REGIONAL DIFFERENCES IN JAPANESE SOCIAL CAPITAL AS REVEALED THROUGH THE DISTRIBUTION OF COMMON FAMILY NAMES

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Family names of Japanese convey information about their family history. Although a precise inference at an individual level is difficult, an inference made in aggregation at a community level reliably captures differences in historical inflows of migrants across communities. Following an introduction of this rationale, this paper develops the Family Name Index. As anticipated, the Index was correlated with historical residential mobility across Japanese prefectures. In regions characterized by high historical residential mobility, frequent family names overlapped more with nationally frequent family names. Part 2 used the Index to illuminate regional differences in Japanese social capital. Consistent with prior research, the results indicated a negative association between the Family Name Index and social capital. That is, social capital was stronger in regions where frequent family names do not closely resemble the nationally frequent names. Implications are discussed.

Key words: residential mobility, cultural change, history, family name, Japan

A person’s name conveys information about personal history. Research has delineated information conveyed in first names—for example, uncommon (vs. popular) first names are becoming more common in a number of societies presumably reflecting increasing individualism (Ogihara et al., 2015; Twenge, Abebe, & Campbell, 2010; Varnum & Kitayama, 2011). A person’s family name also conveys much information, for example, genealogists study family names to understand history. Family names, however, are rarely studied in psychology. This paper introduces a family name analysis to psychological research. Specifically, I analyzed Japanese family names to infer their ancestors’ historical relocations. After introducing how Japanese family names can be analyzed for this purpose, an index derived from this rationale was developed. The second half of this paper uses this index to illuminate regional differences in social capital among Japanese.

Family Names in Japan

Practices surrounding family names vary across societies and across time. Research
on Japanese family names (Morioka, 2009; Niwa, 2002; Takemitsu, 1998) identifies a few characteristics that make them a suitable source for inferring migration patterns of Japanese especially for the previous 140 years.

Many family names in Japan that are in use today (over 80% of them according to research cited above) are traceable to a specific location. There are two reasons for this. Historically, members of a ruling class often registered a family name after a piece of land under their control. Family names originated this way were passed down in a variety of ways—some were passed down strictly through the lineage of the eldest son, whereas others were shared more liberally, for example, by all members of a community (making these names more prevalent). Many more family names were introduced to the pool of family names in 1875, when the national government mandated family names for all citizens, prior to this time, public use of family names was restricted to the ruling class. To some, the mandate just meant officially registering a family name that they had always used, officially or unofficially, but for others it meant newly adopting a family name. As a result, many family names were newly registered, and adopting a family name after local geography (e.g., a household who lives in X township registering X as its family name) was a widely subscribed convention.

The association between family name and geography was by no means precise because there were many locations across Japan with the same name (i.e., multiple origins of the same family name), and also because there were other, albeit less popular, conventions for a family name (e.g., a family name that refers one’s occupation or local landscape). Nevertheless, because many family names referred local geography combined with low mobility historically, family names were highly variable across regions when they were universally mandated in 1875 (Niwa, 2002; Takemitsu, 1998).

Interestingly, the pool of Japanese family names today has remained essentially unchanged because the legal system in place since 1875 has made it extremely difficult to change one’s family name outside the context of marriage in which a marrying couple chooses which of the two names to adopt. Naturalized citizens have introduced foreign family names, but these names account for only a small proportion (Morioka, 2009; Niwa, 2002; Takemitsu, 1998).

Because of the continuity in family names since 1875, the association between family name and geography also persists to some extent. For example, today, close to 1% of the Japanese population has the family name of Ito, making it the fifth most common family name. This family name is known to have originated in the Ise region during the medieval period (Takemitsu, 1998), and in Mie prefecture, which houses this region, 2.8% of its current population has the family name of Ito, making it the most common family name of the prefecture. A regional variation of a family name is more clearly evident for names that are relatively infrequent nationally. For example, Kuroki is a relatively infrequent family name nationally (it ranks 325 in frequency). However, Kuroki is a common family name in Kyusyu, where this name originated, especially in Miyazaki prefecture where Kuroki is in fact the most common family name. In fact, 43.7% of all Japanese with the family name Kuroki lives in Miyazaki prefecture today, which has less than 1% share of the national population.
Importantly, the extent to which the historical connection with local geography is preserved may vary across regions. This connection may be better preserved in regions that had been residentially stable, not receiving many migrants over time and is largely populated by long-term (multi-generation) residents. In such regions, family names that originated locally may still be prevalent. On the other hand, in regions that had been high in residential mobility, locally originated names may be less prevalent and names that originated elsewhere may be more prevalent. That is, such regions may have a pool of family names that is diverse with respect to their regional origin. Regions in Japan that meet the latter profile are historical centers of migration such as Hokkaido and Tokyo and Osaka metropolitan areas.

