

Student No: 4270708

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Assessed Coursework Cover Sheet for Applied Psychology Postgraduate Courses

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Coursework Title: The role of rationality in moderating the relationship between extremist mindsets and schizotypy, autism and emotionality.

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This is to confirm that I submit this piece of assessed work in the full knowledge of the published guidelines on plagiarism and its consequences.

Journal: Journal of Threat Assessment and Management.

Author: Maisie King

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Research Proposal

The role of rationality in moderating the relationship between extremist mindsets and schizotypy, autism and emotionality.

Introduction/Background

According to the Global Terrorism Index (2018) while number of deaths reported due to terrorism dropped by 27% between 2016 and 2017, the number of countries which recorded at least one death by terrorism in 2017 was 67, the second highest annual recording since 2002. This demonstrates the global issue that terrorism presents.

Sinclair and Antonius (2009) argue that most people view terrorism as the result of simple constructs such as grievance, political and religious extremes, psychoticism, and aggression. The reality of why individuals engage in terrorism is actually more nuanced than simply treacherous, and due to how quickly people can be radicalised and operationalised more research is needed to understand the process. Misiak et al (2019) state that the process to radicalisation is multi-staged with many mutually reinforcing aspects; for example, not everyone facing inequality or oppression turns to extremist ideologies. Therefore, there must be other underlying influences. Campelo, Oppetit, Neau, Cohen and Bronsard (2018) suggests that there is no clear explanation for radicalisation but actually a range of vulnerabilities that need to be managed.

One potential vulnerability that could be monitored is schizotypy, a trait present in non-clinical populations. Defined by the DSM-5 (2013), schizotypy is expressed as pervasive social, interpersonal, cognitive and perceptual deficits and people may experience ideas of reference (thinking that unrelated concepts relate specifically to them), unusual perceptions, odd thought processes,

paranoid ideation, and more. Research by Hart and Graether (2018) demonstrate a link between schizotypy and greater endorsement of conspiracy beliefs, with schizotypal individuals having a higher propensity to be untrusting, have eccentric ideas, be preoccupied with personal safety, and view agency in action.

Some conspiracy beliefs could be perceived as extremist, as strong believers of particular conspiracies can become obsessive over the ideas they hold which can impact the way they live. For example, medical conspiracies have caused many to reject vaccination, resulting in previously cured diseases returning and some conspiracies consist of ideas that some terrorists attribute their motives to (Douglas, Uscinski, Sutton, Cichocka, Nefes, Ang & Deravi, 2019). Highlighting the association with schizotypy and conspiracy beliefs could demonstrate propensity of schizotypy as a vulnerability for extremism. Georgiou, Delfabbro and Balzan (2019), found links with lower educational attainment and reduced analytical thinking involved in conspiracy beliefs. It has been demonstrated by Barron et al (2018) and Bogart et al (2010) that analytical and rational cognitive thinking styles mediate the link between schizotypy and paranormal beliefs. This suggests that an individual with high schizotypal traits and less rationality has the potential to be susceptible to rejecting mainstream information sources resulting in delusional ideas and conspiracy, and so has a potential vulnerability to acquire extremist ideologies.

A second vulnerability which to explore is Autism, Autism Spectrum Disorder (ASD) is defined partially by the DSM-5 (2013) as consisting of deficits in social interaction and communication and restrictive and repetitive behaviours. Baron-Cohen et al (2001) has linked Autism to cognitive and perceptual deficits. ASD persons have impairments in cognitive reasoning biases,

particularly Bayesian inference (Karvelis et al, 2018). Critically, if an individual with Autism has deficits in aspects of their cognitive reasoning, they may be susceptible to extremist belief (Georgiou, Delfabbro & Balzan, 2019). The repetitive behaviours and fixed interests observed in ASD have been associated with fanaticism, which may be religious or political. Burke, Kraut and Williams (2010) noted that ASD has been linked more commonly with 'lone-actor' incidents of violence, they argue this could be attributed to the poor social interactions these individuals have, encouraging the development of an online persona which increases the intensity of distrust of others, and inflexible ideologies.

Emotionality is a key factor in the expression of autism and schizotypy, with research showing deficits in socio-emotional functioning (Barron et al, 2018; Kiln, McPartland & Volkmar, 2005). Emotional functioning in high functioning autism is improved when engaged in organised activity which may provide recruiters a vulnerability to usurp (Bohnert, Lieb & Arola, 2019). Kenworthy and Miller (2002) found emotionality, externalisation and less rationality were applied to out-groups in a group under 'high threat', which indicates that emotionality may have a role in extremist ideas forming, hence the importance to look at emotionality alongside the two traits being explored.

This study examines which personality traits might make an individual vulnerable to the process of extremism, focusing on schizotypy and autism, which have been found to share similar features (Dinsdale et al, 2013). Due to the evidence linking conspiracy beliefs and critical thinking, this research also tests whether the relationship between schizotypy, autism, and emotionality trait expression and extremist mindsets can be moderated by rational thinking ability. If an individual can mediate their conspiracy beliefs through rationalisation,

rationality may mediate any potential effects for extremism, perhaps even being protective.

Hypotheses

- There will be a significant positive correlation between individuals with traits of schizotypy and a more extremist mindset.
- There will be a significant positive correlation between individuals with traits of autism and a more extremist mindset.
- There will be a significant positive correlation between individuals with traits of emotionality and a more extremist mindset.
- The relationships between schizotypy, autism and extremist mindsets will be significantly lower for people with rational thinking ability.

Methods

Participants

To obtain a moderate effect size of 0.15 and $p = 0.01$ using multiple hierarchical regression, G*Power (Faul et al, 2007) indicate that 205 participants will be required. Participants will be recruited through opportunity sampling via an online questionnaire posted on different social media platforms and on more specific forums or pages that may target a different population ie. Facebook pages or Reddit subs that might relate more to older individuals, as well as ones for ASD, schizotypy or politics. Moderators of each page will be asked for permission before anything is posted. An even gender split is desired, however due to recruiting online this may not occur. The age range will be broad, however due to the distribution method, an anticipated normal distribution with slightly positively skew for ages is expected. In order to limit the positive skew bias in age, the questionnaire link will be intentionally distributed targeting places where an older demographic frequent. This study assumes that 'any'

individual may be potentially susceptible to radicalisation and extremist ideas, so maximal efforts to achieve a representative sample will be ensured.

Apparatus

The online questionnaire provided to participants will be distributed using Jisc Online surveys. To mitigate low response rates to online questionnaires, features such as easy access, having an engaging and motivating user interface, keeping instructions brief and clear, providing a progression tracker, and including mandatory responses to limit invalid data will be implemented. The questionnaire will be presented to the participants as a questionnaire measuring personality traits and political views, which does not inform them of the true intent for the study, so avoiding initial biases. The content of the questionnaire will comprise the questions from five scales and contains 132 questions overall.

1. sO-Life: Mason, Linney & Claridge (2005).

Mason et al (2005)'s sO-LIFE assesses schizotypal traits and has demonstrated successful convergent and discriminant validity in relation to different schizotypy measures (Fonseca-Pedrero et al, 2015). It was derived from items with high internal consistency from the full-length O-LIFE (Mason et al, 1995), making it a shorter but still a reliable and valid questionnaire. The sO-LIFE consists of 43 YES/NO statements measuring schizotypal traits across four subscales; unusual experiences, cognitive disorganisation, introvertive anhedonia, and impulsive non-conformity. Scoring the sO-LIFE is straightforward, 1 point is recorded for 'yes' responses, but 0 points equate to 'no' responses, and items are summed.

2. RAADS-14: Eriksson, Andersen & Bejerot (2013).

Eriksson, Andersen and Bejerot (2013)'s RAADS-14 was selected as a measure of autism. Derived from the 80-item full length RAADS-R, this

shortened measure is effective at measuring autism in adults (Eriksson, Andersen & Bejerot, 2013). RAADS-14 consists of 14 statements applicable to the individual and their life experiences, covering three subdomains, mentalising deficits, social anxiety, and sensory reactivity. The statements are given four-point Likert responses with subsequent values ranging from 'True now and when I was young' (3), 'True only now' (2), 'True only when I was younger than 16' (1) and 'Never true' (0). Based on the responses selected by the individual, they will be given an overall score which will determine the extent to their traits of autism. The cut off score for this measure is 14 points.

3. MEM: Stankov et al (2018).

The MEM assesses the extent of the militant extremist mindset. The MEM consists of three subscales, 'nastiness' (pro-violence), 'grudge' (vile world), and 'excuse' (utopianism). The 24 statements for the participants are respond to with to a 5 point Likert scale ranging from 'Strongly and completely agree' (5), 'Moderately agree/mostly agree' (4), 'Neither agree or disagree' (3), 'Moderately disagree/mostly disagree' (2) and 'Strongly and completely disagree' (1). Stankov et al (2010) found gender-based differences on the MEM for nastiness (pro-violence) and excuse (utopianism), males endorsing 'nastiness' more, whereas females reported more agreement with the 'excuse' subcategory. No gender difference was identified for grudge (vile world). Their research also found good correlations between the MEM and other related constructs.

