Predictors of Conspiracy Theory Belief: Psychopathological, Socio-Cognitive, and Demographic factors

Neophytos Georgiou

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ABSTRACT

Belief in conspiracy theories (CTs) has been associated with a range of negative health, civic, and social outcomes. As a result, much of the existing literature has been concerned with identifying the causes of CT belief. However, whilst most research has been preoccupied with debates concerning its causes, it has failed to: a) address the use of problematic methodology derived from convenience sampling, and b) include standardised methods to test for the susceptibility of decision-making biases argued to underline CT beliefs.

The aims of the present study were to investigate the validity of psychopathological and socio-cognitive explanations for people's susceptibility to CT beliefs in a sample drawn from the wider internet community, and to examine whether greater CT belief was associated to cognitive biases such as the Jumping-to-Conclusions (JTC) bias, and Bias Against Disconfirmatory Evidence (BADE). A cross-sectional correlational design was employed in which a sample of 375 participants completed a battery of psychological assessments. This included measures of psychopathological, socio-cognitive, and demographic factors, along with two measures of CT belief. Participants subsequently completed two tasks which captured the JTC bias and BADE.

Individuals who held high CT belief were more likely to exhibit psychopathological tendencies, and in turn were less likely to engage in analytical thinking, rendering them more susceptible to the BADE and JTC bias. Future research should endeavour to investigate the contribution of other at-risk mental states that cause psychopathological tendencies (i.e. delusion-proneness) that are associated to CT belief, and further replicate the findings of prior literature which applied problematic methodology.

DECLARATION

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and to the best of my knowledge, this thesis contains no materials previously published except where due reference is made.

I give permission for the digital version of my thesis to be made available on the web, via the University's digital research repository, the Library Search and also through web search engines, unless permission has been granted by the School to restrict access for a period of time.

October, 2018

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To my parents, Μην στενοχωριέστε, αυτή η φασαρία θα μου βγάλει πολλά χρήματα μια μέρα, εντάξει? Thank you for the support always. To my partner, thank you for the encouragement and care throughout the year, you have pushed me to be my best.

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CHAPTER 1: INTRODUCTION

1.1. The Cause and Influence of Conspiracism

Seeking explanation for life's events is a natural human desire. People commonly hold the belief that the world is predictable and more comprehensible than it is in reality. As a result, when they experience uncertainty regarding the cause of events, they often develop compensatory explanations, which function to uphold their view of the world (Hofstadter, 1964). However, many of these beliefs may not be correct, and instead may sometimes represent a form of conspiracism (Oliver & Wood, 2014).

Conspiracy theories (CTs) can be described as a constellation of often false beliefs, viewed as erroneous by the larger society, in which the ultimate cause of an event is believed to be due to a malevolent plot formulated by multiple actors with a self-serving goal (Swami & Furnham, 2016). Such beliefs persist within the general population and may influence perceptions of significant contemporary or historical real-world events (Swami & Furnham., 2010). For example, international polls indicate that up to 50% of respondents question mainstream narratives regarding momentous events such as the 9/11 terrorist attacks and assassination of public figures such as John and Robert Kennedy (Van der Tempel & Alcock, 2015). Such beliefs appear to exist within subgroups of society and seem reinforced by the greater exchange of ideas now possible on modern social media (Wood & Douglas, 2013).

Whilst conspiracy theories are not always false – as best exemplified by their role in uncovering the Watergate Scandal of 1972 – they typically lack evidential support and are generally resistant to falsification (Sutton & Douglas, 2014). As a result, their infallible nature often allows those of high belief in CTs to refute criticism of their legitimacy (Swami et al., 2017). Studies further show that belief in one CT often predicts belief in conceptually unrelated CTs, or even contradictory CTs to the initially adopted belief (Swami et al., 2011; Wood, Douglas & Sutton, 2012). In other words, people who typically apply CTs as a

compensatory explanation for the state of world affairs, tend to endorse and generalise to multiple CTs and prefer it as a means of comprehending all real-world events (Swami et al., 2011).

Although CT organisations (e.g. Anonymous) can foster greater political transparency and allow individuals to challenge dominant ideological structures, such world-views can also result in negative social and civic outcomes (Swami et al., 2017). For example, endorsement of CT worldviews tends to reduce intentions to engage in collectivistic egalitarian-based ideology in relation to issues such as climate change or human rights. Such people also side against minority groups urging for legislative change, such as ethnic groups subject to discrimination, or LGBT+ activism (Oliver & Wood, 2017). This is due to the belief that all activity regarding government alteration is often classed as a form of political collusion (Swami et al., 2017). Consequently, exposure to CTs can act as an obstacle for societal progression and may serve to suppress emergent socio-political movements (Douglas, Sutton & Cickocha, 2017).

There is also evidence to suggest that belief in CTs can undermine public health policy. For example, throughout history, several health epidemics have been brought to the public eye via political engagement or controversial real-world events. For instance, following the discovery of the Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) in 1981, it has been found that, those people born between 1946 and 1964 across several western countries, are more likely to endorse CTs suggesting that the HIV-AIDS epidemic did not exist. Rather, they are allured by the idea that the epidemic was a false front for an acting government to assassinate African-American and homosexual individuals (Ford et al., 2014). Consequently, rates of HIV detection and management are consistently lower in older adult cohorts, with some 51% of HIV-positive

persons aged 60 years or older developing AIDS within a year of receiving a HIV diagnosis (Centres of Disease Control and Prevention, 2011).

Literature also suggests that individuals can be persuaded by CTs without knowing it, even when the origins of such beliefs are highly implausible, and often discredited. For example, in a more recent public health case, international polls suggest a plethora of support for anti-vaccine CTs regarding the Measles, Mumps and Rubella (MMR) vaccination come from individuals unaware of the reasoned evidence for the theory itself (Jolley & Douglas, 2014a). A small minority of anti-vaccine cohorts actively endorse the CTs long since discredited findings of Wakefield (1998), which suggested the correlation between the MMR vaccination and the appearance of autism (Jolley & Douglas, 2014b). However, cases of measles have grown in frequency across several western countries and have been declared endemic in the United Kingdom. Due to the popular endorsement of anti-vaccine CTs, which are not proportionate to the amount of opposing literature to Wakefield (1998), a false sense of contention regarding the validity of vaccination has formed. Such a situation has allowed lingering doubts to persist in the general population; and has lead MMR vaccination rates to fall well below the recommended 95% uptake requirement (Jolley & Douglas, 2014b). Therefore, CTs and their root causes can be considered a potential issue of public psychological health. Finding ways to overcome fears and myths derived from CTs is considered important for both health professionals and for researchers interested in science communication (Fischhoff & Scheufele, 2014).

1.2 Predictors of Conspiracy Ideation

Given these issues, understanding the psychological origins of the belief in CTs remains an important task for scholars. To date, most research on the antecedents of conspiracist ideation have focused on psychopathology, the idea that ascribers to CT possess underlying conditions that make them prone to this style of reasoning.

1.2.1 Psychopathological explanations.

One particular factor regarded as the strongest individual predictor of CT belief is schizotypy, a latent personality trait which is a risk factor for prodromal schizophrenia (Barron et al., 2014; Eisenacher & Zink., 2017; Ettinger et al., 2015; Swami et al., 2013). Schizotypy is a relatively common personality characteristic and is prevalent in 3.6% of the general population across a number of western countries (Rosell et al., 2014). Schizotypal traits include anomalies in cognition (e.g., hallucinations), socio-emotional function (e.g. heightened paranoia) and odd behaviours and language that do not meet the clinical threshold for psychotic disorders (Cohen et al., 2015). Importantly, schizotypy is strongly associated with cognitive-perceptual traits such as suspicion, magical thinking, and strong tendencies to engage in paranormal belief, drawing parallels to conspiracy ideation (Ettinger et al., 2015; Genovese, 2005; Hergovich, Schott & Arendasy, 2008). Although associated with positive features such as increased verbal fluency and general creativity, schizotypy is also associated with many problematic reasoning patterns related to CT belief.

The core issue arising with features of schizotypy is its involvement in cognitive disorganisation (Swami et al., 2014b). First, schizotypal individuals often experience unusual perceptual experiences (i.e. hallucinations), which can be falsely attributed as memories of past experiences due to their strength in detail (Buchy, Woodward & Liotti, 2007). Consequently, hallucinations can act as a false point of reference when recollecting on past experiences, or when interpreting new information (i.e. conspiracist accounts). Hence, individuals with schizotypal characteristics struggle to differentiate between fictitious and credible information (Galliford & Furnham, 2017). They may also have a likelihood to reject conventional explanations for world events, due to their susceptibility to this form of misinformation effect (Brotherton et al., 2014).

Second, consistent with the phenomenon of delusion ideation in schizophrenia, schizotypal individuals have been found to hold fixed false beliefs not amenable to contrary evidence (Moritz et al., 2013; Woodward et al., 2007). Across several studies, highly schizotypal individuals have been shown to continue to endorse certain beliefs, even in the face of evidence that disconfirmed these beliefs or when they are branded as illogical (Eisnacher et al., 2017; Warman et al., 2007; Woodward et al., 2014). This obstinate stance on personal beliefs is known as the Bias Against Disconfirmatory Evidence (BADE), and naturally appears related to the stubborn, unfalsifiable aspects of conspiratorial thoughts (Eisnacher et al., 2017; Moritz, 2014). However, the BADE has never been measured in cohorts endorsing conspiracy ideation specifically, only in cohorts at upper extremities of the psychosis continuum (i.e. Schizophrenia) (Woodward et al., 2011).

Finally, metacognitive factors (i.e. the ability to think about thinking), that are central to interpreting ones' self-beliefs, have been negatively associated with schizotypal characteristics. For example, a specific facet of meta-cognition that may be important in relation to schizotypy and conspiracy ideation is cognitive insight. This can be conceptualised as the mental processes involved in self-re-evaluation of anomalous experiences and misunderstandings (Barron et al., 2014, 2018). Without this self-evaluative process, schizotypal individuals are suggested to engage in decision making intuitively, without consideration of possible alternative explanations to world events (Swami et al., 2017). As a result, schizotypal individuals are suggested to adjudge that their original suspicions of conspiracy as unequivocal, often with insufficient evidence to come to such conclusions. This rash, assumptive nature of reasoning has been likened to the Jumping-to-Conclusions (JTC) bias (Lincoln et al., 2010). The JTC is a probabilistic reasoning error associated to clinical schizophrenia, where sufferers are likely to produce unwarranted conclusions. This arises from the unwillingness to be cautious in decision making (Fine et al., 2007; McKay, Langdon

& Coltheart, 2007; Woodward et al., 2007). However, research has not directly assessed whether sub-clinical individuals which hold CT beliefs directly produce the JTC bias, nor those displaying schizotypal characteristics strictly and has instead focused only on the upper extremities of the psychosis continuum (Balzan et al., 2016; Moritz et al., 2015; Woodward et al., 2007).

A limitation of this body of research, however, is the assumption that schizotypal facets are directly associated with conspiracist beliefs (Barron et al., 2018). While the aforementioned findings have certainly provided ample support for this assumption, it is also possible that schizotypal facets and CT beliefs are mediated by additional factors that have remained relatively unmeasured. For example, through the application of the Peters Delusion Inventory (PDI), recent literature has suggested delusion-proneness is a mediating variable between schizotypy and conspiracist beliefs, yet very little literature has directly examined delusion-proneness as a sole predictor (Dagnall et al., 2015; Denovan et al., 2017).

1.2.2 Socio-cognitive explanations.

Central to much of this work is the assumption that conspiracy beliefs are rooted in largely similar underlying cognitive processes pertaining to illusory pattern perception. This refers to a tendency to perceive meaningful patterns in stimuli that were actually generated through a random process (van Prooijen et al., 2017). Given how fundamental this assumption is within this research, it is surprising to find how little direct evidence exists for this assertion, particularly in the context of conspiracy theories.

Such observations have led to a greater focus away from the view that conspiracist ideation is merely the product of individual or collective psychopathology. Instead, there is now an increased interest to whether CT prone individuals may relate to individual differences in cognitive processing often studied within normative populations: namely,

tendencies to engage in analytical thinking, believed to be one of two distinct branches of reasoning processing (Evans & Stanovich, 2013; van Prooijen, 2014). Analytic, sometimes referred to as the Type 2 (or rational) thinking style, is a slow, low capacity process dependent on an individuals' cognitive ability. This has its counterpoint in the intuitive branch of reasoning. Referred to as the Type 1 thinking style, intuitive reasoning is regarded as a fast, high capacity process that operates independent of cognitive ability (Ross et al., 2017). Although current literature is limited, greater intuitive (Type 1) reasoning has previously been associated with negative factors of schizotypy (Wolfradt et al., 1999). Significantly, analytic thinking is considered a core component of rationality and has been demonstrated to play a central role in many areas of psychological functioning (Pennycook et al., 2015).

