KPU Registry ID Number: 1038 **Date submitted: 22nd Sept 2017**

Study Registration for the KPU Study Registry

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

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

Individual difference correlates of lottery success.

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

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

Six factors have emerged as being significantly related to psi performance, based on an extensive meta-analysis of nearly a century of research on individual difference correlates in forced-choice precognition experiments (Zdrenka & Wilson, 2017).

This project attempts to apply these findings in a real-world setting to test both the internal and external validity of these findings. The lottery is ideal as it presents an unpredictable future event requiring individuals to pick from a limited number of options (i.e. you can only pick numbers between 1-40). In other words, it is a real-world example of a forced-choice precognition experiment.

Overall, the aim of this project is to investigate whether individual differences in personality or cognition are able to predict performance in New Zealand's weekly lottery draws.

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

Confirmatory Hypotheses

H1. Luck belief* will be significantly correlated with success in picking lottery numbers.
H2. Openness to Experience* will be significantly correlated with success in picking lottery numbers.

H3. Belief in Psi* will be significantly correlated with success in picking lottery numbers.
H4. Extraversion* will be significantly correlated with success in picking lottery numbers.
H5. Time Belief As Dynamic* will be significantly correlated with success in picking lottery numbers.

Exploratory Hypotheses

H6. Luck belief will be significantly correlated with monetary reward in the lottery.
H7. Openness to Experience will be significantly correlated with monetary reward in the lottery.
H8. Belief in Psi will be significantly correlated with monetary reward in the lottery.
H9. Extraversion will be significantly correlated with monetary reward in the lottery.
H10. Time Belief As Dynamic will be significantly correlated with monetary reward in the lottery.

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

The plan is to recruit at least 725 participants by requesting participation via a weekly column in the New Zealand Listener magazine (New Zealand's most popular current affairs magazine). Participants will submit their lottery ticket numbers in advance for a total of 8 weeks (i.e. 8 trials for each participant).

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.

Prior to registration, recruitment had already begun and 6 participants signing on. None of these participants have yet to complete the lottery portion of the study (this will begin for all participants in October 2017).

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.)

“Success in picking numbers” is specifically the proportion of numbers a participant chose correctly out of the total numbers of guesses that they made.

“Monetary reward in the lottery” is specifically the total amount of money won by a participant over the 8 weeks.

For the confirmatory analyses, the data for all participants who complete at least one week (i.e. one trial) will be included. However, for the exploratory analyses, only the participants who complete all 8 weeks will be included.

Since there are only a few (5) planned comparisons, no corrections will be made for multiple analyses. However, multiple analyses will be taken into consideration, such that a result with $p \leq .01$ will be considered as a significant outcome and a result between .05 and .01 will be considered suggestive for the confirmatory analyses.

The statistical tests used will be correlation coefficients (Pearson’s *r*), with the participant as the unit of analysis.

The p-value for each correlation will be generated using 10,000 randomised (with replacement) simulations of the experiment, using all possible lottery numbers that could have been selected. The lottery targets will be randomly selected for the simulations and the predictions and psychological measures for the participants will be kept fixed. Randomisation tests are being used to address the potential non-independence of the data; it is not being used to adjust for multiple analyses (as mentioned above).

All of these tests will be two-sided using the significance criteria of .05.

No transformations or adjustments to the data will be made unless the numbers submitted do not match the participant’s ticket image, in which case it will be manually corrected to match the ticket. Since submission of the ticket image is optional, the numbers will only be checked with the ticket image if the participant submitted a ticket image.

Data will be excluded if participants’ do not enter their numbers correctly or fail to provide an email address. Specifically, all data from a single participant will be excluded if an email address is not provided, whereas relevant trial/s will be excluded if incorrect numbers were entered (even if other numbers within that trial were valid).

Incorrect numbers are those that are greater than 40, zero, missing, or use invalid characters (such as letters).