4. REI: Pacini and Epstein (1999).

The REI is used to identify rational and experiential thinking and has subscales of; self-reported ability and engagement. The REI contains 41 statements, each rated on a five-point Likert scale ranging from 'Definitely not true of myself' (1), 'Somewhat not true of myself' (2), 'Neither true nor untrue

of myself' (3), 'Somewhat true of myself' (4) and 'Definitely true of myself' (5). The REI was found by Pacini and Epstein (1999) to correlate with personality traits in Costa and McCrae (1989)'s Big-5 model for personality, strongly for successful REI and openness, agreeableness, extraversion and conscientiousness and negatively with neuroticism, conservatism, and categorical thinking. Highlighting the relationship between this measure for thinking styles and personality and demonstrating its usefulness as a measure.

5. HEXACO-60; Emotionality Subscale: Ashton & Lee (2009).

The HEXACO-60 is a short version of the full 100 item revised HEXACO model of personality, featuring 10 questions from each domain (Ashton & Lee, 2006). The 10 questions from the emotionality subscale are to be included in the questionnaire with the aim to measure an individual's tendency for vulnerability, fearfulness or fearlessness and detachment. Participants score their responses ranging from (1) 'Strongly disagree', (2) 'Disagree', (3) 'Neutral, neither agree or disagree', (4) 'Agree', and (5) 'Strongly agree'. Lee and Ashton (2006) found the HEXACO-10 to have good internal reliability and low inter-scale correlation, supporting its use in situations with limited time available. Aghababaei, Wasserman and Nannini (2014) found good consistency across culture with the HEXACO-60. Measuring emotionality would be of use as socio-emotional deficits are present in both Autism and schizotypy and may be linked to the development of an extremist mindset.

Design

The study is a predictor-outcome design, so each participant will experience the same questions with the purpose being to identify what predicts a high extremist mindset outcome based on the predictor variables identified in high and low traits.

The dependent variable being measured in this study is the outcome scores on the militant extremist mindset questionnaire. Participants will complete each questionnaire therefore the design is within subjects.

Procedure

A sample of at least 205 human participants will be sought using voluntary opportunity sampling methods. Participants will be collected through the distribution of the questionnaire online. Participants will access a link for Jisc online surveys, where they will be given the 132 complied questions.

Participants will receive an information sheet and a consent page to confirm their participation before beginning. Participants will be reminded that once they have agreed to participating, their responses will be recorded on the system and due to no personal data being collected, they are unable to withdraw their responses and if they choose to complete it that all questions should be answered properly, to reduce poor quality responses. Once participants complete the questionnaire, they will be provided with a debrief of the study including its purpose and aims as well as researcher contact information. Also, on completion participants will be provided with a number of free anti-radicalising sites and some online support options. All supplementary sheets are found in the Appendix.

Data is being collected online because it is more time and cost efficient than printing and physically handing the questionnaire out. It is easier to obtain a larger and a wider range of participants when published online as it can be shared in a range of places, and it is straightforward for the participant and researcher. Due to the sensitive topics, it may provide more success in obtaining honest responses as the individual is anonymous.

Planned Analysis

The planned analysis for this study is multiple hierarchical regression, as this facilitates the creation of an explanatory model. A regression will be used as a number of predictor factors have already been determined, based on the rationale established during research. The data collected will subsequently be entered into SPSS (2016) for analysis. The order of the factors entered will be based on what the background research suggests are the most important and can potentially explain the most variance. The hierarchical regression approach has been selected over stepwise regression as Smith (2018) states that stepwise facilitates a number of statistical errors, forwards stepwise regression potentially increasing the amount of type II error possible. Additionally, Hayes PROCESS will be used on SPSS to test for moderation and mediation effects, to allow for the direct and indirect interaction effects to be demonstrated.

Estimated timescales

The expected timescale for data collection is depicted in table 1. It is a basic guideline for the research project as potential changes may occur eg. recruitment delays.

Timeline dates	Intended Progress
27 th January 2020	Final hand in for proposal. Upon feedback, data collection can begin and Jisc can go live.
Middle of March 2020	Data collection complete, all participants recruited.
End of April 2020	Data analysis completed.
April – June 2020	Write up being completed.
22 nd June 2020	Draft portfolio submission.

6 th July 2020	Final hand in for research project.
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Table 1 - Proposed timeline for research project, estimated based on data collection, analysis and final write up.

Word count for proposal: 2280

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Ethics Application Form

Application for approval of all studies involving **Healthy Human Participants only conducted by Staff and Students of the University of Nottingham which don't involve an invasive procedure**

Please complete one application form, consent form (template attached) and participant information sheet (template attached), one detailed study proposal (template attached) Please e-mail 1 copy of each as attachments

1 Title of Project: The role of rationality in moderating the relationship between extremist mindsets and schizotypy, autism and emotionality.

Short title Rationality moderates the effects of schizotypy and autism traits on extremist thinking.

2 Names, Qualifications, Job Title, School/Divisional/Unit/Address, email of all Researchers:

Chief Academic/Supervisor: *Dr Vincent Egan, (mczve@exmail.nottingham.ac.uk).*
Associate Professor of Forensic Psychology Practice, Director, MSc Forensic Psychology by Research, PhD, HCPC Chartered Clinical Psychologist, HCPC Chartered Forensic Psychologist
Centre for Forensic and Family Psychology, Department of Psychiatry and Applied Psychology
School of Medicine, University of Nottingham, Room B23, YANG Fujia Building, Jubilee Campus, Wollaton Road, Nottingham, NG8 1BB.

Other key researchers/collaborators: *Simon Duff, (mczsd@exmail.nottingham.ac.uk).*
Dr Simon Duff C. Psychol. AFBPsS, Registered Practitioner Psychologist (Forensic), Director of Stage II Forensic Training, Centre for Forensic & Family Psychology, University of Nottingham
B05, YANG Fujia Building, Jubilee Campus, Nottingham, NG8 1BB.

Students name and course: *Maisie King, (lpymk4@nottingham.ac.uk).*
MSc Forensic and Criminological Psychology.

3 Type of Project:
The type of project being proposed is a cross-sectional questionnaire-based study.

4 Location of study:
This study is being conducted from the University of Nottingham; however, the recruitment and data collection of participants will be online.

5 Description and number of participants to be studied:
G*Power analysis suggests 205 participants will be required based on the selected effect size of 0.15 and a $p <$ value of 0.01. Participants used in the study will be over the age of 18, of any identified gender.

6 Summary of Experimental Protocol

1. Background

Terrorism is a global phenomenon, with the number of countries reporting at least one death through terrorism in 2017 being the second highest annual

recording since 2002 (Global Terrorism Index, 2018). It has been suggested that anyone can turn to terrorism subsequent to the acceptance of extremist ideologies. The accessibility and speed at which these events can occur makes it difficult to understand what factors have a role in a multifaceted approach. Looking at which vulnerabilities may predispose individual to being susceptible to the process of radicalisation is a better research approach. Prior research by Hart and Graether (2018) and Georgiou, Delfabbro and Balzan (2019) demonstrate individuals with schizotypy traits have significantly more developed and maintained conspiracy beliefs, which can be considered a weak form of extremist ideology. Individuals with autism traits are also shown to have some impairments in cognitive reasoning (Karvelis, 2018) and, the propensity to have fixed interests. This could be linked to the development of extremist ideology as those with such traits may become fixed on the radical ideas of a group and have a deficit in their ability to think critically about the information. Georgiou, Delfabbro and Balzan (2019) have shown the significance of low educational attainment and reduced analytical thinking between schizotypy and endorsement of conspiracy. Barron et al (2018) also identified the relationship between beliefs and schizotypy being mediated by analytical thinking styles, knowing the possible associations between analytical thinking and extremist beliefs may provide a useful direction for understanding. Another factor this study will look at is emotionality, Barron et al (2018) notes socio-emotional functioning in schizotypy to be restricted which is also consistently shown in individuals with Autism (Kiln, McPartland and Volkmar, 2005) and high functioning autism, although Bohnert, Lieb & Arola (2019) found organised activity was associated with better emotional functioning. Therefore, looking at whether emotionality correlates with an extremist mindset would be useful as a means of identifying vulnerability in populations.

2. Aims (to include hypothesis to be tested Primary and secondary endpoints)

This study tests whether high traits of schizotypy and autism are associated with militant extremist mindsets, if this relationship is stronger the higher the trait expression is, and if it can be moderated by rational and experiential thinking, or emotionality.

It predicts:

- schizotypy and having extremist mindsets will be positively correlated.
- autism and having extremist mindsets will be positively correlated.
- increased emotionality and extremist mindsets will be correlated.
- The relationship between schizotypy and autism and extremist mindsets will be significantly reduced for people with more rational thinking.

