

# The Social Networks of Teens and Young Adults

RICH LING



Rich Ling is a sociologist in Telenor R&I

This article examines the way in which social networks operate within small groups. The study examines the social networks of teens and young adults. Groups of friends were recruited for the study and thus the unit of analysis is the group as opposed to the individual. The members of each group developed a contact diary (face to face, mobile voice, SMS, IM etc.) among the friendship group that also recorded their contacts with other "external" persons. The analysis shows the importance of copresence in the development of the groups and how mediated interaction can help to maintain and develop the group. The analysis also examines how different individuals played different roles within the groups.

## Introduction

There is a link between the degree to which the members of a social network are in contact through various forms of media and the degree to which the group members are in physically copresent contact. It has been noted that there is indeed a type of stability in the interaction of social networks in spite of local disruptions associated with the interaction of particular dyads (Ebel, Mielsch and Bornholdt 2002; Kossinets and Watts 2006).

This suggests that the density of contact is a useful predictor of the propensity for adopting for example internet or mobile phone based social networking applications. The idea is that the more intense the web of interaction, the more the members have a common sense of the group. Given this common sense of one another, it is easy to suggest that social networking applications can be adopted, adjusted and used for the various purposes of the group.

The density of social interaction is not necessarily dependent on the density of only mediated interaction. Indeed, in many cases mediated interaction is only a small portion of the total interaction budget of a group. The interactions that are most essential for the development and elaboration of viable group interaction are co-located contact (Collins 2004; Ling forthcoming). Following this thought, teens often have a better milieu in which to develop these social networks since they are in daily contact with other same aged individuals both in the context of school and in their leisure time activities. The material here examines how the social networks of teen males and of young adult females function.

## Method

The ambition of the work being reported here was to understand the internal network based interactions within teen peer groups. Thus, recruiting of randomly selected individuals was not an appropriate approach. Rather, we were interested in recruiting groups of peers and studying their interaction. To do this, a two-staged research process was developed. In broad strokes, we recruited several groups of friends, gathered information on their use of electronically mediated communication (as well as their face-to-face communication), and conducted a group interview with each group.

## Recruitment

Often, social research is carried out in order to understand the way that individuals feel or think about various issues. The unit of research in this case is the individual. Indeed, when thinking of questionnaire based research or of focus groups (Kruegar and Casey 2000), it is the individual who is most often considered the unit of analysis.

Since this work examines the social networks of the teens and young adults – including their use of the so-called mediated communities (My Space, Facebook, etc) – it was not the individual who was the unit of analysis, but rather the group. This posed somewhat special problems both in terms of the recruitment and when conducting the focus groups (more on this second issue below). When recruiting persons for the study we first selected the general categories of groups to be included. These included younger teens (one group of males and another group of females) as well as young adults (again one of each gender).<sup>1)</sup>

<sup>1)</sup> The young adult male group was actually somewhat younger than the female group, indeed they were still in high school. In many ways, they were more tightly tied into teen culture than into what might be considered the culture of young adulthood. For example, they were not regular wage earners nor did they live in their own apartments. Nonetheless, they approached the data collection and group interview in a serious manner and provided insightful information. In addition, two families were recruited. The results from this are reported on elsewhere.

Using these criteria, individuals in each of these categories were contacted and asked if they would be willing to participate.<sup>2)</sup> In addition to their personal participation, these “access point” individuals were also asked to help recruit four or five of those persons they considered to be their best friends. In each case, we were able to recruit a group of four to six individuals who were willing to be interviewed regarding their communication interactions with their friends and to participate in a focus group.

Both groups of younger teens were students in their respective junior high schools. Thus, they had daily contact in addition to several channels for mediated contact. The older males were high school students. They attended different high schools but they had all been neighbors during the earlier part of their education and they were all part of a skiing/snowboarding milieu. Indeed, this group was the very uniform in their choice of clothing style. Finally, the older female group consisted of four young adults. They had attended some school together in Kristiansand (about five hours drive from Oslo). They had then, at different times, moved to Oslo to either continue their studies or to work. Thus, beyond the social dimensions of the group, the main tie that bound them together was their common experience from Kristiansand.

### Diary Data Collection

The focus of this study was to understand the way that teens and young adults use different forms of mediated interaction within the context of their peer groups. We were interested in gathering the stream of communications between the various group members over several days of interaction. It is this information that can be used to reconstitute the social networks of the groups and allow for the calculation of centrality in the context of the group.

The options for gathering the data included a retrospective questionnaire, a traditional paper based diary (Palen and Salzman 2002) or some type of automatic logging program (see for example, Raento et al. 2005). None of these approaches was practical. When thinking about retrospective questionnaires there is the problem of participant recall. It is possible to limit the period recalled to, for example, the previous day. However, when thinking about the ability to recall contacts that may have been somewhat minor and incidental, it can be difficult to summon up these details even when the time lag between the event and the questioning is moderately short (Freeman, Romney and Freeman 1989). A second approach is the use of paper diaries, i.e. a notebook or a sheet of paper

carried by the participants to note their activities as they take place. Indeed, Hjorthol et al. (2007), Ling and Baron (2007) as well as Grinter and Eldridge have used the paper diary approach in their study of mobile communication (2001). These have the advantage of being more fine grained in their analysis. They allow the respondents to note their activities and behaviors as they happen. The disadvantage with the system is that it is intrusive and requires a large degree of commitment on the part of the respondents. Indeed the burden of having to fill out the diary can bias the number and type of respondents who choose to participate in a study. If the data entry is too cumbersome, the respondents might simply fill in their “best guess” at the end of the day or immediately before handing in their diary. Thus, there is the issue of recall as with the retrospective forms of data collection noted above.

A modification of paper based diaries is the Experience Sampling Model developed by Csikszentmihalyi and his colleagues (Csikszentmihalyi, Larson and Prescott 1977; Larson, Csikszentmihalyi and Graef 1980). In essence it employed mediated technology (in the case of the early work it was pagers) in order to elicit information of informants as they moved about their daily routines. In the early use of this method, a signal was sent to the informants that prompted them to fill out an entry in a diary at different points of the day. The approach was used to understand the daily flux of teens’ activities and their mental state.

