# Supplementary Information for "The Clash of Traditional Values: Opposition to Female Monarchs"*

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## Contents



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| | Reign | Sons | Male-line grandsons |
|---|---|---|---|
| Emperor Meiji | 1867–1912 | 1 | 4 |
| Emperor Taisho | 1912–1926 | 4 | 5 |
| Emperor Showa | 1926–1989 | 2 | 2 |
| Emperor Akihito | 1989–2019 | 2 | 1 |
| Emperor Naruhito | 2019– | 0 | 0 |
| Fumihito, Crown Prince | | 1 | ? |

Table A.1: List of emperors in modern Japan and the number of their sons and male-line grandsons. Up to Naruhito, each emperor is the eldest surviving son of his predecessor. Fumihito is the younger brother of Naruhito.

# A Historical Background of the Japanese Imperial House

The Japanese monarchy is currently in a succession crisis. Among the Japanese Imperial House members, only one person in the next generation has the right of succession. If he dies without having a son, there will be nobody to ascend to the throne. This crisis has evolved since the late 19th centry as a consequence of strict male-only patrilineal succession.

The modern Japanese imperial system was institutionalized in the late 19th century as the Meiji government pursued the modernization of the nation. After the regime change in 1868 from the feudal Tokugawa Shogunate, political leaders of the new Meiji government—named after the Meiji Emperor who was "restored" to political power—promoted legal modernization from above. The Imperial House Law, along with the 1889 Constitution of the Empire of Japan, established the imperial system in statutory law. Unlike the pre-modern era when no written rules on imperial succession were stipulated, these Meiji laws established male-line (patrilineal), male-only primogeniture as the explicit succession rule for the first time in confirmed Japanese history. Although there were two female emperors during the Tokugawa Shogunate, the Meiji "modernization" prohibited any women from ascending to the throne. Under this rule, women left the Imperial House altogether after their marriage, and their children were stripped of the right to succession unless they married another male member of the Imperial House.

Limiting succession to male-only patrilineal descendants necessarily risks exhausting the number of legitimate successors, but there were no succession crises in the first decades after the Meiji Restoration. Table A.1 shows the list of emperors in modern Japan, as well as the numbers of their sons and male-line grandsons. Although Emperor Meiji had no children with his empress, he had several concubines. While all of his children except for one son and three daughters died in their childhood, which is not surprising given high infant mortality at the time, his surviving son succeeded the throne and became Emperor Taisho. Emperor Taisho might have endangered succession because he ended the custom of having concubines. However, he had four sons, making dynastic succession (seem) safe when his eldest son, Emperor Showa (a.k.a. Hirohito), ascended to the throne in 1926.

In addition to Emperor Taisho's sons, branch families also held legitimate heirs. When World

War II ended in 1945, eleven families—and their male lines—were considered to be part of the legitimate imperial family. Although the male-line common ancestor of those families and the three post-Meiji-pre-WWII emperors dates back to the 15th century, those cadet branches had been given imperial status and the right of succession during the pre-modern era. This status was reconfirmed by the laws of the Meiji government. As a result, in addition to the three brothers and two sons of Emperor Showa, 26 men were in the line of succession as of 1945.

The question of stable succession has evolved gradually since the end of WWII. On the one hand, the Constitution of Japan, enacted under the Allied Occupation, prohibits discrimination based on gender, but the male-only patrilineal succession rule was left intact. On the other hand, the 11 cadet families with claims to patrilineal legitimacy left the Imperial House in 1947. As a result, the line of succession has been limited to the male-line male descendants of Emperor Taisho. However, among Emperor Taisho's five male-line grandsons, only Crown Prince Akihito, Emperor Showa's son, had sons. After Emperor Showa died and Akihito succeeded in 1989, two daughters were born to his younger son, Fumihito, in 1991 and 1994. When the first child born to Emperor Akihito's older son, Crown Prince Naruhito, in 2001 was a daughter, it was finally recognized that the current succession rule was not sustainable in the long run.

In 2005, Prime Minister Junichiro Koizumi of the conservative Liberal Democratic Party (LDP) appointed a commission to discuss possible reforms to rules of imperial succession. The commission's report proposed "to open the way to a female Emperor or an Emperor of female lineage in order to ensure the stability of succession to the Throne." [1] However, a boy, Hisahito, was born to Fumihito in 2006, which stalled the drive to reform the succession rule completely. As of 2021, Hisahito (the current emperor's nephew) is the only heir after Fumihito (the current emperor's brother), who was born in 1965.

[1] *The Advisory Council on the Imperial House Law Report*, published on November 24, 2005, available at `https://japan.kantei.go.jp/policy/koshitsu/051124_e.pdf` (accessed on February 25, 2021), p. 23.

# B Designing the Item Counting Technique Questions

In this section, we discuss how we constructed the list questions.

## B.1 Selecting Sensitive Items

The "Chrysanthemum Taboo" concerns the Imperial House as an institution and individual members of the Imperial House. Regarding the succession crisis specifically, reform proposals can be framed more generally or about specific individuals. For instance, allowing patrilineal women to succeed may be stated in one of the three ways:

1. In the future, a female emperor will succeed the throne.
2. The next Emperor will be Princess Aiko, the daughter of the Emperor.
3. The next Emperor will be Princess Aiko, the daughter of the Emperor, instead of Prince Akishino, his younger brother.

The three statements convey the same substantive information. If framing does not matter, then people's responses should be the same for all three, but slight differences may evoke different responses. The first statement adopts an institutional framing of the proposal. The second mentions the princess's name, which makes the consequences of the proposed reform concrete and imminent. The last statement explicitly compares the proposal with the status quo.

To assess how issue framing may influence responses, and to examine how sentiments relating to succession proposals compare with sentiments towards other imperial family issues, we ran a pretest using respondents recruited by Yahoo! Crowdsourcing between February 20 and February 22, 2020.[2] The pretest measured attitudes on ten statements using *direct questioning*. The statements are as follows; Items with asterisks were used in the final survey.

1. `Princess Aiko*` The next Emperor will be Princess Aiko, the daughter of the Emperor, instead of Prince Akishino, his younger brother.
2. `Aiko's son (Hypo)*` If Princess Aiko, the daughter of the Emperor, has a son in the future, that child will have the right to succeed the throne.
3. `Mako's son (Hypo)` In the future, if Mako of the Akishinomiya family [daughter of the Crown Prince] has a son, that child will have the right to succeed the throne.
4. `Mako married` Mako of the Akishinomiya family stays in the Imperial House even after her marriage.
5. `Mako's husband` The future husband of Mako of the Akishinomiya family becomes an Imperial House member.
6. `Imperial House cost` More than 20 billion yen in taxes are spent every year on behalf of the Imperial House.