3. Research protocols and methods

This study uses a predictor-outcome design, as each participant experiences the same condition as the purpose is to identify what predicts extremism as an outcome, based on the expression of each trait studied. The data being collected will be obtained using five pre-existing questionnaires adapted into one, posted online using Jisc surveys. The questionnaires being used are Mason (2005)'s shortened Oxford–Liverpool Inventory of Feelings and Experiences (sO-LIFE), Eriksson, Andersen and Bejerot (2013)'s Rivto Autism and Asperger Diagnostic Scale (RAADS-14) Screen. Stankov et al (2018)'s Militant Extremist Mindset assessment, Pacini and Epstein (1999)'s Rational and Experiential Inventory (REI), and the Emotionality subscale from the shortened HEXACO-60 (Ashton & Lee, 2009). Following data collection, a hierarchical regression will be conducted to calculate how much variance in the outcome can be explained by each predictor.

4. Measurable points/statistical power of the study

The points being measured in this study include scores recorded for trait expression across participants for autism, schizotypy, rational and experiential thinking and the militant extremist mindset. Data collected will be analysed using correlation and regression. Given a moderate effect size of 0.15 and a sought significance of $p = 0.01$ using the implementation of multiple hierarchical regression analysis, 205 participants will be required based on a G*Power calculation (Faul et al, 2007). There will be a significant positive correlation between traits of autism, schizotypy, and emotionality and extremist mindsets, however this positive correlation should be moderated if there are concurrent high rational thinking scores. Hayes PROCESS will be used in SPSS in order to show moderation and mediation effects within the dataset.

5. Key references

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7 Lay Summary of project (in lay words): (maximum 200 words) **Summaries which include language which is too technical for lay members of the Committee will be rejected.**

Despite the grave impact of terrorism (Global Terrorism Index, 2018), there is little understanding of how an individual becomes radicalised. One approach is looking at the vulnerabilities an individual may have that make them pre-disposed to the development of extremist mindsets. Personality traits such as schizotypy and autism

have been linked with a higher propensity of conspiracy beliefs, reduced critical thinking, cognitive and perceptual deficits (Baron-Cohen et al, 2001; Hart & Graether, 2018). These factors may be key in an individual's susceptibility to endorsing extremism. Additionally, it is important to understand how these vulnerabilities can be moderated, and one factor that may do this is rational thinking. Georgiou, Delfabbro and Balzan (2019) and Barron et al (2018) have demonstrated that reduced analytical thinking is related to extreme beliefs. Emotional problems also have a role in the presentation of autism and schizotypy, and emotionality may be a factor linked to extremism or could be shown as a preventative factor. This study tests the extent to which schizotypy, and autism traits are related to militant extremist mindsets, and how the relationship can be mediated by an individual's rational thinking ability and emotionality.

8 Will written consent be obtained from all volunteers?

Consent will be obtained online when participants access the questionnaire on Jisc surveys.

9 Will an inconvenience allowance be offered

N/A.

10 FUNDING

N/A.

11 Studies involving NHS Staff, organisations, Services

Does the study involve any premises, services staff who hold a contract with a hospital, Primary Healthcare or Social Care Trust?

N/A.

12 How will the subjects be chosen?

Participants will be collected as a volunteer opportunity sample; questionnaires will be distributed online through a variety of media platforms and identified blogs and participants will volunteer to engage and participate. Moderators from each site will be asked for permission before posting anything.

13 Describe how possible participants will be approached.

Due to collecting data online, participants will encounter social media posts containing links for the study and requests for participants. Brief explanation will be given in the posts, but without explaining the complete aims due to biasing issues.

14 What sources of information will be included? i.e, pre-existing research database, student records, visits to other organisation, online resource

Online primary sources of information will be gathered about the individuals through their responses to the questionnaire.

15 Whose permission will be sought to access this information (eg GP, consultant Head of Organisation)?

The individuals participating will be required to provide permission for using their data and relevant information they provide within the write up and analysis of the study. Prior to the posting of the study details online, moderators of each proposed online site are to provide approval to the research before it is shared.

16 For interview/focus groups:

N/A.

17 Data Storage and Data management

Jisc online surveys will store the initial raw data collected from the questionnaire responses. This is stored securely due to their information security management system and it is only accessible by the researcher for analysis. Once imported into SPSS for data analysis all anonymity and confidentiality protocols will be upheld, ensuring only the primary researcher and supervisor can handle the data.


18 What ethical problems do you foresee in this project?

Participants may realise the purpose of the questions and feel negatively towards the research due to the public perception and views towards extremist ideologies. It may be upsetting depending on the individual's experience and knowledge relating to extremism, or if they feel a 'diagnosis' is associated with extreme responses. We will emphasise these are extreme examples, and we are not claiming all such persons have such views. Additionally, it is unethical to indicate diagnosis of an individual without being qualified, hence that is not occurring within this study. The study does not inform participants entirely about the aims beforehand, as participants should not be primed before responses have been made. Information about de-radicalisation will be provided from online sources to participants.

19 What are the possible limitations of the proposed design of this study?

Potential limitations include issues with participants not completing the questionnaire appropriately or providing non-genuine responses eg. if they rush or misread the question. It is hard to then determine if this in an online study. Data will be tested for reliability to exclude unreliable respondents, if necessary, using Mahalanobis distance for measuring extreme outliers.

DECLARATION: I will inform the Medical School Ethics Committee as soon as I hear the outcome of any application for funding for the proposed project and/or if there are any significant changes to this proposal. I have read the notes to the investigators and clearly understand my obligations as to the rights, welfare and dignity of the subjects to be studied, particularly with regard to the giving of information and the obtaining of consent.



Signature of Lead Investigator:

Date: 29/01/2020

****Nb If you are student your supervisor must sign this form otherwise it will be rejected**

Name and address for correspondence with applicant:

Maisie King
11 Devonshire Promenade,
Lenton,
Nottingham,
NG7 2DS.

Please submit your completed application to:

Administrative Support

Faculty of Medicine & Health Sciences Research Ethics Committee
c/o Faculty PVC Office
B Floor, Medical School (nr Bridge)
QMC Campus, Nottingham University Hospitals
Nottingham
NG7 2UH

e-mail: louise.sabir@nottingham.ac.uk

Word count: 1371

Appendix - Psychometrics

OLIFE:

When in the dark do you often see shapes and forms even though there is nothing there?

Are you easily confused if too much happens at the same time?

Are you much too independent to get involved with other people?

Do you at times have an urge to do something harmful or shocking?

Is trying new foods something you have always enjoyed?

Do you think that you could learn to read other's minds if you wanted to?

Have you ever felt the urge to injure yourself?

Has dancing or the idea of it always seemed dull to you?

Do you dread going into a room by yourself where other people have already gathered and are talking?

Do you feel that your accidents are caused by mysterious forces?

Do you often feel the impulse to spend money which you know you can't afford?

Do you ever feel that your speech is difficult to understand because the words are all mixed up and don't make sense?

Do you often overindulge in alcohol or food?

Have you often felt uncomfortable when your friends touch you?

Do you ever have a sense of vague danger or sudden dread for reasons that you do not understand?

Are you a person whose mood goes up and down easily?

Do you often have difficulties in controlling your thoughts?

Do ideas and insights sometimes come to you so fast that you cannot express them all?

Do you feel very close to your friends?

Would you like other people to be afraid of you?

Do you prefer watching television to going out with people?

Do you find it difficult to keep interested in the same thing for a long time?

Can some people make you aware of them just by thinking about you?

Do you stop to think things over before doing anything?

Are there very few things that you have ever enjoyed doing?

When in a crowded room, do you often have difficulty in following a conversation?

Does a passing thought ever seem so real it frightens you?

Do you love having your back massaged?

When you look in the mirror does your face sometimes seem quite different from usual?

Are you usually in an average kind of mood, not too high and not too low?

Do you find the bright lights of a city exciting to look at?

Does your sense of smell sometimes become unusually strong?

Are your thoughts sometimes so strong that you can almost hear them?

Do you like mixing with people?

Do you often feel like doing the opposite of what other people suggest even though you know they are right?

Are you easily distracted when you read or talk to someone?

Do you ever have the urge to break or smash things?

Have you ever thought that you had special, almost magical powers?

Do you frequently have difficulty in starting to do things?

Have you sometimes sensed an evil presence around you, even though you could not see it?

Are you easily distracted from work by daydreams?

Do you consider yourself to be pretty much an average sort of person?

Is it hard for you to make decisions?

MEM:

Our enemy's children are like scorpions; they need to be squashed before they grow up.

If violence does not solve problems, it is because there was not enough of it.

Compromise is just another word for cowardice.

Our immeasurable sufferings call for merciless revenge.

Frankly, I feel like chopping the head off of those who disagree with me on important matters.

Those who advocate peaceful change are the worst enemy of social change.

No sacrifice of human lives is too much if it can lead to a better and a more just life.

All of our enemies should be treated the same, whether they are men or women, children or adults, armed or unarmed.

Today's society suffers from a crisis of values, greed, and corruption.

It is hard to behave in a relaxed and carefree way in this soulless and competitive world.

Evil has been reincarnated in the cult of markets and the rule of multinational companies.

Our people are in danger, everybody is trying to divide us and hurt us.

Those who talk about freedom and democracy are really advocating promiscuity and sin.

In reality, political freedom is simply an invitation to cause chaos and social disturbances.

Most people are like animals: their only concern is to satisfy their bellies and their lust.

Fairy tales about moral principles are used by the powerful to tyrannize the weak and powerless.

One day all people in this world will be united in truth.