Palen and Salzman have employed an alternative form of electronic diary where they ask participants at various times to call into a voice mail system in order to gather the information. They found that this approach was less time intensive for the respondents since they did not have to stop their activity and manually record incidents. This was particularly important when the informant were mobile (Palen and Salzman 2002).

A final approach is to use some form of technology logging to capture the different communication situations where a particular type of mediation is used. For example, Diminescu et al. and his colleagues have used this in their investigation of geographic mobility and mobile communication (forthcoming). This provides the researcher with a rich and exact overview of the individual’s use of a particular technology. In some cases, it can even provide details with regard who has been contacted and through which mode (voice telephony vs. SMS for example). A drawback with this approach is that it does not allow for multi-

---

<sup>2)</sup> As an inducement, the individuals were paid for their participation with a gift certificate of NOK 500.

modal forms of data collection. While it can provide information on, for example IM traffic, a completely separate apparatus would have to be used to gather co-present interaction or mobile telephony. Thus, a global form of data collection can become quite cumbersome.

A hybrid approach was used in this study. The individuals who were recruited were asked if they would be willing to receive three telephone calls every day from the data collection group, one at midday, a second in the late afternoon/early evening and a third later in the evening. The data collection period lasted for three days from Thursday thru Saturday to include interaction on the weekend.

In each call, the individual was asked to report on interaction with each of the other group members through various forms of mediation (face-to-face, mobile voice telephony, SMS, IM, etc.). In addition, they were asked about any other contacts they had had in the previous time span. This form of data collection when examined for the whole group resulted in a universal diary of interactions within the group. In addition, it provided an ego-based mapping of the individuals' contacts with those who were outside the group (Wasserman and Faust 1994, 53). The relatively short recall time combined with the mobile phone based collection of data eliminated some of the problems with other forms of data collection. Indeed, Hoppe et al. have found that telephone based "diary" studies result in better reporting and in cleaner data than did the more traditional paper diaries (2000). By way of critique, the three-day data collection period was somewhat short in terms of the total amount of data that was collected. In some cases, the interactions were rather sparse. However, issues of cost and issues of respondent willingness limited the time span of the data collection.

After the data collection period, the material was analyzed for broad trends, and the group was called in to a group interview. During the interview, they were asked about their interaction with one another and with other persons outside the immediate group. They were asked about the internal dynamics of their peer group and the types of activities and exchanges in which they participated. Given the form of recruiting, the focus groups had a particular dynamic. It is often the case in focus groups that the informants do not know one another. It is the job of the moderator to help the individuals feel comfortable speaking in

front of others with whom they are not familiar. This is done by using a more extensive round of introductions and directing questions to individuals, etc. In the case examined here, there was a different situation. The informants were all familiar with one another and it became the job of the moderator to operate within the context of the groups' code of behavior. Where with normal groups of informants there are only the most basic forms of social contact between them, in this case there was a massive history shared by the informants. The moderator and those analyzing the material were left, however, to work out these internal group dynamics.

## Analysis

The material from the series of "diary calls" was entered into a set of spreadsheets and summed. It was hoped that there would be enough material to allow examination of both the topography of copresent and mediated forms of interaction separately. The material indicated, however, that there was not a long enough time-period in order to accommodate a separate analysis and so the contact events were simply summed across all forms of interaction, both mediated and copresent.<sup>3)</sup> This material was then used to calculate the centrality of each individual within the group. In addition, the material on contacts with persons outside the group was tabulated and examined for overlap with the lists of persons mentioned by other group members. The material from the focus groups was transcribed and examined for themes that arose from the interaction.

## Results

While there were four groups examined, it is perhaps most telling to contrast the situation of the younger teen males as opposed to the young adult females. In the former case, the group was in relatively tight contact. Their daily activities – school, sports, etc. – gave them the opportunity to interact on a regular basis. The young adult females were, on the other hand, a more diffuse group of individuals. The common thread that ran through the group was that they all had a history of spending at least a part of their youth in the town of Kristiansand and they found themselves collectively in Oslo.

### Young Teen Males

The young teen male group was an active and relatively tight social network. The individuals in the group recognized that they were often together.

---

<sup>3)</sup> *It is clear that comparing a text message to a face-to-face chat is, to some degree, comparing apples to oranges. The text message is limited to 160 characters while the co-located interaction can take place over a longer period of time and can involve much more involved forms of interaction. However, when thinking about the calculation of centrality in a social network, it can be claimed, with only slight damage to the truth, that they are both expressions of the group's dynamics.*

*Interviewer:* I wonder about who is together with whom.

*Andreas<sup>4)</sup>:* I am together with Håken, Andrew and a little with Erik sometimes.

*Erik:* We are all together, it is not like ...

*Andrew:* We play soccer on the same team together.

*Andreas:* Sometimes in the school band also.

*Interviewer:* [In the diaries] I saw that there were several common names, Oliver and ... But is it like you all know each other's friends?

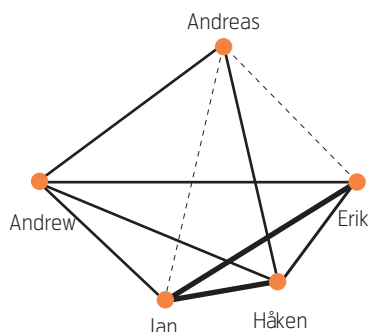
*Andreas:* Yeah.

*Interviewer:* Can I ask in relation to groups. Often girls have a clique. Is it like that, that a well recognized gang hangs together.

*Andreas:* It is like, you know, but at school, then everybody hangs out with everybody. But in our free time it is more like that.

*Håken:* It is like that, that some are more together with each other.

Their comments indicate that while school was an important point in their daily interaction. It was in other milieus that they were able to work out their common identity. School was a venue for all the teens in their age group. It was however in the context of soccer and the school band that the small group had worked out their common identification.