There are at least two ways to examine this rationale. One is to compare the distribution of family names in a specific historical time (e.g., 1875) and that of today. The two distributions of family names should be more similar in regions that are residentially stable historically¹. However, this approach is difficult to carry out due to the limited availability of time-stamped data of family name. An alternative method is to obtain the contemporary distribution of family name and examine the extent to which the distribution at prefecture level converges with the distribution at the national level. The rationale above predicts a greater convergence in regions characterized by historical residential mobility compared to regions characterized by historical residential stability. The latter approach is adopted here.

**PART I**

**METHOD**

A telephone directory in Japan lists households within a district by their name, address, and phone number and typically covers about 60% of all households, making it a fairly representative sample of Japanese family names. While the percentage of households participating in the phone directory is lower in urban areas, and is generally declining, data on family names compiled from other sources (e.g., an insurance company’s database) tends to yield nearly identical results to the data compiled from phone directories (Niwa, 2002). Based primarily on the telephone directory family name data, 500 most frequent family names nationally and in each of the 47 prefectures are publicly available (https://myoji-yurai.net/).² Using this information, I assessed the extent of the overlap between the frequent family name at the prefecture and nation level. Specifically, the number of frequent family names for each prefecture that are nationally frequently were counted. A R script (available at https://osf.io/wjzcp/) shows the detailed procedure.

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¹ With the greater availability of the time stamped data, this approach could also show how different historical waves of migration (e.g., migration before and after the time of accessible public transportation) shaped family name distribution.
² Information retrieved from the website is based on 2018 March data (personal correspondence, December 13, 2018).
RESULTS AND DISCUSSION

Within each prefecture, 500 frequent family names represent about 70% of the population (Mean = 69.6%, Min = 57.8%, Max = 89.0%). On average, 306 ($M = 306.43$, $SD = 57.95$) of the 500 most frequent family names in each prefecture were nationally frequent (Table 1). As expected, prefectures in Tokyo and Osaka metropolitan areas and Hokkaido had the highest scores. For example, 83.8% of the frequent family names in Tokyo were nationally frequent. This is consistent with the rationale that distribution of family names in historical centers of migration, like Tokyo, resembles the national distribution. In contrast, only 16% of the frequent family names in Okinawa were nationally frequent. This is unsurprising given the long distance that separates Okinawa from other prefectures, as well as its unique history under the Japanese sovereignty. Because the score for Okinawa deviates greatly hence an outlier, the analysis below was conducted also excluding Okinawa. One difference in the results is footnoted.

An analysis examined whether this index (hereafter called “family name index”) correlates with an index of historical residential mobility. An index of residential mobility (i.e., net migration for each prefecture) is available for each five-year period since 1920, except 1935–1950 (Statistics Bureau, Ministry of Internal Affairs and Communications, 2013). The distribution of family name may be more strongly related

![Correlation between the family name index and two indices of residential mobility (net migration and in-migration) for different time periods](image)

Fig. 1. Correlation between the family name index and two indices of residential mobility (net migration and in-migration) for different time periods
to in-migration than net migration. As such, the same analysis was conducted also with an index of in-migration, a proportion of new residents in each prefecture available between 1954 to 2004.

Fig. 1 plots the correlation between the family name index and the two indices of residential mobility. As anticipated, the correlations were generally stronger for in-migration than net migration, though the patterns were similar. Focusing on net migration, which is available for a longer period of time, sizable correlations \((M = .48)\) were evident across the periods, with the relationship becoming weaker over time \((b = -.003, p = .035, 95\% CI = [-.006, -.003])\). This suggests that the family name index is more strongly influenced by the historical relative to more recent residential mobility.