I believe that a new type of human, free of greed and selfishness, will be created one day.

One day, a just world, free of exploitation and dictatorship, will be created.

There is a group of people whose uncompromised ideas and brave actions make my own life meaningful and worth living.

I am in awe of those who sacrifice their lives to the fight for truth and justice.

The unbreakable bond between the members of my group is sealed by the noble goals we are trying to achieve.

My people are destined to accomplish important things.

Real life begins after one's life on earth.

RAADS-14:

It is difficult for me to understand how other people are feeling when we are talking.

Some ordinary textures that do not bother others feel very offensive when they touch my skin.

It is very difficult for me to work and function in groups.

It is difficult to figure out what other people expect of me.

I often don't know how to act in social situations.

I can chat and make small talk with people.

When I feel overwhelmed by my senses, I have to isolate myself to shut them down.

How to make friends and socialize is a mystery to me.

When talking to someone, I have a hard time telling when it is my turn to talk or to listen.

Sometimes I have to cover my ears to block out painful noises (like vacuum cleaners or people talking too much or too loudly).

It can be very hard to read someone's face, hand, and body movements when we are talking.

I focus on details rather than the overall idea.

I take things too literally, so I often miss what people are trying to say.

I get extremely upset when the way I like to do things is suddenly changed

REI:

I try to avoid situations that require thinking in depth about something

I'm not that good at figuring out complicated problems

I enjoy intellectual challenges

I am not very good at solving problems that require careful logical analysis

I don't like to have to do a lot of thinking

I enjoy solving problems that require hard thinking

Thinking is not my idea of an enjoyable activity

I am not a very analytical thinker

Reasoning things out carefully is not one of my strong points

I prefer complex problems to simple problems

Thinking hard and for a long time about something gives me little satisfaction

I don't reason well under pressure

I am much better at figuring things out logically than most people

I have a logical mind

I enjoy thinking in abstract terms

I have no problem thinking things through carefully

Using logic usually works well for me in figuring out problems in my life

Knowing the answer without having to understand the reasoning behind it is good enough for me

I usually have clear, explainable reasons for my decisions

Learning new ways to think would be very appealing to me

I like to rely on my intuitive impressions

I don't have a very good sense of intuition

Using my gut feelings usually works well for me in figuring out problems in my life

I believe in trusting my hunches

Intuition can be a very useful way to solve problems

I often go by my instincts when deciding on a course of action

I trust my initial feelings about people

When it comes to trusting people, I can usually rely on my gut feelings

If I were to rely on my gut feelings, I would often make mistakes

I don't like situations in which I have to rely on intuition

I think there are times when one should rely on one's intuition

I think it is foolish to make important decisions based on feelings

I don't think it is a good idea to rely on one's intuition for important decisions

I generally don't depend on my feelings to help me make decisions

I hardly ever go wrong when I listen to my deepest gut feelings to find an answer

I would not want to depend on anyone who described himself or herself as intuitive

My snap judgments are probably not as good as most people's

I tend to use my heart as a guide for my actions

I can usually feel when a person is right or wrong, even if I can't explain how I know

I suspect my hunches are inaccurate as often as they are accurate

HEXACO-E:

I would feel afraid if I had to travel in bad weather conditions

I sometimes can't help worrying about little things.

When I suffer from a painful experience, I need someone to make me feel comfortable.

I feel like crying when I see other people crying.

When it comes to physical danger, I am very fearful.

I worry a lot less than most people do.

I can handle difficult situations without needing emotional support from anyone else.

I feel strong emotions when someone close to me is going away for a long time.

Even in an emergency I wouldn't feel like panicking.

I remain unemotional even in situations where most people get very sentimental.

Appendix - Information sheet

Research team

Maisie King, MSc student supervised by Dr Vincent Eagan and Dr Simon Duff, Centre for Forensic and Family Psychology, School of Medicine, University of Nottingham.

Ethics research number: 498-2002

General Information

The aim of this study is to investigate the relationship between traits observed within the general population and political views. It also looks at the effect that rationalisation can have on this relationship. A person's political view may correspond with their personality but may be influenced by how they think and feel. This may be important and considered carefully in future politics.

We appreciate your interest in taking part in this online questionnaire. You have been invited to participate as a member of the general public population. Please read through this information before agreeing to participate by ticking the 'yes' box below. You may ask any questions before taking part in the study by contacting the researcher (details below).

You will be given 132 questions relating to personality traits, thinking styles and political stances. All questions contain a 'prefer not to say' option should you chose not to answer particular questions. Some questions may be relating to personal thoughts, feelings and experiences, and some questions may be related more to external opinions and situations.

These are validated questionnaires and should take you about 15-25 minutes to complete. No background knowledge is required. Where answering styles to questions change, it will inform you ahead of answering which way to respond to the question set.

Do I have to take part?

Taking part is entirely voluntary and you are free to withdraw at any point and during the questionnaire for any reason, before submitting your answers, by pressing the 'Exit' button / closing the browser. Your answers will only be uploaded after you have clicked the submit button on the final page. As the topic of politics is being covered this may provoke recent news, please contact the researcher if you have any questions.

How will your data be used?

Once you have completed and submitted the questionnaire, we will not be able to see who it is from and for this reason it will not be possible to withdraw the data. Your anonymous data (research data) will be stored in a password-protected file sitting on secure servers at the University of Nottingham under the terms of its data protection policy after which it will be disposed of securely after analysis.

The results will be written up as a masters dissertation and may be used in academic publications and presentations. The overall anonymised data from this study may be shared for use in future research and teaching (with research ethics approval).

If you contact us to ask questions, we will receive your e-mail address, but this will be received separately from your completed questionnaire and it will not be possible to link the two sets of data. Your e-mail address will be stored separately and only for as long as needed to resolve your queries.

Who will have access to your data?

Anonymous Research Data will be collected using Jisc online surveys which is a tool designed for academic research, Education and Public sector organizations to process data (please see link for information about security and GDPR

<https://www.onlinesurveys.ac.uk/security/>). The raw data will then be transferred into a password protected database ready for analysis (Excel/SPSS) using devices with encryption. This file will be stored in a file which sits on a secure restricted access University Server. Only members of the research team and authorised individuals from the University will have access to data. At the end of the project, all raw data will be kept securely by the University under the terms of its data protection policy (stored for minimum of 7 years) after which time it will be disposed of securely.

Further information about your rights with respect to your personal data is available from: <https://www.nottingham.ac.uk/utilities/privacy.aspx/>

Responsible members of the University of Nottingham and funders may be given access to data for monitoring and/or audit of the study to ensure we are complying with guidelines, or as otherwise required by law.

We believe there are no known risks associated with this research, however some sensitive topics may be covered within the questionnaire which could cause distress. In this instance, the debrief page (final page) of the study contains relevant links and contact information for any help required. As with any online related activity the risk of a breach is always possible. We will do everything possible to ensure your answers in this study will remain anonymous. We will minimize any risks by using Jisc Online surveys which is a tool designed for academic research and education for further information please see <https://www.onlinesurveys.ac.uk/security/>

Purpose

This data is being collected for a masters research project. The principle researcher is Maisie King, who is attached to the Centre for Forensic and Family Psychology within the School of Medicine at the University of Nottingham. This

research will be completed under the supervision of Dr Vincent Eagan and Dr Simon Duff. This project has been reviewed and received ethics clearance through the University of Nottingham Faculty of Medicine and Health Sciences Research Ethics Committee (ref no 498-2002).

What if there is a problem?

If you have any concerns about any aspect of this project, please contact the researcher [*Maisie King, lpymk4@nottingham.ac.uk*] or their supervisor [*Dr Vincent Eagan, mczve@exmail.nottingham.ac.uk* or *Dr Simon Duff, mczsd@exmail.nottingham.ac.uk*].

If you wish to complain formally, please contact the FMHS Research Ethics Committee Administrator, E-mail: FMHS-ResearchEthics@nottingham.ac.uk.

Please quote: FMHS REC ref no 498-2002.

Appendix - Debrief sheet

**THANK YOU FOR PARTICIPATING IN THIS RESEARCH STUDY.
THE FOLLOWING INFORMATION IS PROVIDED TO GIVE YOU A DEBRIEF
RELATING TO THE RESEARCH YOU HAVE JUST PARTICIPATED IN,
PLEASE TAKE THE TIME TO READ THROUGH IT.**

**IF YOU HAVE ANY REMAINING QUESTIONS REGARDING THE
STUDY AND THE OUTCOME OF THE RESEARCH, PLEASE FEEL FREE TO
CONTACT THE RESEARCHERS VIA EMAIL (AS DETAILED BELOW).**

Research team

Maisie King [*lpymk4@nottingham.ac.uk*], MSc student supervised by Dr Vincent Eagan [*mczve@exmail.nottingham.ac.uk*] and Dr Simon Duff [*mczsd@exmail.nottingham.ac.uk*], Centre for Forensic and Family Psychology, School of Medicine, University of Nottingham.

Ethics research number: 498-2002

This experiment was designed to examine if there was a difference in extreme thinking styles as a result of differences in personality traits such as schizotypy and autism.

The research is additionally testing if the potential relationship between traits and extreme thinking can be moderated by rational and experiential thinking or emotionality.

