Chapter 4
Political Conversations as Civic Engagement: Examining Patterns from Mobile Communication Logs in Japan

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Abstract Political conversation is regarded as an important form of political participation and civic engagement. Although significant differences have been found in the level of political conversation between countries, studies on political conversation in Japan are scarce. In this study, we investigated political conversation between people, considering the kinds of dyads in personal networks in Japan and how partners are selected. We pursued an exploratory analysis of the features of dyads in political conversation through mobile communication logs, comparing those in Japan and the US. For both countries, the results show that discussion of important topics and the number of voice calls in the afternoon was significant predictors of political conversations. In Japan, discussing with other people and family were more significant predictors than for the US. These results may have important implications for clarifying the extent to which political conversations take place, with whom, and how they occur as a by-product of other topics.

Keywords Mobile communication logs • Political conversations • Civic engagement • Political participation

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4.1 Introduction

Political conversation represents an important form of political participation and civic engagement (e.g., Wyatt et al. 2000); powerful indices can be used to measure this rich concept. In addition to political conversation, there are a variety of other indices used to measure the extent of political participation and civic engagement, including votes, degree of participation in civic organizations, and civic groups. However, certain individuals only nominally participate in civic organizations, without making an active contribution, which reduces the validity of these indices (Putnam 2000).

Nevertheless, because of the growing interest in the validity of political conversation, evidence for its validity has accumulated in recent years. Studies have revealed that political conversation could enhance political knowledge (Bennett et al. 2000; Eveland et al. 2005) and encourage diverse political and civic activities (Eveland and Hively 2009; Pan et al. 2006; Kwak et al. 2005; McClurg 2003). Moreover, Dylko (2010) demonstrated that political conversation was correlated with the extent of all political and civic activities (giving donations, contacting politicians, protesting, attending political events, displaying political paraphernalia, working for campaigns, and voting), while reading newspapers and listening to political talk radio were correlated with the extent of only a few such activities. Thus, political conversation is regarded as an important form of political participation and civic engagement (Bennett et al. 2000) and can be used to measure the extent of these concepts.

However, although significant differences have been found in the level of political conversation between countries (Schmitt-Beck and Lup 2013; Richardson and Beck 2007; Johnston and Pattie 2006), studies on political conversation in Japan are scarce. Some pressing issues remain unclear, such as who talks about politics with whom, and how partners for political conversations are selected. Is there any pattern? While a few studies have investigated political conversation in Japan (Ikeda and Boase 2011), they focused solely on the number of partners in political conversation, and did not examine how these partners were selected.

Therefore, in this study, we investigated political conversation between people, considering the kinds of dyads in personal networks in Japan and how partners are selected. Specifically, we undertook an exploratory analysis of the features of dyads in political conversation through mobile communication logs, comparing those in Japan and the US.

4.2 Review of Previous Studies

Definition of Political Conversation Previous studies have suggested two ways to define political conversation. The first is that a political conversation is assumed to be a formal conversation (Schudson 1997; Noelle-Neumann 1993), and is defined as conversation in a public place intended to gain political information, change

someone's party affiliation, or share views on political issues. The second definition assumes that political conversation is an informal conversation (Tarde 1901; Wyatt et al. 2000; Eveland et al. 2011), and is defined as a routine conversation in personal relationships. The former definition assumes that political conversations are motivated by strategic and political considerations and the latter by nonstrategic and routine considerations (Eveland et al. 2011). In this study, we adopted the latter definition for the following reasons:

First, it has long been demonstrated that informal conversations in horizontal relationships (e.g., peer-to-peer) function as the principal path of information flow in human life. Because ordinary citizens seldom possess an inherent ability to understand politics and governance, it is necessary to enhance understanding through political conversations in personal networks. In particular, mass communication studies indicate that it is not the direct effect of mass media but rather the two-step flow of information mediated by opinion leaders connected to horizontal personal networks that influences the divergence of information (Katz and Lazarsfeld 1955; Klapper 1960; Rogers 1995).

Moreover, group activities are promoted through informal political conversations and new people are recruited (Klofstad 2007), which enhance the ability to express opinions, to persuade others, and consequently to facilitate further participation in group activities (Dylko 2010). Through these processes, informal political conversations may enhance political knowledge (Bennett et al. 2000; Eveland et al. 2005) and encourage diverse political activities (Eveland and Hively 2009; Pan et al. 2006; Kwak et al. 2005; McClurg 2003). Even if strategic political conversation promotes participation in political activities, for example, superiors may mobilize subordinates to vote for a specific candidate, this would increase only the similarity of the vote and would not increase political knowledge; it is therefore unlikely to encourage voluntary political activities (Richey 2009). In sum, these results show that non-strategic political conversations affect voluntary political activities, whereas strategic political conversations do not.

Political Conversation: Types of Dyads in Personal Networks

The definition of political conversation as informal involves the assumption that political conversations are voluntary in daily life. However, because political conversations can create conflict between individuals, and thereby risk damaging human relationships, they are avoided in public (Schudson 1997; Eliasoph 1998). Therefore, to reduce the risk of conflict, partners in political conversations are selected from dyads in personal networks in a certain manner by filtering out others who have dissenting views, so intimate others tend to be selected as partners (Ulbig and Funk 1999; Mutz 2002; Eveland and Kleinman 2013; Testa et al. 2014). Most studies of political conversation dyads in personal networks reveal that political conversations tend to take place with intimate others, especially with spouses or family members (Huckfeldt and Sprague 1995; Ikeda and Boase 2011; Miyata et al. 2014). On the other hand, partners in political conversations are not necessarily limited to family (Huckfeldt and Sprague 1995; Pan et al. 2006; Ikeda and Boase 2011). Huckfeldt and Sprague (1995) noted that while most political conversation partners were intimate others, more than half were not family members. Huckfeldt

et al. (1995) also noted individual differences in the extent of political conversation with non-intimate others that depended on the structure of personal networks.

