Faith in Reason: developing a survey measure of belief in the rationality of others

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abstract goes here

Introduction

What we believe about other people matters. It is not enough that others *are* trustworthy, reasonable or well intentioned. Successful coordination, as well as individual wellbeing, benefit when we also *perceive* others as trustworthy, reasonable or well intentioned.

Rationality

The nature of human reason is a perennial topic. Human rationality has been praised ("a thinking reed") and condemned ("TK") by different thinkers. The so-called 'Rationality Wars' (TK) centered around the definition of rationality that might reasonably used as a standard against which to judge human reasoning

Document prepared with RMarkdown (Allaire et al., 2020) and papaja (Aust & Barth, 2020). CRediT (Contributor Roles Taxonomy) autogenerated using Tenzing (Holcombe, Kovacs, Aust, & Aczel, 2020). Template is available here github.com/tomstafford/rmarkdown_apa

The authors made the following contributions. Tom Stafford: Conceptualization, Data curation, Formal analysis, Funding acquisition, Methodology, Visualization, Writing - original draft, Writing - review & editing; Junyan Zhu: Conceptualization, Data curation, Formal analysis, Methodology, Visualization, Writing - original draft, Writing - review & editing; Katharine Dommett: Conceptualization, Funding acquisition, Methodology, Writing - review & editing.

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An influential research programme is the heuristics and biases programme in psychology (TK), which uses the ideal of economic rationality as a standard to define actual human reasoning against. From this perspective human reasoning appears riddled with biases, but much work is done by the adoption of the standards of utility theory, formal logic and precise statistical reasoning.

Mercier and Sperber's argumentative theory of reasons provides an account TK TK cite my Frontiers paper, BBC commentary

Criteria of reason

So rationality is not a unitary concept, nor one around which there is consensus on the definition of, despite the way it is often evoked in discussion (and particularly in discussion of its negation e.g. "they are being irrational").

That said, core features of rationality have been proposed.

Dawson, N. V., & Gregory, F. (2009). Correspondence and coherence in science: A brief historical perspective. Judgment and decision making, 4(2), 126-133.

Insight. Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. Psychological review, 84(3), 231.

Influence / Gullibility. Altay, S., & Acerbi, A. (2023). People believe misinformation is a threat because they assume others are gullible. New Media & Society, 0(0). https://doi.org/10.1177/14614448231153379

Confidence in their abilities, friends' and family's abilities, and people's abilities to spot misinformation was measured with three statements adapted from Corbu et al. (2020) and the European Commission (2018): "I am able to identify news or information that misrepresent reality or is even false" "My friends and family are able to identify news or information that misrepresent reality or is even false" "People in

general are able to identify news or information that misrepresent reality or is even false"

- negatively conceived
- unidimensional: influence

Summary: so core features of rationality include coherance, correspondence, surceptibility to influence and insight into causes of ones actions. The extent to which these features form a coherent whole in the minds of the general public, and can meaningfully be asked about questions about is the primary topic of this paper.

Consequence of a lack of faith in reason

Second order effexcts of Disinfo. The generalised belief that others are well informed and reasonable is foundational to democracy. Recent concerns around misinformation may have second order effects, undermining democracy not by generating a misinformed populace, but by generating a populace that believes others are misunformed or unreasonable (Karpf, 2019). Alarmism around misinformation may potentially lower trust in institutions (Hoes, Clemm von Hohenberg, Gessler, Wojcieszak, & Qian, 2022), increase skepticism about democracy (Jungherr & Rauchfleisch, 2022; Nisbet, Mortenson, & Li, 2021), or foster calls of tighter media regulation (Lee, 2021).

Third person effect. There is an established literature of the perception of media influence on others (Perloff, 2002; Sun, Pan, & Shen, 2008). The 'third person effect', proposed by Davison (1983), is the phenomenon whereby many people believe others are more susceptible to influence than themselves. The third person effect was proposed as a root cause of censorship instincts and this has been confirmed by subsequent empricial investigations (Feng & Guo, 2012; Olshansky & Landrum, 2020).

Two caveats around the third person effect. Lyons (2022) has recently argued that - for many people - a third person effect of greater media influence on others rather than the self will be an accurate perception. Chung and Moon (2016) have argued that the driving factor in many so-called third person effects is the perception of others (as highly influenced), rather than the discrepancy with first person perception per se.

TK we directly measured the TPE!!