*Figure 1 Social network of the teen males. The analysis shows that all the teen males reported interaction with all other members of the group. The most central members were Jan and Håken. Andreas was the least central (but the most verbal at the focus group)*

The teens realized that there were some groupings that were more central than others.

The comments of the teens indicate that they have a somewhat imprecise idea of the contours of their social topography. There was the idea that some individuals were more directly linked to one another. However, the overall notions of the interactions were also mapped onto different situations (school time, soccer practice, free time, etc.). It is worth noting that the data collection period purposefully spanned these phases of their lives in order to capture the different aspects of their social interactions.

Looking at the material in the contact diaries, the five younger teen males had 167 contact events within the group and 218 contacts with persons outside the group during the three-day data collection period.

All the members of the group reported contact with all other members of the group during the data collection period. Some of the contact between the individuals was more tenuous than in other cases. In addition, some of the links were much more developed than other links. Nonetheless, all the members of the group reported being in contact with one another during the data collection period.

The most central person in the group was Jan (Figure 1). As can be seen in Figure 1, he had two very strong connections to Erik and to Håken in addition to a relatively strong connection to Andrew. Håken was the second most central.

The least central person in the group was Andreas. The material from the diary indicates that he had only limited contact with Jan (who was the most central) and with Erik. Andreas had the most contact with Andrew. Interestingly, Andreas was the “core” person with regard to the recruiting process; that is, he was the individual who helped to recruit the other group members. In addition, he was the most verbal person in the focus group. Of all the verbal turns taken by the five teens in the focus group, he took 37 %.

There were different modes of interaction, and the balance between them was also different. Among the younger teen males, copresent interaction dominated. The five individuals reported a mean of more than six face-to-face episodes with other members of the group during the data collection period (see Figure 2). This is as opposed to one voice based telephonic interaction and one using SMS. This was the approximate (percentage based) distribution pattern for the

<sup>4)</sup> All names have been changed.

teen female and the young adult male groups. Although the teen females had more contacts, their ratio of face-to-face vs. mediated contacts weighed heavily in the direction of the former.

Looking at both the internal interaction as well as the teen males' contact with persons who were outside the group the material reveals some interesting dimensions (Figure 3). First, one external individual was in contact with all the other group members during the data collection period but was not in the focus group nor were they a part of the diary study. Interestingly Andreas, who was the person who helped with recruiting the other group members, reported relatively heavy contact with this individual. Thus while in many respects this external individual could have been considered a member of the group, for one reason or another, he or she was not included.

Second, when considering Jan and Håken, the two most central individuals in the group, they also reported the fewest number of external contacts. This indicates that while they are core members of the group, they have, in effect, put all their eggs in one

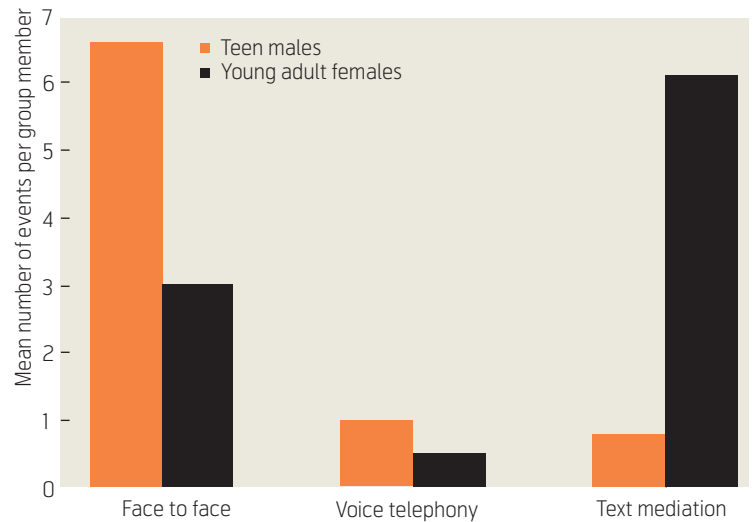


Figure 2 Mean number of contacts via different forms of interaction. The teen males have extensive co-present interaction at school and also during their free time when they play soccer together. This interaction is the main form of promulgation for the group. Texting and voice telephony is seen as a way to support the co-present interaction. With the young adult women the main form of interaction is texting, indeed this in spite of two of the women living together. Texting, it seems, is a convenient way for the group to maintain a type of lightweight contact