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

A power analysis using a power of .90, significance of .05, and an effect size of .12 (the effect size is in the lower half of most of the confidence intervals found in Zdrenka & Wilson’s (2017) meta-analysis, which is necessary given that mean effect sizes have a high likelihood of overestimating the true effect) indicated that at least 725 participants would be required in this study to reach adequate power.

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

The public lottery uses a ball system, of which all the numbers (written on balls) bounce around in a machine before randomly landing one-by-one in a slot to determine the lotto numbers.

This process is streamed live on television, which means that the numbers remain independent from researchers (as they are unable to interfere with them). But most importantly, millions of people demand fair results, so the organisers have a huge responsibility and incentive to make sure they use truly randomised methods.

10. A detailed description of the experimental procedure.

Firstly, participants will complete a questionnaire (taking approximately 30-45 mins) of personality/individual difference measures including the big 5 personality traits, magical ideation, belief in psi, transliminality, beliefs about luck, and notions of time.

Following this, they will receive a link to a page where they will provide their lottery numbers (one line of self-selected numbers only) for the upcoming week, starting October 7th 2017. They can do this in their own time, any time before the Saturday draw. Participants will need to enter their numbers on the page and enter their email address (taking less than 5 minutes), with an optional choice to attach a picture of their ticket.

All lottery number guesses and survey data will be sent to Marc Wilson prior to each Saturday draw, in order to prevent the possibility of experimenter fraud accounting for the results (as the lottery number guesses can be verified with the data sent to Marc Wilson, to ensure that no changes have been made).

Once the Saturday draw results come out, the survey data will be exported onto excel and matched with the numbers from the lotto draw results.

On Sunday, participants will receive an email letting them know the total number(s) they got correct, their total money won (from NZ Lotto), and whether they were one the participants randomly selected from that week's draw to receive a $20 voucher (2 participants will be randomly drawn).

This process will repeat itself for 8 weeks, with the final draw being on 25th November 2017.

All participants who submit a lotto ticket for one week will be entered into a draw to win one of two $20 gift vouchers (MTA/Grocery/Movies) for that week. So in total, 16 x $20 gift vouchers will be randomly given to participants over the 8 weeks.

* note below

Luck belief. Luck belief is measured using a five-item subscale in the QBL (Luke, Delanoy, & Sherwood's, 2003). It refers to the belief that luck is primarily controllable, and participants who score high in this belief also view luck as internal, stable, and nonrandom.

Openness to Experience. Openness to experience is measured using the two-item subscale in the TIPI (Gosling, Rentfrow, & Swann, 2003).

Belief in Psi. Belief in psi is measured using the exact question from Bem's (2011) study, "Do you believe that ESP exists?"

Extraversion. Extraversion is measured using the two-item subscale in the TIPI (Gosling, Rentfrow, & Swann, 2003).

Time Belief as Dynamic. Time belief as dynamic is measured using the seven-item subscale in the TMT (Knapp & Garbutt, 1958).

References

Bem, D. J. (2011). Feeling the future: Experimental evidence for anomalous retroactive in uences on cognition and affect. *Journal of Personality and Social Psychology*, *100*, 407–425. doi:10.1037/a0021524

Gosling, S. D., Rentfrow, P. J., & Swann, W. B., Jr. (2003). A Very Brief Measure of the Big Five Personality Domains. *Journal of Research in Personality, 37, 504-528.*

Knapp, R. H., & Garbutt, J. T. (1958). Time imagery and the achievement motive. *Journal of Personality*, *26*, 426– 434. doi:10.1111/j.1467-6494.1958.tb01597

Luke, D. P., Delanoy, D., & Sherwood, S. J. (2003). *Questionnaire of beliefs about luck*. Unpublished instrument, University of Northampton, UK.

Zdrenka, M., Wilson, M. S. (2017). Individual Difference Correlates of Psi Performance in Forced-Choice Precognition Experiments: A Meta-Analysis (1945-2016). *Journal of Parapsychology, 81,* 9-30.