Inside dyadic relationships selected as described above, political conversations take place frequently, in the same manner as conversation about non-political topics such as entertainment or sport (Wyatt et al. 2000; Gerber et al. 2012; Wei 2014), and occur as a by-product of these topics (Huckfeldt and Sprague 1995; Eveland et al. 2011; Walsh 2004; Wyatt et al. 2000). Wyatt and colleagues (2000) reported that people conversed about politics and other common topics, such as a spate of airline accidents, the quality of movies, the reasons for a child's failing grades, or the prowess of the local coach. Eveland et al. (2011) investigated the motivations for political conversation and showed that the most frequent motivation was to pass time. Klofstad et al. (2009) corroborated these findings in demonstrating that political discussion networks mostly overlapped with discussion networks of important topics, and argued that when people conversed about politics, they did not switch partners from other important conversations.

Indeed, people seem to carefully select partners for political conversation to reduce the risk of conflict. Consequently, intimate others such as family members tend to be selected as talking partners, and within these relationships, political conversations take place frequently in daily life.

Political Conversation in Japan Taking into consideration that political conversation seeks to avoid conflict, it is reasonable to assume that Japanese people tend to avoid political conversation more than Europeans and Americans for the following two reasons: First, Japanese people are characterized by greater risk avoidance (Richey and Ikeda 2006). In the 2005–2008 World Values Survey, Japan showed the lowest tendency to take risks. Also, Ulbig and Funk (1999) investigated the effect of individual differences in conflict avoidance on the extent of political conversation, and showed that people who had higher levels of conflict avoidance were less inclined to engage in political conversations. Second, when Japanese people select conversation partners, a high level of uncertainty about the other's political views impede the estimation of the risk of conflict (Huckfeldt et al. 2005). Support for a political party is commonly used as a clue to a person's political behavior and the homogeneity of dyads (Mutz 2002). However, because there are multiple political parties in Japan—in contrast to the two main political parties in the U.S.—it is more difficult to infer another person's political affiliation in Japan (Ikeda and Boase 2011).

In practice, while political conversations are commonplace in the U.S. and the U.K. (Bennett et al. 2000), but fewer people converse on political topics and do so less frequently in Japan (Richardson and Beck 2007; Ikeda 2005). Okamoto (2004) explored the topics that tended to be avoided in daily communication in Japan and showed that the topic of politics was avoided because it caused emotional friction in human relationships. Richey and Ikeda (2006) compared Japan and the U.S. in terms of the influence of political conversation on preferences for particular policies; their results showed that while political conversation influenced preferences for all policies in the U.S., this effect was limited in Japan. To explain this difference, they argued that various policies, including certain policies that had a high risk

of causing disagreement and conflict, were sensitively avoided even by intimate dyads in Japan. Consequently, preferences for these policies were not affected by political conversations.

While these studies suggest that Japanese people tend to avoid political conversation more than Europeans or Americans, a certain amount of political conversation may be observed even in Japan (Richardson and Beck 2007; Ikeda 2005; Richey and Ikeda 2006), where people carefully select partners for political conversation dyads from personal networks and depend on certain clues, but not those relating to political affiliation, to avoid conflict.

Purpose of and Focus of Study As noted, the pressing issues to be clarified are the kinds of dyads in personal networks where political conversations occur in Japan, and how such dyad partners are selected. To shed light on these issues, we conducted an exploratory analysis of the features of political conversation dyads, comparing Japan and the U.S. The methods we employed aim to overcome the following limitations of previous research.

First, existing studies relied on self-report methods, such as surveys, to measure communication. Most studies have employed self-report surveys. However, Kobayashi and Boase (2012) noted that self-report measures may contain large margins of error in the measurement of frequency of communication. Because frequency of communication is an important factor in this study, we needed to employ a method to reduce potential bias caused by respondent subjectivity.

In addition, in previous work, an upper limit was set for the number of conversational dyads. These studies often used methods such as name generators or snowball sampling by which respondents listed up to four others with whom they conversed on a daily basis, and the dyads where the frequency of conversation was extremely high were included in the sample. In other words, although these methods allowed a certain proportion of extremely intimate dyads to be sampled, they missed many others. Pan et al. (2006) analyzed National Election Study 2000 panel data and showed that more than 20 % of respondents had listed a maximum of four people. This indicated that these respondents would have more than four dyads where political conversations took place, and other dyads were ignored from the beginning. Thus, a ceiling effect may have occurred from using these methods, and the differences in the number of dyads would be underestimated in the comparison between countries. The ceiling may be an obstacle to clarifying the features of political conversation dyads, because the difference between the features of political conversation partners and features of general conversation partners become undetectable. For example, while political discussion networks mostly overlap with discussion networks of important topics (Klofstad et al. 2009), Eveland and Kleinman (2013) compared these networks using full sociometric social network data and noted that political discussion networks were less dense than discussion networks of important topics, and that dyads in political discussion networks might be selected from dyads in discussion networks of important topics. If the methods that assigned an upper limit are employed, because only overlapping dyads tend to be collected, the unique features of political conversation dyads remain unclear. Therefore, a more sophisticated method is needed to measure communication dyads exhaustively.