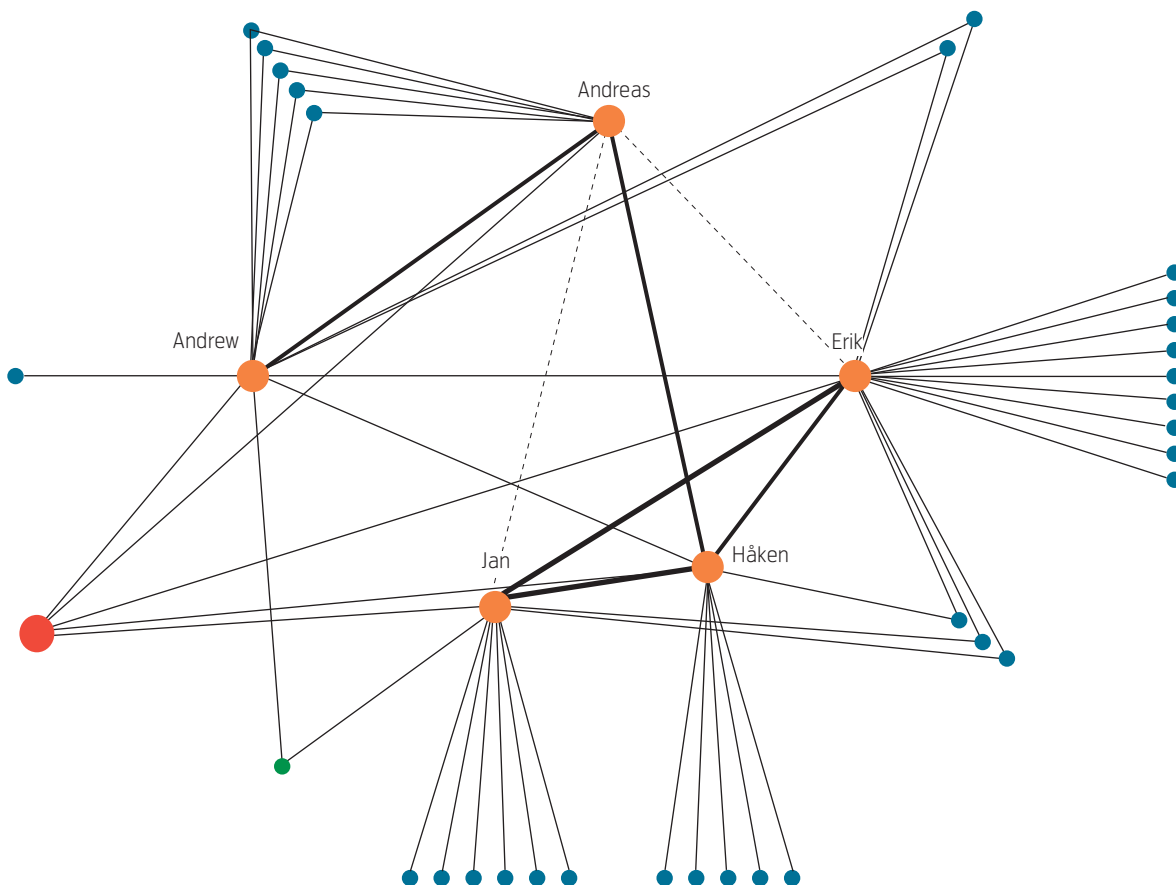


Figure 3 Social network of the teen males with their external ties. The material shows that there is a universally known “external” individual, some groups who circle around shared members (in particular Andrew and Andreas) and some individuals who have relatively few external ties (Jan). The situation of Jan and Håken is interesting since they are the most central members of the group and interestingly, they have a very small number of external ties. This indicates that the group is quite central to them. Alternatively Erik has a large number of external ties as well as a moderately central position in the group itself

social basket. The group is central to them and they have committed themselves to it to a greater degree than several of the other individuals.

A third feature of this analysis shows that Andrew and Andreas reported a series of common friends who were not shared by the other members of the group. Andreas and Andrew had been classmates in elementary school and had continued to be classmates as they moved to junior high school. This group of common friends were also elementary classmates with whom they retained contact. The other group members had attended other elementary schools and so these individuals were not as closely tied to these individuals. Interestingly, neither Andrew nor Andreas had a significant number of their own exclusive external links (Andrew had one and Andreas had none). The material collected during the study seems to indicate that their social lives were bound either to the group being studied here, or to the group they had maintained from elementary school.

Finally, Erik reported the largest number of external ties. In addition to his participation in the group examined here, he also was active in another soccer group. Because of this he had a separate social sphere that was not particularly tied to the group of teens examined here.

The teen males had contacted 33 persons who were outside of the group during the data collection period. Of the external names, 36 % were “common” in the sense that more than one of the group had been in contact with the same person. In the case of one person, all five of the teen males had been in contact with them. The remaining 64 % of the names were unique in that only one of the teen males had been in contact with them.

While face-to-face interaction was the most common form of contact, the teens also used other mediation systems to help them keep in contact with others. So-called community services such as Facebook were popular at the time of the interviews.

The interview material indicated that photos were one way that the group interacted, but they were a part of the broader stream of interaction within the cohort of teens. Facebook had arisen as an application through which some of this interaction took place.

*Interviewer:* What do you use Facebook for?

*Andreas:* Write on each other’s “walls”.

*Erik:* Post pictures and wall-to-wall conversations, it is almost like MSN.

*Interviewer:* Do you send photos using your mobile?

*Håken:* Some take pictures and post them, but nobody sends them [with their phones using MMS].

*Erik:* I have only gotten 2 – 3 MMS since Christmas (note: the focus group was in June).

*Interviewer:* So you only send it to Facebook. Is it more practical?

*Andreas:* Yeah, it is free and that is why nobody sends [MMS] anymore.

Somewhat later in the interview, Erik noted, “I use Facebook mostly to see photos and to post photos.” When compared with other forms of more direct interaction, this form of mediation seems quite indirect. However, it plays an important role in the way that the teens document their activities (be it parties, school activities, older photos or vacation memories). In addition, they used the functionality of the community application to point out particular individuals in the photos (to frame them). This generates a message to the individual being identified and indicates to them that they have been included in the photos of another person. Thus, the photo functionality, in addition to being an archive of activities, is also a type of gifting system.

The teen males were more likely to have contact with same sexed individuals. The material shows that on average each of the teen males had contact with about 4.5 males and slightly more than 1 female during the data collection period (see Figure 7).

The material provides insight into the functioning of the group and the different roles assumed by the teens. Jan and Håken were the two who were the core of the group. All the other members of the group referred to them and used them as a type of central clearinghouse. Andreas was the most verbal of the teens and was, in many ways the clown. He perhaps provided the levity when the group assembled itself. Finally Erik was what Burt might have called a network entrepreneur (2001). He had many exclusive contacts to another group. Through these contacts he could bring different types of influences and ideas back into the group where they could be acted upon or adopted.

The material here indicates that the intensity of the teens’ interaction was, to a large degree, the result of the common parallels in their lives. The group was age sorted and indeed some of the members (for

example Andrew and Andreas) had been school chums since they were six years old. The age sorting function of the educational system in addition to their common interest in soccer and the propinquity of their homes meant that they were in almost daily contact and that they were able to cultivate a set of common interests and often had a common perspective on issues.

Interestingly, the material also shows that beyond these commonalities, there were also distinct roles within the group. There was the jovial verbosity of Andreas, the more sober anchoring of Jan and Håken and the linking of Erik. The members of the group seemingly each had their role and the interaction showed that they were more or less comfortable with their own positions and those of the other individuals.