With relevance to the current research, there have been consistent, significant negative associations between analytic thinking and CT beliefs (Oliver and Wood, 2014; Swami et al., 2014, 2017; van Prooijen, 2014, 2017). Moreover, it has been found that priming analytical (Type 2) thinking itself, successfully reduces the likelihood of adopting CT beliefs (van Prooijen, 2017). Therefore, an understanding of facets predictive of such cognitive styles, and establishing the underlying reason for the lack of analytical cognitive processing itself, through potential demographic or individual difference factors, may provide novel insight for what could be future interventions designed to systematically decrease conspiracy beliefs among the population (van Prooijen & van Djik, 2014).

1.2.3 Demographic and Sociological explanations.

Research indicates than an important demographic predictor of belief in CTs, and hence related to the development of analytical cognitive processing, is an individual's level of education. Previous research has indicated a negative relationship between education level and belief in CTs, such that individuals with high education levels are less likely than others,

to adopt conspiracy beliefs (Douglas et al., 2017; Van Prooijen et al., 2015). Such influence is thought to be understood in relation to three mediating concepts: cognitive complexity, experiences of control and social standing (Barron et al., 2018; van Prooijen, 2017, 2018).

The first, cognitive complexity, refers to an individual's ability to detect nuances and subtle differences across judgment domains, along with a tendency to consciously reflect on those nuances (Darwin, Neave and Homes, 2011). For this reason, those with high cognitive complexity are better equipped to attain high education levels, which coercively nurtures their complexity of thought, and reduces a person's likelihood to embrace relatively simplistic explanations (i.e. paranormal phenomena), for complex events (Ritchie, Bates & Deary, 2015). These arguments are relevant for belief in CTs which have also been described as a simplification of reality (Hofstadter 1964; van Prooijen et al., 2018). Accordingly, research by van Prooijen (2014, 2017) has demonstrated that education and belief in CTs may be mediated by cognitive complexity, which was operationalized as a decreased tendency to believe in simple solutions for complex problems.

Second, experiences of control refers to the ability to independently solve problems that require the social skills necessary to influence an individual's social environment (Whiston & Galinsky, 2008). It has been noted that, education is positively related to a persons' sense of life control and can decrease feelings of powerlessness which are known to influence an individual susceptibility to CTs (Mirowsky & Ross, 2005). An individual is particularly receptive to CTs when they lack a sense of control, in that it may lead to 'mental sense-making' similar to illusory pattern perception, that may involve making causal inferences between things not actually related in reality. In support of the psychologically compensatory role of CTs, people are thought more likely to believe in conspiracy theories in response to distressing societal events, or personal levels of perceived life stress that they cannot control (Van Prooijen & Van Dijk, 2014).

Third, education is intimately related with an individual's objective social standing in terms of socio-economic status (SES). Those with high education are more likely to obtain more desirable and highly paid jobs. Such people are less likely to see themselves as disadvantaged and therefore be suspicious or distrustful of society as a whole (Barron et al., 2018; van Prooijen, 2018).

1.3 Limitations of the Literature

Most research in relation to conspiracy beliefs has been preoccupied with debates concerning its causes, but more attention could be directed towards the methodologies employed in this literature. Studies are generated based on convenience samples drawn largely from college or university populations and are unlikely to be representative of the general population (Kovic & Fuschlin, 2018). For example, the socio-economic and education status of such populations is likely to be very attenuated. As a consequence, few studies are likely to have sampled statistically useful proportions of people with elevated scores on psychopathology measures from the community (Grimes, 2016). Moreover, university educated people are more likely to engage in or be trained in critical thinking, so that it may be difficult to find associations between such variables and CT beliefs (Grimes, 2016; Murihead & Rosenblum, 2018; Swami, 2015, 2017; van Prooijen, 2016, 2017).

1.4 The Present Study

In summary, there is considerable evidence suggesting an association between CT belief and psychopathological characteristics, socio-cognitive processes, and speculative literature regarding demographic and sociological factors. However, there is a lack of comprehensive assessment of the role of these variables in broader community samples. Given these observations, the primary aim of the present study is to examine the relationship between psychopathology, education and belief in CTs within the broader Internet

community. A second aim is to investigate whether the cognitive biases of JTC and BADE, indicative of clinical samples on the psychosis spectrum, are generalisable to a non-clinical sample, and associated with greater conspiracy ideation.

In this study, participants from a range of nations with differing levels of education, will complete a detailed psychological assessment including measures of delusion-proneness, schizotypal personality characteristics, perceived life stress, assessment of thinking style tendencies, and two measures of CT belief. Participants will subsequently complete two cognitive assessments: the Beads Task designed by Huq et al. (1988) pertaining to the JTC, and the BADE 16-item assessment designed by Woodward et al. (2006a, b), to assess the BADE. Both Cognitive bias measures will be assessed for the association to CT belief.

1.5 Correlational Hypotheses

1. Higher levels of psychopathological propensities such as delusion-proneness, schizotypal personality characteristics and perceived life stress levels (as measured by the Peters Delusion Inventory; PDI, Schizotypal Personality Questionnaire-Brief Revision; SPQ-BR, and Perceived Life Stress Scale; PSS) will be associated with higher CT belief scores (as measured by the Generalised Conspiracy Belief Scale; GCBS, and the Belief in Conspiracy Theory Inventory; BCTI).

2. Higher rational thought processing scores, indicative of the Analytical (Type 2) thinking branch (as measured by the Rational subscale of the Rational/Experiential Multimodal Inventory; REIm) will be negatively associated with CT belief scores, whereas the Intuitive/Emotional (Type 1) thinking branch will be positively associated with CT belief scores (as measured by the three-part Experiential subscale of the REIm).

3. Level of education will be negatively associated to CT belief. Further, the current study will undertake an exploratory analysis to investigate whether the area of study is related to people's greater reliance on (Type 2) analytical thinking and is associated with CT scores.

4. Higher CT beliefs will be positively associated with the tendency to produce cognitive biases such as the JTC and the BADE.

CHAPTER 2: METHODOLOGY

2.1 Participants

The initial sample comprised of 375 cases (220 male, 155 female). Seventeen cases were excluded as a result of preliminary screening due to aberrant responses (i.e. nonsensical responses with lack of acknowledgement of reverse coded items). The final sample comprised of 358 participants (210 males, 148 females), aged between 18 to 80 years (M = 25.16, SD = 13.18), from a range of countries (See Appendix A).

In terms of education level, 25 reported having not completed high school (7%), 76 reported high school as their highest completed education (21.2%), 78 had completed a certificate or Diploma equivalent (21.8%), and 179 completed a bachelor's degree or higher (50%). Of those which completed a bachelor's degree or higher, 53 (29.6%) had completed it in the fields of Humanities (i.e. Arts, Languages and Literature), 50 (27.9%) in the fields of Social Science (i.e. Anthropology, Psychology, Sociology and Human Geography), 38 (21.2%) in the fields of Computer Science, Mathematics and Statistics, 20 (11.1%) in fields of Applied Science (i.e. Engineering and Medicine), 11 (6.1%) had completed in fields of Natural Sciences (i.e. Biology, Chemistry, Earth Sciences and Physics), and 7(3.9%) indicated none of the above.

2.2 Sampling Procedure

Participants were recruited from a general population through advertisement on the international participation website Prolific Inc. They were provided a study URL after signing up, in which they could be monitored until completion. Once completed, they were reimbursed for their participation according to the compensation rate of Prolific Inc for 40 minutes of participation (£5.01/ per hour). The study was available from May the 3rd to August the 7th 2018.

2.3 Study Design

The study employed a cross-sectional correlational design and was conducted online. Participants completed several demographic questions and a battery of psychological assessments, and two measures of CT belief. Subsequently, participants completed two computerized cognitive tasks to assess for the JTC bias and the BADE. The study was approved by the Human Research Ethics Subcommittee in the University of Adelaide's School of Psychology.

2.3.1 Software.

The study platform was entirely web-based to provide an ease of access to participants. Consent forms, psychometric assessment and both cognitive tasks were presented using the same content delivery system to minimise the amount of navigation required for participants. Using programming languages HTML and JavaScript, the platform was divided into two systems: the client area which managed participants' user experience, and the server which managed the collection and storage of data. The system included features for interactivity and was designed to maintain unique ID numbers to ensure anonymity**.**

2.4 Psychometric Measures

2.4.1 Demographics and Educational experience.

Before completing the psychometric assessments, participants completed demographic questions: age, gender, highest level of completed education, and country of residence. Additionally, if applicable, they indicated the field of education they had completed during their tertiary education (see Appendix B).

2.4.2 Peters Delusion Inventory (PDI).

The revised 21-item PDI is a self-report measure developed by Peters, Joseph and Garety (2004) to assess delusional ideation in the normal non-psychotic population. For each item, the respondent rates whether they endorse the belief: 0 (*no)* or 1 (*yes*; see Appendix C). Each item is summed to generate a total score between 0 to 21. For each endorsed item, participants are then asked to rate on a scale of 0 to 5 the degree of distress caused by the belief (possible range of scores from 0 to 105), how much he or she is preoccupied with this thought (Scores from 0 to 105) and finally, how much he or she believes this thought to be true (scores from 0 to 105). All items not endorsed are given an automatic value of 0 for these three dimensions. A total score on the PDI may be obtained by adding the yes/no scores and the scores on each dimension (scores from 0 to 336).

The distress, preoccupation and conviction dimensions have been found to best differentiate psychiatric inpatients with delusions from healthy controls (Peters et al., 2004). As clinical populations were not sampled from, the present study excluded these three dimensions. Internal consistency ratings for the PDI are typically high (a > .80, Peters et al., 2004), and the measure has good construct and convergent validity. The Cronbach's Alpha for the present study was .81.

2.4.3 Schizotypy Personality Questionnaire-Brief Revised (SPQ-BR).

The SPQ-BR is a 31-item self-report measure revised by Cohen (2010) designed to measure all nine diagnostic criteria for schizotypal personality disorder. For each item, the respondent rates whether they endorse a belief from 0 (*Strongly Disagree*) to 5 (*Strongly Agree*). Higher scores indicate a greater likelihood of schizotypy (scores range from 0 to 160). The SPQ-BR is divided into three domains in the Cognitive-perceptual (CP), Interpersonal (IP) and disorganized symptoms of schizotypal personality disorder (DO). The

abbreviated version of the SPQ is commonly used and validated for both research and clinical screening purposes. It is also known as a measure of prodromal schizophrenia and/or psychosis-proneness. There is no specific cut off established for clinical screening purposes, and such uses are excluded from the current study. Internal consistency ratings of the SPQ-BR are strong, with previous literature concerning CT belief signifying its good construct and convergent validity (Swami et al., 2017). The Cronbach's Alpha for the present study was .89.

2.4.4 Rational/Experiential Multimodal Inventory (REIm).

The REIm is a 42-item self-report measure developed by Norris and Epstein (2011), which contains a 12-item subscale that measures tendencies to engage in analytical thinking (REIm-R), and a 30- item subscale that measures tendencies towards the use of an experiential and intuitive thinking style (REIm-E/I). All items are rated on a 5-point scale from 1 (*Strongly disagree*), to 5 (*Strongly Agree*). Norris and Epstein (2011) reported that these subscales have good discriminant validity and acceptable internal consistency coefficients. In a later study directly comparing Analytical thinking and CT belief, Swami et al. (2017) revealed similar findings and good convergent validity. The Cronbach's Alpha for the present study is .85.

2.4.5. Perceived Stress Scale (PSS).

The PSS designed by Cohen (1994) is a 10-item self-report measure which captures an individual's subjective appraisal of the degree to which situations in their life are stressful. Item were designed to assess how unpredictable, uncontrollable, and overloaded respondents find their lives. All items were rated on a 5-point scale ranging from 0 (*Never*) to 4 (*Very often*). An overall score was computed as the total of all items. The PSS has strong psychometric properties in diverse populations and has been shown to have good predictive

validity of CT adoption (Swami et al., 2016). The Cronbach's Alpha for the present study is .79.