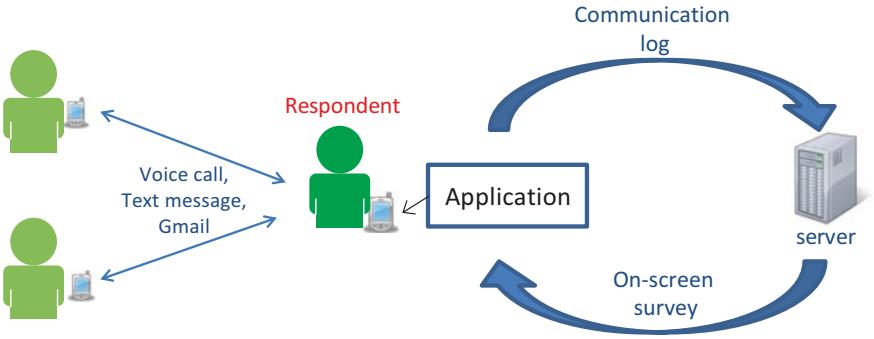

Fig. 4.1 Overview of application

4.3 Method

App for Data Collection In this study, we employed a smartphone application that ran on the Android operating system (Fig. 4.1). This application automatically logs the occurrence of voice calls, text messages (i.e. SMS), and Gmail messages on the devices on which the application is installed. The application did not retrieve the contents of messages (voice calls, text messages, or Gmail messages), nor did it retrieve any identifying information about the users or the people with whom they communicated via smartphone. All logs were irreversibly encrypted and sent to a secure research server. Because it is impossible to differentiate between computer- and smartphone-based Gmail use with the Gmail logs, collected Gmail logs contain lists of times when computer-based Gmail was used. The application can also retrieve communication logs from before the installation date and judge whether or not the people with whom they communicated via smartphone are the same persons by referring to the address book on the devices.

In addition, the application was used to administer surveys. A brief on-screen survey was sent to the smartphone no more than once a day.[1] The application randomly chose one person that the user had contacted via voice call, text message, or Gmail in the previous 24 h, and that person became the respondent of an on-screen survey, which were limited to those registered in address books. When a communication partner was the subject of a survey for the first time, an initial on-screen survey was delivered with items to tap the recipient's relationship with the subject. If a communication partner had been selected previously, a regular on-screen survey was delivered with multiple-choice questions about the content of the most recent communication. These on-screen surveys enabled us to ascertain the type of relationship of each dyad and the content of communication through these dyads.

[1] In this study, we used multiple datasets. There is a small difference in the rules for delivering an on-screen survey between the datasets. In the JP3 dataset, which is described below, on-screen surveys could be sent more than once a day.

Table 4.1 Datasets

Dataset	Period	Respondents	Dyads
JP total		1565	6807
JP1	2011/2–3	196	601
JP2	2012/2–3	224	2500
JP3	2013/1–3	1145	3706
US total		346	2654
US1	2011/2–3	180	670
US2	2012/2–3	166	1984

There were some advantages to using this application for data collection. First, it enabled us to reduce the bias caused by self-report measures. Using this application, all occurrence of communications via smartphone were objectively recorded; thus, it was not biased by user subjectivity. Second, it was not necessary to assign an upper limit to the number of communication dyads. Unlike conventional surveys, because the communication log data were automatically recorded, there was no concern regarding the cognitive load on respondents to recall whom they communicated with and when.

Respondents and Dataset In this study, we used three datasets on Japan and two datasets on the U.S. Each dataset was collected separately, and the respondents and periods differed (see Table 4.1). Respondents in all datasets were recruited from people who registered with online survey companies. Potential respondents were approached based on the following criteria: (1) they used an Android smartphone; (2) they did not use more than one smartphone; (3) they were 20 years of age or over; and (4) they agreed to install the application. After respondents had completed a presurvey, they installed the application and continued to use their smartphones as usual for one to 2 months; when the period ended, they completed a postsurvey.

We combined several types of data in the analyses, including the communication logs, the on-screen surveys collected through the application, and the presurvey (see Table 4.2). Because the on-screen surveys and the presurveys of each dataset contained nearly identical question items, we merged three Japanese (JP) datasets into one, and the two U.S .datasets into one.[2] The unit of analysis was the communication dyad measured in the initial on-screen survey. In this analysis, it should be noted that these data were not representative of Japanese adults because respondents were not randomly sampled and only dyads recorded in their address books were targeted.

[2] However, the presurvey items in JP3 differed from those in the other datasets, so as described below, we conducted two analyses using two models which used different data: model 1 with presurvey items excluded, and model 2, which used all items, including presurvey items.

Table 4.2 Types of data

	How to conduct	What are measured
Presurvey	Respondents had completed a presurvey before they install the application.	Personal-level variables of the respondents.
Communication log	The application automatically logs the occurrence of voice calls, text messages, and Gmail messages.	Dyad-level behavioral variables of the communication patterns.
Initial on-screen survey	Delivered to the smartphone when a communication partner was the subject of a survey for the first time.	Dyad-level self-report variables measuring the type of relationship.
Regular on-screen survey	Delivered to the smartphone when the initial on-screen survey on the dyad had been already collected.	Dyad-level self-report variables of the content of each communication.
Postsurvey	Respondents had completed a postsurvey when the period ended.	Personal-level self-report variables measuring communication patterns. These were not used in this analysis.

Measurement

Dependent Variable Political conversation was measured by the initial on-screen survey question, "Do you ever talk about politics or social issues with [*Subject name*][3]?" to which the response was "yes" or "no." This was not limited to political conversation via smartphone but included face-to-face political conversation. Previous studies (Huckfeldt and Sprague 1995; Eveland et al. 2011; Walsh 2004; Wyatt et al. 2000) showed that political conversations occurred as a by-product of other topics; if we had asked respondents to judge whether each communication concerned political topics, they would be bothered by the question, with the consequent risk of inaccurate responses (Eveland et al. 2011). The method we adopted had the advantage of consistency, given that there was no need to judge each communication.

