

Study Registration for the KPU Study Registry

The registration information for the study is given below. Each section can be expanded as needed.

This document is an updated version of the original preregistration submitted in September 2022. Text added in this version is in red. Deleted text from the original version is struck through like this.

1. The title or name of the experiment (for listing the experiment in the registry).

An evaluation of the effect of the habitual abstinence from consumption of meat and dairy in a quasi-experimental ganzfeld precognitive task.

2. The name, affiliation, and email address for the lead experimenter(s) for the study.

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- Dr Callum Cooper, University of Northampton

3. A short description or abstract of the purpose and design of the experiment.

I am conducting a precognitive remote viewing task with ganzfeld stimulation. My previous study – a questionnaire survey of 958 respondents – found that self-reported psi abilities are associated with reduced consumption of meat and dairy (and other dietary modifications). The primary aim of this experiment is to explore whether these reported differences in psi abilities according to meat and dairy consumption might also be present under laboratory conditions. My design is quasi-experimental in that participants will be allocated to groups according to whether their current diets are vegan, vegetarian, or omnivore.

The study is viewed as exploratory for two reasons: (a) to the best of my knowledge, this is the first study to test the effect of this aspect of diet in a psi task; and (b) limited resources mean that the study has a sub-optimal power for a confirmatory study.

I intend to replicate the ganzfeld precognitive remote viewing design previously employed by Roe et al. (2020). The experiment will test whether free-flowing imagery and thoughts expressed by a participant in the ganzfeld are a match for a target physical location (remote viewing), which is randomly-selected after the ganzfeld session is complete from four possible options (i.e. adopting a precognition design), the correspondence determined by an independent judge.

Before the session, the participant completes an online experiment questionnaire, consisting of items related to diet (five items); fasting (seven items); practice of a mental or physical discipline (two items); personal ESP ability (two items); experience of ESP (one item); belief in ESP (one item); creativity (one item); the 'Big Five' personality inventory BFI-10 (Rammstedt & John, 2007) incorporating

measures for extraversion, agreeableness, conscientiousness, neuroticism, and openness (ten items); demographic details (four items); and the highly sensitive person scale (twelve items) (Pluess et al., 2020) (this last for a separate study with Dr Malcolm Schofield, University of Derby).

For the session itself, the participant listens to recorded relaxation instructions, after which is played a recording of white or pink noise for thirty minutes whilst wearing an eye mask incorporating halved ping pong balls with a red light shining towards their face (or commercially-available 'ganzfeld goggles' to achieve a similar diffused red lighting effect). During this time, the participant is asked to report verbally all of the distinctive images, thoughts and feelings that occur to them throughout the session, recorded by me as the main researcher as that participant's 'mentation'. When this part of the session is over, I review the mentation with the participant to allow them to add to it or correct any errors. After this is done, the mentation is considered final and is not subject to any alteration.

In order to minimise the potential for experimenter fraud, the following sequence of events then takes place. Firstly, I email a photo-scan of the mentation sheet to my own email account and to both of my supervisors. Secondly, I email another person who is assisting with the experiment (cc-ing my supervisors) to ask them to select at random a target set and target location from a pool of twenty Google Earth images, divided into five sets of four distinct locations. This person (who is blind to the mentation) generates two random numbers for this purpose, and replies to my email with this information, cc-ing my supervisors. This sequence of three emails are timestamped by the University of Northampton email server and so the chronology of the finalisation of the mentation before the selection of the target location cannot be faked. This procedure also ensures that no one person acting alone is able fraudulently to modify the results without detection.

The participant and I then review the selected location, and discuss possible correspondences between the mentation and the location.

After the experiment, the selected set of four locations and the scanned mentation sheet are sent to an independent judge for them to determine which of the four possible locations corresponds best with the mentation and to rate each of the four locations on a 'similarity scale' of 0-99.

4. A statement or list of the specific hypothesis or hypotheses being tested, and whether each hypothesis is confirmatory or exploratory. (confirm/explore guidance)

H1: Exploratory. Performance of all participants will be better than mean chance expectation (MCE) as measured by a sum of ranks analysis of the independent judge's ranking of the target. [1]

H2: Exploratory. Participants with vegan and vegetarian diets will perform better than those with omnivorous diets, as measured by z-scores of the independent judge's similarity ratings for the target location. [2]

H2a: Exploratory. Participants with vegan diets will perform better than those with vegetarian diets, as measured by z-scores of the independent judge's similarity ratings for the target location.