The purpose of this study is to determine whether individuals have vulnerabilities to adopting extremist mindsets due to outlook or personality, and if other traits are help minimise this. If we can determine this, we may be able to develop and introduce methods to prevent the targeting of these individuals

during radicalization procedures or understand factors that protect against this occurring. Additionally, if the data suggests that such relationships are reduced through rational thinking, or emotionality, it suggests the development critical thinking styles might be able to reduce an individual's vulnerability to being radicalised.

Prior research has linked these particular traits with concepts that could be related to extreme thinking, such as some conspiracy beliefs. Aspects of the traits being explored may become possible vulnerabilities for the development of extreme thinking styles, and therefore the aim of this research is to show a clearer link between the traits and extremist thinking. It is known that critical thinking reduces belief in conspiracy, suggesting critical thinking may be a factor that could reduce the development of extreme thoughts. Emotionality is also being studied as it would be interesting to see whether individual's shown to be emotionally unstable have differences in their tendency to have extreme thoughts.

Anti-radicalising Information

<https://www.elearning.prevent.homeoffice.gov.uk/edu/screen1.html>

<https://www.youtube.com/watch?v=79MTkVumCcQ>

Associated Reading

<https://www.psypost.org/2017/10/study-links-facets-schizotypy-belief-conspiracy-theories-50027>

<https://www.psychologytoday.com/gb/blog/experimentations/201810/what-makes-conspiracy-theorists-tick>

<https://theconversation.com/are-autistic-people-at-greater-risk-of-being-radicalised-76726>

<https://www.psychologytoday.com/gb/basics/autism>

<https://www.sciencedirect.com/topics/medicine-and-dentistry/schizotypy>

<https://www.newstatesman.com/world/north-america/2019/10/why-conspiracy-theories-are-deeply-dangerous>

Ethics approval letter



**University of
Nottingham**

UK | CHINA | MALAYSIA

Faculty of Medicine & Health Sciences Research Ethics Committee

Faculty Hub
Room E41, E Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham, NG7 2UH
Email: FMHS-ResearchEthics@nottingham.ac.uk

27 March 2020

Ms Maisie King

MSc Student Forensic and Criminological Psychology
c/o Dr Vincent Egan
Associate Professor
Centre for Forensic and Family Psychology
Division of Psychiatry and Applied Psychology
School of Medicine
Room B23 YANG Fujia Building
Jubilee Campus, Wollaton Road
Nottingham, NG8 1BB

Dear Ms King

Ethics Reference No: 498-2002 – please always quote	
Study Title: Do Critical Thinking and Emotionality Moderate the Relationship Between Extremist Mindsets, Autism, and Schizotypy?	
Chief Investigator/Supervisor: Dr Vincent Egan, Associate Professor, Dr Simon Duff, Associate Professor, Centre for Forensic and Family Psychology, Division of Psychiatry and Applied Psychology, School of Medicine.	
Lead Investigators/student: Maisie King, MSc Forensic and Criminological Psychology, School of Medicine.	
Proposed Start Date: 01.03.2020	Proposed End Date: 30.05.2020

Thank you for submitting the above application and the following documents were received:

- FMHS REC Application form and supporting documents version 2.0: 26.03.20

These have been reviewed and are satisfactory and the project has been given a favourable opinion.

A favourable opinion has been given on the understanding that:

1. The protocol agreed is followed and the Committee is informed of any changes using a notice of amendment form (please request a form).
2. The Chair is informed of any serious or unexpected event.
3. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely

Dr John Williams, Associate Professor in Anaesthesia and Pain Medicine
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee



University of
Nottingham

UK | CHINA | MALAYSIA

**The role of rationality in moderating the relationship
between extremist mindsets and schizotypy, autism and
emotionality.**

MSc Forensic and Criminological Psychology

The University of Nottingham

School of Medicine

Division of Psychiatry and Applied Psychology

Author: Maisie Sierra King

Supervisors: Dr Vincent Egan, Dr Simon Duff

*To be submitted for publication in the Journal of Threat Assessment and
Management with corresponding author Dr Vincent Egan.*

Word count: 5882

Abstract

What makes an individual vulnerable to extremism is complex, though it is likely idiosyncratic. In this research schizotypy, autism, and emotionality were chosen as traits to explore due to shared deficits in cognitive abilities, socio-emotional functioning, and perceptual processing which makes these also predictors of risk taking and offending. Not all people with these qualities offend or take risks, subsequently rational and experiential thinking was chosen as a moderator between these traits and a militant extremist mindset. Over 990 participants completed scales measuring schizotypy (OLIFE), autism (RAADS-14), emotionality (HEXACO-E), rationality (REI) and militant extremist mindsets (MEM). Traits of schizotypy and autism were significantly related to extremist mindset. Schizotypal unusual experiences, introvertive anhedonia, impulsive nonconformity, and autism's mentalising deficits were the most significant predictors for extremist mindset. Rational and experiential thinking had a significant moderation effect these relationships, indicating rationality can moderate the relationship between schizotypy, autism and militant extremist mindsets. Emotionality showed no significant relationship with extremist thinking styles. This study shows rational thinking is important in moderating extremist thinking in people with schizotypal or autism-related traits, which are identified as possible vulnerabilities for extremist ideation, and can be developed into preventative interventions to counter the development of extremist mindsets in those identified as vulnerable.

Key words: extremism, schizotypy, autism, threat assessment, ideology

Introduction

The nature of terror

Terrorism is dynamic and varied, making a comprehensive definition difficult. It can be considered as violence (intent to do harm) against non-combatants for ideological reasons. The Global Terrorism Index (2019)'s current statistics show a decline in deaths from terror incidents for the fourth year (following a spike in 2014). However, the globalisation of terrorist incidents continues; 103 countries recorded at least one terrorist incident in 2018, the highest annual recording since 2002, indicating an increased breadth of offences, rather than intensity of incidents. Jäckle and Baumann (2017) suggest that post-9/11 terror has created a new identity where brutality and novelty drives public attention. This reinforces that the dynamics of attacks are changing; some incidents occur on a smaller scale but are now perpetrated against non-combatant members of the public in parks, entertainment areas, or even academic meetings. Committing an act of terror is now easier, and perpetrating terror can be as rudimentary as having the ability to drive.

Different theories dispute what makes an individual radical but the everchanging nature of terror makes it difficult to determine. Sinclair and Antonius (2009) argue terrorist motivations are more nuanced than generally perceived, inflicting violence whilst propagating their ideologies and creating lasting social anxiety. The picture of extremism portrayed by western societies and their literature has had a narrow scope, focusing on mental health issues, criminal histories, social class, and education. This limited approach to understanding has been argued against by Crenshaw (1992), stating there is a lack of evidence to suggesting mental health issues produce terrorism. Monahan

(2012) identified that broad predictive factors do not provide sufficient information for understanding vulnerabilities and predictors. Misiak et al (2019) state that the radicalisation process is multi-staged with many mutually reinforcing aspects; for example, not everyone facing or opposing inequality or oppression turns to extremist ideologies and responses. Contrary to received wisdom that terror sympathisers are poor and uneducated from overseas, they found sympathy for terrorism was higher in those who earned highly, were educated, UK born, and under 20 years old. These findings contrast the notion that sympathy towards terrorism equates to having the greatest grievances, suggesting other underlying influences must exist. Whilst all radicals are radical (ie., desire a profound and through change) not all radicals turn to terror, so addressing radicalism is addressing terrorism at its roots. Research suggests radicalisation involves a range of vulnerabilities that need to be managed, highlighting the importance of understanding a variety of factors that make an individual more vulnerable to adopting extreme ideas (Campelo et al., 2018).

Schizotypy as a vulnerability

One potential vulnerability is schizotypy. DSM-5 (2013) defines schizotypy as the expression of pervasive social, interpersonal, cognitive and perceptual deficits. Individuals with a diagnosis may experience ideas of reference (thinking that unrelated concepts relate specifically to them), unusual perceptions, odd thought processes, paranoid ideation, and supernatural or conspiratorial interpretations of observed events. Reed and Randell (2014) describe the continuum of schizotypy as “psychometrically measured behavioural dispositions which are associated with schizophrenia but are present in the non-clinical population” (pp.4-5). Hart and Graether (2018) demonstrated a link between schizotypy and greater endorsement of conspiracy beliefs, with schizotypical

individuals having a higher propensity to be untrusting, have eccentric ideas, be preoccupied with personal safety, and view agency in action (i.e., feeling like one controls events occurring around them). Conspiracy beliefs can be extremist. For example, medical conspiracies have caused rejection of vaccinations, resulting in previously cured diseases returning and children dying (Larson, 2018). Recently multiple phone masts, including one at Birmingham's Nightingale hospital, have been intentionally set on fire in a fear response to the '5G-COVID-19' conspiracy (Ahmed et al., 2020). This is important as some conspiracies consist of ideas to which terrorists may attribute to their motives (Douglas et al., 2019). This shows the opportunity for conspiracy interests to turn into extremism, demonstrating the potential link between schizotypy and extremist ideas due to the increased likelihood of individuals with a diagnosis of schizotypy to hold conspiracy beliefs.