Independent Variables The presurvey measured demographics (sex, age, generalized trust), level of participation in formal organizations or informal groups, the extent of smartphone use in communications with other members of a formal organization or informal group, whether the smartphone was used for accessing social network services (SNS), or for work-related purposes. The initial on-screen survey measured the types of relationship with subjects. The regular on-screen survey measured the content of the most recent communication transmitted via smartphone (see Appendix for details on the wording of survey items and construction of measures).

[3] This was replaced by the name of the subject registered in the address book. The name of the subject was not logged on the research server, this replacement was reproduced on their devises.

4.4 Results

Descriptive Statistics First, we show the number of dyads and communications in the JP and U.S. data collected by the application and used in our analyses. Figure 4.2 shows the distribution of the number of dyads per respondent.

Figure 4.2 shows that while the distributions of the number of dyads were skewed toward smaller numbers in both datasets, some respondents had around 20 dyads. This results shows that unlike previous studies that used conventional social surveys, we succeeded in collecting dyads without an upper limit on numbers.

Table 4.3 gives a summary of the number of retrieved communications in each channel between dyad partners (voice calls, text messages, and Gmail messages).

Table 4.3 shows more communications via each channel in the U.S. than in Japan; however, it is not appropriate to directly compare the degree of communication via smartphone between JP and U.S. from these results because the periods in which the application could retrieve communication logs differed according to the device used. To calculate the differences in the number of text and Gmail messages between Japan and the U.S., we needed to consider the following facts. In Japan, when people send text-based messages via smartphone, they prefer to use e-mail services provided by the telecommunications companies, and there were only a small number of respondents who mainly used text (SMS) and Gmail messages (Table 4.3). Therefore, in the following analyses, while the number of voice calls

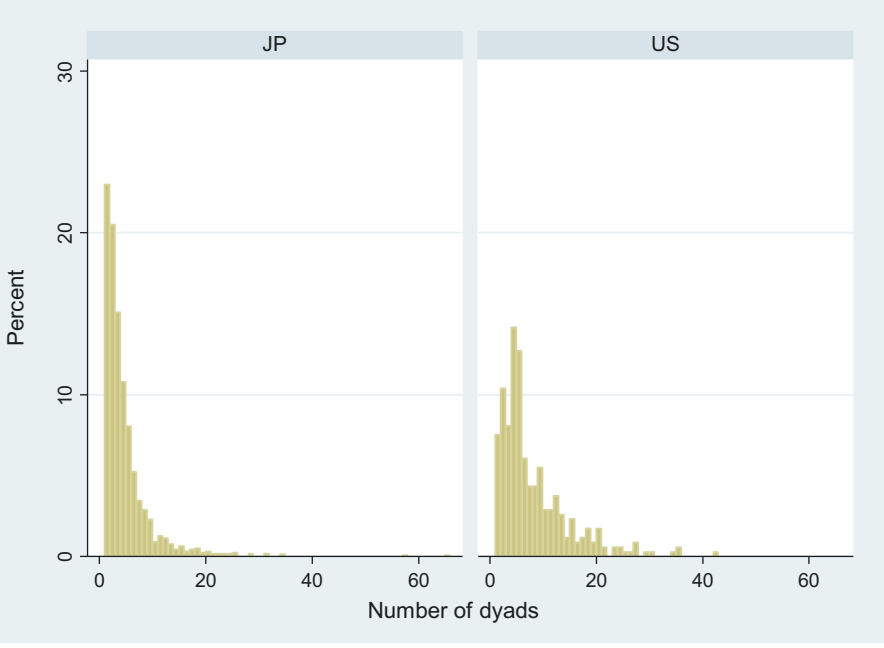

Fig. 4.2 Distribution of number of dyads per respondent

was treated as a numerical variable, numbers of text and Gmail messages were converted into binary variables according to whether they had been used.

Relationships in Dyads The left-hand column of Table 4.4 shows the results of the initial on-screen survey of the types of relationships within communication dyads. These indicate that the number of political conversation partners in the U.S. was slightly larger than that in Japan. Even in Japan, more than 40 % of communication partners in address books were regarded as partners in political conversations. In addition, the left-hand column of Table 4.4 also indicates that the homogeneity of communication partners was lower in Japan than in the U.S. This does not necessarily mean that Japanese people tend to communicate with heterogeneous others more than do Americans, but may be because it was difficult to infer whether the communication partners were homogeneous in Japan.

The right-hand column of Table 4.4 shows the types of relationships in which political conversations occur. These are the results of the initial on-screen survey, limited to dyads that converse about politics. The proportion of family members in political conversation dyads (the right-hand column of Table 4.4) was therefore larger than that in dyads that communicated via smartphone (the left-hand column of Table 4.4) in both countries. This result was consistent with previous studies,

Table 4.3 Summary of number of communications per dyad by channel

			Number of communications				
		Number of dyads	Mean	Std. Dev.	Min	Max	Usage rate
Voice calls	JP	6807	16.7	35.6	0	609	94.6 %
	US	2654	39.3	88.0	0	1492	86.3 %
Text messages	JP	6807	6.1	123.1	0	8786	12.1 %
	US	2654	144.5	433.2	0	6737	69.8 %
Gmail messages	JP	6807	10.9	112.6	0	4804	11.5 %
	US	2654	17.1	148.7	0	5203	16.4 %

Table 4.4 Nature of relationships with partners in conversations via smartphone

	All dyads		Dyads that discuss politics	
Variables	JP (n = 6807)	US (n = 2654)	JP (n = 2927)	US (n = 1566)
Political conversation	43 %	59 %		
Family	38 %	40 %	58 %	51 %
Work or school relationship	36 %	33 %	27 %	33 %
Face-to-face conversation	50 %	37 %	67 %	48 %
Trust	74 %	80 %	91 %	92 %
Homogeneity	40 %	74 %	58 %	88 %
One-hour proximity	68 %	66 %	80 %	68 %
Discuss important topics	71 %	75 %	94 %	92 %
Enjoy socializing	52 %	85 %	74 %	95 %
Many mutual friends	56 %	51 %	69 %	63 %

which revealed that politics tended to be discussed with intimate others, especially spouses or family members (Huckfeldt and Sprague 1995; Ikeda and Boase 2011; Miyata et al. 2014). This indicates that family members tended to be selected as political conversation partners.