H3: Exploratory. Participants whose diets consist of more wholefoods will perform better than those whose diets do not, as measured by z-scores of the independent judge's similarity ratings for the target location.

H4: Exploratory. Participants who habitually avoid added sugars will perform better than those who do not, as measured by z-scores of the independent judge's similarity ratings for the target location.

H5: Exploratory. Participants who habitually abstain from alcohol will perform better than those who do not, as measured by z-scores of the independent judge's similarity ratings for the target location.

H6: Exploratory. Participants who currently engage in fasting will perform better than those who do not, as measured by z-scores of the independent judge's similarity ratings for the target location.

H7: Exploratory. There will be a linear relationship between the distance in time of a participant's last meal and their performance, with the longer the 'fast', the better the performance, as measured by z-scores of the independent judge's similarity ratings for the target location. [3]

Notes:

1. In free response ESP experiments at the University of Northampton, sum of ranks has always been our primary outcome measure in preference to direct hits analysis, e.g. Roe & Flint, 2007; Roe et al., 2020. This approach has been found to yield more sensitive results (albeit to a nonsignificant degree) in a meta-analytical comparison of ganzfeld experiments (Milton, 1997). ~~The test used to compare samples will be the Mann Whitney U test.~~ **The method of analysis for this is detailed in Palmer (1986, p. 148). (This change has been made because a Mann Whitney U test is not applicable to a sum of ranks analysis. This was an error in the original version of the preregistration document.)**
2. Z-scores are calculated by subtracting the mean of all ratings (target and decoys) from the target similarity rating and dividing this by the standard deviation for all ratings (cf. Palmer, 1986). Samples will be compared using an independent t-test. Although a number of these hypotheses are directional, all analyses will be conservatively set as 2-tailed.
3. This correlation will be tested using the non-parametric analytical technique Spearman's Rho.

5. The planned number of participants and the number of trials per participant.

~~Forty participants, each participating in a single trial. We aim to recruit approximately equal numbers of vegans/vegetarians (ideally ten of each, i.e. twenty participants in total) and omnivores (twenty participants).~~

Eighty participants, each participating in a single trial. We aim to recruit equal numbers of vegans/vegetarians (40 participants) and meat-eaters (40 participants).

The reason for expanding this study by doubling our sample size is because of a recommendation received during peer review from a journal that rejected this study for publication due to its underpowered sample size.

Our original study incorporated 40 participants (20 vegans/vegetarians and 20 meat-eaters). These preliminary results are provided in full in Chapter 9 of Daw's PhD thesis (<https://pure.northampton.ac.uk/en/studentTheses/an-empirical-exploration-of-the-relationship-between-spirituality>) and summarised below in Appendix A.

6. A statement that the registration is submitted prior to testing the first participant, or indicating the number of participants tested when the registration (or revision to the registration) was submitted.

~~This registration is submitted prior to testing the first participant.~~

The original version of this registration was submitted prior to testing the first participant. This version of this registration is submitted prior to testing the 41st participant.

The following additional information is needed for studies that include confirmatory analyses:

7. Specification of all analysis decisions that could affect the confirmatory results, including: the specific statistical test for each confirmatory hypothesis, whether the test is one-sided or two-sided, the criterion for acceptable evidence, any transformations or adjustments to the data, any criteria for excluding or deleting data, and any corrections for multiple analyses. Checklists and examples for registering classical analyses, permutation and bootstrap analyses, Bayesian analyses, and classification analyses are provided in the statistics registration document. (This information can be included in section 4 above for simple experiments.)

See section 4.

8. The power analysis or other justification for the number of participants and trials.

A power analysis using G*Power 3.1 (Faul et al., 2009) shows that a total of one hundred and fifty-six participants are required to achieve a power of .8 based on the use of two participant groups for the primary hypothesis (vegan/vegetarian and omnivore) and the .4 effect size found by Roe et al. (2020). However, this high number of participants is prohibitive due to the limited resources available both in terms of time and money available.

