Assessing the Attitude Towards Artificial Intelligence: Introduction of a Short Measure in German, Chinese, and English Language

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Control Survey

Sample

The control survey was implemented at the University of Electronic Science and Technology of China (UESTC) by means of an online survey via the SurveyCoder tool (https://ckannen.com/).

After data cleaning (deleting one dataset of each participant who took part twice (n = 2)), a final sample of N = 82 (n = 33 males, n = 49 females) participants remained for final analyses. The mean age of this control sample was 21.27 years (SD = 2.26) with a median of 21 years. Most participants were students (n = 70; 85%).

Principal Component Analysis (PCA) of the ATAI Items

The PCA revealed one eigenvalue greater than 1 (2.44). Moreover, another eigenvalue was slightly smaller than 1 (0.98). Therefore, two components were extracted as in the samples of the main study (see Main Manuscript). As in the samples of the main study (see Main Manuscript), the loadings of the items on the components reflected the wording of the items with one Acceptance and one Fear component.

Confirmatory Factor Analysis (CFA), Reliabilities, and Measurement Invariance of the ATAI scale

The CFA revealed an acceptable model fit for the two-factorial structure in the sample of the control survey (CFI: .934, TLI: .835, RMSEA: .133, SRMR: .056). As in the samples reported in the Main Manuscript, the two factors were negatively associated. Loadings of the items on the two factors in the control sample are presented in Supplementary Table 1.

The reliabilities (using Cornbach's α) of the Acceptance and Fear scale were $\alpha = .51$ and $\alpha = .68$ in the sample of the control survey.

Tests on measurement invariance across all four samples (Germany, China (Main Manuscript), UK, China (control survey)) revealed that configural invariance (see model fit) and equal loadings (delta $X_2 = 13.69$, $p = .134$) can be assumed across samples.

Supplementary Table 1.

Standardized loadings of the items of the ATAI scale on the two ATAI factors in the CFA.

	China (control survey)	
	Acceptance	Fear
ATAI 02	.63	
ATAI 04	.59	
ATAI 01		.68
ATAI 03		.90
ATAI 05		.40

Descriptive Statistics, Sample and Gender Differences

Descriptive statistics of the two ATAI scales in the Chinese sample of the control survey are presented in Supplementary Table 2. A multivariate multifactorial ANCOVA (age as covariate; see Main Manuscript) including both Chinese samples (of the main study reported in the Main Manuscript and of the control survey) and gender as factor revealed gender differences in the ATAI scales ($F(2,489) = 3.84$, $p = .022$, $\eta_{p2} = .015$), but no significant difference between the two Chinese samples ($F(2,489) = 1.08$, $p = .341$, $\eta_{p2} = .004$), or any significant effect of age ($F(2,489) = 2.36$, $p = .0.96$, $\eta_{p2} = .010$), or the gender by sample interaction term ($F(2,489) = 2.26$, $p = .106$, $\eta_{p2} = .009$) on the ATAI scales. The gender effect was due to males showing higher scores in the Acceptance scale ($F(1,490) = 5.70$, $p = .017$, $\eta_{p2} = .012$) and lower scores in the Fear scale ($F(1,490) = 4.85$, $p = .028$, $\eta_{p2} = .010$) compared to females.

Please note that in the male sample of the Chinese control survey the skewness and kurtosis of the ATAI Fear scale were greater than +/-1. However, when implementing non-parametric tests, age cannot be controlled for. Nevertheless, for reasons of transparency we shortly want to present the results: Mann-Whitney U-tests revealed no significant differences between the two Chinese samples in any of the ATAI scales, but significant gender differences in the ATAI Acceptance scale ($W = 33260$, $p = .009$), but not the Fear scale ($W = 26980$, $p = .153$).

Supplementary Table 2.

Mean values and standard deviations (in parentheses) of the two ATAI scales in the Chinese sample of the control survey.

	China (control survey)		
	Total (N = 82)	Male (n = 33)	Female (n = 49)
Acceptance	6.93 (1.63)	7.48 (1.58)	6.55 (1.57)
Fear	3.99 (1.93)	3.37 (1.86)	4.40 (1.88)

Note: Range of response scale: 0-10. The observed range of the ATAI Acceptance scale was 3-10 in this total sample, the observed range of the ATAI Fear scale was 0-10 in this total sample.

Correlations between the two ATAI scales and Items on the Willingness to use Specific AI Products

As can be seen in Supplementary Table 3, also in the control survey the ATAI Acceptance scale correlated moderately to strongly positively with the items on the willingness to use specific AI products. Moreover and in line with the results reported in the Main Manuscript, the correlations between the ATAI Fear scale and the items on the willingness to use specific AI products were weakly positive to moderately negative. None of the correlations differed significantly between the Chinese sample of the main study (Main Manuscript) and the Chinese sample of the control survey (all p-values of Fisher's z-tests > .180).

