Supplementary file

Exploring Trust and Literacy in Danish Engagement with Generative AI and their Relation to Science-Related Information Consumption

Online Appendix

Tables

Table S1. Full survey items and variable operationalizations

Variable Name	Abbreviation	Description	Scale	Survey Question (Operationalization)	Survey Question (Danish Translation)
TRUST_overall	TrustOverall	Overall trust in GenAI technologies	1–5 (Strongly disagree – Strongly agree) 99 (I don't know)	To which degree do you agree with the following statement: Overall, I can trust generative AI technologies.	I hvor høj grad er du enig eller uenig i det følgende udsagn: Overordnet set kan jeg stole på generative AI-teknologier.
TRUST_DIAL_responsive	TrustResp	Trust that GenAI responds to user needs	1–5 (Strongly disagree – Strongly agree) 99 (I don't know)	To which degree do you agree with the following statement: Generative AI technologies are responsive to users' information needs.	I hvor høj grad er du enig eller uenig i det følgende udsagn: Generative AI-teknologier er lydhøre over for brugernes informationsbehov.
TRUST_BEN_help	TrustHelp	Trust that GenAI would help users if needed	1–5 (Strongly disagree – Strongly agree) 99 (I don't know)	To which degree do you agree with the following statement: Generative AI technologies would do their best to help users if they needed help.	I hvor høj grad er du enig eller uenig i det følgende udsagn: Generative AI-teknologier ville gøre deres bedste for at hjælpe brugere, hvis de havde brug for hjælp.
TRUST_BEN_prioritize	TrustPrior	Trust that GenAI prioritizes user well-being	1–5 (Strongly disagree – Strongly agree)	To which degree do you agree with the following statement: Generative AI	I hvor høj grad er du enig eller uenig i det følgende udsagn: Generative AI-

			99 (I don’t know)	technologies prioritize users' well-being.	teknologier prioriterer brugernes velbefindende.
TRUST_COMP_competent	TrustComp	Trust in GenAI’s competence in its domain	1–5 (Strongly disagree – Strongly agree) 99 (I don’t know)	To which degree do you agree with the following statement: Generative AI technologies are competent in their area of expertise.	I hvor høj grad er du enig eller uenig i det følgende udsagn: Generative AI-teknologier er kompetente inden for deres ekspertiseområde.
TRUST_DIAL_welcome	TrustWelc	Trust that GenAI welcomes user engagement	1–5 (Strongly disagree – Strongly agree) 99 (I don’t know)	To which degree do you agree with the following statement: Generative AI technologies welcome users to engage with them.	I hvor høj grad er du enig eller uenig i det følgende udsagn: Generative AI-teknologier indbyder brugere til at interagere med dem.
TRUST_TRANS_comprehensible	TrustCompr	Trust that GenAI provides comprehensible information	1–5 (Strongly disagree – Strongly agree) 99 (I don’t know)	To which degree do you agree with the following statement: Generative AI technologies deliver comprehensible information.	I hvor høj grad er du enig eller uenig i det følgende udsagn: Generative AI-teknologier formidler forståelig information.
TRUST_COMP_reliable	TrustRel	Trust in GenAI’s reliability	1–5 (Strongly disagree – Strongly agree) 99 (I don’t know)	To which degree do you agree with the following statement: Generative AI technologies are reliable.	I hvor høj grad er du enig eller uenig i det følgende udsagn: Generative AI-teknologier er pålidelige.

LIT_AI1	LitAI1	Knowledge about AI learning from human interaction	1 (True) or 2 (False) 99 (I don't know)	Some AI technologies can learn from the humans who interact with them. (True)	Nogle AI-teknologier kan lære af de mennesker, der interagerer med dem. (Sandt)
Lit_AI2	LitAI2	Awareness that AI learns from training data	1 (True) or 2 (False) 99 (I don't know)	Some AI technologies learn by recognizing patterns in training data. (True)	Nogle AI-teknologier lærer ved at genkende mønstre i træningsdata. (Sandt)
Lit_AI3	LitAI3	Awareness that training examples shape AI outputs	1 (True) or 2 (False) 99 (I don't know)	The examples provided to the AI, when trained, affect its output. (True)	De eksempler, som AI'en er trænet ud fra, påvirker dens output. (Sandt)
Lit_AI4	LitAI4	Belief about whether all algorithms are AI	1 (True) or 2 (False) 99 (I don't know)	All algorithms are a form of an AI. (False)	Alle algoritmer er en form for AI. (Falsk)
Lit_AI5	LitAI5	Belief about whether AI decisions are unbiased	1 (True) or 2 (False) 99 (I don't know)	When AI is used to make decisions, it is always free of bias. (False)	Når AI bliver brugt til at tage beslutninger, er den altid uden bias. (Falsk)
Lit_GenAI1	LitGen1	Understanding that GenAI generates sentences word by word	1 (True) or 2 (False) 99 (I don't know)	When generative AIs (like ChatGPT) answer you, they calculate the probability of the next	Når generative AI'er (som ChatGPT) svarer dig, gør de det ved at beregne sandsynligheden for de næste ord et efter et for

