**Supplementary material**

**Voice-based assistants as intermediaries for socio-political issues: investigating use patterns, expectations, and prior indirect experiences**

Figure S1. Histogram of the age distribution (*n* = 803 regular VBA users)



Table S1. Description of the regular VBA users (*n* = 803)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | n | % |  |  |  | n | % |
| Age |  |  |  | Number of children in the household |  |
|  | 18-24 years | 85 | 10.6 |  |  | No children | 470 | 58.5 |
|  | 25-34 years | 154 | 19.2 |  |  | 1 child | 177 | 22.0 |
|  | 35-44 years | 167 | 20.8 |  |  | 2 children | 120 | 14.9 |
|  | 45-54 years | 196 | 24.4 |  |  | 3 children or more | 35 | 4.3 |
|  | 55+ years | 201 | 25.0 |  | Monthly net income of the household (EUR) |  |
| Gender |  |  |  |  | Under 500 | 11 | 1.4 |
|  | Male | 418 | 52.1 |  |  | 500 to under 1,500 | 72 | 9.0 |
|  | Female | 383 | 47.7 |  |  | 1,500 to under 2,500 | 137 | 17.1 |
| Education |  |  |  |  | 2,500 to under 3,500 | 181 | 22.5 |
|  | Secondary ed. first stage | 257 | 32.0 |  |  | 3,500 to under 4,500 | 129 | 16.1 |
|  | Secondary ed. second stage | 264 | 32.9 |  |  | 4,500 to under 5,500 | 112 | 13.9 |
|  | Tertiary ed. | 282 | 35.1 |  |  | 5,500 to under 10,000 | 99 | 12.3 |
| Merital status |  |  |  |  | 10,000 and more | 26 | 3.2 |
|  | Single | 219 | 27.3 |  | No. of residents in place of residence |  |
|  | Married | 355 | 44.2 |  |  | Fewer than 2,000 | 52 | 6.5 |
|  | In a partnership | 129 | 16.1 |  |  | 2,000 to fewer than 5,000 | 64 | 8.0 |
|  | Divorced | 70 | 8.7 |  |  | 5,000 to fewer than 20,000 | 129 | 16.1 |
|  | Widowed | 20 | 2.5 |  |  | 20,000 to fewer than 50,000  | 120 | 14.9 |
| Household size |  |  |  |  | 50,000 to fewer than 100,000 | 107 | 13.3 |
|  | 1 person | 185 | 23.0 |  |  | 100,000 to fewer than 500,000 | 142 | 17.7 |
|  | 2 persons | 274 | 34.1 |  |  | 500,000 residents and more | 177 | 22.0 |
|  | 3 persons | 157 | 19.6 |  |  |  |  |  |
|  | 4 persons | 139 | 17.3 |  |  |  |  |  |
|  | 5 persons or more | 47 | 5.7 |  |  |  |  |  |

*Note.* The percentages in this table do not sum to 100% because some values are missing

Table S2. Comparative model fit statistics for determining the optimal number of groups

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No. of Groups | LL | AIC | BIC | SABIC | BLRT p-value | Entropy | Smallest group (%) |
| 1 | -6833 | 13691 | 13747 | 13709  | - | 1 | 100 |
| 2 | -5788 | 11614 | 11703 | 11642 | < .01 | 0.895 | 42.5 |
| 3 | -5442 | 10935 | 11057 | 10974  | < .01 | 0.876 | 18.1 |
| 4 | -5274 | 10613 | 10768 | 10663 | < .01 | 0.869 | 18.7 |
| 5 | -5163 | 10405 | 10593 | 10466 | < .01 | 0.879 | 11.3 |
| 6 | -5083 | 10259 | 10479 | 10330 | < .01 | 0.859 | 10.8 |
| 7 | -5033 | 10175 | 10428 | 10256 | < .01 | 0.873 | 4.23 |
| 8 | -4952 | 10026 | 10312 | 10119 | < .01 | 0.885 | 3.24 |
| 9 | -4934 | 10004 | 10323 | 10107 | < .01 | 0.866 | 4.73 |

*Note. n = 803. The BLRT test compares the current model to a model with k -1 groups.*