On the other hand, the fact that the proportion of non-family members within political conversation dyads was no less than 42 %, even in Japan, indicated that political conversation dyads was measured exhaustively. In addition, the fact that the proportion of work or school colleagues in political conversation dyads was low in both countries indicated that political conversations seldom took place in offices or schools, as noted by Ikeda and Boase (2011).

A comparison of the right- and left-hand columns of Table 4.4 reveals that the proportions of those that discussed important topics and trust in the partner was over 90 % in both countries (the right-hand column of Table 4.4), which would indicate that dyads in political discussion networks might be selected from dyads in discussion networks of important topics (Eveland and Kleinman 2013). These results support the view that political conversations may create conflict and thereby risk damaging human relationships.

Content of Communications Table 4.5 shows the results of the regular on-screen survey on the content of communications transmitted via smartphone. Small talk was the most common type in both countries. Discussing other people (i.e., gossip) may be regarded as a form of small talk; however, such conversations were less common than those on small talk, especially in Japan. Although gossip may be regarded as a small talk, it provides valuable information to exclude free riders from groups (Dunbar and Dunbar 1998; Feinberg et al. 2012). Because someone who gossips risks being despised (Ellwardt et al. 2012), gossip only occurs with those considered able to keep secrets (Grosser et al. 2010). This means that gossip is similar to political conversation, in that partners must be carefully selected; therefore, gossip may be effective in predicting choice of partners for political conversations.

Predictors of Political Conversation Dyads Finally, we selected variables that were effective in predicting whether dyads discussed politics, and then constructed models. In the data in this study, the number of units was large because datasets collected over several periods were merged into one dataset, and the unit of analysis

Table 4.5 Content of communications

	All dyads		Dyads that discuss politics	
Variable	JP	US	JP	US
Work/school-related topics	28 %	35 %	25 %	35 %
Small talk	33 %	64 %	41 %	68 %
Adjustments to schedules	24 %	45 %	24 %	53 %
Important topics	24 %	46 %	25 %	63 %
Discussing other people	9 %	31 %	12 %	33 %
Hobby-related topics	7 %	44 %	9 %	51 %

was the dyad rather than the respondent. Ordinary least squares (OLS) regressions and logistic regressions were not appropriate for this analysis, because these methods are apt to regard even variables that were in fact powerless to predict dependent variables as significant when the sample size was large. Moreover, there were high correlations between independent variables such as the number of communications and intimacy of dyads. If OLS regressions or logistic regressions were used for prediction, multicollinearity would be more likely. To select a few effective variables from among many, the stepwise method is often used. However, when some potential independent variables are indispensable for prediction and there are high correlations between them, the stepwise method selects only one variable and omits others that should also be selected (Flom and Cassell 2009).

In this study, to resolve such problems, we employed the least absolute shrinkage and selection operator (LASSO) to select variables. LASSO, a kind of machine learning, is often used to select a few variables from among a large set of potential independent variables and to construct appropriate models (Tibshirani 1996; James et al. 2013). In this method, by adding uniform weights for each independent variable in the ordinary linear prediction model, these weights function as a penalty to include each independent variable in the model and the coefficients of independent variables shrink toward zero, which means minimizing the quantity

$$\sum_{n}^{i=1}(y_i-\beta_0-\sum_{p}^{j=1}\beta_j x_{ij})^2+\lambda\sum_{p}^{j=1}\left|\beta_j\right|=\mathrm{RSS}+\lambda\sum_{p}^{j=1}\left|\beta_j\right|$$

where n is the number of units and p is the number of independent variables.

Through these processes, the coefficients of independent variables that are powerless to predict become zero, and only the independent variables that are powerful predictors remain. By specifying parameter λ, we can control the strength of the penalty, and we can freely control the fit of the eventual model (James et al. 2013). With a smaller λ, the penalty is weakened, many independent variables are selected in the model, and consequently the model with a high level of fit is constructed. With a larger λ, the penalty is strengthened, fewer independent variables are selected for the model, and consequently the model with low fit is constructed. This method, without statistical significance testing, is not unreasonably influenced by sample size, and there is no concern with respect to multicollinearity (Flom and Cassell 2009). Moreover, unlike the stepwise method, if there is a high correlation between independent potential variables that are indispensable for prediction, all of these variables can be selected (Flom and Cassell 2009). Hammami et al. (2012) noted that, when the prediction models were constructed with many potential independent variables, LASSO enabled construction of models with high predictive power.