				words one after another to form sentences. (True)	at danne sætninger. (Sandt)
Lit_GenAI2	LitGen2	Understanding that GenAI considers conversational context	1 (True) or 2 (False) 99 (I don't know)	When generative AIs (like ChatGPT) answer you, they consider the context of the conversation so far. (True)	Når generative AI'er (som ChatGPT) svarer dig, tager de konteksten af den foreløbige samtale i betragtning. (Sandt)
Lit_GenAI3	LitGen3	Belief that GenAI uses only trustworthy sources	1 (True) or 2 (False) 99 (I don't know)	Generative AIs (like ChatGPT) are based only on sources that are trustworthy and knowledgeable in the topic. (False)	Generative AI'er (som ChatGPT) er udelukkende baseret på troværdige og velinformerede kilder inden for det givne emne. (Falsk)
Lit_GenAI4	LitGen4	Belief that GenAI outputs are always true	1 (True) or 2 (False) 99 (I don't know)	The answers provided by generative AIs (like ChatGPT) are always true. (False)	De svar, som generative AI'er (som ChatGPT) leverer, er altid sande. (Falsk)
EXP_chatgpt	ExpChat	Experience with ChatGPT	1-6 (I am hearing about it here for the first time (1); I heard the name, but never used it, (2); I used it once or twice (3); I use it several times a	Have you ever heard of, or used, the following technologies? ChatGPT	Har du nogensinde hørt om eller brugt nedenstående teknologier? ChatGPT

			month (4); I use it several times a week (5); I use it daily (6)) 99 (I don't know)		
EXP_bard	ExpBard	Experience with Gemini (previousl Google Bard)	1-6 (I am hearing about it here for the first time (1); I heard the name, but never used it, (2); I used it once or twice (3); I use it several times a month (4); I use it several times a week (5); I use it daily (6)) 99 (I don't know)	Have you ever heard of, or used, the following technologies? Google Gemini (formerly Google Bard)	Har du nogensinde hørt om eller brugt nedenstående teknologier? Google Gemini (tidligere Google Bard)
EXP_bing	ExpBing	Experience with Microsoft Copilot (previously Bing Chat)	1-6 (I am hearing about it here for the first time (1); I heard the name, but never used it, (2); I used it once or twice (3); I use it several times a	Have you ever heard of, or used, the following technologies? Microsoft Copilot (previously Bing Chat)	Har du nogensinde hørt om eller brugt nedenstående teknologier? Microsoft Copilot (tidligere Bing Chat)

			month (4); I use it several times a week (5); I use it daily (6)) 99 (I don't know)		
EXP_perpelx	ExpPerpl	Experience with Perplexity AI	1-6 (I am hearing about it here for the first time (1); I heard the name, but never used it, (2); I used it once or twice (3); I use it several times a month (4); I use it several times a week (5); I use it daily (6)) 99 (I don't know)	Have you ever heard of, or used, the following technologies? Perplexity AI	Har du nogensinde hørt om eller brugt nedenstående teknologier? Perplexity AI
SCIENCENEWS1	SciNews1	Exposure to science and technology news	1–5 (Never – Once or more per day) 99 (I don't know)	How often do you encounter news stories about science and technology?	Hvor tit støder du på nyhedshistorier om videnskab og teknologi?
SCIENCENEWS2	SciNews2	Frequency of encountering professional	1–5 (Never – Once or more per day)	How often do you encounter professional content about science	Hvor tit støder du på professionelt indhold om videnskab og teknologi

		science content (e.g., experts, blogs)	99 (I don't know)	and technology (e.g., scientific websites or blogs by scientists)?	(fx videnskabelige hjemmesider eller blogs forfattet af videnskabsfolk)?
SCIENCENEWS3	SciNews3	Frequency of encountering user-generated science content (e.g., YouTube, Instagram)	1–5 (Never – Once or more per day) 99 (I don't know)	How often do you encounter user-generated content about science and technology (e.g. on YouTube or Instagram)?	Hvor tit støder du på brugergenereret indhold om videnskab og teknologi (fx på YouTube eller Instagram)?
AGE	Age	Respondent's age in years	Open numerical response	How old are you?	Hvor gammel er du?
GENDER	Gender	Respondent's self-identified gender	0 (Female) 1 (Male) 3 (Non-binary) 99 (Prefer not to say)	Which gender do you identify with?	Hvilket køn identificerer du dig som?
EDUCATION	Education	Highest level of completed education	1 (Did not attend school) 2 (Primary) 3 (Secondary)	What is the highest level of education you have completed?	Hvad er det højeste uddannelsesniveau, du har gennemført?