[2]We did not use the pretest data in our final research.

7. `Daijosai ceremony` The total public expenditure of the Daijosai ceremony held in November 2019 for the succession of the throne was 2,443 million yen.

8. `Imperial Desc.*` The descendants of former imperial house members, who have lived as ordinary people since the end of World War II, gain the right to succeed the throne.

9. `Emperor const.` The Constitution of Japan is amended so that the Emperor is officially designated as the head of state.

10. `Female emperor*` In the future, a female emperor will succeed the throne.

The pretest asked for attitudes towards Princess Mako, the eldest daughter of the current Crown Prince Akishino, because she is a well-known figure in public and had recently become engaged. Regarding the imperial descendant proposal, we did not try individual framing because there is no well-recognized descendant. In addition to items directly related to succession proposals, we tested some items about the imperial house in general, such as annual fiscal costs and expenses from holding traditional ceremonies.

The purpose of the pretest was to examine if any topic involving the imperial house was so sensitive that people dared not express negative feelings, even anonymously. If this were the case, ICT may not be an appropriate tool to study this topic. Figure B.1 shows the percentage of respondents (n = 1,785) who were upset by the item when asked directly. A convenient, albeit not-necessarily-accurate, indicator of social desirability bias is when an overwhelming majority of responses are clustered in one direction. `Princess Aiko`, `Aiko's son (Hypo)`, `Imperial Desc.`, and `Female emperor` are the four items on which most respondents did not express negative feelings. `Princess Aiko` and `Female Emperor` have to do with permitting patrilineal women to succeed the throne, with individual and institutional framing, respectively. `Aiko's son (Hypo)` concerns the palatability of matrilineal lineage. `Imperial Descendant` would reincorporate cadet family branches who left the imperial households after World War II. We use these four statements as the sensitive items in the list design and construct the nonsensitive items around them.

It is worth noting that many respondents were upset by items concerning Princess Mako. This is likely due to the spotlight on Mako's fiancée's family, which was involved in a domestic financial dispute that the media widely publicized (and frowned upon) during our survey. Because we expected this media attention to change respondents' preferences in a sui generis manner, we decided not to use these items. Further, about half of the respondents find the tax burden of the imperial house upsetting. This suggests that even if social desirability bias affects people's responses to some questions related to the imperial house, it does not permeate every aspect of the establishment. Collectively, then, we believe that ICT is a viable tool to study imperial succession specifically, and perhaps even the imperial system overall.

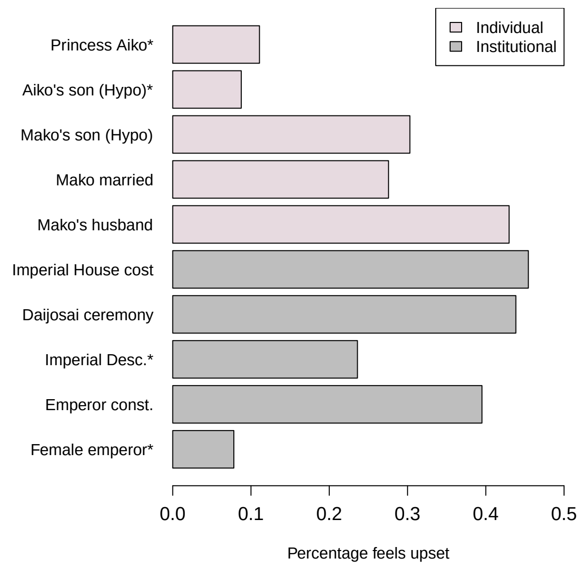


Figure B.1: Percentage feels upset by the item when asked directly. Items with * are the sensitive items we use to construct the list experiment.

## B.2 Choosing Nonsensitive Items

We follow a similar procedure to select nonsensitive items for our ICT lists. Ideally, nonsensitive items should be *sufficiently controversial* and *negatively correlated*. Following these design principles would avoid the list experiment's potential floor and ceiling effects (Blair and Imai, 2012; Glynn, 2013). When a respondent chooses zero or all statements as upsetting, it reveals their true preference towards the sensitive item, defeating the purpose of the item count design.

In our pretest using Yahoo! Crowdsourcing, we tested 28 statements with direct questioning. Following the structure of our sensitive items, the 28 statements concern specific individuals as well as institutions. It covers a wide range of topics, including international relations, domestic policies, entertainment, and social issues. All the statements (translated) can be found in Appendix B.3.

Figure B.2 shows the percentage of respondents (n = 1,785) who were upset by the item when asked directly. Controversial items are around the dashed vertical line (about 50% of respondents are upset by that item). The pair-wise correlation plot in Figure B.3 indicates that few items are negatively correlated. Instead, most items are positively correlated. One possibility is that, because the pretest was fielded at the beginning of the COVID pandemic, people may have felt unsettled and distracted in general. Hence we opted for the second-best option to avoid potential floor and ceiling effects. For the three nonsensitive items for each list, we chose one controversial item, one item that upset a clear majority respondents, and one that upset a minority. We also sought to balance the topics and item length in each list, so that the sensitive item would not stand out.