In any case, the use of such a high number of participants risks sacrificing the quality of the experiment through potential exhaustion on the part of the research team involved (mainly me as primary researcher, but also others who will be assisting me) and the need to widen the pool of participants to those who may be less than keen to participate.

Hence, in keeping with previous similar experiments at the University of Northampton ganzfeld laboratory (including Roe et al.'s study), I aim to recruit forty participants, comprised of twenty omnivores, and twenty vegans and vegetarians

(ideally ten vegans and ten vegetarians), each participating in a single trial. This is one reason why this study's hypotheses are exploratory.

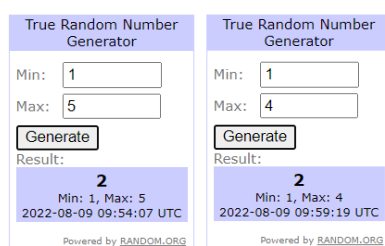
In addition, in order to allow for future power calculations in any subsequent confirmatory studies, reporting outcomes in terms of effect sizes will be as important as null hypothesis statistical testing (after Cumming, 2011).

As explained in section 5, the sample size has been increased to 80 participants in total in order to expand the original study. The original discussion above has been left as background/contextual information.

9. The methods for randomization in the experiment. If a pseudorandom generator is used, specify how and when the seed(s) will be obtained.

Randomisation for the selection of target locations is achieved using an online true random number generator: <https://www.random.org/>.

The person assisting the experiment (either one of my supervisors or a fellow PhD candidate, by prearrangement for each trial **or another qualified individual**) will generate two numbers, the first with a range of 1-5 to select the target set, and the second with a range of 1-4 to select the location from within that set. Two screenshots, one for each of these generated random numbers will be included in the email reply (see step 10 of the experimental procedure below), for example:



10. A detailed description of the experimental procedure.

Full ethical approval for this study has been provided by the University of Northampton's Research Ethics Committee (ref.: ETH2122-0096).

1. I will recruit and book appointments for participants individually, sending them the participant information sheet and consent forms for review.
2. On arrival I will meet the participant, introduce them to the task, and give them an opportunity to ask questions or discuss their own personal experiences that might have motivated their participation.
3. I will show them the laboratory and ganzfeld equipment, and ask them to complete and sign the experiment consent form.
4. I will ask the participant to complete the experiment questionnaire (hosted on JISC Online Surveys, <https://www.onlinesurveys.ac.uk/>), which contains items related to the following:
 - a. Dietary choices (meat and dairy, wholefoods, added sugar, and alcohol consumption).
 - b. Fasting.
 - c. Last time of eating.
 - d. Practice of a mental or physical discipline.

- e. Personal ESP ability.
 - f. Personal experience of ESP.
 - g. Belief in ESP.
 - h. The Big Five personality traits (extraversion, agreeableness, conscientiousness, neuroticism, and openness) (BFI-10, Rammstedt & John, 2007).
 - i. Creativity.
 - j. Highly sensitive person measure (the HSP-12 scale, developed by Pluess et al., 2020, for use in a separate study with Dr Malcolm Schofield, University of Derby).
 - k. Demographic information.
5. I will ask them to make themselves comfortable in a reclining armchair, place eye shields (incorporating halved ping pong balls) over their eyes with fitted headphones over which white or pink noise will be played. An LED red light will be shone in their face from a distance of approximately 1m, giving a warm and relatively uniform visual field. (For the second half of the study, we may use commercially-available ganzfeld equipment to achieve the same effect.)
 6. I will play them a recording consisting of progressive relaxation instructions involving tensing and releasing muscles in different parts of the body and noticing the difference in order to enable the participant to relieve muscular tension. Toward the end of the relaxation instructions, the participants will be advised as follows:

You are now in a very relaxed, peaceful state. While you are in this relaxed state you find that from time to time you will experience images, sounds and bodily sensations. This is perfectly natural, as your unconscious produces its own imagery when there isn't much outside stimulation, much like a daydream or when drifting off to sleep. Just like drifting off to sleep, don't try and force this process, just relax and let things happen naturally — the images will appear at the appropriate time, and they will be related to the target location that you will get to visit later. When the impressions do occur, think out loud. Report all the distinctive images, thoughts and feelings you have as they occur, and continue to share them throughout the session.