Barron et al (2018) and Bogart et al (2010) demonstrate that analytical and rational cognitive thinking styles mediate links between schizotypy and paranormal beliefs. Georgiou, Delfabbro and Balzan (2019) show links between lower educational attainment and reduced analytical thinking in those who hold conspiracy beliefs. This suggests that individuals with high schizotypal traits, particularly those with cognitive impairments and less rationality have the potential to be susceptible to rejecting mainstream information sources, resulting in delusional ideas and conspiracy, increasing their potential vulnerability to acquiring extremist ideologies.

Autism as a vulnerability

A second vulnerability to explore is Autism Spectrum Disorder (ASD), defined partially by the DSM-5 (2013) as deficits in social interaction, communication, and restrictive and repetitive behaviours. Baron-Cohen,

Wheelwright, Hill, Raste and Plumb (2001) linked ASD to cognitive and perceptual deficits, features also observed in schizotypy. Individuals with ASD are known to have impairments in cognitive reasoning biases, in particular Bayesian inferences, indicating deficits in inferences and judgements (Karvalis et al., 2018). Critically, if an individual with ASD has deficits in aspects of their cognitive reasoning it may suggest a potential susceptibility to extremist beliefs (Georgiou et al., 2019).

The repetitive behaviours and fixed interests observed in ASD have been associated with fanaticism, which could be political and religious in nature. Al-Attar (2018) found fixed interests related to radical ideologies may occur pre-offence such as, for example, World War II interest becoming a precursor to Nazism for persons with ASD. Burke, Kraut and Williams (2010) found ASD is linked more commonly with 'lone-actor' incidents of violence. They argue this could be attributed to poor social interactions, encouraging the development of an online persona which increases the intensity of distrust of others, and inflexible ideologies. A disproportionate percentage of the ASD population have been identified as perpetrators in lone-actor terror compared to the general population (3.3% vs 0.9%) (Corner, Gill & Mason, 2005).

Emotionality as a vulnerability

Emotionality is an operationalised term for the way people expresses their emotional experiences, regardless of their salience. Individuals with high emotionality desire emotional support from others, have emotional attachments to others, and experience fear and anxiety as a consequence to stressors. Those with low emotionality are emotionally distant from others, do not experience stress or anxiety in a stress inducing situations, or share emotional concerns. Emotionality is a trait shared in the expression of ASD and schizotypy as

research shows both show deficits in socio-emotional functioning (Barron et al, 2018; Kiln, McPartland & Volkmar, 2005). Aguirre, Sergi and Levi (2008) found individuals with high schizotypy traits were impaired emotionally as they were poorer in their ability to perceive and manage emotions, which impacted on their social functioning abilities. In high functioning autism, emotional functioning, including affect rapport, reactivity to emotional experiences, and physiological responses to emotions are atypical compared to participants who were neurotypical (Bölte, Feineis-Matthews & Poustka, 2007). Emotional functioning in high functioning autism is shown to improve when engaged in organised activities - which may provide recruiters for extreme ideologies a vulnerability to exploit (Bohnert, Lieb & Arola, 2019). Kenworthy and Miller (2002) found emotionality, externalisation, and less rationality were applied to identifying out-groups when an in-group perceives themselves to be under 'high threat', highlighting the tactical use of emotionality in serving the agenda of the in-group. The social identification theory (Tajfel & Turner, 1986) posits that heuristics used to define group identities can lead to polarisation of group ideologies due to the tendency to perceive the negative traits of 'out-groups' and the positive traits of 'in-groups'. As emotionality has been linked to group identification, it is relevant to look at the role emotionality may have in contributing to extremism.

Can rational thinking moderate?

Prior research (Swami et al., 2014) found a negative correlation between analytical thinking and abstract conspiracy beliefs, which suggests having radical beliefs is maintained by rejecting the use of analytical and rational cognitive processes. Van Prooijen, Douglas and De'Inocencio (2017) identified that priming an individual with analytical thinking reduces subsequent conspiracy

belief, indicating the role of critical thinking in moderating extreme thoughts. Analytical thinking is a core component of rationality, defined by Pacini and Epstein (1999) as an inferential cognitive system that utilises affect-free, slow analytical rules for reasoning. Alternatively, experiential thinking is defined as an automatic, rapid preconscious and affect-based process.

Study intentions

In summary, this research anticipates finding positive relationship between each subscale of schizotypy, ASD, and emotionality and having an extremist mindset. Schizotypy and ASD have been found to share some features (Dinsdale et al., 2013) which may make certain people vulnerable to developing extremist ideas. It's expected that there will be a relationship between emotionality and extremist mindsets, reflecting the deficits observed in the traits being explored. Individuals with increased rational thinking on both subscales are predicted to have reduced extremist mindsets, and rationality will moderate any relationship between mental health and extremism. It will be observed which subscales for each trait explored have the most salient relationships with the extremist mindsets subscales using regression.

Methods

Ethics

The study was approved by the School of Medicine Research Ethics Committee, (see appendix D).

Participants

A total of 1009 human participants were recruited online through social media (Facebook, Twitter and Instagram) and relevant forums on Reddit, (see Appendix A). Moderators for the subReddits were asked for permission before posting. The population sample consisted of 438 females (43.8%), 555 males

(44%) and 16 participants identifying as 'Other' (1.6%), with ages ranging from 18-85 ($M=39.46$, $SD=16.35$). G*Power (Faul et al, 2007) calculated the study needed a minimum of 205 participants for a moderate effect size of 0.15 and $p = 0.01$ using multiple hierarchical regression. The power of the study was therefore 100%. Breakdowns of the demographics collected are found within Appendix B.

Apparatus

The questionnaire was hosted on Jisc online surveys. Participants were given an information sheet outlining the study background, containing instructions and providing answers to potential queries, (found within the ethics proposal in section 1, pp.18-36). The questionnaire was comprised of five individual scales, totalling 132 questions. Jisc securely stored participants responses before the raw data was moved to SPSS statistics IBM corp, version 24 (2016) for analysis.

Scale

1. sO-Life: Mason, Linney & Claridge (2005).

Mason et al (2005)'s sO-LIFE (short O-Life) assesses schizotypy traits and has demonstrated successful convergent and discriminant validity in relation to other schizotypy measures (Fonseca-Pedrero et al, 2015). It was derived from items with high internal consistency from the full-length O-LIFE (Mason et al, 1995), making it shorter whilst still reliable and valid. The sO-LIFE consists of 43 YES/NO statements to measure schizotypal traits across four subscales; unusual experiences (OLIFE-UE), cognitive disorganisation (OLIFE-CD), introvertive anhedonia (OLIFE-IA), and impulsive nonconformity (OLIFE-IN). The scale is highly reliable.

2. The RAADS-14: Eriksson, Andersen & Bejerot (2013).

Eriksson, Andersen and Bejerot (2013)'s RAADS-14 was selected as a measure of autism, derived from their 80-item full length RAADS-R, this shortened measure is effective at screening for ASD in adults. The RAADS-14 consists of 14 statements applicable to the individual and their life experiences, covering three subdomains, mentalising deficits (RAADS-MD), social anxiety (RAADS-SA), and sensory reactivity (RAADS-SR). The statements are given four-point Likert responses with subsequent values ranging from 'Never true' (0). 'True only when I was younger than 16' (1), 'True only now' (2), to 'True now and when I was young' (3),

3. The MEM: Stankov et al (2018).

The MEM assesses the extent of the militant extremist mindset and has three subscales, 'Pro-violence' (MEM-PV; nastiness), 'Vile World' (MEM-VW; grudge), and 'Excuse' (MEM-E; utopianism). The 24 statements use a 5 point Likert scale ranging from 'Strongly and completely disagree' (1), 'Moderately disagree/mostly disagree' (2), 'Neither agree or disagree' (3), 'Moderately agree/mostly agree' (4), and 'Strongly and completely agree' (5). Stankov et al (2010) found males endorsed MEM 'pro-violence' more, whereas females agreed more with MEM 'excuse'. No gender difference was identified for vile world (grudge). Their research found good correlations between the MEM and other related constructs.

4. The REI: Pacini and Epstein (1999).

The REI is used to identify rational and experiential thinking and has subscales of; self-reported ability and engagement. The subscales can be identified as rationality (REI-R) and experiential (REI-E) thinking styles. The REI contains 41 statements, each rated on a five-point Likert scale ranging from 'Definitely not true of myself' (1), 'Somewhat not true of myself' (2), 'Neither

true nor untrue of myself' (3), 'Somewhat true of myself' (4) and 'Definitely true of myself' (5). Pacini and Epstein (1999) found REI correlated positively with openness, agreeableness, extraversion and conscientiousness and negatively with neuroticism, conservatism, and categorical thinking using Costa and McCrae (1989)'s Big-5 personality model. This work highlights the relationship between this measure for thinking styles and personality.