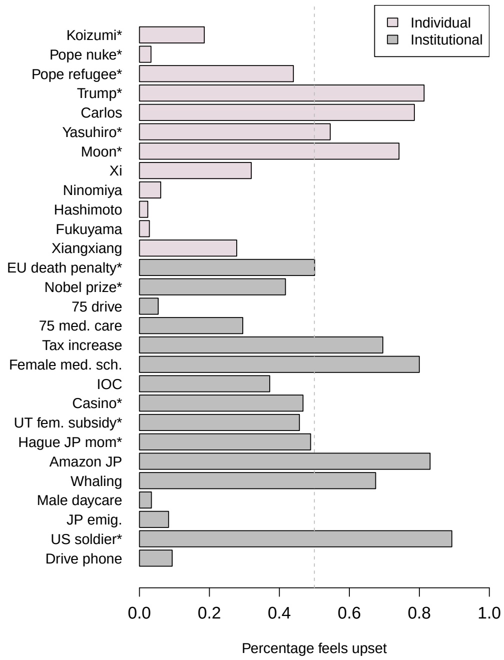


Figure B.2: Direct questioning

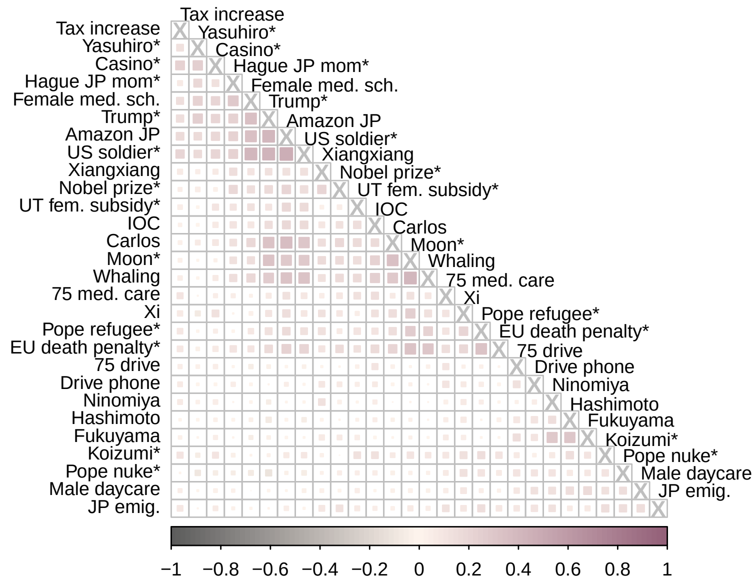


Figure B.3: Item correlation

Figure B.4: Screening nonsensitive items. Items with * are the sensitive items we use to construct the actual lists. Items around the dashed vertical line at 50% are defined as controversial. In the right panel, the color of squares indicates the direction of pair-wise correlation for all nonsensitive items, whereas the size of each squares indicates the strength of that correlation.

## B.3 Testing Nonsensitive Items (Translated)

We tested the following 28 questions using Yahoo! Crowdsourcing between February 20 and February 22, 2020. The question order was randomized. Items with asterisks are the ones we used in the actual experiment.

- `Koizumi*` Minister of the Environment Shinjiro Koizumi took childcare leave.
- `Pope nuke*` The Pope is calling for the abolition of all nuclear weapons.
- `Pope refugee*` When the Pope came to Japan, he urged Japan to accept more refugees.
- `Trump*` President Trump is calling for Japan to quadruple its host nation support for US forces stationed in Japan.
- `Carlos` Former Nissan Chairman Carlos Ghosn fled to Lebanon while out on bail.
- `Yasuhiro*` Former Prime Minister Yasuhiro Nakasone has argued that Japan should develop nuclear weapons.
- `Moon*` South Korean President Moon Jae-in is asking Japan for a (serious) apology for colonial rule.
- `Xi` President Xi Jinping of China is scheduled to visit Japan as a state guest.

- `Ninomiya` Arashi's Kazunari Ninomiya married a former female announcer.
- `Hashimoto` Manami Hashimoto, an actress, married a working doctor who is one year younger.
- `Fukuyama` Actor Masaharu Fukuyama married actress Kazue Fukiishi.
- `Xiangxiang` Xiang Xiang, a panda born at Ueno Zoo, will be sent to China, which owns the panda, at the end of 2020.
- `EU death penalty*` The EU (European Union) is calling on Japan to abolish the death penalty.
- `Nobel prize*` There will be no Japanese who will win the Nobel Prize in 2020.
- `75 drive` Cognitive performance tests and senior citizen training will be required to renew a driver's license for people aged 75 and over.
- `75 med. care` The out-of-pocket medical expenses for the elderly aged 75 and over are two-thirds of those under the age of 75 who receive the same medical care.
- `Tax increase` The consumption tax has risen to 10%.
- `Female med. sch.` The medical school of some universities uniformly deducted the points of female examinees to make them disadvantageous.
- `IOC` The Olympic marathon was moved from Tokyo to Sapporo by the IOC.
- `Casino*` Casinos have been legalized and tourist facilities, including casinos, will be built within a few years.
- `UT fem. subsidy*` The University of Tokyo subsidizes 30,000 yen for monthly rent only to female students.
- `Hague JP mom*` According to the Hague Convention, a child brought back by a Japanese mother divorced abroad will be returned to the original country.
- `Amazon JP` Amazon Japan did not pay any Japanese corporate taxes from its opening in 2000 to 2016.
- `Whaling` Foreign anti-whaling activists are obstructing whaling in Japan.
- `Male daycare` Some daycare centers employ male childcare workers.
- `JP emig.` In the last 30 years, the number of Japanese who have emigrated overseas has tripled.
- `US soldier*` Even if a US military soldier commits a crime in Japan, s/he is often not prosecuted in Japan.
- `Drive phone` Penalties for checking smartphones and operating car navigation systems while driving has been increased.

# C Complete ICT Questions in the Actual Survey

The following is the list of complete ICT questions we use in the actual survey with Nikkei Research. Every respondent saw all four lists, but only respondents in the sensitive list group saw items with asterisks (the sensitive items). Every list has the same format. Above the three (nonsensitive group)/four(sensitive group) items, the instruction reads, *"Read through the three/four sentences below and tell us how many of them you find upsetting. Not which ones, just how many in total."* Below the items, respondents see a dropdown menu with options `0, 1, 2, 3` for the nonsensitive group and options `0, 1, 2, 3, 4` for the sensitive group. The order of each list is randomized, but the item order within each list is fixed.

- List 1
  - `*Princess Aiko` The next Emperor will be Princess Aiko, the daughter of the Emperor, instead of Prince Akishino, his younger brother.
  - `Trump` President Trump is calling for Japan to quadruple its host nation support for US forces stationed in Japan.
  - `Pope nuke` The Pope is calling for the abolition of all nuclear weapons.
  - `Koizumi` Minister of the Environment Shinjiro Koizumi took childcare leave.
- List 2
  - `Nobel prize` There will be no Japanese who will win the Nobel Prize in 2020.
  - `*Female emperor` In the future, a female emperor will succeed the throne.
  - `US soldier` Even if a US military soldier commits a crime in Japan, s/he is often not prosecuted in Japan.
  - `Hague JP mom` According to the Hague Convention, a child brought back by a Japanese mother divorced abroad will be returned to their original country.
- List 3
  - `UT fem. subsidy` The University of Tokyo subsidizes 30,000 yen for monthly rent only to female students.
  - `*Aiko's son (Hypo)` If Princess Aiko, the daughter of the Emperor, has a son in the future, that child will have the right to succeed the throne.
  - `Moon` South Korean President Moon Jae-in is asking Japan for a (serious) apology for colonial rule.
  - `Pope refugee` When the Pope came to Japan, he urged Japan to accept more refugees.
- List 4
  - `Yasuhiro` Former Prime Minister Yasuhiro Nakasone has argued that Japan should develop nuclear weapons.