Generalised trust

social capital, dropped wallets, democracy

Method

Part of a larger survey

Sample

Item development

naive endorsement (item 1) correspondance (items 2 and 6) coherance (items 7 and 8) influence (items 3 and 5) insight into behaviour (4)

negative and positive (reverse coded)

See Table 1

Prereg

Reproducibility

Data availability: The analysis code and anonymised response data which support the results here are openly available https://github.com/tomstafford/faithinreason

This repository contains the files used to generate this report, which is in the form of a `reproducible manuscript`, a document which generates the analysis it reports, and so combines sharing, documenting and reporting an analysis in a single set of project files.

Results

Initial characterisations

Our data consist of 1875 participants who completed our online survey. 6 failed an attention check and were removed.

scale development / item selection

Scale analysis

The average score across these six items was 3.29, a summary statistic which suggests that the typical view of other people weighted to being slightly less, rather than slightly more, reasonable. The distribution is shown in Figure 5.

Correlation between Q17 and FIR

Table 1
Scale item wording

Item	Framing	Aspect	Wording
1	negative	general	The typical person is often irrational
2	negative	corresponence	People are often misinformed on important issues
3	negative	influence	People are too easily manipulated
4	negative	insight	People often act for reasons they don't understand or endorse
5	positive	influence	The average person can be persuaded to change their mind if given good reasons
6	positive	correspondence	Most people hold accurate views about the world
A	NA	ATTN CHECK	For this question please click the middle option, 'neutral', to show you are paying attention
7	positive	coherance	An individual's beliefs about the world are generally coherent
8	positive	coherance	People's behaviour is generally consistent with their beliefs

Note. Response was on a 7 point Likert scale from (1 = "Strong Disagree", 7 = "Strongly Agree"). Items 1,2,3 and 4 reverse coded so that for all items higher scores represented stronger faith in reason.

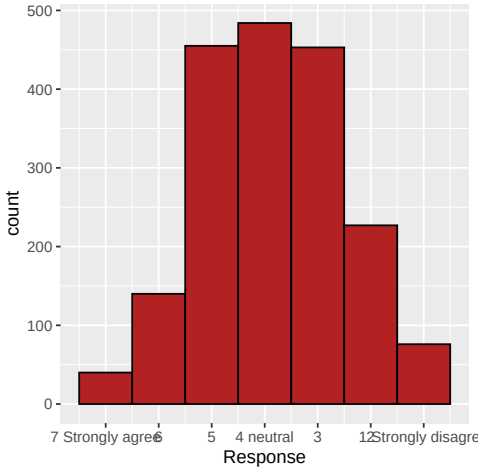

Figure 1. Histogram of responses to Item 1 ("The typical person is often irrational")

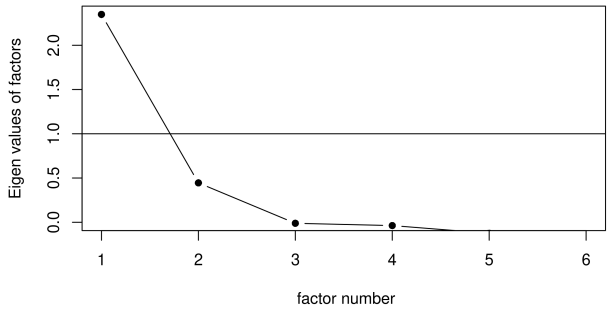

Figure 2. Factor analysis

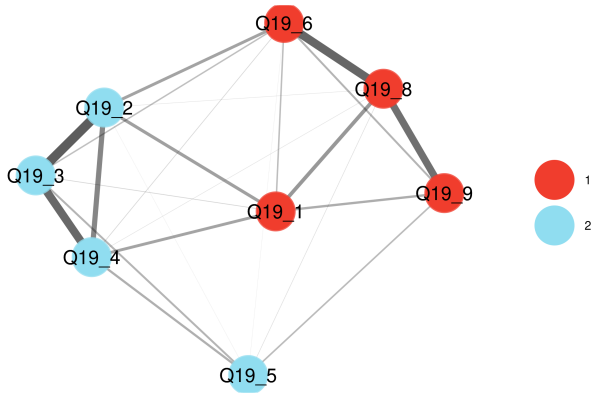

Figure 3. Exploratory Graph Analysis (EGA) of all items.

Table 2
Correlation Matrix

	mean	Q16	Q17
mean	1.00	-0.02	0.40
Q16	-0.02	1.00	0.26
Q17	0.40	0.26	1.00

TODO

Methods for assessing dimensionality cronbach's alpha + leave on out scree plots and EFA Mokken scale analysis EGA

Write up all of them?

Look at items and make sensible decisions. A single scale of 6 items and 2 subscales?