5. HEXACO-60; Emotionality Subscale: Lee & Ashton (2009).

The 10 questions from the emotionality subscale of the HEXACO-60 (Lee & Ashton, 2006) were included in the questionnaire to measure an individual's tendency for vulnerability and fearfulness to fearlessness and detachment. Participants score responses ranging from (1) 'Strongly disagree', (2) 'Disagree', (3) 'Neutral, neither agree or disagree', (4) 'Agree', and (5) 'Strongly agree'. Lee and Ashton (2006) found the HEXACO-10 to have good internal reliability and low inter-scale correlation, supporting its use in situations with limited time available. Aghababaei, Wasserman and Nannini (2014) found good consistency across cultures with the HEXACO-60.

Design

This study has a predictor-outcome within subjects' regression design. Each participant experiences the same questions to identify which constructs predict higher extremist mindsets as an outcome based on the several predictor variables, with a moderating variable being explored. The outcome variable is the outcome score on the militant extremist mindset scales.

Procedure

Recruitment posts were shared online in multiple locations, including Twitter, Facebook, Instagram, and Reddit (Appendices A). Participants were given a brief description of the study's aims in the recruitment posts before

giving informed consent and progressing to the questionnaire. The description given to participants was broad to prevent priming responses, it was advertised as a study looking at personality traits and political values. The specific traits were not revealed, and the research described political ideologies rather than extremist mindsets to avoid response biases from people concerned about being 'too extreme'. On completion, participants were debriefed and told what the study really examined and provided with anti-radicalising sites and online support options should they be concerned about the nature of the topic.

Results

The data was analysed to identify the relationship between the predictor variables; schizotypy, autism and emotionality, and the moderator of rational thinking on the outcome variable; extremist mindset. Data transformations were conducted for scales featuring reversed-scoring questions, as per scoring requirements. Skew and Kurtosis was identified to be normal for each scale, indicating no further transformations needed. Raads-14 indicated a positive skew to the right, representing the majority of participants not showing high scores related to ASD, but the statistical skew score was not larger than 1.

Participants had the option to respond with 'Prefer not to say' (PNTS). Data was cleaned to remove data where the PNTS option was used in excess (>4 PNTS used per scale in >2 scales). The sample size reduced from 1009 to 991, which included the removal of participants who had skipped too many questions. In cases where participants only had a few missed questions average item responses were used for that question to fill missing data. The data was then transformed to produce total scores for each scale and their subscales within the questionnaire.

Descriptive statistics

- Table 1 -

Cronbach's alpha (α) was calculated for each scale, observed in table 1, internal consistency was found as acceptable for OLIFE and Raads-14. Internal consistency was identified as good for HEXACO-E, REI, and MEM. Data was coded for demographics including gender, education level (in years), employment status, ethnicity and religion, full tables of the demographic data are available within Appendix B.

Analysis of Variance (ANOVA)'s were conducted on the demographics for the total MEM score, and each subscale. A significance level of $p < .01$ was adopted as the sample is large and a stricter significance criterion reduces false discoveries. A significant difference was found between female and males for MEM-PV as demonstrated in Appendix C – Table 1. No significant effects were identified for gender and MEM-Total, MEM-VW or MEM-E. A significant effect was identified for education and MEM-E, but no significance was found for education and MEM-Total, MEM-VW and MEM-PV, as demonstrated in Appendix C – Table 2. A significant effect was found between employment categories and MEM-Total, MEM-E, and MEM-VW, but no significance was found for education and MEM-PV, these effects are found in Appendix C – Table 3. For ethnicity only MEM-Total showed significance, no significance was found for MEM-PV, MEM-VW, and MEM-E. Post-hoc multiple comparisons test found significance was between Asian and white and mixed and Asian ethnicities. The ANOVA's for ethnicity is found in Appendix C – Table 4. No significant effects were identified in the ANOVA conducted for the religious affiliation claimed and MEM-Total, MEM-PV, MEM-VW, and MEM-E (Appendix C – Table 5).

The ANOVA's revealed which demographic information should be included in the multiple hierarchical regression analysis', enabling variables that explain no variance to be dropped. Religion was dropped for the regression, but education, employment, gender, and ethnicity remained demographic predictors. Four multiple hierarchical regressions were conducted; MEM-Total and its three subscales. For each regression, demographics were input at stage one, all OLIFE subscales were added at stage two, all RAADS-14 subscales at stage three, HEXACO-E was added at stage four, and at stage five both REI subscales were added.

Statistical analysis: Multiple Regression

A summary table for the multiple regression can be found in Table 2. In the first regression for MEM-Total demographics significantly contributed to the model, ($F(4, 978) = 8.09, p = .001$), accounting for 3.2% of the variance. When OLIFE was added, it made a significant contribution to the model, ($F(4, 974) = 54.88, p = .001$), adding 17.8% of the variance within the model. The RAADS-14 made a non-significant contribution, ($F(3, 971) = 5.03, p = .002$), accounting for just 1.2% more in the overall model variance. HEXACO-E made no significant change to the model, ($F(1, 970) = .00, p = .883$), explaining none (0%) of the MEM-total. The final model found when REI was added there was a significant change, ($F(2, 968) = 8.45, p = .001$), accounting for 1.3% of the variance. Overall, 23.5% of variance in the MEM-Total is explained by the model. In the final model, as shown in Appendix C - Table 6, gender ($\beta = -.14, p = .001$), OLIFE-UE ($\beta = -.29, p = .001$), RAADS-MD ($\beta = -.16, p = .001$), and REI-E ($b = -.13, p = .001$) all significantly and independently contributed to predicting MEM-Total. The results from the first regression conducted can be found in Appendix C – Table 6.

In the second regression model for MEM-PV the first variable entered at stage one, demographics, showed a significant contribution, ($F(4, 978) = 5.55, p = .001$), accounting for 2.2% variance in the final model. OLIFE was added at the second model, showing significant contribution, ($F(4, 974) = 27.71, p = .001$), accounting for 10% of variance in the final model. At stage 3 RAADS-14 was added which was not significant, ($F(3, 971) = 1.74, p = .157$), only accounting for .5% variance for MEM-PV. HEXACO-E was added to the fourth model which was not significant, ($F(1, 970) = 5.42, p = .020$), HEXACO-E only accounts for .5% variance in MEM-PV. The fifth model added REI which showed a significant contribution, ($F(2, 968) = 11.83, p = .001$), this shows REI accounts for 2.1% of the variance in MEM-PV. Overall 15.5% of variance in the MEM-PV subscale of MEM is accounted for by these variables. Appendix C -Table 7 contains the final MEM-PV model which shows gender ($\beta = -.14, p = .00$), OLIFE-IA ($\beta = -.18, p = .001$), OLIFE-IN ($b = -.17, p = .001$), REI-E ($b = -.10, p = .001$) and REI-R ($b = .05, p = .001$) are all identified as significant contributors for MEM-PV.

The third hierarchical regression was conducted for MEM-VW, which showed a significant contribution by demographics, ($F(4, 978) = 8.47, p = .001$), accounting for 3.3% of variance in the MEM-VW model. Adding OLIFE at the second stage showed significance, ($F(4, 974) = 55.27, p = .001$), 17.9% variance in MEM-VW is accounted for by OLIFE. RAADS-14 was added at stage 3 which did not show a significant contribution, ($F(3, 971) = 3.86, p = .009$), which only accounts for .9% of the overall model. At model four when HEXACO-E was added there was no significant contribution from the scale, ($F(1, 970) = 1.33, p = .248$), meaning HEXACO-E accounts for .1% of MEM-VW. In the last model REI is added, contributing a non-significant effect, ($F(2, 968) = 5.78, p =$

.003), which provides accountability for .9% of the model. Overall 23.2% of the variance for MEM-VW is accounted for by these variables. Appendix C - Table 8 demonstrates the final model for MEM-VW, showing gender (beta = $-.14$, $p = .001$) and OLIFE-UE (beta = $-.25$, $p = .001$) significant contributors for MEM-VW. Whilst not significant at $p < .001$, employment, OLIFE-IA and RAADS-MD were all identified as having p values of $< .005$, which is approaching a significant effect.

In the final regression for MEM-E the demographics variable is identified as having significance, ($F(4, 978) = 7.55$, $p = .001$), this means demographics can account for 3% of variance in the model. At the second level OLIFE was added which had a significant contribution, ($F(4, 974) = 32.08$, $p = .001$), accounting for 11.3% of variance in MEM-E. RAADS-14 was added at level three which did not show significance, ($F(3, 971) = 4.160$, $p = .006$), which only accounts for 1.1% of the overall variance for the model. HEXACO-E was added at the third level which did not show a significant contribution, ($F(2, 970) = 1.52$, $p = .219$), accounting for .1% of MEM-E. At the fifth stage REI was added which was not identified as a significant contribution, ($F(2, 968) = 5.06$, $p = .007$), meaning REI accounts for .9% of the model. The overall variance in MEM-E explained by the variables explored is 16.4% as shown in Appendix C - Table 9, with employment (beta = $-.1$, $p = .001$), OLIFE-UE ($b = -.28$, $p = .001$), and OLIFE-IA ($b = .13$, $p = .001$) being significant predictors of MEM-E. RAADS-MD was identified as being close to significance with a p value of $< .002$, however this did not meet the significance cut off.

An average of 19.57% variance in MEM outcomes can be explained by the variables.