### Young Adult Women

The teen males had a daily location where they could meet (school) in addition to regular extracurricular activities. This regular and quasi-institutionalized form of interaction was visible in their contact diaries. In the case of the young adult females there was some common structure in their interactions, but it was not as strongly anchored in their daily lives.

*Interviewer:* Who is together with whom?

*Astrid:* It is a little mixed. Iris and I are together a lot, and I meet Vilde and Helene.

*Iris:* We, me and Astrid, live near one another and Vilde and Helene live together.

*Interviewer:* You all have separate networks? A lot of common friends?

*Iris:* Some.

*Astrid:* We had a lot of common friends from ... we were together a lot in Kristiansand. Now it is a little more like ...

*Iris:* We know a lot of the same people.

*Interviewer:* High school?

*Iris:* We got to know each other in high school, all of us.

*Vilde:* We knew about each other in junior high school.

*Iris:* Yeah, we went to the same junior high school, but we didn't know each other then.

*Interviewer:* Are there others?

*Iris:* But if there was something big that happened, it would be natural that we four would be a part of it.

The young adult females were in a different life situation. They had been school mates approximately ten years previous to the focus group. At the time of the focus group, each of them was pursuing somewhat different paths in life. Two of the group members (Helene and Vilde) shared an apartment while two others lived near one another. All of them use SMS and all, save one, studied at different locations in Oslo.

As with the teen boys, the establishment of the group was based in their experience as younger teens at junior high school.

*Interviewer:* Where do you all come from?

*Astrid:* From Kristiansand

*Interviewer:* Everyone?

*Iris:* Actually I am from here [Oslo], but I lived there. So we know each other from there. We didn't move [to Oslo from Kristiansand] at the same time, about a year in between, but almost at the same time.

The young adult females were not classmates or working colleagues. Three of the women were students (one at the University of Oslo, one at a junior college in Oslo and a third at a vocational school). The fourth woman worked. Because of this, there was not the same routinized structure nor was there a common milieu in which they could meet as with the teen males. Further, these women were in a life phase where they had left their family of orientation and had not yet entered into an eventual family of procreation that would demand its own time and attention. Thus, the group filled a certain social space in each of their lives. It had been more central when they were teens together in school and now it provided them with social contact and other logistical advantages (the common apartment and perhaps occasional transport back and forth between Oslo and Kristiansand). We can speculate however, that it was a social sphere that would – in anticipation of the completion of their education and the establishment of their own families – have to tolerate further adjustments.

Unlike the teen males, not all of the group members had been in contact with one another during the data collection period. Thus, the diary material shows that the social network for the young adult women was not completely linked. Of the six possible ties

between the four women, they only reported on five of them being used during the data collection period. Two of the group members did not interact during the data collection period and further, three of the six possible dyads had had only weak interaction. Perhaps most surprisingly, Helene and Vilde, the two who shared an apartment, reported only weak levels of interaction.

This group was unique among the four that we studied in that it was the only one that relied more on mediated than on face-to-face interaction (see Figure 2). Where the teen males reported a mean of more than six face to face interactions as opposed to about 2.5 mediated interactions,<sup>5)</sup> the young adult women reported sending and receiving a median of six text messages to other group members during the data collection period. They reported a mean of three co-present interactions and somewhat less than one contact via voice telephony. The copresent interaction was clearly driven by the fact that Vilde and Helene lived together. Had they lived in separate apartments the co-present interaction would have been lower.

The network maps of the group give a very different picture when compared to the teen males. Where the teen males had a fully configured group (all individuals had interacted with all other members of the group), this was not the case with the young adult females.

The data also shows that it was Iris who was in many respects the key individual in the group. She was the

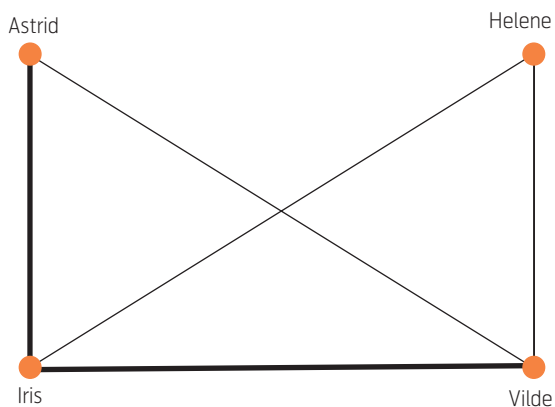


Figure 4 Social network of the young adult females. Iris is the most central member of the group with Astrid and Vilde being about equally central. Helene is the least central member and indeed has only moderate ties to Vilde (her room mate) and to Iris. There was no contact reported during the data collection period between her and Astrid

most central when looking at the material from the interaction diaries. She was the “core” person who was used in recruiting the other individuals to the group and she is the one who made the most utterances during the focus group.

Her role as the leader was also recognized within the group:

*Vilde:* We are maybe a core [group], with Iris as the leader. (Laughter)

*Interviewer:* You will define Iris as the leader?

*Vilde:* Because she says she is. (Laughter)

*Interviewer:* Why do you define Iris as the leader?

*Iris:* Me and Vilde have known each other the longest and then Astrid and Helene knew us from school and we were the ones that introduced them.

*Interviewer:* Why is Iris the leader? Is she good at keeping appointments?

*Iris:* Now there is a lot of silliness. However, I am good at keeping track of appointments.

The leadership of Iris is seen in the diaries, in the conversation of the focus groups and it is also recognized by other members of the group. With the teen boys, who were in a more integrated group, the different members had more explicit roles that they filled. The sense of this group however, was that while it is still vital, its role in the lives of the members is changing. Thus, rather than having a daily forum for of interaction, it is the individual members who must work to maintain the group. Iris is the most energetic in this context. The material from the interaction diaries shows that Astrid and Vilde were moderately central and that Helene was the least central.

The young adult females had contacted 46 persons outside the group. This is about twice as many as the teen males. There was a difference, however, in terms of the number of common and unique names. The data shows that only 7 % of the individuals were named by more than one of the four women in the group. None of the individuals had been contacted by all four of the women. The remaining 93 % of the external contacts had only been contacted by a single member of the group. The young adult females had a broader range of alternative friendship ties. It is perhaps an indication that since they did not have the

<sup>5)</sup> This included a 1.5 mean of interactions via voice telephony and a mean of less than one text message from or to other group members.