2.4.6 The Beliefs in Conspiracy Theory Inventory (BCTI).

The BCTI is a 15-item self-report measure developed by Swami et al. (2010, 2011), which describes a range of prominent and internationally recognisable CTs (i.e. 'A powerful and secretive group, known as the New World Order, are planning to eventually rule the world'). All items are rated from 1 (*Completely false*) to 9 (*Completely true*), and an overall score is computed as the total of all items. Higher scores on this scale reflect greater belief in existing CTs. Factorial analysis by Swami et al. (2018) suggests the BCTI is the current CT belief scale with the highest construct validity and internal consistency. The Cronbach's Alpha for the present study is .87.

2.4.7 The Generalised Conspiracy Beliefs Scale (GCBS).

The GCBS is a 15-item self-report measure developed by Brotherton (2013), which measures an individual's general conspiratorial beliefs of self-referent, rather than the acceptance of specific, contemporary CTs as measured by the BCTI. The scale was developed and validated across 4 studies in which the initial 75-item measure was revised to the current 15-item scale, showing good test-retest reliability and content-criterion validity (Brotherton, 2013; Swami et al., 2018). All items were rated from 1 (*Definitely not true*) to 5 (*Definitely true*) and yielded an overall score between 15 and 75 (higher scores reflect greater conspiracy ideation). The Cronbach's Alpha for the present study is .83.

2.5 Cognitive Tasks

2.5.1 Cognitive Task 1: The Beads Task.

Participants were presented with an adapted computerized version of the original beads task (Huq et al., 1988), using the 'draws to decision' method and the standard

conventional instructional set (for details see McLean et al., 2016). They were shown a picture of two containers filled with 100 coloured beads in reciprocal portions (one practice trial, followed by two randomized trials with a bead ratio of 80/20, and two with a ratio 60/40). They were told that the computer would randomly select beads from one container, and the goal of the task was to determine which container the bead sequence came from. However, the task had a predetermined sequence of (up to) ten beads per trial and ended once a container had been selected. Pictures of the containers remained displayed during the task to ensure that participants remembered the proportions of beads in each container, with the sequence of beads was also shown in the middle of the screen as it emerged. Participants were shown an initial example, and a further comprehension test before they began to reduce misinterpretation (see Appendix I).

The raw number of 'draws to decision' for the Beads Task was converted into a mean proportion of evidence requested before reaching a definite decision across both 80/20 trials and 60/40 trials separately. The lower the average proportion of evidence requested, the less information used to justify a conclusion, and hence the more susceptible a person is to the JTC Bias.

2.5.2. Cognitive Task 2: The Bias against Disconfirmatory evidence task (BADE).

The second task was a computerized version of the BADE test, originally devised by authors Moritz and Woodward (2006a, b). The current version consists of 16 written delusion-neutral scenarios which assesses an individual's persistence to hold certain beliefs in the face of disconfirmatory evidence.

Within the BADE assessment, the plausibility of four statements are rated for their fit to a specified scenario, which is based on a single piece of information (i.e. "Jenny can't fall asleep"). Each scenario had one true interpretation, two lure interpretations and one absurd

interpretation from the four statements. The plausibility of the four interpretations are rated for each scenario from a scale of 0 (*Poor*) to 10 (*Excellent*).

After an initial rating by the subject, a second piece of information is displayed (i.e. "Jenny can't wait until it is finally morning"), in which the subject is asked to reconsider the plausibility of the four interpretations previously rated. This is repeated again with a third and final piece of information (i.e. "Jenny wonders how many presents she will find under the tree"). The true interpretation appears implausible initially, but becomes more reasonable as additional information is revealed, prompting a participant to justify their decisions based on presented evidence. Alternatively, the lure interpretations appear plausible initially, but become implausible as additional information is revealed. The lures consist of one "emotional" lure interpretation, and a "neutral" lure interpretation, whilst the absurd interpretation was designed to be implausible at all stages (see Appendix J).

The BADE measures were computed as the *decrease* in plausibility ratings from informatory statement #1 to statement #3, for emotional or neutral lure interpretations, and for absurd interpretations. Likewise, an *increase* in plausibility ratings for the true interpretation is expected from informatory statement #1 to #3. Hence, the smaller the alteration in lure plausibility ratings, the greater the inferred resistance to incorporate newly presented information.

2.6 Procedure

2.6.1 Information and Consent.

The study URL directed participants to an information page containing inclusion and exclusion criteria, and consent forms (see Appendix L). Participants were asked to read the study information and indicate their understanding of the materials and eligibility criteria before commencing the study.

2.6.2 Online Psychometric inventories, and Cognitive tasks.

Upon entering the study, participants were asked to provide their Prolific ID number. Each measure was presented on a different page of the study, and participants moved forward through the study after completing each inventory by clicking “next”. The software was programmed to prevent participants from moving forward before completing all items of each measure to prevent missing data. Likewise, the software was also designed to prevent participants moving backwards in the study, to prevent multiple attempts at the BADE and Beads task. Upon completion, participants were directed back to the original platform they had entered the study.

CHAPTER 3: RESULTS

3.1 Preliminary Analyses and Statistical Procedures

Prior to commencing analyses, the data was screened to determine its suitability for parametric testing. Ten scores on the PDI and the SPQ-BR were found to be outliers through examination of box plots and stem-and-leaf plots. An inspection of their standardized values found that all were extreme cases, exceeding the cut-off standardized score of each scale respectively. A sensitivity analysis found that the inclusion of the cases mentioned had a sizable impact on the results, so all cases were excluded. Preliminary examination of the data suggested all variables were normally distributed and parametric assessment was suitable. Analysis was conducted using version 24 of IBM SPSS Statistics software.

Analyses included the presentation of descriptive statistics for both psychometric variables pertaining to psychopathology factors (i.e. PDI, SPQ-BR, PSS) and socio-cognitive factors (i.e. REIm) in relation to CT measures (i.e. BCTI, GCBS). This was followed by a correlation analyses between study variables of interest using Pearson's correlation coefficients. Demographic variables such as level and area of education, were analysed using one-way ANOVA and Kruskal Wallis H group comparisons for difference in level of CT belief.

The results of the Beads task were analysed via Pearson's correlation analysis to all psychometric measures in the current study, followed by a group comparison assessment using a one-way ANOVA between High and Low CT Belief individuals to assess for differences in susceptibility to the JTC Bias. Similarly, results of the BADE assessment were analysed via Pearson's correlation analysis to all psychometric measures, followed by a group comparison assessment via a one-way ANOVA between High and Low CT Belief individuals to assess differences in susceptibility to the BADE. Finally, Hierarchical Linear Regression Analysis was conducted to assess the predictive validity of sociological factors

(i.e. Level and Area of Education), psychopathological factors (i.e. SPQ-BR, PDI, PSS) and socio-cognitive Factors (I.e. REIm – R, REIm – E/I) on CT Belief as measured by GCBS and BCTI scores.

3.2 Descriptive Statistics: Psychometric and Demographic Measures

Demographic differences in CT beliefs were initially analysed to understand whether factors such as age or gender might need to be controlled in subsequent analyses. One-way ANOVA confirmed no age group differences in CT belief scores $F(5,342) < 1$. Welch independent samples t-test also indicated no significant gender differences, $t(346.77) < 1$. A summary of the descriptive statistics for all psychometric measures is provided in Table 3.1. As indicated, delusion-proneness scores (PDI) were generally low as consistent with the non-clinical nature of the sample, with only 4 participants having scores approaching the clinical cut-off (1.1%). In terms of cognitive thinking style, the sample indicated a relatively high level of preference for rational thought processing (type 2) compared to intuitive or experiential thinking styles (type 1).

Table 3.1

Descriptive statistics for principle psychological measures (N = 348)

	Theoretical Minimum Score	Theoretical Maximum Score	Actual Minimum Score	Actual Maximum Score	*M*	*SD*
PDI	0	360	21	268	71.03	34.79
SPQ - BR	0	160	32	147	90.52	18.82
PSS	0	40	9	37	29.81	4.45
REI m- R	10	50	26	48	38.92	3.43
REIm - E/I	30	150	66	143	95.32	9.63
GCBS	15	75	15	70	33.56	13.20
BCTI	15	135	15	129	53.36	25.50

Note. Score ranges, mean and standard deviation for all psychometric measures (*n* = 348), PDI = Peters Delusion Inventory, SPQ-BR = Schizotypy Personality Questionnaire Brief-Revised, PSS = Perceived Stress Scale, REIm – R = Rational Multimodal Inventory Subscale, REIm – E/I = Experiential and Intuitive Multimodal Inventory Subscale, GCBS = General Conspiracy Belief Scale, BCTI = Belief in Conspiracy Theory Inventory.

3.3 Correlation Analysis

Pearson's Correlations are presented in Table 3.2. Consistent with the first hypothesis, there were moderate, positive correlations between measures of psychopathological factors such as delusion-proneness, schizotypal personality characteristics, perceived life stress, and CT belief. As expected, participants with higher PDI and SPQ-BR scores were positively correlated to CT beliefs through the measures of GCBS and BCTI.

CT belief as measured by the GCBS and BCTI, was differentially associated with a number of psychometric measures of socio-cognitive explanations. Consistent with the second hypothesis, higher scores in intuitive and experiential thinking styles (Type 1) were weak to moderately and positively correlated to both CT measures, whilst there was a small to moderate and negative correlation between rational thinking (Type 2) and conspiracy beliefs. In other words, those who are impulsive and unstructured in decision making are likely to find the logic of CTs more plausible. Additionally, higher REI-EI and PSS scores were weak and positively related to the aforementioned psychopathological factors, with no significant relation existing between REIm-R and REIm-E/I scores. These relationships suggest that those same individuals who are impulsive and unstructured in decision making, are also the more likely to entertain delusional thinking, overestimate the impact of life stressors, or hold odd patterns of thought and behaviour revealing of schizotypy personality traits.

Table 3.2

Pearson's Correlation analysis between all psychometric measures

	1	2	*3*	*4*	5	6	7
1. PDI							
2. SPQ – BR	.534**						
3. PSS	.413**	.312**					
4. REIm – R	-.231**	.310**	.056				
5. REIm – E/I	.495**	.280**	.378**	-.178**			
6. BCTI	.464**	.337**	.236**	-.287**	.365**		
7. GCBS	.426**	.817**	.232**	-.310**	.346**	.874**	

Note. **p* <.05(two-tailed), ***p* <.01(two-tailed), Score ranges, mean and standard deviation for all psychometric measures (*n* = 348), PDI = Peters Delusion Inventory, SPQ-BR = Schizotypy Personality Questionnaire Brief-Revised, PSS = Perceived Stress Scale, REIm – R = Rational Multimodal Inventory Subscale, REIm – E/I = Experiential and Intuitive Multimodal Inventory Subscale, GCBS = General Conspiracy Belief Scale, BCTI = Belief in Conspiracy Theory Inventory.

3.4 Sociological and Demographic Factors: Group Comparisons regarding Education

3.4.1. Level of education.

A one-way ANOVA was conducted to assess whether CT belief scores differed according to education level. For GCBS scores, there was a non-significant difference across levels of education $F(3, 345) = <1$. However, consistent with the third hypothesis, BCTI scores indicated a significant difference across levels of education $F(3,345) = 2.194$, $p = .03$. Individuals which had completed up to a high school level of education had the highest BCTI scores ($M = 59.78$, $SD = 7.18$), compared to those with a: Diploma or Certificate ($M = 55.23$, $SD = 6.45$), Bachelor's Degree ($M = 51.28$, $SD = 7.80$) or Higher Degree ($M = 49.78$, $SD = 7.32$).

3.4.2. Area of higher education.

A Kruskal-Wallis H Test was conducted to assess the differences in CT belief according to the area of academia due to the significant differences in group size per faculty. There was a non-significant difference across areas of academia in both GCBS scores ($p = .189$), and BCTI scores ($p = .140$).

However, according to the descriptive statistics, those which studied Formal Sciences (i.e. Statistics, Mathematics and Computer Sciences) displayed a lower tendency to hold CT beliefs. This is particularly emphasized when compared to the rest of the population. The lowest GCBS scores were obtained for those with training in the Formal Sciences ($M = 30.18$, $SD = 10.18$) as compared to the rest of the sample ($M = 37.71$, $SD = 10.57$). An independent samples t-test suggested a significant difference between students of Formal Sciences and the rest of the population that had completed tertiary education $t(176.12) = 1.974$, $p = .024$).