			4 (Higher education)		
REGION	Region	Respondent's place of residence within Denmark	1 (Capital Region) 2 (Zealand) 3 (Southern Denmark) 4 (Central Jutland) 5 (North Jutland)	In which region do you live?	Hvilken region bor du i?
LIVING	Living	Type of residential area	1 (Rural) 2 (Urban) 99 (Prefer not to say)	Which of the following best describes the area you live in?	Hvilken af nedenstående beskriver bedst det område, du bor i?

Note: The table includes all 29 variables used in the graphical model. A comprehensive overview of the ScI-AI survey design, including construct development as well as evidence on validity and reliability, is reported in: Greussing, E., Guenther, L., Baram-Tsabari, A., Dabran-Zivan, S., Jonas, E., Klein-Avraham, I., Taddicken, M., Agergaard, T. E., Beets, B., Brossard, D., Chakraborty, A., Fage-Butler, A., Huang, C.-J., Kankaria, S., Lo, Y.-Y., Middleton, L., Nielsen, K. H., Riedlinger, M., & Song, H. (2025). Exploring temporal and cross-national patterns: The use of generative AI in science-related information retrieval across seven countries. *Journal of Science Communication, 24*(2), A05. https://doi.org/10.22323/2.24020205.

Table S2. Overview of key measures

Descriptive overview of variables included in the analysis. For Likert-type trust items, percentages reflect distribution across the scale; for binary literacy items, the proportion of correct answers is shown. Reliability coefficient (Cronbach's α) is reported only for the multi-item trust construct.

Construct and reliability (if applicable)	**Variables**	**Scale**	**Type**	**Response Distribution**
Trust in Generative AI α = 0.855	TRUST_overall	1–5	Ordinal	36% (1–2) 39% (3) 18% (4–5) (7% don't know)
	TRUST_DIAL_responsive	1–5	Ordinal	22% (1–2) 25% (3) 26% (4–5) (27% don't know)
	TRUST_BEN_help	1–5	Ordinal	17% (1–2) 28% (3) 32% (4–5) (22% don't know)
	TRUST_BEN_prioritize	1–5	Ordinal	43% (1-2) 22% (3) 9% (4-5)

				(27% don't know)
	TRUST_COMP_competent	1–5	Ordinal	19% (1-2) 31% (3) 31% (4-5) (20% don't know)
	TRUST_DIAL_welcome	1–5	Ordinal	8% (1-2) 23% (3) 43% (4-5) (26% don't know)
	TRUST_TRANS_comprehensible	1–5	Ordinal	11% (1-2) 31% (3) 41% (4-5) (17% don't know)
	TRUST_COMP_reliable	1–5	Ordinal	37% (1-2) 33% (3) 14% (4-5) (16% don't know)
AI Literacy	LIT_AI1	True/False	Binary	69% correct (23% don't know)
	LIT_AI2	True/False	Binary	81% correct (17% don't know)

	LIT_AI3	True/False	Binary	72% correct (24% don't know)
	LIT_AI4	True/False	Binary	27% correct (35% don't know)
	LIT_AI5	True/False	Binary	42% correct (47% don't know)
Generative AI Literacy	LIT_Gen1	True/False	Binary	40% correct (46% don't know)
	LIT_Gen2	True/False	Binary	60% correct (30% don't know)
	LIT_Gen3	True/False	Binary	60% correct (28% don't know)
	LIT_Gen4	True/False	Binary	76% correct (20% don't know)
Experience	EXP_chatgpt	1–6	Ordinal	10% (first time) 40% (heard only) 48% (used ≥ once)
	EXP_bard	1–6	Ordinal	65% (first time) 24% (heard only) 6% (used ≥ once)
	EXP_bing	1–6	Ordinal	44% (first time) 31% (heard only) 19% (used ≥ once)
	EXP_perplex	1–6	Ordinal	81% (first time) 11% (heard only) 2% (used ≥ once)