Table 4.6 shows the variables used in the LASSO. Because personal-level variables measured by the presurvey of JP3 differed greatly from those in the other datasets, we used two analytical models: model 1, which excluded personal-level variables, and model 2, which used all variables and included personal-level variables. Specifically, model 1 included JP1 + JP2 + JP3 as Japanese data and

Table 4.6 Variables used in LASSO

Dependent variable			
Independent variables	Political conversation	Model 1	Model 2
Dyad level 0 or 1	Family	○	○
	Work or school relationship	○	○
	Face-to-face conversation	○	○
	Trust	○	○
	Homogeneity	○	○
	1-h proximity	○	○
	Discuss important topics	○	○
	Enjoy socializing	○	○
	Many mutual friends	○	○
Voice calls	Total number of voice calls	○	○
	Total duration of voice calls	○	○
	Number of voice calls on weekdays	○	○
	Number of voice calls on weekends	○	○
	Ratio of weekend voice calls	○	○
	Number of voice calls in the morning 06:00–11:59	○	○
	Number of voice calls in the afternoon 12:00–17:59	○	○
	Number of voice calls in the evening 18:00–22:59	○	○
	Number of voice calls at night 23:00–05:59	○	○
Text messages (used = 1, not used = 0 except ratio of weekend use)	Total text message use	○	○
	Text message use on weekdays	○	○
	Text message use on weekends	○	○
	Ratio of weekend text messages use	○	○
	Text message use in the morning 06:00–11:59	○	○
	Text message use in the afternoon 12:00–17:59	○	○
	Text message use in the evening 18:00–22:59	○	○
	Text message use at night 23:00–05:59	○	○
Gmail (used = 1, not used = 0 except ratio of weekend use)	Total Gmail use	○	○
	Gmail use on weekdays	○	○
	Gmail use on weekend	○	○
	Ratio of weekend Gmail use	○	○
	Gmail use in the morning 06:00–11:59	○	○
	Gmail use in the afternoon 12:00–17:59	○	○
	Gmail use in the evening 18:00–22:59	○	○
	Gmail use at night 23:00–05:59	○	○
Content (0/1 binary variables, over/under 50 %)	Work/school-related topics	○	○
	Small talk	○	○
	Adjustments to schedules	○	○
	Important topics	○	○
	Discussing other people	○	○
	Hobby-related topics	○	○

(continued)

Table 4.6 (continued)

Dependent variable			
Independent variables	Political conversation	Model 1	Model 2
Personal level	Sex		○
	Age		○
	Generalized trust		○
	Participation in organizations		○
	Smartphone use on organizations		○
	Participation in groups		○
	Smartphone use in groups		○
	Access to SNS		○
	Work-related purposes		○

US1 + US2 as U.S. data; model 2 included JP1 + JP2 as Japanese data and US1 + US2 as U.S. data. All dyad-level variables measured in the initial on-screen survey were 0/1 binary variables. The variables on the number of voice calls were used as numeric variables. Because there are few people in Japan who usually use text messages and Gmail messages, the variables for the number of text messages and Gmail messages were converted into 1/0 binary variables according to whether they had been used. The variables for the content of communications measured by the regular on-screen survey were converted to 1/0 binary variables; they were 1 if the proportion of content contained in communications in that dyad was over 50 %; zero otherwise. The reason for this conversion was because the number of responses to the regular on-screen survey was generally small and there were a number of dyads where the regular on-screen survey was answered only once, then the proportions of each communication in those dyads tended to converge on 0 % or 100 %. It was appropriate that these variables were treated as binary rather than numerical variables.

Using the above variables, we constructed models to predict political conversation dyads. Here, we aimed to construct robust models with high predictive power for unknown data, rather than a sensitive model which enables prediction only for the data used in this analysis. If the latter were the case, the model could be constructed with as many variables as possible. However, this "best-fit model" runs the risk of overfitting and therefore usually has low predictive power for unknown data (James et al. 2013). To avoid the risk of overfitting, we constructed the models with high predictive power using as few variables as possible. Theoretically, the models with high predictive power that avoid overfitting can be constructed by the following steps. By changing the value of λ, the predictive power of the model was estimated by cross-validation, and the value of λ that minimized estimation errors was identified and the appropriate model could be constructed using this value of λ.[4] In this study, we employed this method to select independent variables with robust and high predictive power.

[4] To construct a more parsimonious and robust model, Friedman et al. (2010) recommended the use of λ with the largest value such that the estimation error is within one standard error of the minimum value.

Tables 4.7 and 4.8 show the variables selected for each model in the order in which they were likely to be selected for the Japanese and U.S. data, respectively. Higher placement of the variables indicates that these variables were likely to be selected even if the value of λ were raised, and these variables had consistently high predictive power for political conversation dyads.

Further, Table 4.9 shows the constructed model. These results demonstrate that intimate others tended to be selected as partners for political conversations in both countries. In particular, others with whom important topics were discussed were selected most often (see the models in Tables 4.7 and 4.8) and the coefficients of these variables were large (see results in Table 4.9), which is consistent with previous studies (Klofstad et al. 2009). On the other hand, family members were selected in the third or fourth position in Japan, and they were selected for the model but in a lower position than the equivalent variables in the U.S. Living within 1-h proximity was selected only in Japan. For communication logs, the number of voice calls in the afternoon was selected in all models. For the content of communication, discussing other people was consistently selected in Japan regardless of participation in organizations or groups. In contrast, in the U.S., while discussing other people was selected only in model 2, it was not selected in model 1; therefore, it cannot be concluded that discussing other people robustly predicted political conversation in the U.S. What these differences between countries indicate is discussed in the next section.

As Table 4.9 shows, for both countries, the results indicate that discussion of important topics and the number of voice calls in the afternoon were significant predictors of political conversations. In Japan, being a family member, living within 1-h proximity and discussing other people were more powerful predictors than for the U.S.