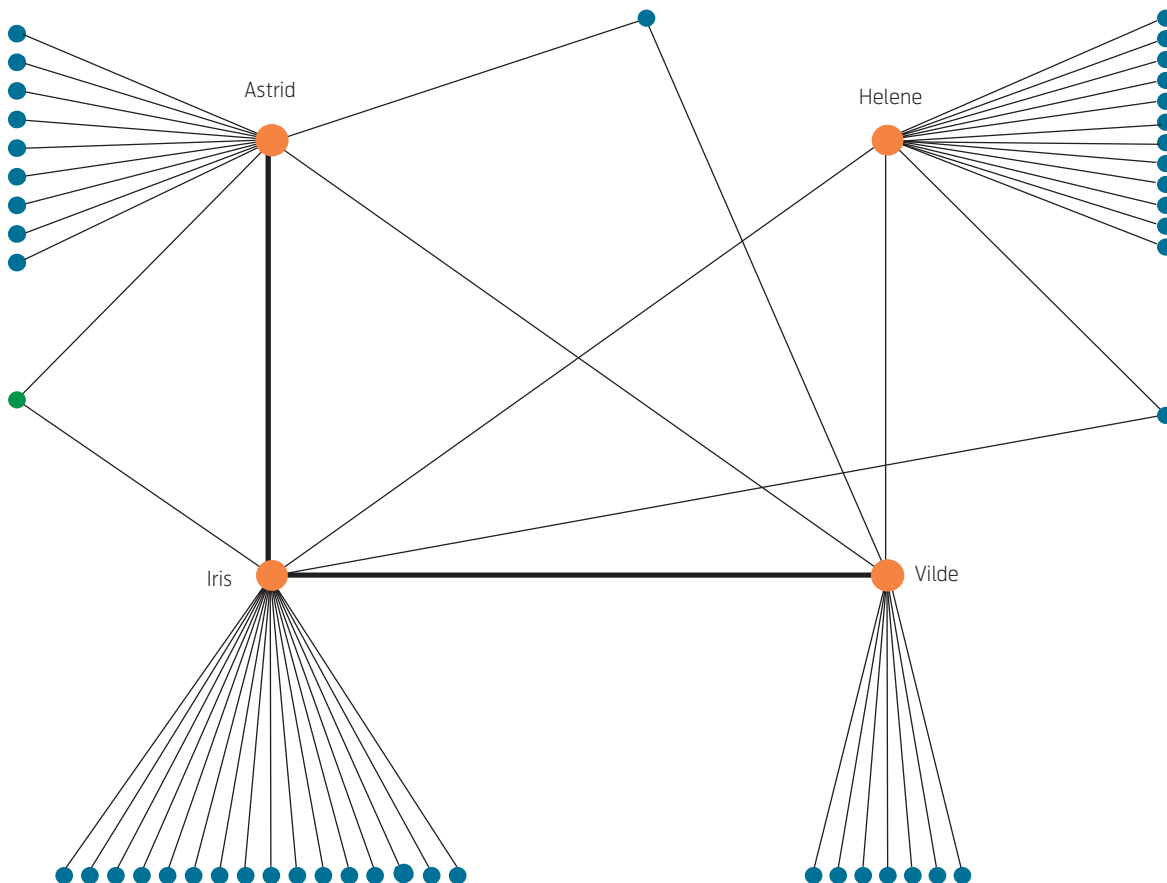


Figure 5 Social network of the young adult females with their external ties. The material shows that Iris reported the most extensive number of unique external ties. She was also quite central to the group. Helene was the least central group member but she reported the second largest number of external ties. This might indicate that she is “spreading her bets” in terms of social involvement. If her membership in the group falters, she will have other alternatives available

institutional support of a common school or a common leisure time milieu with which to support the group (as did the teen males) they needed to work harder at maintaining the group and that the existence of the group was perhaps more uncertain.

On the individual level, Iris also had the largest number of external ties (a total of 16). Thus, we see a situation where a single individual seemingly dominates the group in terms of centrality, links to other individuals and in the contributions to the conversation. A review of the focus group transcript does not show her to be overbearing. She did not, for example cut off other individuals when they were speaking or challenge the assertions that they made in any direct way. However, it is clear from this material that, as Vilde noted, Iris is the leader.

Interestingly it is also possible to see that Helene has a precarious position in the group. She was the least central person when examining the internal interaction within the group. She had only moderate ties to Iris and to Vilde and no reported interaction with Astrid during the period covered by the data collection. In addition, Helene reported the second largest

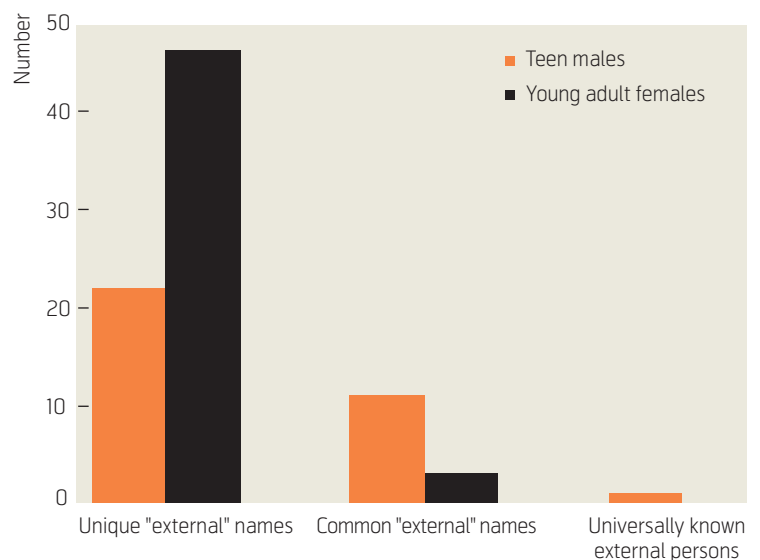


Figure 6 Total number of contact events with unique external individuals, external individuals who were in contact with more than one group member and external individuals who were in contact with all the group members. The material shows that the young adult females each had their own friends who were not in contact with other members of their group. By contrast, the teen males had more common friends who were outside the immediate group. (Note: the larger number of “unique” names generated by the women was in spite of their being only four group members as opposed to the five teen males)

number of external persons with whom she had had contact during the data collection period (a total of 12). The material seems to indicate that the elements holding Helene in the group were the fact that she shared an apartment with Vilde and that Iris seemed interested in holding contact with her. Were these elements not in place, the centripetal elements of limited contact with the group and for example the pursuit of a more academic degree (a university degree as opposed to junior college or vocational school) along with the influences of her university peers could result in her focusing more on other groups.