- `Casino` Casinos have been legalized, and tourist facilities with casinos are expected to be built in a few years.
- `EU death penalty` The EU (European Union) is calling on Japan to abolish the death penalty.
- `*Imperial Desc.` The descendants of the imperial house members, who have lived as ordinary people since the end of World War II, gain the right to succeed the throne.

# D ICT Design Issues

## D.1 ICT Comprehension

A potential problem of the ICT design is that the unusual format creates cognitive hurdles for respondents. If they cannot enumerate correctly or they misunderstood the instructions (Kramon and Weghorst, 2019), the numbers they provide for *how many items upset them* will not reflect their actual attitudes. Given the education level in Japan, where citizens are required to complete middle-school, we are not concerned about respondents' ability to count correctly. But respondents may be less attentive when reading instructions in web surveys, which leads to poor comprehension.

We take three steps to deal with this concern. First, other than the standard instructions, we provided an example of answering a list question and explained the thought process. Under a three-item (four-items) list, we wrote, *"If you find the first and the second statements upsetting, answer "2"; If you find only the third statement upsetting, answer "1". You don't have to specify to which statement you have that feeling about. There is no correct answer. Just answer as you feel."* Second, we programmed the questionnaire interface so that the *next page* button was hidden for eight seconds. We hoped this would nudge respondents to stay on the page and read the instruction carefully. Lastly, prior to the actual list questions, we asked respondents to complete the following *teaching task* (see Table D.1), where we told them which specific items upset a participant and invited them to choose a number. Respondents could attempt this exercise as many times as they wanted, but they were able to proceed only when they chose "2" in the dropdown menu. We hid the next page button for eight seconds here as well. In aggregate, we believe these measures minimized erroneous answers due to miscomprehension.

| |
|---|
| *First, let's practice how to answer the question.* |
| Read through the four statements below and tell us how many of them upset you. |
| • Former Nissan Chairman Carlos Ghosn fled to Lebanon on bail. |
| • Xiang Xiang, a panda born at Ueno Zoo, will be sent to China, which owns the panda, at the end of 2020. |
| • Amazon Japan did not pay any Japanese corporate tax from its opening in 2000 to 2016. |
| • Arashi's Kazunari Ninomiya married a former female announcer. |
| Let's say you find **the first** and **the third** statements upsetting. Please select a number as your answer to this question. |

Table D.1: Teaching task. Emphasis is added in English. In Japanese, Arabic numerals are distinct from other texts.

## D.2 Difference due to Mechanical Inflation

Most ICT designs include a greater number of items (J+1) in the sensitive list group than in the nonsensitive group (J) to identify the prevalence rate. Recent research suggests that different lengths may lead to mechanical inflation: respondents in the sensitive group report a larger number simply because a longer list is presented to them, especially for respondents who are "satisficing" when answering the questions. Riambau and Ostwald (2021) proposes adding a placebo statement—an improbable event that few respondents would choose—in the nonsensitive group to balance the list length.

While this is an insightful note, we opted for the convention of J+1/J comparison for two reasons. First, we only have four/three items in the sensitive/nonsensitive group, so even the longer list is not particularly cumbersome. Further, the Japanese text is more condensed than the English, as expressing the same meaning takes fewer characters in Japanese. Most of our sensitive and nonsensitive items can be stated within one line. Second, the appearance of improbable items could lead to other types of measurement error (Ahlquist, 2018; Blair et al., 2019). Respondents may take the survey less seriously when they see an extremely rare or nonexistent item like "I was abducted by extraterrestrials (aliens from another planet)" (Ahlquist et al., 2014). We leave the modification of ICT design for future research.

## D.3 Observed Response to the Sensitive List: Wave 1 Data

| *Sensitive Item* | *0* | *1* | *2* | *3* | *4* |
|---|---|---|---|---|---|
| Princess Aiko | 335 | 1698 | 563 | 114 | 33 |
| Female Emperor | 173 | 766 | 1255 | 470 | 79 |
| Aiko's Son (Hypo) | 283 | 912 | 941 | 487 | 120 |
| Imperial Desc. | 477 | 835 | 817 | 439 | 175 |

Table D.2: Tabulation of observed responses in wave 1 for the sensitive group.

## D.4 Observed Response to the Sensitive List: Two-Wave Panel

| **Princess Aiko** | | | | | |
|---|---|---|---|---|---|
| | | | *Wave 2* | | |
| *Wave 1* | *0* | *1* | *2* | *3* | *4* |
| *0* | 77 | 77 | 13 | 6 | 2 |
| *1* | 63 | 771 | 127 | 17 | 9 |
| *2* | 22 | 116 | 159 | 23 | 6 |
| *3* | 6 | 14 | 27 | 19 | 6 |
| *4* | 2 | 3 | 4 | 7 | 1 |
| **Female Emperor** | | | | | |
| | | | *Wave 2* | | |
| *Wave 1* | *0* | *1* | *2* | *3* | *4* |
| *0* | 25 | 41 | 16 | 6 | 3 |
| *1* | 28 | 209 | 173 | 44 | 8 |
| *2* | 13 | 132 | 435 | 109 | 17 |
| *3* | 8 | 41 | 94 | 121 | 10 |
| *4* | 1 | 6 | 11 | 14 | 12 |
| **Aiko's Son (Hypo)** | | | | | |
| | | | *Wave 2* | | |
| *Wave 1* | *0* | *1* | *2* | *3* | *4* |
| *0* | 74 | 67 | 21 | 9 | 0 |
| *1* | 44 | 286 | 127 | 59 | 11 |
| *2* | 14 | 136 | 279 | 89 | 12 |
| *3* | 9 | 30 | 100 | 121 | 17 |
| *4* | 0 | 5 | 14 | 24 | 29 |
| **Imperial Desc.** | | | | | |
| | | | *Wave 2* | | |
| *Wave 1* | *0* | *1* | *2* | *3* | *4* |
| *0* | 116 | 103 | 32 | 11 | 6 |
| *1* | 68 | 217 | 149 | 39 | 12 |
| *2* | 32 | 134 | 204 | 84 | 18 |
| *3* | 7 | 33 | 85 | 93 | 32 |
| *4* | 2 | 11 | 25 | 31 | 33 |

Table D.3: Cross tabulation of observed responses across two waves for the sensitive group.