Table 4.7 Variables in the order in which they were likely to be selected for Japan

Japan	
Model 1	Model 2
Discuss important topics	Discuss important topics
Enjoy socializing	Enjoy socializing
Family	Homogeneity
Face-to-face conversation	Family
Homogeneity	Face-to-face conversation
Trust	Trust
1-h proximity	1-h proximity
Many mutual friends	Many mutual friends
Total number of voice calls	Participation in groups
Discussing other people	Smartphone use in organizations
Number of voice call in the afternoon 12:00–17:59	Discussing other people
	Number of voice calls in the afternoon 12:00–17:59
	Participation in organizations
	Work/school-related topics

Table 4.8 The selected variables in the order in which they were likely to be selected for the US

US	
Model 1	Model 2
Discuss important topics	Discuss important topics
Small talk	Enjoy socializing
Homogeneity	Homogeneity
Enjoy socializing	Many mutual friends
Face-to-face conversation	Number of voice calls in the afternoon 12:00–17:59
Many mutual friends	Small talk
Number of voice calls in the afternoon 12:00–17:59	Participation in organizations
Trust	Participation in groups
Family	Face-to-face conversation
Total number of voice calls	Total Gmail use
Number of voice calls in the evening 18:00–22:59	Discussing other people
Total Gmail use	Number of voice calls on weekdays
Text message use in the evening 18:00–22:59	Family
	Work-related purposes
	Total number of voice calls
	Adjustments of schedules

Table 4.9 The constructed model

	JP		US	
(Dependent variable) Political conversation	Model 1	Model 2	Model 1	Model 2
Family	0.53	0.62	0.10	0.02
Face-to-face conversation	0.36	0.32	0.32	0.21
Trust	0.17	0.18	0.06	
Homogeneity	0.39	0.51	0.72	0.42
1-h proximity	0.30	0.30		
Discuss important topics	1.49	1.38	1.15	1.57
Enjoy socializing	0.57	0.41	0.71	0.73
Many mutual friends	0.21	0.21	0.28	0.10
Total number of voice calls	0.00	0.00		0.00
Total duration of voice calls			0.00	
Number of voice calls on weekday				0.00
Number of voice calls in the afternoon 12:00–17:59	0.00	0.00	0.00	0.00
Number of voice calls in the evening 18:00–22:59			0.00	
Text message use in the evening 18:00–22:59			0.01	
Total Gmail use			0.04	0.19
Work/school-related topics		0.03		
Small talk				0.30

(continued)

Table 4.9 (continued)

	JP		US	
(Dependent variable) Political conversation	Model 1	Model 2	Model 1	Model 2
Adjustments of schedules				0.01
Important topics			1.12	
Discussing other people	0.26	0.33		0.20
Participation in organizations	–	0.02	–	0.06
Participation in groups	–	0.04	–	0.07
Work-related purposes	–		–	0.05
Intercept	−2.84	−3.09	−2.55	−2.92
N	6807	3074	2654	658
λ	0.02	0.02	0.02	0.03
Accuracy	74.9%	75.3%	78.7%	80.2%

4.5 Discussion

An exploratory analysis of the factors was conducted to predict the discussion of politics in conversations using mobile communication logs, and compared data for Japan and the U.S. The findings have important implications for clarifying the extent to which political conversations take place, with whom, and how they occur tangentially to other topics in Japan.

Common Predictors for Both Japan and the US

Previous studies have indicated that intimate others such as family members tend to be selected as political conversation partners. This study also showed that the variables concerning intimacy, especially partners with whom important topics are discussed, were powerful indicators, suggesting that partners in political conversations are often those with whom important topics are discussed (Klofstad et al. 2009). Also, political conversations took place as a by-product of other topics without a change of partners (Huckfeldt and Sprague 1995; Eveland et al. 2011; Walsh 2004; Wyatt et al. 2000).

The finding that the number of voice calls in the afternoon had strong predictive power might be attributable to the way in which mobile media were used. Tables 4.7 and 4.8 show that the proportion of family members or intimate friends was high, and while that of colleagues in the same workplace was low. Because it is common for people to talk face-to-face with family or intimate friends in their private time, smartphones are used mainly during business hours. Therefore, the number of voice calls during business hours had significant predictive power. However, from our data, we could not determine whether political conversations took place in such voice calls in the afternoon. The results of this study indicate only that political conversations were likely to take place through dyads and that respondents talked during business hours via smartphones. Future research can clarify the content of communication during business hours by referring to mobile communication studies.

Unique Predictors in Japan

Different predictors were highlighted for Japan and the U.S. First, while the predictive power of talking to family and living within 1-h proximity was lower than intimacy variables in the US, the predictive power of family was as high as intimacy variables in Japan. Second, discussing with other people (i.e., gossip) robustly predicted political conversations in Japan.

Regardless of whether they were conducted in Japan or the U.S, previous studies consistently demonstrated that political conversations tended to occur with spouses or family (Huckfeldt and Sprague 1995; Ikeda and Boase 2011; Miyata et al. 2014); the results of this study also showed that family members were selected for all models. However, although family in Japan had predictive power next to other important intimacy variables (namely discussing important topics, enjoying socializing, and homogeneity, see Table 4.7), in the U.S, the family variable had lower predictive power than most other intimacy variables (Table 4.8). These between-country differences suggest that even if around half of the partners in political conversations were family in either country (Table 4.3), the priority of families differed between countries. Moreover, the result that living within 1-h proximity had predictive power only in Japan indicated that physical proximity would be important factor affecting political conversation dyad in Japan.

In Japan, partners for gossiping also tended to be selected as partners for political conversations. This suggests that political conversations occur as a by-product of gossip (or vice versa) and that gossip could be used to indicate a kind of intimacy. Gossip is not just a form of entertainment or a kind of small talk (Foster 2004), but also entails the risk of being despised (Ellwardt et al. 2012) and is only shared with those who are considered able to keep confidential information (Grosser et al. 2010). When partners are selected for gossiping, it is important whether opinions about the subjects of conversation will be shared and secrets kept; consequently, gossip tends to be exchanged with intimate others (Grosser et al. 2010). Because these features of gossip are similar to those of political conversation, the partners with whom gossip is shared may be the same.