Similar differences were observed for BCTI scores. Those with training in the Formal Sciences had the lowest scores (M = 44.53, SD = 17.54) compared to the rest of the sample (M = 58.65, SD = 16.64). An independent samples t-test suggested a difference between students of Formal Sciences and other areas of education that is approaching significance $t(179.31) = 1.754$, $p = .064$).

3.5 Cognitive Bias Measure: The Beads Task

3.5.1. Correlation analysis.

As indicated in Table 3.3, the Beads 'draws to decision' totals were calculated by averaging the number of 'draws to decisions' across each trial, and ratio type. Consistent with the fourth hypothesis, levels of requested evidence on the task showed a significant but weak negative correlation with both GCBS (r = -.161, p = .02) and BCTI scores (r = -.159, p = .01). This indicated that higher belief in CTs could lead to lower percentage of evidence requested on the Beads Task. In other words, individuals who are likely to endorse CT beliefs are also more rash in the context of decision making. Pearson's correlations with all further psychometric measures were non-significant.

3.5.2. Group Comparison on both CT Belief and JTC tendencies.

To obtain further understanding of the relationship between CT beliefs on a person's 'draws to decision' tendencies, and hence their susceptibility to the JTC bias, two sub-samples were formulated from the original sample: High CT belief individuals (participants which scored in the upper quartile in both the BCTI and GCBS; n = 66) and Low CT belief individuals (participants in the lower quartile for both BCTI and GCBS; n = 84).

According to an independent samples t-test, there was a non-significant difference between High and Low CT belief individuals according to both GCBS scores $t(166.7) <1$., and BCTI scores $t(167.3) <1$. However, a noticeable portion of participants in the 'High CT

belief' category (n = 23/83) made their decision on the first bead. This potentially indicates a large portion of individuals which produced abnormal responses indicative of the JTC bias.

Table 3.3

Mean (SD) draws to decision, Overall proportion of evidence requested on the Beads Task across differing levels of Conspiratorial Beliefs (N = 150)

Ratio Type	Low CT Belief	High CT belief
80/20	4.14 (2.07)	3.56 (2.11)
60/40	6.13 (3.03)	5.13 (3.17)
Total	5.82 (2.68)	4.90 (2.20)

Note. *p = <0.05., CT Belief = Averaged Scores on both BCTI and GCBS within upper and lower quartile sub-samples

This observation was further supported when analysis employed refined group comparisons. As indicated within Table 3.4, two sub-samples were formulated from the original population: High CT belief individuals (participants which scored in the upper 5% range in both the BCTI and GCBS; n = 41) and Low CT belief individuals (participants which scored in the lower 5% range for both BCTI and GCBS; n = 37). Comparisons of these groups showed that a large portion of participants in the High CT belief category (n = 20/41) made their decision on the first bead. An independent samples t-test revealed a significant difference between High and Low CT belief individuals within these refined group parameters in both GCBS scores $t(76.32) = 2.893$, $p = .001$), and BCTI scores $t(75.58) = 3.645$, $p = .001$). Such results indicate that at the upper-tail of the population, a sizable collective of individual are exhibiting 1-bead responses. In other words, highly conspiratorial individuals tend to make extremely rash decisions, with the reliance of as little as one piece of evidence enough to come to a conclusion.

Table 3.4

Mean (SD) draws to decision, Overall proportion of evidence requested on the Beads Task across differing levels of Conspiratorial Beliefs (N =78)

Ratio Type	Low CT Belief	High CT Belief
*80/20**	3.52 (2.31)	2.98 (2.18)
*60/40**	5.87 (3.27)	4.71(2.87)
Total	5.02 (3.13)	4.32 (2.49)

Note. **p* = <0.001., CT Belief = Averaged Scores on both BCTI and GCBS within upper and lower 5% sub-samples

3.6. Cognitive Bias Measures: The BADE Assessment

3.6.1 Correlation analysis of Psychometric measures.

According to a Pearson's Correlation analysis, there was a significant and weak negative correlation between PDI scores and changes in plausibility ratings of both Neutral-Lure (r = -.23, p = .01) and Emotional-Lure (r = -.15, p = .01) statements. Additionally, there was a significant but weak negative correlation between SPQ-BR scores and changes in plausibility ratings of both Neutral-Lure (r = -.14, p = .01) and Emotional-Lure (r = -.27, p = .001) statements. This indicates that higher levels of delusion proneness and schizotypal tendencies, which have been shown to highly correlate in Table 3.1, relate to an unwillingness to downwardly adjust plausibility ratings to reflect recently encountered disconfirmatory evidence.

Furthermore, scores on the REIm – E/I sub-scale which reflects tendencies to interpret information based solely on intuitive reasoning, also indicated a significant and weak negative correlation to changes in plausibility ratings of both Neutral-Lure (r = -.27, p =

.001) and Emotional Lure (r = -.12, p = .001) statements. Scores on both the REIm – R subscale and PSS measure did not correlate with any lure items. However, REIm – R scores showed a significant and weak positive correlation to changes to plausibility in True statements (r = .19, p = .001). All remaining correlations across psychometric measures pertaining to psychopathological or socio-cognitive predictors facets of the BADE were non-significant.

3.6.2. Correlation analysis of CT belief.

In terms of level of CT belief, consistent with the fourth hypothesis, GCBS scores were significantly and negatively correlated to both Emotional-Lure (r = -.21, p = .001) and Neutral-Lure statements (r = -.24, p = .001), but were not significantly related to both True and Absurd statement plausibility changes. Likewise, BCTI scores were significantly and moderately correlated to Emotional Lure statements (r = -.38, p = .001) and NL statements (r = -.31, p = .041). BCTI scores were not significantly correlated with both True and Absurd statement plausibility changes from statements #1 to #3.

3.6.3. Group comparisons on CT belief.

To examine the nature of the relationship between CT beliefs and a person's ability to downwardly adjust plausibility ratings to reflect recently encountered disconfirmatory evidence, two sub-samples were again used from the original population: High CT belief individuals (participants which scored in the upper quartile in both the BCTI and GCBS; n = 66) and Low CT belief individuals (participants in the lower quartile for both BCTI and GCBS; n = 84). All results are reported as between-groups t-tests for the three BADE measures and the Truth measure.

High and low CT Belief individuals did not differ on both True statement interpretations, $t(167) < 1$., or Absurd statement interpretations $t(167) < 1$. However, an independent samples t-test revealed a significant difference in change in plausibility ratings for Emotional Lure statements $t(167) = 2.07$, $p < .05$, ($d = .31$), and NL statements, $t(167) = 1.93$, $p < .05$, $d = .23$), supporting the hypothesis that an increase in CT belief would result in a lower alteration to conclusions in the face of disconfirmatory evidence.

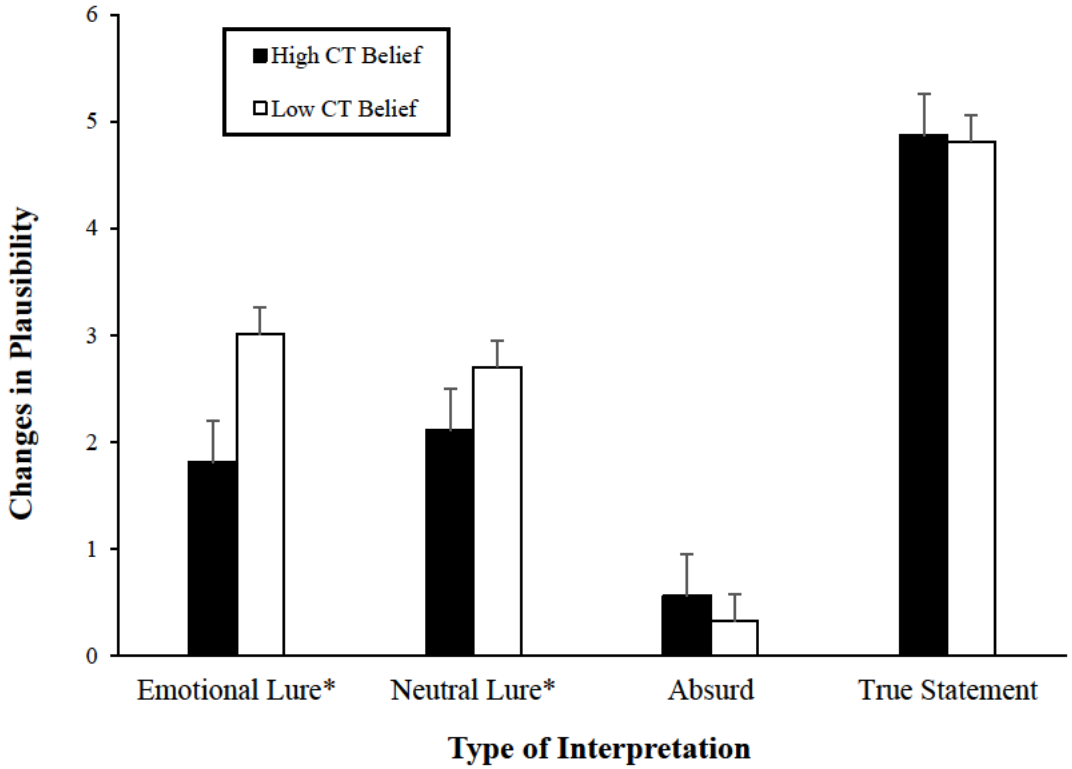

Figure 1. Mean rating decreases (for lure and absurd interpretations; BADE) or increases (for true interpretations), presented as a function of group (bars are standard errors). *$p < .05$, High vs Low CT belief individuals

3.7. Predicting CT Belief from Psychopathological, Socio-cognitive, and Demographic factors

Prior to conducting a hierarchical multiple regression, the relevant assumptions of this statistical analysis were tested. The appropriate collinearity statistics (i.e. Tolerance and VIF assessments) indicated there was no cases of multicollinearity. Extreme univariate outliers

identified in initial data screening were removed as previously mentioned. An examination of the Mahalanobis distance scores indicated no multivariate outliers, whilst residual and scatter plots indicated the assumptions of normality, linearity and homoscedasticity were all satisfied.

As shown in Table 3.5 and 3.6, a three-stage hierarchical multiple regression was conducted with GCBS scores and BCTI scores as the dependent variable respectively. All sociological and demographic factors were entered at stage one of the regression. The psychopathological factors were entered in stage two, with socio-cognitive factors entered in the third stage. Psychometric variables were entered in this order to control for demographic and sociological factors foremost to capture the separate influence of individual differences on CT Belief, essentially allowing examination of predictive factors based on clusters of conceptually related variables (i.e. Environmental factors), to individual differences (i.e. socio-cognitive and psychopathological) across the population.

According to both the hierarchical multiple regressions, the best predictor of CT beliefs across both GCBS and BCTI scores was delusion-proneness (PDI). With the addition of Schizotypy personality characteristics, both measures of thinking style tendencies and perceived life stress, the five independent variables accounted for 51% of GCBS scores, and 39.2% of BCTI scores. Factors such as area of education and level of education were not significantly related to CT beliefs. Psychopathological factors (i.e. delusion-proneness and schizotypy, perceptions of life stress) explained 37.5% of GCBS scores and 33% of BCTI scores respectively. Adding socio-cognitive factors explained an additional 9% of GCBS scores and 10% of BCTI scores.

Table 3.5

Summary of Hierarchical Analysis for Variables Predicting Conspiracy Ideation via GCBS scores (N = 348)

	Model 1			Model 2			Model 3		
	B	*SE B*	B	*B*	*SE B*	B	*B*	*SE B*	B
Age	-.012	.987	.01	-.008	.917	>.001	-.008	.887	.001
Gender	.003	.512	.01	.005	.512	>.001	.005	.508	.001
Level of Education	.874	.270	.10*	.774	.270	.03	.774	.270	.02
Area of Education	.736	.341	.03	.511	.341	>.001	.511	.341	.001
PDI				1.67	.031	.39**	1.67	.031	.39**
SPQ-BR				-0.71	.17	.38**	-0.59	.17	.32**
PSS				.014	0.06	.07*	.014	0.06	.07*
REIm – R							-0.64	.11	.19**
REIm – E/I							.48	.09	.10*
R^2	.05			.38			.51		
F for Changes in R^2	.317			17.43**			5.67*		

Note. All psychometric variables were centred at their means, *p <.05, **p<.01.