## D.5 Testing the Design Effect

| *Sensitive Item* | *p-value* |
|---|---|
| Princess Aiko | 0.965 |
| Female Emperor | 0.745 |
| Aiko's Son (Hypo) | 0.194 |
| Imperial Descendant | 1.000 |

Table D.4: Testing for design effects in ICT with Wave 1 data. The null hypothesis is that there is no design effect. If the $p$-value is below the pre-determined critical value $\alpha = 0.05$, we reject the null hypothesis. Because the $p$-value is above $\alpha$ for each item, we fail to reject the null. The $p$-value takes into consideration the multiple hypothesis testing problem when testing the design effect. The Bonferroni approach is used here. This is performed using the `ict.test` function in the `list` package (version 9.2) in the `CRAN` repository. For methods details, see Blair and Imai (2012).

| | **Information Treatment Group** | | | |
|---|---|---|---|---|
| | *Treatment: Capability* | *Treatment: Global Practice* | *Treatment: Necessity* | *Control* |
| Princess Aiko | 0.454 | 1.000 | 1.000 | 0.466 |
| Female Emperor | 0.281 | 0.164 | 0.219 | 0.783 |
| Aiko's Son (Hypo) | 0.631 | 0.065 | 0.312 | 1.000 |
| Imperial Descendant | 0.215 | 0.364 | 0.595 | 1.000 |

Table D.5: Testing for design effects in ICT in the two-wave panel data. The null hypothesis is that there is no design effect. If the $p$-value is below the pre-determined critical value $\alpha = 0.05$, we reject the null hypothesis. Because the $p$-value is above $\alpha$ for each item, we fail to reject the null. The $p$-value takes into consideration the multiple hypothesis testing problem when testing the design effect. The Bonferroni approach is adopted. This is performed using the `ict.test` function in the `list` package. For methods details, see Blair and Imai (2012).

# E Descriptive Statistics

| *Variable* | *Obs.* | *Mean* | *Std. Dev.* | *Min* | *Max* | *Type* |
|---|---|---|---|---|---|---|
| Sensitive List Group | 5442 | 0.504 | 0.500 | 0 | 1 | Binary |
| Female | 5430 | 0.496 | 0.500 | 0 | 1 | Binary |
| Age | 5442 | 3.045 | 1.401 | 1 | 6 | Categorical |
| College | 5383 | 0.578 | 0.494 | 0 | 1 | Binary |
| LDP Support | 5442 | 0.248 | 0.432 | 0 | 1 | Binary |
| Sexism Score | 5442 | 0.000 | 0.904 | -2.223 | 2.138 | Continuous |
| Conservatism Score | 5442 | 0.000 | 0.757 | -1.837 | 2.615 | Continuous |

Table E.1: Summary Statistics for Wave 1 Data

| *Variable* | *Obs.* | *Mean* | *Std. Dev.* | *Min* | *Max* | *Type* |
|---|---|---|---|---|---|---|
| Sensitive List Group | 3156 | 0.500 | 0.500 | 0 | 1 | Binary |
| Treatment: Capability | 3156 | 0.253 | 0.435 | 0 | 1 | Binary |
| Treatment: Global Practice | 3156 | 0.245 | 0.430 | 0 | 1 | Binary |
| Treatment: Necessity | 3156 | 0.251 | 0.433 | 0 | 1 | Binary |
| Control | 3156 | 0.251 | 0.434 | 0 | 1 | Binary |
| Female | 3149 | 0.466 | 0.499 | 0 | 1 | Binary |
| Age | 3156 | 3.155 | 1.365 | 1 | 6 | Categorical |
| College | 3130 | 0.586 | 0.493 | 0 | 1 | Binary |
| Married | 3144 | 0.605 | 0.489 | 0 | 1 | Binary |
| LDP Support | 3156 | 0.245 | 0.430 | 0 | 1 | Binary |
| Sexism Score | 3156 | -0.000 | 0.902 | -2.227 | 2.149 | Continuous |
| Conservatism Score | 3156 | -0.000 | 0.758 | -1.856 | 2.646 | Continuous |

Table E.2: Summary Statistics for the Two-Wave Panel Data

# F Multiple Hypothesis Testing

To address the problem of multiple hypothesis testing in Figure 5, we use the Benjamini-Hochberg (BH) Procedure to correct the coefficient estimates (Benjamini and Hochberg, 1995; Benjamini and Yekutieli, 2005; Romano et al., 2008). The BH-adjusted $p$-value for the coefficients are as follows.

| *Sensitive Item* | *Female* | *Age* | *College* | *LDP* | *Sexism* | *Conservatism* |
|---|---|---|---|---|---|---|
| Princess Aiko | 0.947 | 0.947 | 0.947 | 0.947 | 0.150 | 0.150 |
| Female Emperor | 0.541 | 0.897 | 0.776 | 0.541 | 0.776 | 0.016 |
| Aiko's Son (Hypo) | 0.322 | 0.540 | 0.673 | 0.540 | 0.239 | 0.322 |
| Imperial Descendant | 0.000 | 0.186 | 0.656 | 0.464 | 0.099 | 0.075 |

Table F.1: Benjamini-Hochberg (BH) adjusted $p$-value for coefficient estimates in Figure 5.

# G Asymptotic Variance Estimator

The basic idea of the design-based estimator is similar to the difference-in-difference-in-differences estimator. We can point estimate the average treatment effect with list design defined by equation (1) in the main paper:

$$\hat{\tau} \equiv \Bigg\{ \Big( \underbrace{\frac{\sum_{i=1}^N Y_{i2} D_i T_i}{\sum_{i=1}^N D_i T_i}}_{1} - \underbrace{\frac{\sum_{i=1}^N Y_{i1} D_i T_i}{\sum_{i=1}^N D_i T_i}}_{2} \Big)$$

$$- \Big( \underbrace{\frac{\sum_{i=1}^N Y_{i2}(1-D_i) T_i}{\sum_{i=1}^N (1-D_i) T_i}}_{3} - \underbrace{\frac{\sum_{i=1}^N Y_{i1}(1-D_i) T_i}{\sum_{i=1}^N (1-D_i) T_i}}_{4} \Big) \Bigg\}$$

$$- \Bigg\{ \Big( \underbrace{\frac{\sum_{i=1}^N Y_{i2} D_i (1-T_i)}{\sum_{i=1}^N D_i (1-T_i)}}_{5} - \underbrace{\frac{\sum_{i=1}^N Y_{i1} D_i (1-T_i)}{\sum_{i=1}^N D_i (1-T_i)}}_{6} \Big)$$

$$- \Big( \underbrace{\frac{\sum_{i=1}^N Y_{i2}(1-D_i)(1-T_i)}{\sum_{i=1}^N (1-D_i)(1-T_i)}}_{7} - \underbrace{\frac{\sum_{i=1}^N Y_{i1}(1-D_i)(1-T_i)}{\sum_{i=1}^N (1-D_i)(1-T_i)}}_{8} \Big) \Bigg\}$$