The differences in predictive power of these features between Japan and the U.S. may be attributable to differences in the clues used to estimate the risk of conflict created by political conversations. As reported in Huckfeldt and Sprague (1995) and confirmed in the present study, homogeneity is an important feature by which to select partners for political conversations. However, unlike in the U.S., a high level of indeterminacy about another's political behavior is an obstacle to estimating the risk of conflict in Japan (Huckfeldt et al. 2005). As noted earlier, because Japanese people are characterized by greater risk avoidance (Richey and Ikeda 2006), they need clues other than political homogeneity to judge whether conflict might arise from a political conversation. The results of this study indicate that the suitability of potential conversation partners may be assessed according to whether they are family, physical proximity and whether they gossip. In particular, the fact that partners

in gossip are consistently selected in Japan (see Table 4.5) supports that inference. In contrast, in the U.S., because it is easier to estimate another's political leanings more directly, the priority given to such clues was low (see Table 4.8).

Characteristics of the Measurement Method One of the strengths of this study was the method used to measure the communication dyads without assigning an upper limit. In previous social surveys, respondents listed up to four others with whom they discussed politics. In this study, we measured not only the dyads where political conversations occurred but also other dyads where they did not. By analyzing the data collected using these exhaustive measurements, the difference in clues used to select political conversation partners between countries was clear. Although previously used methods enabled us to demonstrate that intimacy was important for partners in political conversation and that the proportion of family members was highest in both Japan and the U.S., because only the dyads where intimacy was extremely high were collected, these methods could not establish differences in the priority of predictors between countries. The method used in the present study enabled us to collect diverse dyads and was effective in countering these limitations.

Limitations The main limitation of this study was that sampling biases could not be entirely eliminated. Because respondents needed to install an application for their smartphones, attrition arose at this stage. This attrition from the sample was similar to that in panel surveys; thus, there is scope for increasing the accuracy of analyses by addressing dropouts from the sample and any resulting bias. Another source of sampling bias was that targets of the analyses were dyads among the acquaintances recorded in the address book. Because people listed were to a certain extent limited to intimate acquaintances, the dyads analyzed in this study would be biased toward intimacy. While this study enabled us to measure many more dyads than previous studies that assigned an upper limit, it is possible that political conversations also took place in more diverse dyads, for example, via SNS or other channels where there are nonintimate dyads. In future, it is necessary to investigate nonintimate dyads where political conversations took place, and compare our data with the data collected from SNS or other channels.

Another limitation of this study was that the content of communication could not be measured accurately. Although we measured the content of each communication using a self-report measure of six items, the dependent variable (i.e. political conversation) was not measured for each communication, and so it was not clear when political conversations took place. We were unable to determine whether a political conversation took place via smartphone, or what topics led to political conversations as a by-product. In future, it will be necessary to link each communication with its content.

Appendix: Wording of Survey Items

Initial On-screen Survey

The initial on-screen survey measured the types of relationship with subjects using the following questions. The question for whether the subject was a family member was: "Is [*Subject Name*] a family member of yours?" The question for whether a work or school relationship existed was: "Do you know [*Subject name*] from work or school?" Occurrence of face-to-face conversations was captured by: "Do you talk to [*Subject name*] face-to-face during a typical day?" The question for trust in the subject was: "Do you trust [*Subject name*] a lot?" The question for homogeneity was: "Do you and [*Subject name*] generally share similar opinions?" The question for whether the subject lived within 1 h of travelling time from the respondent was: "Does [*Subject name*] live more than 1 h away from you?" The question for occurrence of discussions about important topics question was: "Do you discuss important topics with [*Subject name*]?" The respondent was asked whether he/she enjoyed socializing with the subject by: "Do you enjoy socializing with [*Subject name*]?" Whether the respondent and subject had many mutual friends was established by asking: "Do you have many mutual friends with [*Subject name*]?" Respondents responded "yes" or "no" to each question.

Regular On-screen Survey

The regular on-screen survey asked whether the most recent communication concerned the following topics: "work/school-related topics," "small talk," "adjustments to schedules such as messages about rendezvous," "important topics," "discussing other people (e.g. recent situation, or rumor)," and "hobby-related topics" using a multiple-choice item.

Presurvey

The presurvey measured demographics (sex, age, generalized trust), level of participation in organizations or groups, the extent of smartphone use in communications with other members of an formal organization or informal group, whether the smartphone was used for accessing social network services (SNS), or for work-related purposes. Generalized trust was measured by the items "Most people are trustworthy," "Most people are trustful of others," and "Most people are basically good and kind." The four-point scale for each item ranged from "agree" to "disagree" and the scores were aggregated into one scale (α: JP = 0.81, US = 0.81). To measure level of participation in formal organizations, respondents were asked

about their participation in a "Neighborhood Community Association/Block Association," "PTA," "Agricultural Cooperative/Trade Body," "Trade Union," "Co-op/Consumer Group," "Volunteer Group," "Citizens' Group/Civic Group," "Religious Group," "School Alumni Association," "Political Support Group." They responded on a three-point scale for each item: "I am an active member," "I am just a member," or "I am not a member." Respondents' responses were aggregated into one scale (α: JP = 0.72, US = 0.69). To measure the use of smartphones for communicating with other members of formal organizations, respondents responded to the multiple-choice item, "Please check all activities for which you use your smartphone for communicating with other members of your organization" and selected from "For telephone calls," "To exchange emails or text messages," or "To follow on Twitter or communicate on Facebook." The number of checked items was used in the analyses. The level of participation in informal groups and smartphone use for communicating with other members of informal groups was measured by the same items, with types of organizations replaced with "A private group of coworkers," "A study or enrichment group," and "A hobby or peer group" (α: JP = 0.67, US = 0.60 for level of participation in groups).

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