Science-related Information Exposure	SCIENCENEWS1	1–5	Ordinal	5% (never) 11% (yearly) 32% (monthly) 30% (weekly) 9% (daily)
	SCIENCENEWS2	1–5	Ordinal	15% (never) 22% (yearly) 24% (monthly) 15% (weekly) 4% (daily)
	SCIENCENEWS3	1–5	Ordinal	22% (never) 15% (yearly) 20% (monthly) 16% (weekly) 6% (daily)
Background Variables	GENDER	Categorical	—	51% (female) 49% (male) 0% (other)
	AGE	Continuous	Discretized for analysis in	11% (18-24)

			such a way to preserve most of the Shannon information.	9% (25-29) 16% (30-39) 15% (40-49) 17% (50-59) 15% (60-69) 19% (70-)
	EDUCATION	1–4	Ordinal	0% (Did not attend school) 17% (Primary) 42% (Secondary) 40% (Higher education)
	REGION	1-5	Nominal	32% (Capital Region) 14% (Zealand) 21% (Southern Denmark) 23% (Central Jutland) 10% (North Jutland)
	LIVING	1-2	Nominal	44% (Rural) 55% (Urban)

Note. Given the ordinal and categorical nature of the survey variables, descriptive summaries are presented as response distributions rather than means and standard deviations. Cronbach's α is reported only for the multi-item trust construct, which was designed as a reflective scale. AI and generative AI literacy items are factual knowledge indicators capturing distinct aspects of AI understanding and include substantial "don't know"

responses; internal consistency metrics are therefore not appropriate. Science-related information exposure, experience, and background variables were measured using single-item ordinal or categorical indicators and are not subject to reliability analysis.

Table S3. Contingency table for TrustRel × LitGen3

The variables correspond to following questions: TrustRel — "Generative AI technologies are reliable" (1 = strongly disagree, 5 = strongly agree); LitGen3 — "Generative AIs (like ChatGPT) are based only on sources that are trustworthy and knowledgeable in the topic" (the correct answer is "false").

TrustRel	True (incorrect)	False (correct)	Don't know
1	2	47	17
2	6	104	15
3	22	109	46
4	24	30	11
5	6	1	0
99 (Don't know)	8	20	46

Simulated p-value (10,000 replicates) due to low expected cell counts: $\chi^2 = 148.02$, df = NA, $p < 0.0001$.

Table S4. Contingency table for TrustWelc × LitGen2

The variables correspond to the following questions: TrustWelc — "Generative AI technologies welcome users to engage with them" (1 = strongly disagree, 5 = strongly agree); LitGen2 — "When generative AIs (like ChatGPT) answer you, they consider the context of the conversation so far" (the correct answer is "true").

TrustWelc	True (correct)	False (incorrect)	Don't know
1	5	2	6
2	13	10	6
3	76	11	32
4	119	22	24
5	56	8	3
99 (Don't know)	42	6	73

Simulated p-value (10,000 replicates) due to low expected cell counts: $\chi^2 = 115.55$, df = NA, $p < 0.0001$.

Table S5. Contingency table for Gender × LitAI4

The variables correspond to following questions: Gender — "Which gender do you identify with?" (although additional options were offered in the survey, all respondents in our sample selected either female or male); LitAI4 — "All algorithms are a form of AI" (correct answer = "false").

Gender	True (incorrect)	False (correct)	Don't know
0 (Female)	112	47	106
1 (Male)	93	90	66

Simulated p-value (10,000 replicates) due to low expected cell counts: $\chi^2 = 24.085$, df = NA, $p < 0.0001$.

Table S6. Contingency table for Gender × SciNews3

Gender corresponds to the same survey item as in Table S5, while SciNews3 refers to the question: "How often do you encounter user-generated content about science and technology (e.g. on YouTube or Instagram)?"

Gender	Never	Several times the year	Several times the month	Several times the week	Once or twice per day	Don't know
0 (Female)	74	33	48	29	14	67
1 (Male)	37	46	57	53	20	36

Simulated p-value (10,000 replicates) due to low expected cell counts: $\chi^2 = 32.19$, df = NA, $p < 0.0001$.

Table S7. Contingency table for Age × LitAI5

Age is divided into four groups (18–32, 33–48, 49–65, and 66+ years). LitAI5 corresponds to the statement: "When AI is used to make decisions, it is always free of bias" (correct answer = "false").

Age Group	True (incorrect)	False (correct)	Don't know
18-32	37	83	13
33-48	49	62	16
49-65	70	48	15
66+	77	31	13

Simulated p-value (10,000 replicates) due to low expected cell counts: $\chi^2 = 43.551$, df = NA, $p < 0.0001$.