Table 3.6

Summary of Hierarchical Analysis for Variables Predicting Conspiracy Ideation via BCTI scores (N = 348)

	Model 1			Model 2			Model 3		
	B	*SE B*	β	*B*	*SE B*	B	*B*	*SE B*	B
Age	-.45	.732	.01	-.43	.732	.01	-.43	.732	.01
Gender	-.12	.689	.01	-.14	.688	.01	-.14	.688	.01
Level of Education	.874	.270	.08	.721	.873	.07	.721	.873	.07
Area of Education	.611	.341	.02	.589	.341	.01	.589	.341	.01
PDI				.610	.041	.36**	.610	.041	.34**
SPQ-BR				.074	.080	.055	.073	.080	.045
PSS				.097	.245	.011	.097	.245	.011
REIm – R							.280	.054	.35**
REIm – E/I							.031	.029	.27**
Adjusted R^2	.02			.35			.392		
F for Changes in R2	.298			13.23**			5.12**		

Note. All psychometric variables were centred at their means, *p <.05, **p<.01

CHAPTER 4: DISCUSSION

4.1 Overview of the Findings

The aim of this study was to investigate the validity of psychopathological and socio-cognitive explanations for people's susceptibility to CT beliefs in a sample of people drawn from the wider Internet community. The project investigated several hypotheses which broadly converged on three principal propositions: namely, whether susceptibility to CT beliefs are related to broader underlying psychopathology; differences in educational attainment; or differential preferences for analytical styles of thinking. The study was designed to overcome limitations of sampling present in most other studies, including: (a) the reliance on undergraduate student samples, and (b) the failure to include standardised methods to test for the susceptibility of decision-making biases thought to underline CT beliefs.

Overall, the results were consistent with all four principal hypotheses. CT belief (as measured by scores on the BCTI, and GCBS) was positively associated with several measures of psychopathology states: such as delusion-proneness (PDI), schizotypal personality characteristics (SPQ-BR), and perceived life stress (PSS). Furthermore, CT belief was associated with an individual's style of cognitive processing, with analytical (Type 2) thinking found to be negatively associated with CT beliefs and intuitive or experiential (Type 1) thinking in the positive direction. There were also associations between susceptibility to CT beliefs and performances on cognitive tests designed to capture people's tendency to jump to conclusions (the Beads task), and to be inflexible in their rejection of information initially presented in support of propositional statements (the BADE task). Some support was also evinced for the notion that higher levels of education and, in particular, formal training in reasoning and logic may be a protective factor in the development of CT beliefs.

4.2 Psychopathological Explanations for CT Beliefs

As hypothesised, psychopathological factors associated with cognitive disorganisation – such as schizotypal cognitive-perceptual traits, delusion-proneness and intensified perceptions of life stress – were associated with a stronger endorsement of both general conspiratorial beliefs (GCBS), and specific CT beliefs (BCTI). These findings were, therefore, generally consistent with studies that have similarly investigated the role of psychopathological factors (van der Tempel, 2014b; Swami et al., 2014; Barron et al., 2014; Ettinger et al., 2014, 2017). In particular, the findings align with other studies that have shown an association between schizotypy and susceptibility to CT beliefs as thought to arise as a result of misinformation effects, lack of cognitive insight, and the retention of erroneous beliefs despite conflicting evidence (Brotherton et al., 2014, Mortiz et al., 2014; Swami et al., 2017, Barron et al., 2014).

Although a direct link between schizotypy and CT belief was supported, Barron et al. (2018) suggest that there are a number of mental conditions which may also contribute to greater CT endorsement (i.e. alternative avenues of heightened paranoia and delusional ideation). As shown, schizotypal characteristics only predicted GCBS ratings – a CT assessment containing items primarily concerned with views of conspiratorial acts that influence the self – but not BCTI ratings which capture general CT beliefs of little direct personal relevance.

In addition to these findings based on self-report measures, the present study also found evidence of an association between the JTC bias, Confirmation bias and CT beliefs. Such biases have been found to be highly prevalent in people who are positioned higher on the so called ‘psychosis continuum’, and this supports the proposition that highly conspiratorial individuals may represent examples of people in non-clinical populations who share some of the characteristics of individuals with diagnosed clinical disorders (i.e., schizophrenia).

Consistent with Barron et al. (2018), individuals endorsing CT's score highest on measures of delusion-proneness. The importance of this finding however, becomes apparent when considering the similarity of the current findings to research that assessed individuals who fall into the lower spectrum of the psychosis continuum (Woodward et al., 2009; Balzan et al., 2014).

A central feature implicated in the development of delusional thinking at the lower extremity of the psychosis continuum is the metacognitive phenomena termed negative belief inflexibility (Eisenacher & Zink; 2017; Woodward et al., 2006). Previous studies by Woodward et al. (2005; 2009), Moritz et al. (2011; 2014) and Eisenacher (2015) have argued that belief inflexibility may result from an accumulated adherence to false, contentious beliefs regarding world events that strengthen in conviction the more those thoughts are reflected upon. The cyclic process of both encouraging such beliefs about the world and strengthening their conviction by acting upon a pre-existing confirmatory bias to support them is seen as a pathway to altering conventional thinking styles into a more warped delusional reasoning style. It is also one of the few documented explanations for why individuals at the lower spectrum engage with delusional thought, and potentially progress towards their first psychotic episode (Eisenacher et al., 2016a). Whilst causality cannot be inferred from the cross-sectional analyses conducted in the present study, these explanations support the notion that belief inflexibility may explain why some individuals who may not necessarily hold emergent psychopathological propensities, or delusional thinking styles, are more susceptible to CT belief. As shown by the relation between CT belief and both the JTC bias and BADE, it seems that the higher the rates of CT adoption in the current sample, the more such tendencies become apparent, the greater the resemblances are between minor psychosis tendencies and conspiracist characteristics.

4.3. Socio-cognitive and Sociological Explanations of CT Beliefs

In support of the second and third hypothesis, CT belief was negatively associated with tendencies to engage in analytical (Type 2) thought and participants' level of education, which is broadly consistent with the findings of van Prooijen (2014, 2017, 2018), Swami and Furnham (2014), and Douglas et al. (2016). Although regarded as differing schools of thought in the context of CT adoption (van Prooijen & Van Dijk, 2014), this finding demonstrated the conceptual overlap between sociological influences (i.e. educational experience) and tendencies to engage in logical reasoning. Similar to earlier studies (e.g. Darwin, Neave and Homes, 2011; Ritchie, Bates & Deary., 2015), the results suggest that, when a person is placed in an environment where they can develop the decision-making skills to detect and reflect on the nuances of overly-simplistic explanations (i.e. conspiracy frameworks), they are more likely to reject them on the basis of evidential merit.

Correspondingly, scores on the REIm – E/I which measured tendencies to engage in intuitive or experiential (Type 1) thought were positively associated with levels of perceived life stress, and both measures of CT belief. This is consistent with the idea that poorer analytical ability can make life events seem less controllable and make CT beliefs more attractive as compensatory explanations. These findings are generally consistent with other studies (e.g. Douglas et al., 2017; Spohr, 2017) that have associated perceived life stress and low analytical thought tendencies to features similar to CT belief, including: more impulsive behavioural tendencies, or a greater susceptibility to the misinformation effect through fabricated social media stories (i.e. incapable of interpreting facts from fiction in non-scholarly articles).

There was some evidence to suggest that training in the fields of Formal Science – which centres on the understanding of mathematical operations based primarily on procedures necessitating the use of logic and reason – may be a potential protective factor for

the development of CT beliefs and this is consistent with other studies (e.g. van Prooijen et al., 2017; Bonetto et al., 2018). Such studies suggest that curricula that promote methodological and scientific reasoning are more likely to encourage individuals to use analytical thought to appraise evidence.

4.4. Methodological Strengths and Limitations

This study had a number of strengths, including the use of a large diverse sample recruited through the Internet community, which is where CT beliefs often proliferate. It also included validated measures of decision-making biases and captured both the potential role of educational differences, analytical style and psychopathology in the same study. There are, however, several limitations that should be considered. The results were based on self-report; a paid panel sample from different countries rather than a representative sample from the community. Although careful checking of the data was undertaken, it is not impossible to rule out any duplications in the survey results. It is also not possible to rule out the possibility that all members of the drawn sample had no pre-existing clinical diagnosis. It may well be, for example, that some individuals did not read the pre-screening information and participated anyway or may have ignored the information because they were keen to participate and be paid for their contribution to the study.

4.5 Future Directions and Implications

There are a number of ways in which this study could be extended. For example, it could be useful to examine the contribution of other at-risk mental states (i.e. Borderline Personality Disorder, acute Autism Spectrum Disorder) that cause delusion-proneness and hence CT belief, or to examine the contribution of delusion-proneness to other cognitive biases analogous to the reasoning characteristics of CT belief. For example, there is evidence to suggest several other reasoning biases, such as the representativeness and availability heuristics (Balzan et al., 2012) are also prevalent in delusional individuals. Furthermore, an

investigation into paranormal reasoning phenomena that extend from the BADE such as the illusory truth effect (i.e. the tendency to believe information is correct after repeated exposure) and the Semmelweis reflex (i.e. the tendency to reject new knowledge because it aligns with established societal norms), may also be useful in distinguishing the nature of evidence a highly conspiratorial individual is likely to disregard.

The present study also did not examine the causal mechanisms through which the range of investigated variables actually influences individual's susceptibility to CT beliefs. A large focus of the current literature concerning CT belief is to examine what potential factors prompt CT adoption, but the present study provides little regarding how such factors operate in relation to one another. For example, it has been well recognized that psychopathological factors influence reasoning biases indicative of CT belief, and this has equally been argued to be a result of normative differences such as a lower tendency to engage in analytical thought; yet very little research has examined the primacy of such explanations comparatively. Alike the efforts of Barron et al. (2018) and Swami et al. (2014) which examined the comparative order of schizotypal facets for their influence on CT belief, it would be insightful to conduct an all-inclusive Path Analysis to capture the 'causal paths' across the different predictors of CT belief. One valuable outcome in doing so would be the ability to determine what psychopathological factors precede, coincide, or develop subsequent to high levels of CT belief.

4.6. Conclusions

This study provided evidence to suggest that individuals with elevated clinical psychopathology are more likely to score higher on measures of CT belief, and to be less likely to engage in analytical thinking. Both of these appear to make them more susceptible to the BADE and JTC bias. However, experiential factors also seem to be important in that susceptibility to CT beliefs also appeared related to the level and type of education an

individual received. More broadly, the study underscored the importance of addressing the methodological limitations of the pre-existing CT literature including the over-reliance on student samples. The findings suggest a need for future research that captures a broader range of psychopathological factors as well as greater insight into the role of education and socialisation factors that were not the predominant focus of the present investigation.

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APPENDICES

Appendix A: Participant Country of Residence

Table A1: Summary of participants according to country of residence (N = 375)

Country of Residence	*N*
United States of America	118
Canada	38
Mexico	18
Australia	31
United Kingdom	69
Greece	7
Germany	8
Portugal	9
Italy	8
Spain	7
India	3
Hong Kong	5
Malaysia	5
Other (Single case instances)	32
Total	358

Appendix B: Demographic Measures

What is your gender? (Choose: Male/Female/Other)

How old are you? (Choose: 18-21/22-30/31-40/41-50/51-60/60+)

Highest Level of Completed Education? (Choose: Year 10 Only/Year 11 Only/Year 12 Only/ Diploma or Other Qualifications/ Bachelor's Degree)

If underwent University/College Education or a Higher Degree): Nominate a field(s) of study completed at least (2) years of: (Regardless of Major/Minor):

- ***Drop Down Box with the following options:***

Humanities: Arts, Performing Arts, Visual Arts, History, Languages and Literature, Philosophy, Theology,

Social Sciences: Anthropology, Economics, Human Geography, Law, Political Science, Psychology, Sociology,

Natural Sciences: Biology, Chemistry, Earth Sciences, Space Sciences, Physics,

Formal Sciences: Computer Science, Mathematics, Statistics ,

Applied Sciences: Engineering, Medicine ,

Other: ***Specify Below……..***

What is your country of residence? (Choose from 252 Countries)

Main language spoken at home?