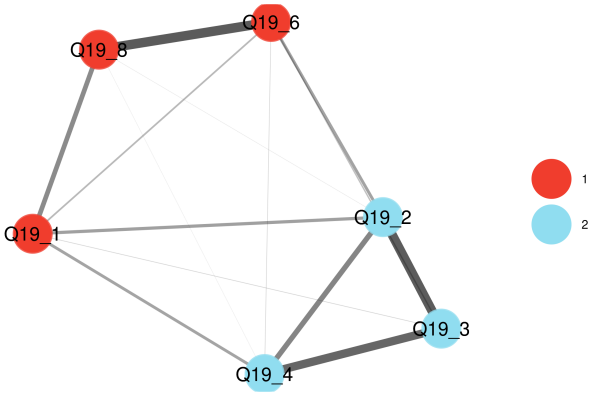

Figure 4. The items of the full ASRS scale displayed following Exploratory Graph Analysis (EGA).

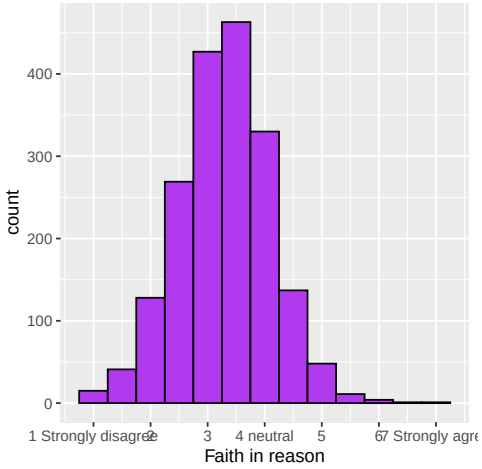

Figure 5. Histogram of mean of responses to all rationality items

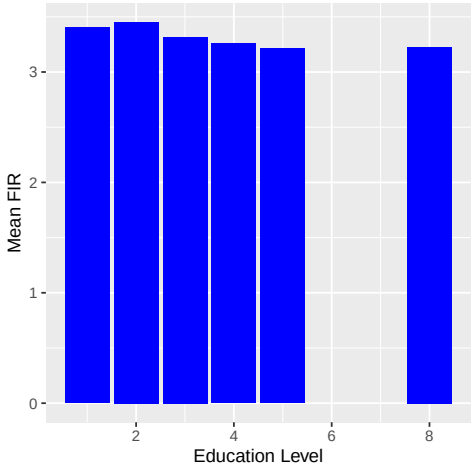

Figure 6. Education level and mean FIR

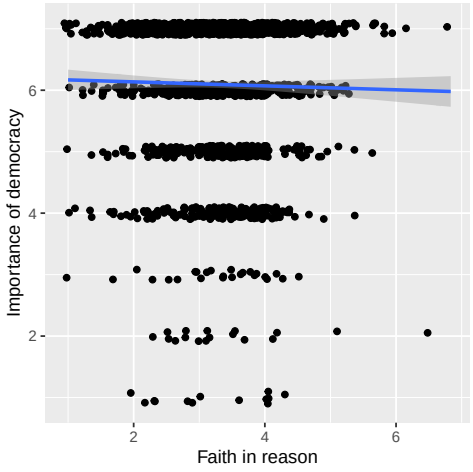

Figure 7. How important is it for you to live in a country that is governed democratically? and mean FIR

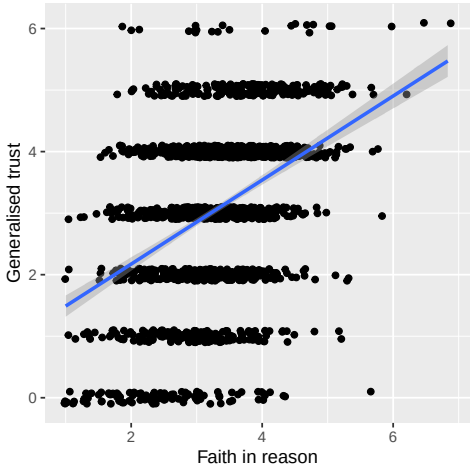

Figure 8. Generally speaking, would you say that most people can be trusted? and mean FIR

Junyan

We asked 8 questions about rationality in the survey. To determine the homogeneity and the fitness of the responses, I use Stata to perform Mokken scaling analysis. Testing all 8 rationality variables, the Mokken analysis yields one scale of 6 items. The items with low Loevinger's coefficient of homogeneity (H i), a criterion for scalability, are dropped. If the overall H<0.3, it means the items in the scale are unrelated, thus cannot be accepted to form a cumulative scale. As a rule of thumb, H i must be higher than 0.3 to be kept in the scale. Therefore, there are 6 fitting items in the scale: rationality_1, rationality_2, rationality_3, rationality_4, rationality_6, and rationality_7. The overall H coefficient is 0.41, indicating a medium-strong scalability. The individual critical values in the scale are all lower than 80, so the vari-

ables are double monotonous and there is no model violation. Code: loevh rationality_1 rationality_2 rationality_3 rationality_4 rationality_6 rationality_7, pair monotonicity(*) ppp pmm nipmatrix(minvi(0.03) siglevel(0.01)) We can thus generate a rationality variable by aggregating those six variables. Cronbach's α is 0.78, indicating an acceptable internal consistency.