Supplementary Table 3.

Partial Spearman correlations between the two ATAI scales and the items on the willingness to use specific AI products in the Chinese sample of the control survey.

	China (control survey) (N = 82)	
	Acceptance	Fear
Self-driving cars	$r_s = .52$, $p < .001$	$r_s = -.04$, $p = .729$
Siri	$r_s = .20$, $p = .079$	$r_s = .02$, $p = .887$
Alexa	$r_s = .34$, $p = .002$	$r_s = -.20$, $p = .073$
Pepper	$r_s = .35$, $p = .001$	$r_s = -.11$, $p = .344$
Erica	$r_s = .37$, $p < .001$	$r_s = -.23$, $p = .037$

Note: All correlations are controlled for age.

Given that in the large Chinese sample of the main study (Main Manuscript), no gender differences were found in the correlations between the two ATAI scales and the items on the willingness to use specific AI products, we refrain from additionally reporting these correlations split by gender for the smaller sample of the control survey.

Variables about the Willingness to use Specific AI Products

Descriptive Statistics

Descriptive statistics of the items on the willingness to use specific AI products are presented in Supplementary Table 4 for the samples from Germany and China of the main study (Main Manuscript) as well as the Chinese sample of the control survey.

Supplementary Table 4.

Descriptive statistics on the items on the willingness to use specific AI products.

	Germany			China			China (control survey)		
	Total (N=461)	Males (n=116)	Females (n=345)	Total (N=413)	Males (n=268)	Females (n=145)	Total (N=82)	Males (n=33)	Females (n=49)
AI Products									
Self-driving cars	5.36 (2.79)	6.93 (2.51)	4.83 (2.68)	5.86 (2.81)	6.05 (2.79)	5.50 (2.82)	5.96 (2.78)	6.55 (2.54)	5.57 (2.89)
Siri	4.93 (3.40)	4.75 (3.61)	4.99 (3.34)	7.04 (2.67)	6.99 (2.69)	7.15 (2.65)	6.83 (2.95)	6.85 (3.08)	6.82 (2.88)
Alexa	3.42 (3.30)	3.74 (3.62)	3.31 (3.18)	6.34 (2.58)	6.50 (2.45)	6.03 (2.79)	6.28 (2.63)	6.73 (2.55)	5.98 (2.67)
Pepper	2.28 (2.67)	3.03 (3.16)	2.03 (2.43)	5.30 (2.95)	5.46 (2.89)	5.00 (3.03)	5.22 (2.93)	5.67 (2.73)	4.92 (3.04)
Erica	1.26 (2.09)	2.20 (2.66)	0.94 (1.76)	4.62 (3.11)	5.13 (3.03)	3.68 (3.05)	3.71 (2.97)	5.09 (3.25)	2.78 (2.37)

Note: Range of response scale: 0-10. The observed range of all items was 0-10 in the total German sample, 0-10 in the total Chinese sample of the main study (Main Manuscript), and 0-10 in the total Chinese sample of the control survey.

Variables about whether Participants actually Use(d) / Interact(ed) with Specific AI Products

In Supplementary Table 5, the number and percentages of participants who interact(ed) with / use(d) the five specific AI products are presented for the German and Chinese samples of the main study (Main Manuscript) as well as the Chinese sample of the control survey.

Supplementary Table 5.
Number and percentage (in parentheses) of participants stating to (have) use(d) / interact(ed) with specific AI products.

	Germany			China			China (control survey)		
	Total (N=461)	Males (n=116)	Females (n=345)	Total (N=413)	Males (n=268)	Females (n=145)	Total (N=82)	Males (n=33)	Females (n=49)
AI Products									
Self-driving cars	14 (3.04)	3 (2.59)	11 (3.19)	15 (3.63)	13 (4.85)	2 (1.38)	1 (1.22)	0 (0.00)	1 (2.04)
Siri	119 (25.81)	28 (24.14)	91 (26.38)	267 (64.65)	167 (62.31)	100 (68.97)	45 (54.88)	19 (57.58)	26 (53.06)
Alexa	14 (3.04)	5 (4.31)	9 (2.61)	12 (2.91)	8 (2.99)	4 (2.76)	1 (1.22)	0 (0.00)	1 (2.04)
Pepper	1 (0.22)	1 (0.86)	0 (0.00)	9 (2.18)	5 (1.87)	4 (2.76)	0 (0.00)	0 (0.00)	0 (0.00)
Erica	18 (3.90)	11 (9.48)	7 (2.03)	159 (38.50)	121 (45.15)	38 (26.21)	27 (32.93)	18 (54.55)	9 (18.37)

Note: The item on whether participants actually use(d) / interact(ed) with Erica was reformulated as Erica is not yet available for private use: “If Erica would be available for home use, I would use it.” Percentages are derived from column wise analyses.