Appendix C: The Peters Delusions Inventory (PDI) Items

For the questions you answer YES to, we are interested in: (a) how distressing these beliefs or experiences are; (b) how often you think about them; and (c) how true you believe them to be. On the right-hand side of the page we would like you to circle the number which corresponds most closely to how distressing this belief is, how often you think about it, and how much you believe that it is true. All three subscale items were rated on a 4-point scale (1 = Never, 4 = Always)

1) Do you ever feel as if people seem to drop hints about you or say things with a double meaning?
2) Do you ever feel as if things in magazines or on TV were written especially for you?
3) Do you ever feel as if some people are not what they seem to be?
4) Do you ever feel as if you are being persecuted in some way?
5) Do you ever feel as if there is a conspiracy against you?
6) Do you ever feel as if you are or destined to be someone very important?
7) Do you ever feel that you are a very special or unusual person?
8) Do you ever feel that you are especially close to God?
9) Do you ever think people can communicate telepathically?
10) Do you ever feel as if electrical devices such as computers can influence the way you think?
11) Do you ever feel as if you have been chosen by God in some way?
12) Do you believe in the power of witchcraft, voodoo or the occult?
13) Are you often worried that your partner may be unfaithful?
14) Do you ever feel that you have sinned more than the average person?
15) Do you ever feel that people look at you oddly because of your appearance?
16) Do you ever feel as if you had no thoughts in your head at all?
17) Do you ever feel as if the world is about to end?
18) Do your thoughts ever feel alien to you in some way?
19) Have your thoughts ever been so vivid that you were worried other people would hear them?
20) Do you ever feel as if your own thoughts were being echoed back to you?
21) Do you ever feel as if you are robot or zombie without a will of your own?

Appendix D: Schizotypal Personality Questionnaire Brief Revision (SPQ-BR)

The new updated version (Cohen et al., 2010), is a 32-item self-report scale on a five-point ordinal response format ("strongly disagree"-" neutral"-" strongly agree") on which higher scores indicate greater schizotypy. This allows the measurement of cognitive-perceptual (CP), interpersonal (IP) and disorganized symptoms of schizotypal personality disorder (DO).

1) Do you sometimes feel that people are talking about you?
2) Do you sometimes feel that other people are watching you?
3) When shopping, do you get the feeling that other people are taking notice of you?
4) I often feel that others have it in for me.
5) Do you sometimes get concerned that friends or co-workers are not really loyal or trustworthy?
6) Do you often have to keep an eye out to stop people from taking advantage of you?
7) Do you feel that you cannot get "close" to people?
8) I find it hard to be emotionally close to other people.
9) Do you feel that there is no one you are really close to outside of your immediate family, or people you can confide in or talk to about a personal problem?
10) I tend to keep my feelings to myself.
11) I rarely laugh and smile.
12) I am not good at experiencing my true feelings by the way I talk and look.
13) Other people see me as slightly eccentric (odd).
14) I am an odd, unusual person.
15) I have some eccentric (odd) habits.
16) People sometimes comment on my unusual mannerisms and habits.
17) Do you often feel nervous when you are in a group of unfamiliar people?
18) I get anxious when meeting people for the first time.
19) I feel very uncomfortable in social situations involving unfamiliar people.
20) I sometimes avoid going to places where there will be many people because I will get anxious.
21) Do you believe in telepathy (mind-reading)?
22) Do you believe in clairvoyance (psychic forces, fortune telling)?
23) Have you had experiences with astrology, seeing the future, UFO's, ESP, or a sixth sense?
24) Have you ever felt that you are communicating with another person telepathically (by mind-reading)?
25) I sometimes jump quickly from one topic to another when speaking.
26) Do you tend to wander off the topic when having a conversation?
27) I often ramble on too much when speaking.
28) I sometimes forget what I am trying to say.
29) I often hear a voice speaking my thoughts aloud.
30) When you look at a person or yourself in a mirror, have you ever seen the face right before your eyes?
31) Are your thoughts sometimes so strong that you can almost hear them?
32) Do every things seem unusually large or small?

Appendix E: Rational and Experiential Multimodal Inventory (REIm)

The REIM contains 12 items that measure an analytic thinking style (a tendency to solve problems through understanding of logical principles and the evaluation of evidence, and 30 items that measure an experiential thinking style. The latter consists of three 10-item subscales, which are Intuition (tendency to solve problems intuitively, Emotionality (a preference for intense and frequent strong affect) and finally Imagination (A tendency to engage in, and appreciate, imagination). All items are rated on a 5-point scale (1 = Strongly disagree, 5 = Strongly Agree).

Rational Scale (12 Items)

1) I enjoy problems that require hard thinking.
2) I am not very good in solving problems that require careful logic analysis. **(Reversed)**
3) I enjoy intellectual challenges.
4) I prefer complex to simple problems.
5) I don't like to have to do a lot of thinking. **(Reversed)**
6) Reasoning things out carefully is not of my strong points. **(Reversed)**
7) I am not a very analytical thinker. **(Reversed)**
8) I try to avoid situations that require thinking in depth about something. **(Reversed)**
9) I am much better at figuring things out logically than most people.
10) I have a logical mind.
11) Using Logic usually works well for me in figuring out problems in my life.
12) Knowing the answer without understanding the reasoning behind it is good enough for me. **(Reversed)**

Experiential Scale (30 Items)

13) I enjoy reading things that evoke visual images.
14) I enjoy imagining things.
15) I can clearly picture or remember some sculpture or natural object (not alive) that I think is very beautiful.
16) I Identify strongly with characters in movies or books I read.
17) I tend to describe things by using images or metaphors, or creative comparisons.
18) Art is really important to me.
19) Sometimes I like to just sit back and watch things happen.
20) I have favourite poems and paintings that mean a lot to me.
21) When I travel or drive anywhere, I always watch the landscape and scenery.
22) I almost never think in visual images. **(Reversed)**
23) My emotions don't make much difference in my life. **(Reversed)**
24) Emotions don't really mean much: they come and go. **(Reversed)**
25) When I have strong emotional experience, the effect stays with me for a long time.
26) When I'm sad, it's often a very strong feeling.
27) Things that make me feel emotional don't seem to affect other people as much.
28) Everyday experiences often evoke strong feelings in me.
29) I'd rather be upset sometimes and happy sometimes, than always feel calm.
30) I don't react emotionally to scary movies or books as much as most people do. **(Reversed)**

31) My anger is often very intense.
32) When I'm happy, the feeling is usually more like contentment than like exhilaration or excitement. **(Reversed)**
33) I like to rely on my intuitive impressions.
34) I often go by my instincts when deciding on a course of action.
35) I don't think it is a good idea to rely on one's intuition for important decisions, **(Reversed)**
36) I trust my initial feelings about people.
37) I tend to use my heart as a guide for my actions.
38) I enjoy learning by doing something, instead of figuring it out first.
39) I can often tell how people feel without them having to say anything.
40) I generally don't depend on my feelings to help me make decisions. **(Reverse Scores)**
41) For me, descriptions of actual people's experiences are more convincing than discussions about "facts."
42) I'm not a very spontaneous person. **(Reverse Scored)**

Appendix F: Perceived Stress Scale (PSS)

This measures an individual's subjective appraisal of the degree to which situations in her or his life are stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. All Items were rated on a 5-point scale ranging from 0 (Never) to 4 (Very Often) and, following reverse-coding of 4 items, an overall score is computed as the mean of all items.

0. Never 1. Almost never 2. Sometimes 3. fairly often 4. very often

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "Stressed"?
4. In the last month, how often have you dealt successfully with irritating life hassles? **(Reversed)**
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life? (**Reversed)**
6. In the last month, how often have you felt confident about your ability to handle your personal problems? **(Reversed)**
7. In the last month, how often have you felt that things were going your way? **(Reversed)**
8. In the last month, how often have you found that you could not cope with all the things that you had to do?
9. In the last month, how often have you been able to control irritations in your life? **(Reversed)**

10. In the last month, how often have you felt that you were on top of things? **(Reversed)**

11. In the last month, how often have you been angered because of things that happened that were outside of your control?

12. In the last month, how often have you found yourself thinking about things that you have to accomplish?

13. In the last month, how often have you been able to control the way you spend your time? **(Reversed)**

14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix G: Belief In Conspiracy Theory Inventory (BCTI)

All items are rated on a 9-point scale, ranging from 1 (Completely false) to 9 (Completely true). Higher scores on this scale reflect greater endorsement of a range of real-world conspiracy theories.

1. A powerful and secretive group, known as the New World Order, are planning to eventually rule the world through an autonomous world government, which would replace sovereign government.

2. SARS (Severe Acute Respiratory Syndrome) was produced under laboratory conditions as a biological weapon.

3. The US government had foreknowledge about the Japanese attack on Pearl Harbour but allowed the attack to take place so as to be able to enter the Second World War.

4. US agencies intentionally created the AIDS epidemic and administered it to Black and gay men in the 1970s.

5. The assassination of Martin Luther King, Jr., was the result of an organised conspiracy by US government agencies such as the CIA and FBI.

6. The Apollo moon landings never happened and were staged in a Hollywood film studio.

7. Area 51 in Nevada, US, is a secretive military base that contains hidden alien spacecraft and/or alien bodies.

8. The US government allowed the 9/11 attacks to take place so that it would have an excuse to achieve foreign (e.g., wars in Afghanistan and Iraq) and domestic (e.g., attacks on civil liberties) goals that had been determined prior to the attacks.

9. The assassination of John F. Kennedy was not committed by the lone gunman, Lee Harvey Oswald, but was rather a detailed, organised conspiracy to kill the President.

10. In July 1947, the US military recovered the wreckage of an alien craft from Roswell, New Mexico, and covered up the fact.

11. Princess Diana’s death was not an accident, but rather an organised assassination by members of the British royal family who disliked her.

12. The Oklahoma City bombers, Timothy McVeigh and Terry Nichols, did not act alone, but rather received assistance from neo-Nazi groups.

13. The Coca Cola company intentionally changed to an inferior formula with the intent of driving up demand for their classic product, later reintroducing it for their financial gain.

14. Special interest groups are suppressing, or have suppressed in the past, technologies that could provide energy at reduced cost or reduced pollution output.

15. Government agencies in the UK are involved in the distribution of illegal drugs to ethnic minorities.

Appendix H: General Conspiracist Beliefs Scale (GCBS)

Items were rated on a 5-point scale, ranging from 1 *(Definitely not true)* to 5 *(Definitely true).* Higher scores on this measure reflect greater generic conspiracist ideation.

1. The government is involved in the murder of innocent citizens and/or well-known public figures and keeps this a secret.

2. The government permits or perpetrates acts of terrorism on its own soil, disguising its involvement.

3. The Government uses people as patsies to hide its involvement in criminal activities.

4. The power held by heads of state is second to that of small, unknown groups who really control world politics.

5. A small secret groups of people is responsible for making all major world decisions, such as going to war.

6. Certain significant events have been the result of the activity of a small group who secretly manipulate world events.

7. Secret organisations communicate with extra-terrestrials but keep this fact from the public.

8. Evidence of alien contact is being kept from the public.

9. Some UFO sightings and rumours are planned or staged in order to distract the public from real alien contact.

10. The spread of certain viruses and/or diseases is the result of deliberate, concealed efforts of some organisations.

11. Technology with mind-control capacities is used on people without their knowledge.

12. Experiments involving new drugs or technologies are routinely carried out on the public without their knowledge or consent.