Table S3. Description of the five latent user groups

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Everyday inquirers (*n* = 112-117) | Everyday news inquirers (*n* = 127-131) | Balanced inquirers(*n* = 179-186) | Personifying balanced inquirers(*n* = 269-275) | Minimalist inquirers (*n* = 87-94) |
| Frequency of query type1  |  |  |  |  |  |
|  | Questions about everyday life  | 4.82 (1.32)abcd | 6.29 (0.83)cfi | 4.39 (1.42)aefg | 6.27 (0.86)beh | 1.44 (0.79)dghi |
|  | Questions about current events | 2.85 (1.23)abcd | 5.95 (0.88)cfhj | 4.26 (1.20)aefg | 6.27 (0.73)behi | 1.17 (0.44)dgij |
|  | Questions about specific facts | 2.59 (1.37)abcd | 4.14 (1.74)cgi | 4.12 (1.23)aef | 5.75 (1.08)begh | 1.51 (1.06)dfhi |
|  | Questions about causes and relationships | 1.86 (1.05)abcd | 2.97 (1.68)cfhj | 4.11 (1.16)aefg | 5.68 (1.04)behi | 1.17 (0.54)dgij |
|  | Questions for guidance in situations of uncertainty or problems | 1.95 (1.16)abcd | 2.83 (1.58)cfhj | 4.27 (1.19)aefg | 5.65 (1.12)behi | 1.23 (0.81)dgij |
|  | Questions for guidance in decision-making | 1.71 (1.0)abc | 1.55 (0.78)egi | 4.25 (1.09)adef | 5.59 (1.12)bdgh | 1.17 (0.51)cfhi |
| Demographics |  |
|  | Age | 45.22 (15.88)a | 46.46 (13.53)b | 39.72 (14.69)abc | 43.04 (13.61)d | 49.38 (14.37)cd |
|  | Gender |  |  |  |  |  |
|  |  | Male | 47.0 % (*n* = 55) | 42.0 % (*n* = 55) | 53.8 % (*n* = 100) | 59.5 % (*n* = 163) | 48.4 % (*n*= 45) |
|  |  | Female | 53.0 % (*n* = 62) | 58.0 % (*n* = 76) | 46.2 % (*n* = 86) | 40.5 % (*n* = 111) | 51.6 % (*n*= 48) |
|  | Education |  |  |  |  |  |
|  |  | Secondary ed. first stage | 28.2 % (*n* = 33) | 38.2 % (*n* = 50) | 25.3 % (*n* = 47) | 34.5 % (*n* = 95) | 34.0 % (*n*= 32) |
|  |  | Secondary ed. second stage | 31.6 % (*n* = 37) | 35.9 % (*n* = 47) | 39.2 % (*n* = 73) | 26.9 % (*n* = 74) | 35.1 % (*n*= 33) |
|  |  | Tertiary ed. | 40.2 % (*n* = 47) | 26.0 % (*n* = 34) | 35.5 % (*n* = 66) | 38.5 % (*n* = 106) | 30.9 % (*n*= 29) |
|  | Affinity for technology (index)2 | 4.65 (1.22) | 4.81 (1.30)ab | 4.27 (0.93)ac | 4.80 (1.23)cd | 4.21 (1.22)bd |
|  | Interest in AI3 | 5.13 (1.42)a | 5.37 (1.39)b | 5.40 (1.20)cd | 6.05 (1.08)abce | 4.94 (1.44)de |
|  | Tendency to perceive the VBA as person4 | 2.93 (2.66)ab | 3.13 (2.78)cd | 4.19 (2.68)acef | 5.88 (2.82)bdeg | 2.19 (2.43)fg |
| Expectations towards an VBA when answering questions about climate change, the coronavirus pandemic or politics5 |  |
|  | Impartial interpretation | 5.02 (1.29)ab | 5.41 (1.32)cd | 5.09 (1.17)ef | 5.92 (0.97)aceg | 4.25 (1.80)bdfg |
|  | Transparency | 4.97 (1.28)ab | 5.04 (1.30)cd | 5.03 (1.15)ef | 5.87 (1.04)aceg | 4.20 (1.81)bdfg |
|  | Practical support | 4.77 (1.43)abc | 5.36 (1.24)ade | 5.06 (1.19)fg | 5.92 (0.91)bdfh | 4.14 (1.75)cegh |
|  | Dialogic engagement | 3.47 (1.50)ab | 3.74 (1.52)cd | 4.54 (1.32)acef | 5.36 (1.31)bdeg | 3.18 (1.80)fg |

*Note.* Mean differences are calculated using an ANOVA with Bonferroni post-hoc test. Mean values with a common exponent differ with p < .05 in the post-hoc test.