It is perhaps not surprising that the young adult women had greater contact across the gender line than did the teen males. The material shows that on average each of the young adult females had been in contact with six females and slightly more than four males during the data collection period (see Figure 7). Where the teen males were only starting to explore romance, sexuality and relationships with women, the young adult females had had the opportunity to work through some of the main issues in this area. They were, for example, familiar with the dynamics of dating and the use of SMS and IM in the process of interacting with members of the opposite sex.

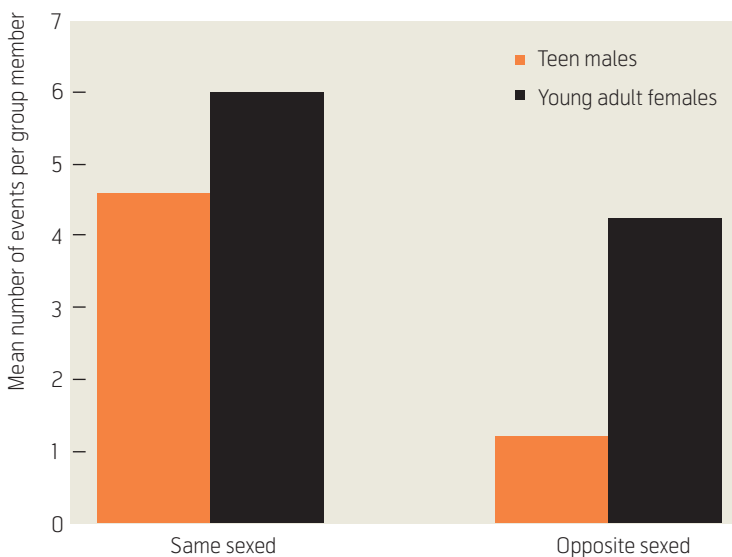


Figure 7 Mean number of contact events per group member with opposite sex individuals. The young adult females and the teen boys were each in contact with about the same number of same sexed individuals. The big difference between the two groups was in the case of contact with opposite sexed individuals. In this case the young adult females reported more contact with persons of the opposite sex. This is a reflection of their different position in the life cycle. While the teens were still unsure about the role of interaction with female peers, the young adult females were far more involved in that type of socializing

The image that one takes away from the analysis of the young adult females is that of a group that maintains itself based on its past associations (the experience of junior high and high school), on their common current situation (leaving Kristiansand for Oslo) and by having a dynamic person (Iris) who is willing to draw them into various social activities. This means that they maintain a certain sense of being a group. The teen males had an easier time of this in that they could devote much more time to common activities, both within the context of school and in their free time.

The common notion of the group developed by the young adult women can be seen, for example in their use of argot (or rather their ethics of which argot to use), which showed how the women used language in the definition of the group. The form of interaction was also important. The informants reported that they were not likely to use different formulations that might identify them as teens.

*Interviewer:* Do you use “koz”? [the respelling of the Norwegian word for “hug” with the substitution of z for the final s, a style that had been popular among teen users (see Ling forthcoming)]

*All:* No! Absolutely not!

*Interviewer:* Is that wrong?

*Iris:* We did it maybe before, but that was a long time ago.

*Astrid:* I have never written “koz” with z. I don’t write “kos” so often. (Laughter)

*Iris:* No.

*Astrid:* “Klem” [another form of the word for hug] you can write that.

*Iris:* Sometimes. (Laugh)

This passage indicates that these women had adopted a carefully calculated style of writing and the range of endearments. The informants in this group were not as likely to rely on what they saw as immature and childish forms of interaction. They saw themselves as being more urbane and sophisticated. Thus, they eschewed formulations and argot that would potentially give the reader the wrong impression.

In the same way as argot can be used to help identify the group, so can the use of photos. They can be used to commemorate certain group events (Ling 2008) and they can also be seen as a type of gifting between

the individuals (Johnsen 2000; Taylor and Harper 2001).

*Interviewer:* Do you use your telephone to take pictures?

*Astrid:* Yeah, there is a little of that every once in a while.

*Iris:* It is usually when you are going out. I have sent some lately. I take more when I am out than normally, I do that.

*Interviewer:* Tell me. What do you do. What is typical?

*Jeanne:* Pictures, that is mostly like Iris says. If you are going to go out.

*Iris:* A fun picture, or an ugly picture of someone. Or a picture that someone wants.

*Interviewer:* What do you do with the pictures?

*Iris:* Send them to the person [who has been photographed]

*Interviewer:* A lot of jokes or funny ones? Or are they more serious?

*Iris:* Astrid and I have sent a lot.

As noted above, photos taken by the group members have both the function of being a type of informal archive of group activities and a way of giving an individual a type of special attention. Interestingly we also see again that Iris who is so central for the group in other contexts is also central here. She is recognized as the person who photographs different events and she is the one who sends them to others.

## Conclusion

### General Results

The results indicate that it is the strength of the co-present interaction that, in many ways determines the strength of the global social network. The younger teens, who met one another daily at school, during football practice and in their local neighborhoods were more strongly bound than the older women who had a relatively thin thread holding them together in the form of Iris. Where the younger teens were, in effect, thrown into a common environment, the older women had had some of the same background, but were in the process of establishing new identities and each developing their own sphere of friends.

