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).

Exploring the relationship between sensory processing sensitivity (SPS) and anomalous experiences.

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.

This project will explore possible links between Sensory Processing Sensitivity (SPS) and anomalous experiences.

Sensory Processing Sensitivity (SPS) is a temperament trait identified by deeper processing of information, greater empathy and emotional reactivity, and being able to sense subtleties in the environment (Greven et al., 2019). Aron and Aron (1997) devised a questionnaire called the Highly Sensitive Person Scale (HSPS) to measure high sensitivity and the Highly Sensitive Person (HSP) is used to describe an individual who experiences SPS. There is some promising initial research in parapsychology to suggest that highly sensitive persons (HSPs) may be more likely to experience anomalous experiences (AEs). In one of the few parapsychological studies to use the HSPS, Irwin et al. (2015) found an increased proneness to AEs on the Survey of Anomalous Experiences in HSPs, and the authors recommended that further research was needed to explore whether there was a relationship with SPS and sensitivity to psi. In another study using the HSPS, Jonsson et al. (2014) found that HSPs had higher scores for absorption and mystical experiences. Findings from these preliminary studies suggest that further research is warranted to establish what, if any, is the relationship between AEs and SPS. We also do not know how the subscales of the HSPS might factor in any relationship between AEs and SPS. Furthermore, no studies have used a measure of AEs that includes paranormal belief, abilities, and experiences to explore the relationship with SPS. As such, this study will involve an online survey including measures of SPS, boundary-thinness and transliminality as independent variables and a measure of AEs as the dependent variable to predict whether sensitivity/personality variables contribute significantly to reporting of anomalous experiences, beliefs, and abilities.

Materials

The study will present the following four measures using Qualtrics software to present material online and a standard keyboard for entering responses. The four measures are: the Highly Sensitive Person Scale – Brief Version (HSP-12; Pluess et el., 2020), the Anomalous Experiences Inventory (AEI; Gallagher, Kumar, & Pekala, 1994), the Revised Transliminality Scale (RTS; Lange, Thalbourne, Houran, & Storm, 2000) and the Boundary Questionnaire (BQ-18), Short-Form (Hartmann, Kunzendorf, Rosen & Grace, 2001).

The HSP-12 is a 12-item self-report measure of SPS, created by selecting items from the original 27-item HSPS (Aron & Aron, 1997) that loaded strongly on the bifactor structure detected in previous studies (Lionetti et al., 2018). Each of the 12 comprising items is rated on a 7-point Likert scale. The items are then averaged to obtain an individual's total mean score. Based on their scores, people can be categorised into one of three groups along the sensitivity continuum: low, medium and high sensitivity. The HSP-12 has shown good psychometric properties and correlation between the two scales is very high, with r = .94 (Pluess et al., 2020).

The AEI is a 70-item questionnaire designed to investigate unusual, anomalous and paranormal experiences, beliefs and abilities, as well as including questions relating to drug and alcohol use and fear of the paranormal (Gallagher et al., 1994). It is scored by answering True or False to a number of statements. It has numerous subscales: anomalous/paranormal experiences (29 items), anomalous/paranormal ability (16 items), anomalous/paranormal belief (12 items), paranormal fear (6 items), and use of drugs/alcohol (7 items) and adequate psychometric properties.

The RTS is a 17-item transliminality scale that corrects age and gender biases in the original scale, is unidimensional by a Rasch, and has a reliability of .82 (Lange et al., 2000). The scale defines a probabilistic hierarchy of items that address magical ideation, mystical experience, absorption, hyperaesthesia, manic experience, dream interpretation, and fantasy proneness.

The BQ-18 requires participants to rate 18 item statements from 0 to 4 (0 indicates "not at all true of me"; 4 indicates "very true of me") relating to boundary statements. An example of a 'thick boundaried statement' is: "A good organization is one in which all the lines of responsibility are precise and clearly established". An example of a 'thin boundaried statement' is: "My feelings blend into one another". The BQ-18 total score equals the sum of all the items, with higher scores indicating boundary thinness. This shorter version has demonstrated an alpha reliability of .93 and test-retest reliability of .77 (Hartmann et al., 2001).

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

Exploratory Hypotheses

There are three exploratory hypotheses:

H1 – Explore the possible link between participant scores on sensitivity measures (i.e., HSP-12, BQ-18, and RTS) and scores on the AEI

H2 – Explore whether the possible link between participant scores on sensitivity measures (i.e., HSP-12, BQ-18, and RTS) and scores on the AEI are moderated by participant demographics (e.g., age, gender)

H3 - Explore whether the possible link between participant scores on sensitivity measures (i.e., HSP-12, BQ-18, and RTS) and scores on the AEI are moderated by a participant's spiritual practices

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

The survey will close once 200 participants have completed all components of the study. Each participant will be required to complete the survey only once.

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 study has yet to be started.

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.)**

Only data from participants who complete all components of the study will be included in the main analyses. Statistics tests will be 2-tailed and utilise a p value of 0.05.

The study will use linear multiple regression models utilising a forced entry approach (i.e., with all predictors forced into the model simultaneously) to explore whether scores on sensitivity measures (i.e., HSP-12, BQ-18, and RTS) will significantly predict scores on the AEI and assess whether these are moderated by demographics or spiritual practice.

It will also use correlational measures to assess possible relationships between scores on the HSP-12 (and subscales), RTS, BQ-18 with the AEI (and subscales).

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

Prior research assessing differences in sensitivity (i.e., SPS) have utilised sample sizes from 96 (Aron et al., 2005) up to 201 (Liss et al., 2008). Hence, to ensure sufficient power this study will remain active until 200 participants have completed all components.

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 study will use the Qualtrics software presentation/capture platform. This software uses an inbuilt Mersenne Twister pseudorandom number generator (PRNG), with the proviso that the PRNG evenly select the pathways. The PRNG uses the Unix timestamp, counted in milliseconds, as the seed for the random number generator.

10. A detailed description of the experimental procedure.

Participants will complete the survey online at a time and place convenient to them. The survey will begin by presenting participants with an information screen outlining what they will be required to do. This will be followed by a consent screen where participants provide their informed consent to participate. The next screen will ask participants to enter information regarding a selection of demographic details (e.g., age, gender, ethnicity, spiritual practice, experience in martial arts) and this will be followed by a selection of 8 qualitative questions asking participants about their potential experiences. This will be followed by presentation of the four main questionnaires (i.e., HSPS-12, AEI, RTS and BQ-18) in a counterbalanced. Once all questionnaires have been completed participants will be fully informed about the nature and purpose of the study and provided with contact details for the principal investigator should they need to make any enquiries. Participants will also have the opportunity to say whether they would like to take part in later studies (i.e., Study two and three) and asked to provide their contact details.

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