To interpret the expression, we can think of $\Big(1 - 2\Big)$ as representing the cross-wave difference for respondents who were assigned to one of the treatment arms and sensitive list group. $\Big(3 - 4\Big)$ represents the cross-wave difference for respondents who were assigned to the control but are in the sensitive list group. Therefore, the pieces inside the first curly brackets correspond to the treatment effect for the sensitive list group. The pieces inside the second curly brackets are the treatment effect for the nonsensitive list group. The difference between the two corresponds to the average treatment effect on the sensitive item. Because we have a representative sample, the estimates can be interpreted as population estimates.

The asymptotic variance estimator is,

$$\widehat{\mathbb{V}}(\hat{\tau}) = \frac{\sigma_1^2 + \sigma_2^2 - 2\rho\sigma_1\sigma_2}{\sum_{i=1}^N D_i T_i} + \frac{\sigma_1^3 + \sigma_2^4 - 2\rho\sigma_3\sigma_4}{\sum_{i=1}^N (1-D_i) T_i} + \frac{\sigma_1^5 + \sigma_2^6 - 2\rho\sigma_5\sigma_6}{\sum_{i=1}^N D_i (1-T_i)} + \frac{\sigma_1^7 + \sigma_2^8 - 2\rho\sigma_7\sigma_8}{\sum_{i=1}^N (1-D_i)(1-T_i)}$$

where $\sigma_1^2$ is the sample variance of $Y$ in piece 1, $\sigma_2^2$ is the sample variance of $Y$ in piece 2, and et cetera. $\rho$ is the correlation coefficient of the corresponding pieces. Because the information treatment and ICT are administered independently, the only dependence is within the same individuals across two waves when the treatment status and list status are the same. Note that as the standard derivation of the difference-in-means estimator, the $\widehat{\mathbb{V}}(\hat{\tau})$ is not identifiable due

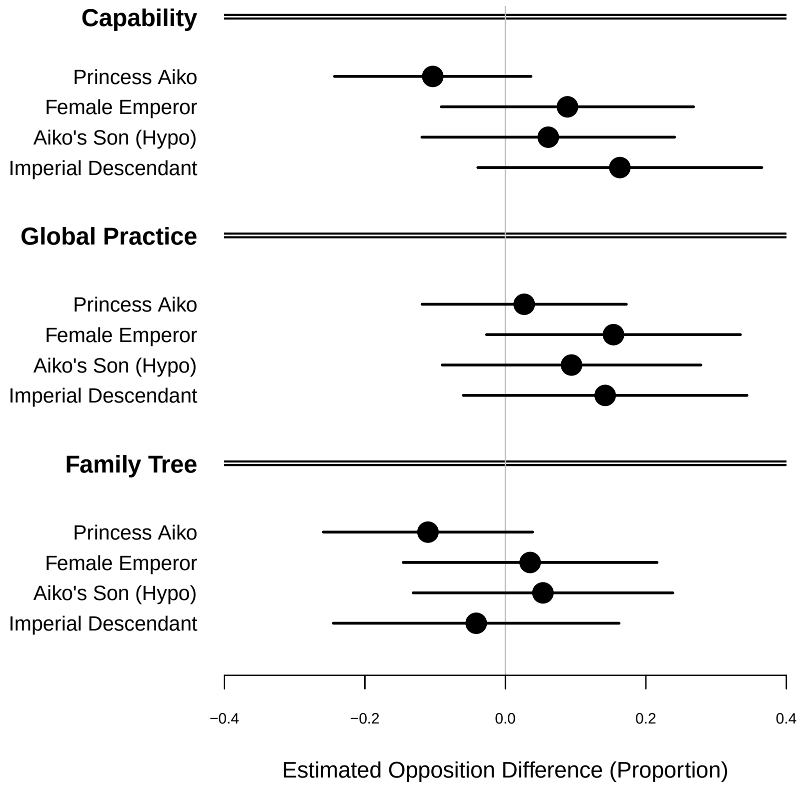


Figure G.1: Effects of information treatments on the estimated change (across two waves) in the proportion of respondents who are upset by the four sensitive items. The interpretation of the treatment effects is relative to the `control group`. `Princess Aiko`, `Female Emperor`, `Aiko's Son (Hypo)` and `Imperial Descendant` represent the four sensitive items. The solid lines represent the 95% asymptotic confidence intervals.

to the unobservability of potential outcomes. The variance estimator would be conservative on average if we assume $\rho$ is zero. The standard errors with non-parametric bootstrap are similar to the estimates with the variance estimator if we do not assume $\rho$ is zero. Figure G.1 presents the estimates and asymptotic confidence intervals.

# H Consistency of the Design-Based Estimator

When we rearrange the design-based estimator equation (1) above, we get

$$\begin{aligned}\hat{\tau} \equiv & \Bigg\{ \Big( \frac{\sum_{i=1}^N Y_{i2} D_i T_i}{\sum_{i=1}^N D_i T_i} - \frac{\sum_{i=1}^N Y_{i2} D_i (1-T_i)}{\sum_{i=1}^N D_i (1-T_i)} \Big) \\ & - \Big( \frac{\sum_{i=1}^N Y_{i2} (1-D_i) T_i}{\sum_{i=1}^N (1-D_i) T_i} - \frac{\sum_{i=1}^N Y_{i2} (1-D_i)(1-T_i)}{\sum_{i=1}^N (1-D_i)(1-T_i)} \Big) \Bigg\} \\ & - \Bigg\{ \Big( \frac{\sum_{i=1}^N Y_{i1} D_i T_i}{\sum_{i=1}^N D_i T_i} - \frac{\sum_{i=1}^N Y_{i1} D_i (1-T_i)}{\sum_{i=1}^N D_i (1-T_i)} \Big) \\ & - \Big( \frac{\sum_{i=1}^N Y_{i1} (1-D_i) T_i}{\sum_{i=1}^N (1-D_i) T_i} - \frac{\sum_{i=1}^N Y_{i1} (1-D_i)(1-T_i)}{\sum_{i=1}^N (1-D_i)(1-T_i)} \Big) \Bigg\}\end{aligned}$$

where $i$ denotes individual respondents. $D_i$ is a factor variable that indicates treatment status. It is coded as 1 if $i$ receives an information treatment and 0 otherwise. $T_i \in \{0, 1\}$ denotes sensitive list status, where $T_i = 1$ denotes receiving the sensitive list in both survey waves. $Y_{i1}$ is $i$'s total number of reported affirmative answers in the first wave, and $Y_{i2}$ is $i$'s total number of reported affirmative answers in the second wave.