The tightness of the teen male group, as opposed to the young adult females, can be seen in their contact with external individuals. Where the females had a larger number of contacts, there were far fewer that were common. In more than nine cases out of ten, the contacts were individual interactions and not contacts with common friends. This was only the case with about six in ten for the teen males. The network of external friends was more compact, but it was also more shared for the teen males.

The young adult females had more cross gender contact than did the teen males. Where about a third of the external contacts were males in the case of the young adult women, only 18 % were females in the case of the teen males. This is likely an indication of the unsure role that women had in the lives of the teen males as opposed to the more mature forms of interaction among the young adult women. Interestingly, the number of external persons who were family members was the same across the two groups.

Returning to the introductory question, the material here indicates that co-present contact is an essential element in the development and maintenance of social groups. This can be supported by mediated interaction, but it is through copresence that we are able to promulgate the social ties that are later cultivated via mediated interaction. In the process of developing social ties, the participation in common milieus is a common experience upon which the group members can develop their sense of their linked identity. This was obvious in the material here in that the teen males (school chums and members of the same soccer league) displayed a flourishing sense of group identity. In a similar way, the young adult women were still drawing on their sense of group identity that had its foundations in their common experience as teens. In this latter case, it is possible to see that the network was becoming somewhat frayed with time. In addition, as the women enter into a more established phase of life, the group ties will be further tested. Nonetheless, the fact that they have been able to maintain their common sense of a group bears witness to the strength of their earlier common experiences.

## Bibliography

Burt, R S. 2001. The social capital of structural holes. In: Guillien, M F, Collins, R, England, P, Meyer, M (eds). *New directions in economic sociology*. New York, Russell Sage.

Collins, R. 2004. *Interaction ritual chains*. Princeton, Princeton University Press.

- Csikszentmihalyi, M, Larson, R, Prescott, S. 1977. The ecology of adolescent activity and experience. *Journal of Youth and Adolescence*, 6, 281-294.
- Diminescu, D, Licoppe, C, Smoreda, Z et al. (Forthcoming) *Tailing untethered mobile users: A joint study of urban mobilities and communication practices by combining ethnography and cell-based mobile phone-supported localization journals*. (Mobile communications research series, 1)
- Ebel, H, Mielsch, L-I, Bornholdt, S. 2002. Scale-free topology of e-mail networks. *Physical Review E*, 66, 035103.
- Freeman, L C, Romney, A K, Freeman, S C. 1989. Cognitive structure and information accuracy. *American anthropologist*, 89, 310-325.
- Grinter, R, Eldridge, M. 2001. y do tngrs luv 2 txt msg? In: Prinz, W et al. (eds). *Proceedings of the seventh European conference on computer supported cooperative work ECSCW '01*, 219-238. Dordech, Netherlands, Kluwer.
- Hjorthol, R, Jakobsen, M H, Ling, R et al. 2007. Det mobile hverdagsliv: Kommunikasjon og koordinering i moderne barnefamilier. In: Lüders, M, Prøitz, L, Rasmussen, T (eds). *Personlige medier. Livet mellom skjermene*. Oslo, Gyldendal Akademisk.
- Hoppe, M J, Gillmore, M R, Valadez, D L et al. 2000. The Relative Costs and Benefits of Telephone Interviews Versus Self-Administered Diaries for Daily Data Collection. *Eval Rev*, 24, 102-116.
- Johnsen, T E. 2000. Ring meg! En studie av ungdom og mobiltelefoni. In: *Department of ethnology*. Oslo, University of Oslo.
- Kossinets, G, Watts, D J. 2006. Empirical Analysis of an Evolving Social Network. *Science*, 311, 88-90.
- Kruegar, R A, Casey, M A. 2000. *Focus groups: A practical guide for applied research*. Thousand Oaks, Sage.
- Larson, R, Csikszentmihalyi, M, Graef, R. 1980. Mood variability and psychosocial adjustment of adolescents. *Journal of Youth and Adolescence*, 9, 469-490.
- Ling, R. 2008. *New Tech, New Ties: How mobile communication is reshaping social cohesion*. Cambridge, MIT Press.
- Ling, R, Baron, N. 2007. The Mechanics of Text Messaging and Instant Messaging Among American College Students. *Journal of sociolinguistics*, 26.
- Palen, L, Salzman, M. 2002. Voice-mail diary studies for naturalistic data capture under mobile conditions. In: *CSCW'02*, New Orleans, Louisiana.
- Raento, M, Oulasvirta, A, Petit, R et al. 2005. ContextPhone: a prototyping platform for context-aware mobile applications. *Pervasive Computing, IEEE*, 4, 51-59.
- Taylor, A, Harper, R. 2001. Talking 'Activity': Young people and mobile phones. In: Palen, L (ed). *CHI 2001 Workshop: Mobile communication: Understanding user, adoption and design*. Seattle, WA.
- Wasserman, S, Faust, K. 1994. *Social network analysis: Methods and applications*. Cambridge, Cambridge University Press.

---

Rich Ling is a sociologist in Telenor R&I. He received his PhD in sociology from the University of Colorado, Boulder in his native US. Upon completion of his doctorate, he taught at the University of Wyoming in Laramie before coming to Norway on a Marshall Foundation grant. Since that time he has worked at the Resource Study Group and has been a partner in the consulting firm Ressurskonsult, which focused on studies of energy, technology and society. For the past 13 years he has worked at Telenor R&I and has been active in researching issues associated with new information communication technology and society with a particular focus on mobile telephony. He has led projects in Norway and participated in projects at the European level. Ling has published numerous articles, held posts at and lectured at universities in Europe and the US and has participated in academic conferences in Europe, Asia, Australia and the US. He has been responsible for organizing scholarly meetings and editing both academic journals and proceedings from academic conferences. He has received recognition as an outstanding scholar from Rutgers University and Telenor, and his analysis has appeared in Norwegian newspapers.

email: richard-seyler.ling@telenor.com