13. Groups of scientists manipulate, fabricate, or suppress evidence in order to deceive the public.

14. New and advanced technology which would harm current industry is being suppressed.

15. A lot of important information is deliberately concealed from the public out of self-interest.

Appendix I: Beads Task Instructions, Stimuli and pre-programmed outcome sequence

Figure I1: Beads Task Instructions Displayed

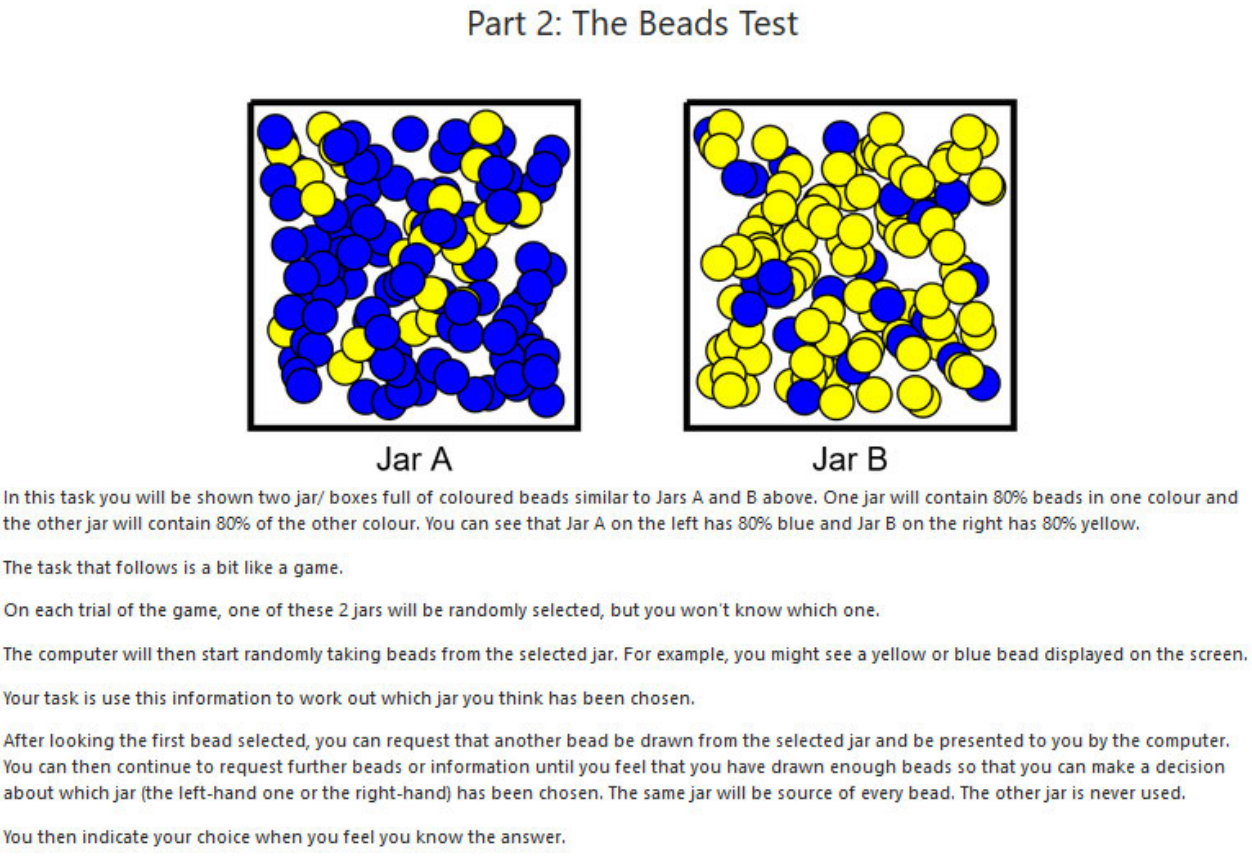


Figure I2: Consequent Comprehension Test

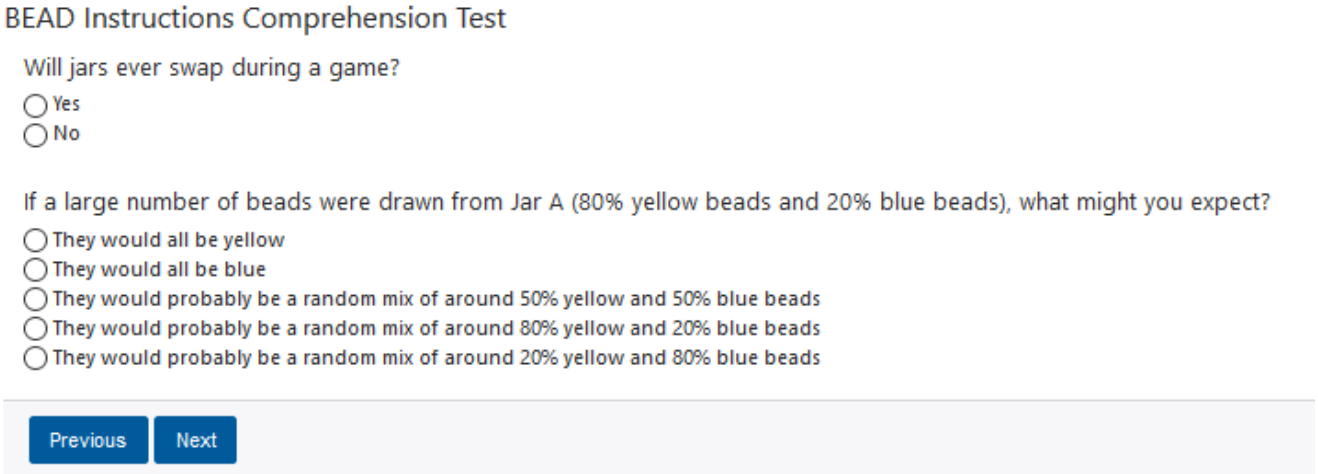


Figure I3. Pre-programmed Outcome Sequence over the 6 Trials

Set	Colour	Trial no.	Sequence
1	Red/Green	1	AAAABAABAA (distractor)
		2	AAABAAAABA (target;80/20)
		3	BABBABAAAA (target;60/40)
2	Blue/Red	4	AAAABAABAA (distractor)
		5	AAABAAAABA (target;80/20)
		6	BAAAABAAAA (target; 60/40)

Figure I4. Example of 80/20 Trial

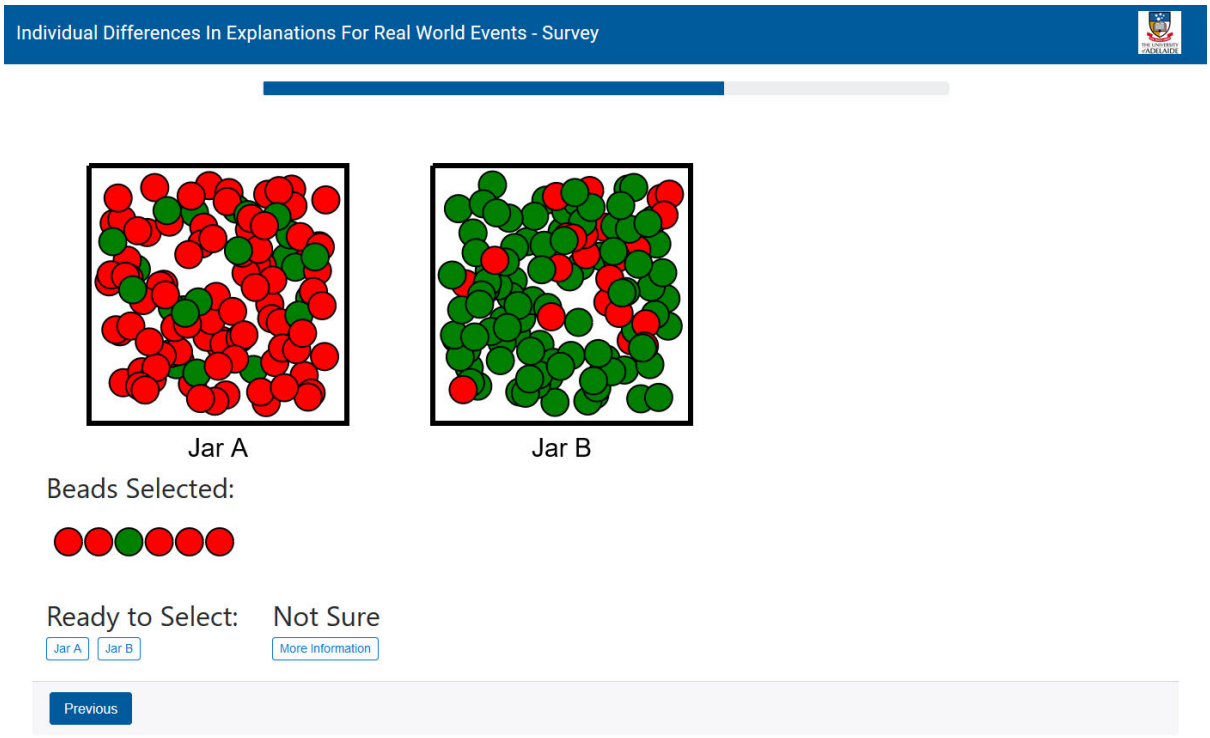
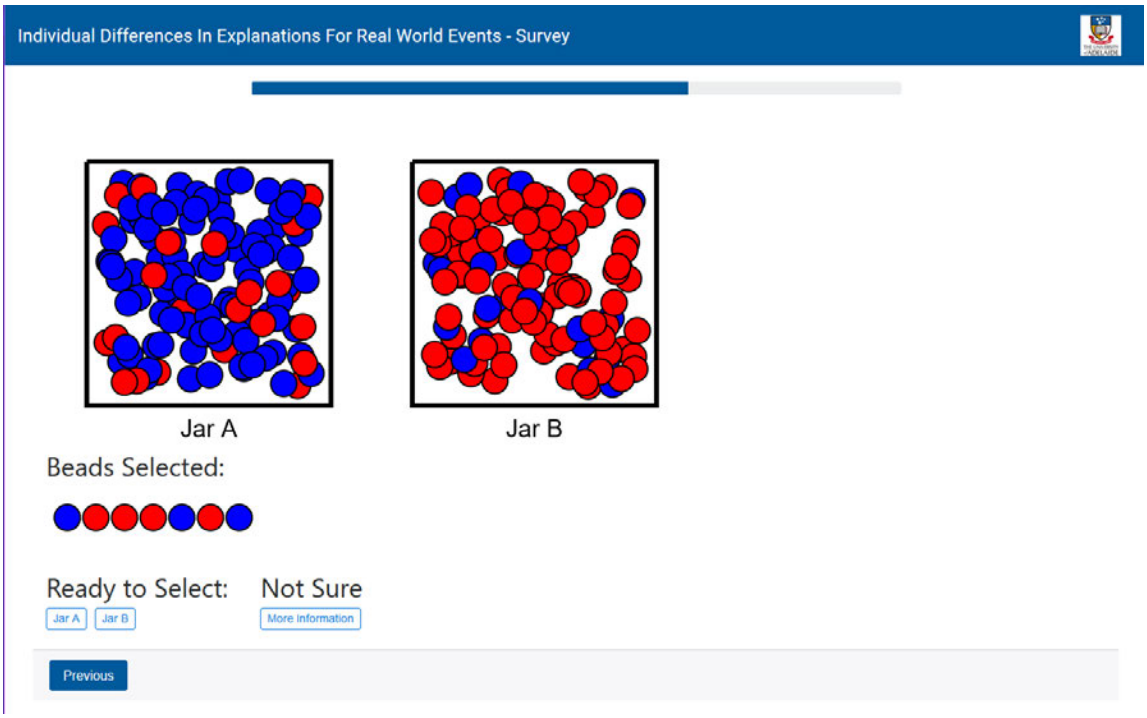