Let us focus on the first term.

$$\begin{aligned}\frac{\sum_{i=1}^N Y_{i2} D_i T_i}{\sum_{i=1}^N D_i T_i} &= \frac{\sum_{i=1}^N D_i T_i \{Y_{i,2}(0,1) + Z^*_{i,2}(1)\}}{\sum_{i=1}^N D_i T_i} \\ &= \frac{\frac{1}{N}\sum_{i=1}^N D_i T_i \{Y_{i,2}(0,1) + Z^*_{i,2}(1)\}}{\frac{1}{N}\sum_{i=1}^N D_i T_i}\end{aligned}$$

According to the continuous mapping theorem

$$\xrightarrow{p} \frac{\mathbb{E}[D_i T_i \{Y_{i,2}(0,1) + Z^*_{i,2}(1)\}]}{\mathbb{E}[D_i T_i]}$$

According to randomization,

$$\begin{aligned}&= \frac{\mathbb{E}[D_i T_i]\mathbb{E}[Y_{i,2}(0,1) + Z^*_{i,2}(1)]}{\mathbb{E}[D_i T_i]} \\ &= \mathbb{E}[Y_{i,2}(0,1) + Z^*_{i,2}(1)]\end{aligned}$$

Similarly, the second term in the parentheses convergence in probability to $\mathbb{E}[Y_{i,2}(0,1)]$. Following the same steps, we know that

$$\begin{aligned}\hat{\tau} \xrightarrow{p} & \Big\{ \big( \mathbb{E}[Y_{i,2}(0,1) + Z^*_{i,2}(1)] - \mathbb{E}[Y_{i,2}(0,1)] \big) - \big( \mathbb{E}[Y_{i,2}(0,0) + Z^*_{i,2}(0)] - \mathbb{E}[Y_{i,2}(0,0)] \big) \Big\} \\ & - \Big\{ \big( \mathbb{E}[Y_{i,1}(0,1) + Z^*_{i,1}(1)] - \mathbb{E}[Y_{i,1}(0,1)] \big) - \big( \mathbb{E}[Y_{i,1}(0,0) + Z^*_{i,1}(0)] - \mathbb{E}[Y_{i,1}(0,0)] \big) \Big\}\end{aligned}$$

According to linearity

$$
\begin{aligned}
\hat{\tau} \xrightarrow{p} & \Big\{ \big(\mathbb{E}[Y_{i,2}(0,1)] + \mathbb{E}[Z^*_{i,2}(1)] - \mathbb{E}[Y_{i,2}(0,1)]\big) - \big(\mathbb{E}[Y_{i,2}(0,0)] + \mathbb{E}[Z^*_{i,2}(0)] - \mathbb{E}[Y_{i,2}(0,0)]\big) \Big\} \\
& - \Big\{ \big(\mathbb{E}[Y_{i,1}(0,1)] + \mathbb{E}[Z^*_{i,1}(1)] - \mathbb{E}[Y_{i,1}(0,1)]\big) - \big(\mathbb{E}[Y_{i,1}(0,0)] + \mathbb{E}[Z^*_{i,1}(0)] - \mathbb{E}[Y_{i,1}(0,0)]\big) \Big\}
\end{aligned}
$$

According to the assumption of *no design effect*,

$$
\hat{\tau} \xrightarrow{p} \Big\{ \mathbb{E}[Z^*_{i,2}(1)] - \mathbb{E}[Z^*_{i,2}(0)] \Big\} - \Big\{ \mathbb{E}[Z^*_{i,1}(1)] - \mathbb{E}[Z^*_{i,1}(0)] \Big\}
$$

# I Other Specifications

Following the advice from an anonymous reviewer, we did the following exercises. First, we explore the "Princess Aiko Effect" by combining the three treatment arms into one and redo the analysis. In other words, we compare the effect of being shown ANY of the three treatments to the control.

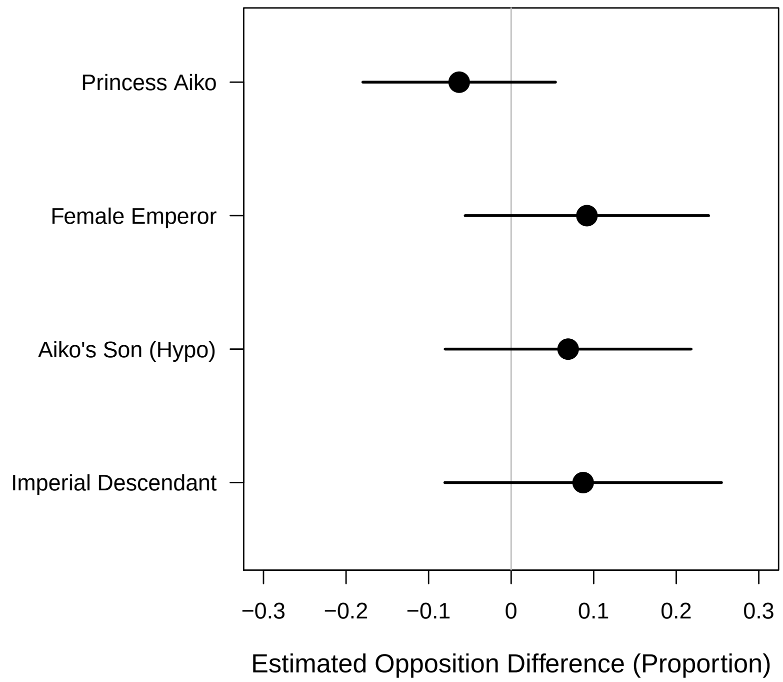


Figure I.1: Effects of the "Princess Aiko effect" on the estimated change (across two waves) in the proportion of respondents who are upset by the four sensitive items. Unlike the main design, the treatment here combines all the treatment arms into one, the "Princess Aiko Effect." The interpretation of the treatment effect is the Aiko-related information relative to the `control`. The solid lines represent the 95% asymptotic confidence intervals.