11 = “very seldom or never”, 7 = “daily”; 21 = “does not apply at all”, 7 = “does fully apply”; 31 = “not interested at all”, 7 = “very interested”;

40 = “thing/object”, 10 “person/subject”; 51 = “not important at all”, 7 = “very important”

Table S4a. Prevalence of query types across demographic groups

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Questions about everyday life | Questions about current events | Questions about specific facts | Questions about causes and relationships | Questions for guidance in situations of uncertainty or problems | Questions for guidance in decision-making |
| Age | 18-24 years | 4.64 (1.95) | 4.35 (1.97) | 4.10 (1.74) | 4.00d (1.85) | 4.04h (2.0) | 4.24l (2.08) |
| 25-34 years | 5.23 (1.73) | 4.87 (1.92) | 4.49a (1.84) | 4.15e (2.04) | 4.09i (2.04) | 3.74m (2.04) |
| 35-44 years | 5.22 (1.76) | 4.87 (1.78) | 4.36 b (1.87) | 3.96f (1.97) | 3.97j (2.06) | 3.49 (2.15) |
| 45-54 years | 5.12 (1.85) | 4.78 (1.93) | 4.38 c (1.82) | 3.88g (1.93) | 3.99k (1.95) | 3.70n (2.06) |
| 55+ years | 4.93 (2.07) | 4.35 (2.23) | 3.54 abc (2.06) | 3.21defg (2.05) | 3.22hijk (1.96) | 2.96lmn (1.94) |
| Gender | Male | 5.01 (1.84) | 4.77 (1.94) | 4.29a (1.87) | 4.00b (1.96) | 3.95 (2.00) | 3.80d (2.03) |
| Female | 5.13 (1.92) | 4.55 (2.04) | 4.00a (1.97) | 3.56b (2.04) | 3.68 (2.05) | 3.25d (2.10) |
| Education | Secondary ed. first stage | 5.22 (1.94) | 4.77 (2.01) | 4.09 (2.02) | 3.74 (2.08) | 3.88 (2.08) | 3.45 (2.09) |
| Secondary ed. second stage | 4.87 (1.94) | 4.55 (1.94) | 4.17 (1.84) | 3.72 (1.93) | 3.60 (2.02) | 3.48 (2.10) |
| Tertiary ed. | 5.09 (1.77) | 4.66 (2.03) | 4.21 (1.91) | 3.91 (2.02) | 3.96 (1.97) | 3.68 (2.06) |

*Note.* Mean differences are calculated using an ANOVA with Bonferroni post-hoc test (age, education) or an independent samples t-test (gender). Mean values with a common exponent differ with p < .05 in the post-hoc test. Prevalence is measured on a 7-point scale (1 = “very seldom or never”, 7 = “daily”).

Table S4b. Expectations towards an VBA when answering questions about climate change, the coronavirus pandemic or politics across demographic groups

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Impartial interpretation | Telling me the sources of the information | Telling me what is not known or uncertain | Practical support | Dialogic engagement |
| Age | 18-24 years | 5.13 (1.23) | 4.93 (1.56) | 4.56abc (1.62) | 4.82de (1.28) | 4.25 (1.59) |
| 25-34 years | 5.19 (1.42) | 5.28 (1.40) | 5.14 (1.51) | 5.22 (1.20) | 4.38 (1.66) |
| 35-44 years | 5.30 (1.22) | 5.16 (1.62) | 5.25a (1.40) | 5.44d (1.66) | 4.44 (1.68) |
| 45-54 years | 5.44 (1.28) | 5.47 (1.40) | 5.30b (1.53) | 5.35e (1.35) | 4.61 (1.57) |
| 55+ years | 5.40 (1.48) | 5.39 (1.65) | 5.20c (1.77) | 5.25 (1.60) | 4.15 (1.73) |
| Gender | Male | 5.28 (1.33) | 5.31 (1.54) | 5.12 (1.62) | 5.25 (1.35) | 4.50a (1.64) |
| Female | 5.37 (1.36) | 5.26 (1.55) | 5.20 (1.54) | 5.28 (1.36) | 4.24a (1.67) |
| Education | Secondary ed. first stage | 5.41 (1.33) | 5.29 (1.59) | 5.25 (1.65) | 5.42 (1.41) | 4.45 (1.64) |
| Secondary ed. second stage | 5.26 (1.36) | 5.24 (1.54) | 5.02 (1.62) | 5.18 (1.33) | 4.21 (1.72) |
| Tertiary ed. | 5.30 (1.35) | 5.35 (1.50) | 5.21 (1.47) | 5.20 (1.32) | 4.46 (1.61) |

*Note.* Mean differences are calculated using an ANOVA with Bonferroni post-hoc test (age, education) or an independent samples t-test (gender). Mean values with a common exponent differ with p < .05 in the post-hoc test. Expectations are measured on a 7-point scale (1 = “not important at all”, 7 = “very important”).