Figure I5. Example of 60/40 Trial



Appendix J: The BADE 16-Item Task Instructions and Display

Figure J1. 16-Item Bade Task Intructions Displayed

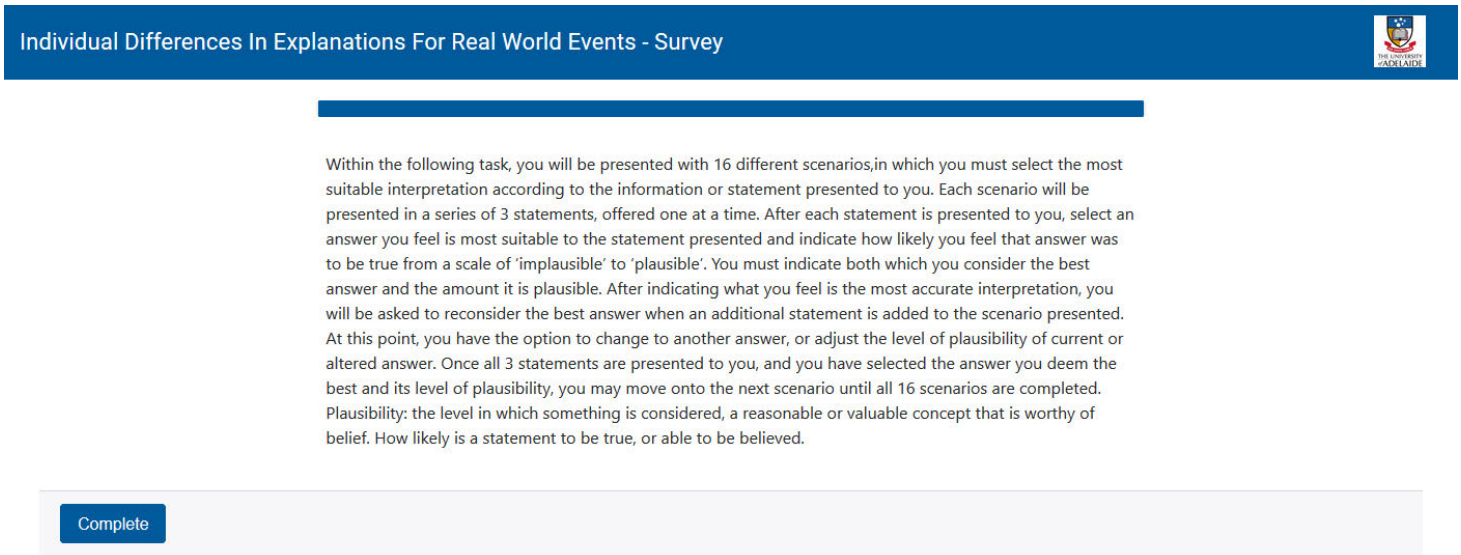
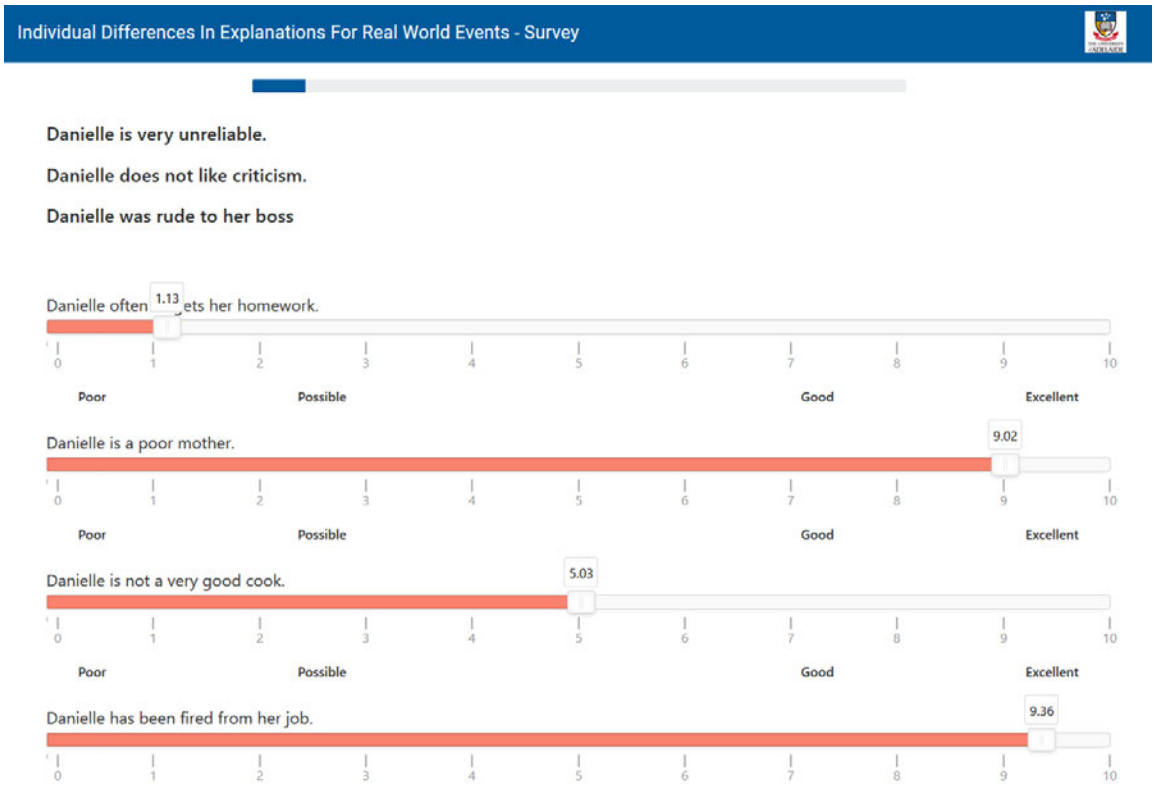


Figure J2. Sample BADE Item Displayed



Appendix K: The BADE 16-item set

Figure K1. Practice Items

Practice 1	
Danielle is very unreliable.	Danielle often forgets her homework. NL
Danielle does not like criticism.	Danielle is a poor mother. EL
Danielle was rude to her boss.	Danielle is not a very good cook. A
	Danielle has been fired from her job. T
Practice 2	
Cindy is dancing.	Cindy is at a party. NL
Cindy is wearing a small dress.	Cindy is high on drugs at a rave. EL
The men clap and whistle when Cindy dances.	Cindy is a member of a famous pop group. A
	Cindy is a stripper. T

Figure K2. Test Items

Trial 1	
Natasha doesn't know that she's talking to her mother.	Natasha is at a Halloween costume party. NL
Natasha is confused and disoriented.	Natasha was adopted at birth. EL
Natasha did not wear her helmet when she went biking.	Natasha is very shy. A
	Natasha has lost her memory after being hit by a car. T
Trial 2	
Andrea has made some new friends.	Andrea has just started going to university. NL
Andrea's new friends control every single aspect of her life.	Andrea is a kind and caring person. EL
Andrea has very suddenly cut off all contact with her family.	Andrea loves to be photographed. A
	Andrea has joined a cult. T
Trial 3	
Nicholas is driving his car very fast.	Nicholas is running late for work. NL
Nicholas did not stop at the red light.	Nicholas' wife is in labour. EL
Nicholas injured a little girl with his car.	Nicholas hates going for walks. A
	Nicholas is a hit and run offender. T
Trial 4	
Tom and Mike are screaming.	Tom and Mike are at a basketball game. NL
Tom and Mike feel nauseous.	Tom and Mike have found a dead body in the alley. EL
Tom and Mike ate too much cotton candy today.	Tom and Mike enjoy being in the spotlight. A
	Tom and Mike are having fun on a roller-coaster. T
Trial 5	
Jenny can't fall asleep.	Jenny is nervous about her exam the next day. NL
Jenny can't wait until it is finally morning.	Jenny is worried about her ill mother. EL
Jenny wonders how many presents she will find under the tree.	Jenny loves her bed. A
	Jenny is excited about Christmas morning. T
Trial 6	
The man is an experienced public speaker.	The man is a politician. NL
The same people come to hear the man speak every week.	The man is a gay-rights activist. EL
The man wears long robes.	The man is shy. A
	The man is a priest. T
Trial 7	
Richard sometimes wears make-up.	Richard is a drag queen. NL
Richard spends most of his time in the theatre.	Richard is self conscious about his scars. EL
Richard went to acting school.	Richard wishes he had a wife. A
	Richard is an actor. T

Trial 8	
Stella answers the phone at work.	Stella is a secretary. NL
Stella is a powerful woman.	Stella is a 911 phone call operator. EL
Stella went to law school.	Stella is a baby-sitter. A
	Stella is a lawyer. T
Trial 9	
Ted is surprised.	Ted needs to be cared for. T
Ted's suitcase is packed.	Ted's wife is taking him on a holiday. NL
Ted is very ill and cannot live at home anymore.	Ted is being evicted for having too many parties. EL
	Ted is fast asleep. A
Trial 10	
Dan is very lucky.	Dan got married. T
Dan has always wanted this to happen.	Dan got tickets to see his favourite band. NL
Dan will always remember the day he proposed to her.	Dan just won the lottery. EL
	Dan slipped and fell on his banana peel. A
Trial 11	
Fred got a very high grade on his exam.	Fred is very dishonest. T
He doesn't usually do well in school.	Fred is a hard working student. NL
The teacher caught him copying from another student.	Fred is really intelligent. EL
	Fred is a frog. A
Trial 12	
Amy encourages the children to exercise.	Amy is a dog. T
Amy is very protective of the children.	Amy is a gym teacher. NL
At home, Amy barks loudly whenever the doorbell rings.	Amy is a very active mother. EL
	Amy is not a very caring person. A
Trial 13 - FILLER	
Stan is on his knees.	Stan is praying. NL
Stan is crying.	Stan is about to propose to his fiancee. EL
Stan's wife has packed her bags.	Stan wishes he was a magic dwarf. A
	Stan can't find his purse. F
Trial 14 - FILLER	
Joan cannot fit into her clothes from summer.	Joan is pregnant. T
Joan's family wants to help her.	Joan is going shopping for a new wardrobe. NL
Joan is very excited to see her new baby.	Joan wants to lose weight. EL
	Joan is shrinking from the winter weather. A
Trial 15 - FILLER	
Alice is anxious to get on the bus.	Alice is running away from home. T
Alice had no time to pack.	Alice is going on a vacation. NL
Alice is very afraid of her cruel step-father.	Alice is going away to college. EL
	Alice likes to wave at people. A
Trial 16 - FILLER	
Gord has reached the peak.	Gord is a mountain climber. T
He will record this date in his journal.	Gord has a best-selling novel. NL
Gord is physically exhausted and needs to return to the base.	Gord has a bad temper. EL
	Gord is an ice-cream on a long stick. A

Appendix L: Participant Information & Consent Form content

[Page 1]

Title: Individual Differences In Explanations For Real World Events - Survey

Brief Description of the study:

This study is investigating the relationship between differences in personality and people's beliefs about the causes of world-wide events. Do events that occur in the world for the reasons that are commonly reported or are there other explanations?

Your role in the Study:

You will be asked to complete a series of online psychometric inventories where you will be asked to provide answers reflective of your own beliefs, \ followed by two cognitive tasks. Participation in the study is entirely voluntary; there is no obligation to take part in the study and, if you choose not to participate, there will be no repercussions. You have the right to withdraw at any time.

Inclusion/Exclusion Criteria:

Participants must be English-fluent to comprehend the scale items and cognitive measures of the present study.

Risks of Participating:

This study is unlikely to pose any risks to your health or wellbeing as a result of participating. However, you may feel some discomfort when asked to reflect upon unusual experiences or how others might view you.

Statement of Privacy:

All data collected during the experiment will be treated in the strictest confidence and stored on password protected computers. The data will be used only for this project and once the data is no longer required it will be destroyed. You will also have the opportunity to receive a summary of the research findings. Results will be aggregated for reporting purposes to preserve anonymity

Other relevant human research ethics consideration:

In due course, this research will be reported in the open literature based upon the group-based analyses of current study, based upon each participant's response.

Consent:

If you are willing to participate, please indicate this by clicking on the first screen of the experimental application, as instructed by the researcher and follow the prompts.

Contact Details for Questions:

Should you have any complaints or concerns about the manner in which this project is conducted, please contact primarily the student investigator or lead investigator:

Student Investigator

[redacted]

[Page 2]

For any questions about the ethical conduct of this research, please contact the Acting Chair of the Human Research Ethics Committee in the School of Psychology, University of Adelaide (Dr. Diana Dorstyn): [redacted]

1. I have read the attached Information sheet and agree to take part in the following project:

Title:

Individual Differences In Explanations For Real World Events - Survey

Ethics Approval Number:

HREC 18/9

2. I have had the project, so far as it affects me, fully explained to my satisfaction within the brief description of the study. My consent is given freely.

3. Although I understand the purpose of the research project, I also understand the involvement may not be of any benefit to me.

4. I understand that I am free to withdraw from the project at any time.

5. I have read and understood the risks of participating within the current project.

ELECTRONIC CONSENT: You may print a copy of this consent form for your records. Selecting the boxes below indicates that you agree.

- You have read the above information
- You voluntarily agree to participate
- You are 18 years of age or older
- I am not receiving treatment or have been clinically diagnosed for any form of psychological illness/disorder

This study has been approved by The University of Adelaide Human Research Ethics Committee

In order to assess whether our sample is representative of the larger population, please answer the following demographic questions. This information will not be associated with your name or contact details.

*Prolific ID Number

I have read the terms and conditions of this study and understood my rights and ethical considerations.

☐ I Agree

I permit the researchers of this study to use my produced data for the purposes mentioned.

☐ I Agree

Please take note of your Prolific ID number. If your browser closes unexpectedly, you can re-enter this number and you will be taken to where you were up to in the study.

[Page 3]

Eligibility Criteria – please tick all boxes before proceeding, if you meet the following criteria:

☐ I have not already participated in this study.

☐ I am aged 18 and above.

☐ I am not receiving treatment or have been clinically diagnosed for any form of psychological illness/disorder

Informed Consent – Please tick all the boxes before proceeding, if you agree to the following:

☐ I freely consent to taking part in this study. I understand that I can withdraw at any time by leaving the study.

☐ I have read and understood the information provided above. I have contacted the researchers involved if I have any questions, and these have been answered to my satisfaction.

☐ Although I understand the purpose of the research project it has also been explained that my involvement may not be of any benefit to me.

☐ I have been informed that, while information gained during the study may be published, I will not be identified, and my personal results will not be divulged.

☐ I agree not to discuss my experience of taking part in this study with other people who are likely to participate, as this may adversely affect the data.