Second, because self-selection-related attrition may bias the results, we do the following analysis. First, we run a simple logistic regression where the dependent variable is a binary indicator for whether a respondent in the first wave stays in our sample in the second wave. It reveals that younger, less educated, and married respondents are more likely to drop out of the second wave. We cannot come up with a plausible story where attrition along these dimensions would affect the treatment effect in our application. As an additional check, we regress first wave response on dropout status using the standard `ictreg` function in the `list` package for each sensitive list. There is no difference in the prevalence rate. This makes us less concerned about the self-selection problem in our case. Then, we use a Difference-in-Difference-in-Differences (DDD) regression estimator with age, education and marriage as control variables. None of the third-order interaction terms are statistically significant after controlling for attrition covariates. The results are presented in Table I.1.

Table I.1: Difference-in-Difference-in-Differences Regression Estimator with Controls

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | Princess Aiko | Female Emperor | Aiko's Son (Hypo) | Imperial Descendant |
| | (1) | (2) | (3) | (4) |
| Capability | −0.036 | 0.054 | −0.019 | −0.012 |
| | (0.048) | (0.059) | (0.067) | (0.071) |
| Global Practice | −0.076 | 0.024 | −0.009 | −0.046 |
| | (0.048) | (0.059) | (0.067) | (0.071) |
| Necessity | −0.022 | −0.097* | 0.105 | −0.092 |
| | (0.048) | (0.059) | (0.067) | (0.071) |
| List Ind. | 0.112** | 0.162*** | 0.229*** | 0.270*** |
| | (0.048) | (0.059) | (0.067) | (0.071) |
| Wave Ind. (mod 1) | −0.007 | | | |
| | (0.048) | | | |
| Wave Ind. (Mod 2) | | 0.125** | | |
| | | (0.058) | | |
| Wave Ind. (Mod 3) | | | 0.060 | |
| | | | (0.066) | |
| Wave Ind. (Mod 4) | | | | 0.027 |
| | | | | (0.071) |
| Age | 0.040*** | 0.053*** | −0.009 | 0.082*** |
| | (0.007) | (0.009) | (0.010) | (0.011) |
| College | −0.057*** | −0.069*** | −0.041* | −0.086*** |
| | (0.018) | (0.022) | (0.025) | (0.026) |
| Married | 0.005 | 0.086*** | −0.018 | 0.021 |
| | (0.020) | (0.025) | (0.028) | (0.030) |
| Capability×List Ind. | 0.016 | −0.123 | −0.164* | −0.049 |
| | (0.068) | (0.083) | (0.095) | (0.101) |
| Global Practice×List Ind. | 0.052 | −0.171** | −0.165* | −0.087 |
| | (0.068) | (0.084) | (0.095) | (0.102) |
| Necessity×List Ind. | 0.009 | −0.041 | −0.223** | 0.014 |
| | (0.068) | (0.083) | (0.095) | (0.101) |
| Capability×Wave Ind. (mod 1) | 0.018 | | | |
| | (0.068) | | | |
| Global Practice×Wave Ind. (mod 1) | −0.011 | | | |
| | (0.068) | | | |
| Necessity×Wave Ind. (mod 1) | 0.086 | | | |
| | (0.068) | | | |
| List Ind.×Wave Ind. (mod 1) | 0.044 | | | |
| | (0.068) | | | |
| Capability×List Ind.×Wave Ind. (mod 1) | −0.092 | | | |
| | (0.096) | | | |
| Global Practice×List Ind.×Wave Ind. (mod 1) | 0.024 | | | |
| | (0.097) | | | |
| Necessity×List Ind.×Wave Ind. (mod 1) | −0.097 | | | |
| | (0.096) | | | |
| Capability×Wave Ind. (Mod 2) | | −0.122 | | |
| | | (0.083) | | |
| Global Practice×Wave Ind. (Mod 2) | | −0.034 | | |
| | | (0.083) | | |
| Necessity×Wave Ind. (Mod 2) | | 0.016 | | |
| | | (0.083) | | |
| List Ind.×Wave Ind. (Mod 2) | | −0.091 | | |
| | | (0.083) | | |
| Capability×List Ind.×Wave Ind. (Mod 2) | | 0.088 | | |
| | | (0.118) | | |
| Global Practice×List Ind.×Wave Ind. (Mod 2) | | 0.134 | | |
| | | (0.118) | | |
| Necessity×List Ind.×Wave Ind. (Mod 2) | | 0.031 | | |
| | | (0.118) | | |
| Capability×Wave Ind. (Mod 3) | | | −0.075 | |
| | | | (0.094) | |
| Global Practice×Wave Ind. (Mod 3) | | | −0.031 | |
| | | | (0.095) | |
| Necessity×Wave Ind. (Mod 3) | | | −0.068 | |
| | | | (0.095) | |
| List Ind.×Wave Ind. (Mod 3) | | | −0.034 | |
| | | | (0.095) | |
| Capability×List Ind.×Wave Ind. (Mod 3) | | | 0.079 | |
| | | | (0.134) | |
| Global Practice×List Ind.×Wave Ind. (Mod 3) | | | 0.092 | |
| | | | (0.135) | |
| Necessity×List Ind.×Wave Ind. (Mod 3) | | | 0.082 | |
| | | | (0.134) | |
| Capability×Wave Ind. (Mod 4) | | | | −0.068 |
| | | | | (0.101) |

| | | | | |
|---|---|---|---|---|
| Global Practice×Wave Ind. (Mod 4) | | | | 0.027 |
| | | | | (0.101) |
| Necessity×Wave Ind. (Mod 4) | | | | 0.056 |
| | | | | (0.101) |
| List Ind.×Wave Ind. (Mod 4) | | | | −0.046 |
| | | | | (0.101) |
| Capability×List Ind.×Wave Ind. (Mod 4) | | | | 0.164 |
| | | | | (0.143) |
| Global Practice×List Ind.×Wave Ind. (Mod 4) | | | | 0.133 |
| | | | | (0.144) |
| Necessity×List Ind.×Wave Ind. (Mod 4) | | | | −0.043 |
| | | | | (0.143) |
| Constant | 1.024*** | 1.567*** | 1.672*** | 1.216*** |
| | (0.041) | (0.050) | (0.057) | (0.061) |
| Observations | 6,246 | 6,246 | 6,246 | 6,246 |
| $R^2$ | 0.022 | 0.025 | 0.008 | 0.033 |
| Adjusted $R^2$ | 0.019 | 0.022 | 0.005 | 0.031 |
| Residual Std. Error (df = 6227) | 0.673 | 0.825 | 0.939 | 1.000 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

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