Based on the statistical results, it looks to me that rationality_5 (The average person can be persuaded to change if given good reasons) is a real problem, it doesn't fit at all with other items

3 and must be removed. Rationality_8 (People's behaviour is generally consistent with their beliefs) has a poor fitness, but it is not as bad as rationality_5.

Next, I try to scale the remaining two items that are not included in the above scale – rationality_5 and rationality_8. As expected, these two items doesn't form a separate scale. Empirically, these items are excluded from the rationality measure by Mokken scaling likely because persuasion effect is not a robust indication of rationality?

Tom

Obviously 5 is weakly correlated. Omitting gives biggest boost to Cronbach's alpha, EEGnet suggests weakly related to all other items,

EEGnet suggets two commuities Scree plot of factors suggests border of unidimension and bidimensional mokken analysis suggests 1 domension, BUT if you remove items 5 and 9 you then find 2 dim3nsions at 0.35

Discussion

Normative models

arguably our scale doesn't touch on normative models of rationality as captured by T&K. Bias, prejudice

Deflationary accounts of misinformation (Mercier, 2020; Nyhan, 2020)

References

Allaire, J., Xie, Y., McPherson, J., Luraschi, J., Ushey, K., Atkins, A., … Iannone, R. (2020). *Rmarkdown: Dynamic documents for r*. Retrieved from https://github.com/rstudio/rmarkdown

Aust, F., & Barth, M. (2020). *papaja: Create APA manuscripts with R Markdown*. Retrieved from https://github.com/crsh/papaja

Chung, S., & Moon, S.-I. (2016). Is the third-person effect real? A critical examination of rationales, testing methods, and previous findings of the third-person effect on censorship attitudes. *Human Communication Research*, *42*(2), 312–337.

Davison, W. P. (1983). The third-person effect in communication. *Public Opinion Quarterly*, *47*(1), 1–15.

Feng, G. C., & Guo, S. Z. (2012). Support for censorship: A multilevel meta-analysis of the third-person effect. *Communication Reports*, *25*(1), 40–50.

Hoes, E., Clemm von Hohenberg, B., Gessler, T., Wojcieszak, M., & Qian, S. (2022). *The cure worse than the disease? How the media's attention to misinformation decreases trust*. PsyArXiv. https://doi.org/10.31234/osf.io/4m92p

Holcombe, A. O., Kovacs, M., Aust, F., & Aczel, B. (2020). Documenting contributions to scholarly articles using CRediT and tenzing. *PLoS One*, *15*(12), e0244611.

Jungherr, A., & Rauchfleisch, A. (2022). *Negative downstream effects of disinformation discourse: Evidence from the US*. SocArXiv.

Karpf, D. (2019). On digital disinformation and democratic myths. Retrieved from https://mediawell.ssrc.org/expert-reflections/on-digital-disinformation-and-democratic-myths/

Lee, T. (2021). How people perceive influence of fake news and why it matters. *Communication Quarterly*, *69*(4), 431–453.

Lyons, B. A. (2022). Why we should rethink the third-person effect: Disentangling bias and earned confidence using behavioral data. *Journal of Communication*, *72*(5), 565–577.

Mercier, H. (2020). *Not born yesterday*. Princeton: Princeton University Press.

Nisbet, E. C., Mortenson, C., & Li, Q. (2021). The presumed influence of election misinformation on others reduces our own satisfaction with democracy. *Harvard Kennedy School Misinformation Review*.

Nyhan, B. (2020). Facts and myths about misperceptions. *Journal of Economic Perspectives*, *34*(3), 220–236.

Olshansky, A., & Landrum, A. R. (2020). Third-person perceptions and calls for censorship of flat earth videos on YouTube. *Media and Communication*, *8*(2), 387–400.

Perloff, R. M. (2002). The third-person effect. In *Media effects* (pp. 499–516). Routledge.

Sun, Y., Pan, Z., & Shen, L. (2008). Understanding the third-person perception: Evidence from a meta-analysis. *Journal of Communication*, *58*(2), 280–300.