**PART 2**

The fact that Japanese family name covaries with a measure of historical mobility is not only an intriguing phenomenon but also a contribution to research examining regional differences in Japan. An examination of regional difference is important in understanding culture’s effects on mind that is separable from national culture (Hamamura & Takemura, 2018; Uchida et al., 2018; Vandello & Cohen, 1999). As such, Part 2 applied the Family Name Index to investigate regional variations in a well-examined topic in social science: social capital.

In its essence, social capital refers to “connections among individuals — social networks and the norm of reciprocity and trustworthiness that arise from them” (Putnam, 2000). In research, social capital is typically assessed with a range of indices, such as social connections (e.g., the strength of contacts with neighbors, memberships in social associations), community engagement (e.g., volunteering), and trust. Trust, particularly generalized trust of unfamiliar others in the society, is seen as a catalyst of interpersonal fabric within a society.

Research suggests that social capital is weaker in residentially mobile communities presumably because residents’ identity as a community member is weaker in these communities (Oishi, Lun, & Sherman, 2007). Part 2 extends this rationale and examines the relationship between residential mobility, using the Family Name Index, and social capital in Japan, taking advantage of an existing measure of social capital that separately measures its facets (i.e., social networks, community engagement, and trust).

**METHOD**

*Social Capital*

A prefecture-level index of social capital published before was used for the analysis. This index is developed from a survey \((N = 3878)\) administered in 2003 by the Cabinet office mandated to examine social capital in Japan. The index comprises of three facets of social capital: social connection, trust, and community engagement. Social connection encompasses (a) frequency and intimacy of contacts with

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3 The effect was not significant in the analysis excluding Okinawa \((b = -.002, p = .255)\).
neighbors, (b) socialization with friends and colleagues outside work, (c) socialization with relatives, and (d) participation in sports and arts activities. Trust encompasses (a) generalized trust, and trust of (b) neighbors (c) friends and colleagues (d) relatives. Community engagement encompasses participation in (a) local community activities (b) volunteer activities and (c) donation. The survey information is publicly available (https://www.npo-homepage.go.jp/uploads/report_h14_sc_ref2.pdf). A composite score for each facet was used for the analysis (alphas = .84 for social connection, .50 for trust, and .77 for community engagement). Given the interest in the literature, generalized trust was analyzed separately.

Family Name Index
Scores shown in Table 1 were used.

Table 1. Number of 500 nationally frequent family names that are frequent in each prefecture

| Prefecture     | Family Names | Prefecture | Family Names |
|----------------|--------------|------------|--------------|
| Hokkaido       | 396          | Shiga      | 342          |
| Aomori         | 246          | Kyoto      | 369          |
| Iwate          | 257          | Osaka      | 390          |
| Miyagi         | 283          | Hyogo      | 374          |
| Akita          | 265          | Nara       | 344          |
| Yamagata       | 231          | Wakayama   | 287          |
| Fukushima      | 260          | Tottori    | 278          |
| Ibaraki        | 292          | Shimane    | 278          |
| Tochigi        | 282          | Okayama    | 311          |
| Gumma          | 296          | Hiroshima  | 341          |
| Saitama        | 388          | Yamaguchi  | 316          |
| Chiba          | 375          | Tokushima  | 297          |
| Tokyo          | 419          | Kagawa     | 292          |
| Kanagawa       | 416          | Ehime      | 305          |
| Niigata        | 298          | Kochi      | 264          |
| Toyama         | 310          | Fukuoka    | 332          |
| Ishikawa       | 311          | Saga       | 240          |
| Fukui          | 329          | Nagasaki   | 310          |
| Yamanashi      | 264          | Kumamoto   | 320          |
| Nagano         | 292          | Oita       | 286          |
| Gifu           | 303          | Miyazaki   | 286          |
| Shizuoka       | 342          | Kagoshima  | 227          |
| Aichi          | 345          | Okinawa    | 80           |
| Mie            | 333          |            |              |
Contemporary Residential Mobility

Because the Family Name Index tends to reflect historical residential mobility (Part 1), the effect associated with residential mobility was also entered in the analysis. Net residential mobility for the 5-year period encompassing the year in which the survey was administered (2000–2005) was obtained (Statistics Bureau, Ministry of Internal Affairs and Communications, 2013).