This part of the process lasts about seven minutes.
 7. During the ganzfeld period, I will either remain with the participant in the sound attenuated laboratory or will be in the room next door and in audio-visual contact using a baby monitor (this second technique may allow the participant more personal space in what otherwise might be cramped conditions; however, we have not yet piloted this). Either way, I will make a record of the participant's ongoing commentary using a ganzfeld mentation sheet. This part of the process lasts thirty minutes.
 8. Once the session is over, I will review the mentation with the participant and give them an opportunity to add to it or correct any errors.

9. I will then note the completion time on the mentation sheet. The sheet will be signed by both the participant and me. A photo-scan will be made of the sheet at this point and sent by email to my supervisors and me for later use by the independent judge. This email timestamps the mentation at a point before the target location is selected and ensures that from this point onward, no changes at all can be made to the mentation sheet.
10. I will then email a second experimenter located elsewhere to ask them to select a target set (one of five) and a target location from within that set (one of four) using the online true random number generator at <https://www.random.org/>. (NB This person is not sent the mentation sheet.) They will send these two numbers to me and my supervisors by replying to my email, including two screenshots for each of the random numbers, thereby timestamping the selection of the target location after the mentation is finalised (see my response to preregistration question 9 above).
11. The participant will then view the target location with me, and I will encourage them to look for correspondences between their mentation and the target site, even where these are relatively tenuous. Care is taken to ensure that participants spend some time engaging with their intended precognitive target.
12. Before the participant departs, I will remind them of their right to withdraw for up to seven days following the experiment.
13. At some stage after the experiment, an independent judge will rank the four possible target locations in the selected target set against the photo-scanned mentation sheet for closeness of correspondence and provide each of the four with a similarity rating (0-99). The judge will not at any stage have knowledge of which location was selected as the correct target.

Appendix A. Summary of results from initial study.

The sum of ranks and hit rate (i.e. rank first) results are provided for the initial sample as a whole ($N = 40$) in Table 1, meat eaters and vegans/vegetarians (veg*ans) in Table 2, and for progressive abstention from eating animal products in Table 3.

Results are provided in full and in context in Chapter 9 of Daw's PhD thesis (<https://pure.northampton.ac.uk/en/studentTheses/an-empirical-exploration-of-the-relationship-between-spirituality>).

Table 1.

Ranks for Target Locations for All Participants

Dietary Subsample	N	First	Second	Third	Fourth	Sum of Ranks	Z-score	p	r
All	40	11 (28%)	14 (35%)	9 (23%)	6 (15%)	90	1.34	.180	0.21

Note. r = effect size, calculated using $z/\sqrt{n}$.

Table 2.*Ranks for Target Locations for Meat Eaters and Veg*ans*

Dietary Subsample	n	First	Second	Third	Fourth	Sum of Ranks	Z-score	p	r 95% CI
Meat eaters	20	3 (15%)	8 (40%)	5 (25%)	4 (20%)	50	0.10	.920	0.02 -
Veg*ans	20	8 (40%)	6 (30%)	4 (20%)	2 (10%)	40	1.90	.058	0.42 [-.03, .73]

Note. CI = confidence interval, calculated using the *VassarStats* website (Lowry, 2023). Other abbreviations and explanations are provided in the note for Table 1.

Table 3.*Ranks for Target Locations for Dietary Groupings*

Dietary Subsample	n	First	Second	Third	Fourth	Sum of Ranks	Z-score	p	r
Omnivore ^A	9	1 (11%)	4 (44%)	2 (22%)	2 (22%)	23	0	1.0	0
Meat-reducer ^B	11	2 (18%)	4 (36%)	3 (27%)	2 (18%)	27	0	1.0	0
Vegetarian ^C	5	1 (20%)	4 (80%)	0 (0%)	0 (0%)	9	1.20	.230	0.54
Vegan ^D	15	7 (47%)	2 (13%)	4 (27%)	2 (13%)	31	1.39	.164	0.36

Note. Abbreviations and explanations are provided in the note for Table 1. ^{A, B, C, D} = these categories correspond to responses to item D1 of the experiment questionnaire respectively of *g* (omnivore), *d, e, f* (meat-reducer); *b, c* (vegetarian), and *a* (vegan).

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