RESULTS

All analyses below were conducted also excluding Okinawa. Results below were generally stronger after excluding Okinawa, though all the results remained the same. Table 2 reports the correlations among the variables. Generally, the family name index and contemporary residential mobility exhibited the same pattern. Their independent contribution in predicting social capital was examined in multiple regression analyses. Table 3 summarizes the results. In predicting social connection, the two predictors jointly accounted for 19.4% of the variance \((F = 5.30, p = .009)\). The family name index was a stronger negative predictor \((b = -.004, p = .050)\) compared to contemporary residential mobility \((b = -.142, p = .19)\). The same pattern was found with respect to

| Table 2. Correlations among the variables (Part 2) |
|---------------------------------|--------|--------|--------|--------|
| 1 Family Name Index             | 4      | 3      | 2      |
| 2 Residential Mobility          | 0.46*  |        |        |
| 3 Social Capital: Connections   | -0.40* | -0.35* |        |
| 4 Social Capital: Generalized Trust | -0.06 | 0.12   | 0.16   |
| 5 Social Capital: Trust         | -0.21  | -0.13  | 0.53*  | 0.54*  |
| 6 Social Capital: Engagement    | -0.48* | -0.42* | 0.69*  | 0.24   | 0.35*  |

Note. *p < .05. Indices 3, 5, 6 are composite scores.

| Table 3. Multiple regression analyses predicting different facets of social capital from the Family Name Index and residential mobility |
|---------------------------------|--------|--------|--------|--------|--------|
|                                 | Social Capital: Connection | Social Capital: Trust | Social Capital: Generalized Trust | Social Capital: Engagement |
|                                 | b      | p      | b      | p      | b      | p      | b      | p      |
| Intercept                       | 1.188  | .081   | .620   | .297   | .860   | .364   | 1.453  | .036   |
| Residential Mobility            | -.142  | .189   | -.024  | .802   | .166   | .275   | -.192  | .081   |
| Family Name Index               | -.004  | .050   | -.002  | .259   | -.003  | .390   | -.005  | .018   |
| \(R^2\)                         | .194   | .045   | .031   | .278   |        |        |        |        |
community engagement. The family name index was more strongly associated ($b = -.005$, $p = .018$) than contemporary mobility ($b = -.192$, $p = .081$). The two variables accounting for 27.8% of the prefecture differences ($F = 8.478$, $p = .001$). Hence, a lower level of social connection and community engagement was evident in regions scoring higher on the Family Name Index. The stronger association found for the Index relative to residential mobility suggests the role of historical migration pattern in predicting contemporary regional differences in social capital. Neither the Family Name Index or contemporary residential mobility was associated with trust.

**General Discussion**

While research has traditionally examined the cultural influence on mind via national comparisons, cultural influence is also discernible across regions within a nation. Such an analysis is important in understanding the culture and mind interaction not confounded by factors inherent in cross-national comparisons (Hamamura & Takemura, 2018; Uchida et al., 2018; Vandello & Cohen, 1999). This research contributed a new tool for illuminating regional differences. One unique feature of the Family Name Index developed here is its explicit focus on history. In fact, the Family Name Index reflects domestic relocations that took place since 1875, covering time periods not well-covered in state demographics (e.g., no national demographics on residential mobility exists prior to 1920). Of course, the specific rationale that led to the development of the Index could not be mindlessly transplanted to other nations. Nevertheless, the underlying insights that family name conveys information about ancestral mobility, or more broadly that historical patterns of population movement influences contemporary social psychology (Oishi et al., 2007), should be applicable for research in a number of societal contexts.

As an initial application of the Index, Part 2 of this research examined regional differences in Japanese social capital. Prior research suggested the negative association between residential mobility and social capital (Oishi et al., 2007). The current study not only extended this association to Japan but contributed novel findings. Specifically, the results indicated the negative association between residential mobility and two facets of social capital: social connections and community engagement. A similar association was not evident with respect to trust of particular others (neighbors, friends, colleagues) nor generalized trust. Importantly, the Family Name Index was more strongly associated with the above facets of social capital than contemporary residential mobility. Taken together, these findings suggest that the regions in Japan that have been residentially stable over the years have fostered a higher level of social capital relative to regions that have been residentially mobile.

In conclusion, the analyses reported here identified a meaningful pattern of culture in a place that no prior research has examined before, people’s family names. While the analyses are specific to Japanese culture, the underlying insight that family names convey rich information about people’s past is potentially applicable elsewhere and can facilitate the work to better understand the interactive relationship between culture and mind.
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