- Table 2 -

Statistical analysis: Moderation PROCESS

-Table 3-

Post-regression Hayes PROCESS was conducted for each significant predictor variable subscale and both REI scales to determine if there was a moderating effect of rationality on MEM outcomes predicted by the mental health trait scores. The regression calculates the moderation, then provides values that differentiate things using the Johnson-Neyman method. Each REI subscale was tested individually with the predictor variables to determine if there was a difference in the moderation effects of the scale, although as seen in Table 3's summary of the moderation process, no differences between REI-E and REI-R were found.

The model found the presence of REI scores for both subscales causes a significant negative relationship between OLIFE-UE and MEM-Total, seen in Table 3. A zone of statistical significance was observed using the Johnson-Neyman method which can be found in Table 5. A significant negative relationship was observed between MEM-Total and RAADS-MD when REI was present, the effect sizes are shown in Table 4. The Johnson-Neyman zone of significance is found in Table 5. The conditional effect of the focal predictor has been measured at values equal to -1SD, mean, and +1SD of the REI scores to determine the simple slope effect of the moderation, as presented in Table 4. REI remains significant at all levels, with every 1 unit increase for the moderator, REI score, a negative relationship is observed between OLIFE-UE, RAADS-MD and MEM-Total.

A significant negative relationship was shown between MEM-PV, OLIFE-IN and OLIFE-IA with a moderating effect caused by both REI subscales, shown in Table 3. The Johnson-Neyman demonstrated the transitional point of significance

for the moderation effect, this is shown in Table 5. The conditional effect of the focal predictor, shown in Table 4, highlights that REI remains significant at all levels, with every 1 unit increase for the moderator, REI score, a negative relationship is observed between OLIFE-IN, OLIFE-IA and the MEM-PV score.

A significant negative relationship was identified between OLIFE-UE and MEM-VW when REI is present for either subscale, the effects observed are shown in Table 3. The Johnson-Neyman reveals the zone of significance for both REI subscales' moderation effect on OLIFE-UE and MEM-VW, these are found in Table 5. The conditional effect of the focal predictor is presented in Table 4, showing REI remains significant at all levels, with every 1 unit increase for the moderator, REI score, a negative relationship is observed between OLIFE-UE and the MEM-VW score.

The moderating effect for REI on MEM-E was varied, when REI is present as either subscale alongside RAADS-MD, a significant negative relationship between RAADS-MD and MEM-E was found, these effects can be found in Table 3. The Johnson-Neyman method identifying the zone of significance for REI-E and REI-R are found in Table 5. A significant negative relationship between OLIFE-UE and MEM-E was found with REI present, identifying the significance of the moderator on these variables which is seen as effect sizes in Table 3. The moderating effect for REI-E on OLIFE-IA and MEM-E was found negatively non-significant with the presence of low REI-E scores, and positively non-significant with mean and high REI-E scores, shown in Table 4. The model for REI-E as a moderator for OLIFE-IA and MEM-E was significant, however no significance was identified in the model for OLIFE-IA and MEM-E when REI-R was present, found in Table 3, which shows as a whole REI had no moderating effect on the relationship between OLIFE-IA and MEM-E. The statistically significant transition

points were identified for REI moderation between OLIFE-IA and MEM-E using the Johnson-Neyman method, found in Table 5. The conditional effect of the focal predictor can also be shown as values equal to -1SD, mean, and +1SD of the REI scores to demonstrate the simple slope of the moderation effect, as presented in Table 4. REI remains significant at all levels, with every 1 unit increase for the moderator, REI score, a negative relationship is observed between OLIFE-UE, RAADS-MD and the MEM-E score. However, no significance is shown for the relationship between OLIFE-IA and MEM-E at any 1 unit increase of the moderator.

- Table 4 -

- Table 5 -

Discussion

The aim of this study was to identify whether schizotypy, autism, and emotionality traits within the general population were predictors of extremist thinking styles, and whether this effect was moderated with rationality. This study has tried to shift the perspective on radicalisation by focusing on different traits found within the general population that may be dispositional to having an extremist mindset, these traits being on a continuum.

MEM-Total

Results showed schizotypy and autism significantly contributed to the Militant Extremist Mindset total, with the schizotypy subscale 'unusual experiences' and the autism subscale 'mentalising deficits' being the significant predictors. Schizotypy and autism share some similar cognitive features (Dinsdale et al., 2013) which may contribute to this finding. Mason et al (2005)'s OLIFE suggests unusual experiences account for the experience of magical

thinking, hallucinations, perceptual anomalies, and is related to positive psychosis symptoms. Mentalising deficits corresponds to impaired ability to understand the mental state of another individual (Eriksson et al, 2013). This finding suggests those who experience unusual experiences and have deficits in their ability to mentalise, two distinct cognitive difficulties, have more vulnerability to extremist ideation. Emotionality was not found to significantly predict the total extremist mindset score. The analysis further showed that the presence of rational and experiential thinking moderated this relationship and decreased extremist thinking, indicating the importance of rational critical thought in reducing extreme ideas.

MEM-PV

Each Militant Extremist Mindset subscale was explored to identify whether significant relationships with the specific facets of extreme thinking could be shown. The results for the MEM-Pro-Violence subscale found schizotypy was a significant predictor, specifically the subscales for 'introvertive anhedonia' and 'impulsive nonconformity'. Introvertive anhedonia is defined as not experiencing enjoyment from social and physical sources, and intimacy avoidance, which reflects negative symptoms. Impulsive nonconformity is understood as anti-social and impulsive behaviours which are perceived as lacking control. MEM-Pro-Violence measures indicate a belief in the acceptance and justification of violence towards enemies. Individuals experiencing no gratification in life may feel like society is against them and this could result in the perception that they can only get enjoyment from life if they challenge those that 'deny' them, hence acceptance or advocacy for violence. Impulsive nonconformity and a strong pro-violence thinking style appear innately cohesive, and individuals who are antisocial and lack control may be more disposed to acting violently and hence

maintain these beliefs (Rongquin, Geddes & Fazel, 2012). The results found show increased rational and experiential thinking has a moderating effect, decreasing the strength of the relationship between impulsive nonconformity, introvertive anhedonia, and MEM-Pro-violence.

MEM-VW

Schizotypy was a significant predictor for the MEM-Vile-World subscale, specifically the unusual experiences subscale. Stankov and Saucier et al (2010) refer to the vile world subscale as capturing those who hold a dissatisfied perception of the world and others, and the "unusual experiences" association could explain why some perceive the world negatively. If an individual is experiencing the world through hallucinations and distorted perceptions, perhaps feeling manic and hypersensitive they may experience the world negatively, hence they conclude the world is miserable, vile and inherently corrupt. When rationality is introduced to this relationship it moderates the effect, diminishing the relationship between unusual experiences and MEM-Vile-World.

MEM-E

For the MEM-Excuse subscale results were varied. Autism traits, specially mentalising deficits were significantly related to MEM-Excuse. MEM-Excuse is a subscale measuring the way people make justifications for their ideologies, this relationship could be understood as being because those who struggle to mentalise may excuse their extremist thinking more frequently because they have not used the perspective of others to challenge their ideologies. Rationality was found to significantly moderate this relationship, increased rational and experiential thinking was linked to reduced MEM-Excuse. This same moderation effect was identified between the schizotypy subscale for unusual experiences and MEM-Excuse, with rationality significantly reducing this effect. The

endurance of unusual experiences may provide an individual with the justification and excuse for their extremist attitudes as these experiences may be altering their perception of the surrounding world. The final results for MEM-Excuse found that whilst the relationship between the schizotypy subscale for introvertive anhedonia was significant, there was a non-significant moderation effect of rationality. This was the only non-moderation effect found within the data set, which suggests that regardless of how rational someone may be, if they do not experience gratification, they may utilise this as an excuse for their extremist mindset.

Emotionality

No significant effects for emotionality were identified, this could be due to HEXACO-E being used after RAADS-14 which may have already screened emotionality through the 'social anxiety' subscale, meaning HEXACO-E could not add significantly explain more variance. Between RAADS-14 and HEXACO-E the variance change for the model ranged from 0 to .005 (R^2), which suggests a very small amount of variance (.1- .5%) accounted for when adding HEXACO-E.

Emotionality came close to significance for predicting pro-violence, however due to the adjusted p value it did not meet the cut-off.

Moderation significance

The systematic significance of rationality moderating the majority of the effects shows that increased rationality is a key element in countering extremist thinking. Prior research has demonstrated how analytical thinking reduces conspiratorial thinking (Van-Prooijen, 2017; Georgiou et al., 2019). The current findings reinforce this, with a focus on militant extremist mindsets, and show that schizotypy and autism are significant contributors. Whilst individuals with traits associated with cognitive deficits may have more vulnerability to

developing extremist ideologies, these relationships are moderated through the introduction and development of rational and experiential thinking. Rationality has been shown by Pacini and Epstein (1999) as being significantly related to openness, conscientiousness and superior reasoning which may show individuals with stronger extremist beliefs have deficits in these areas. Experientiality is associated with increased emotional expression and agreeableness, which may show extremism is associated with impoverished automatic-affect processing, suggesting those with extremist ideation may not be using affect in their cognitive functioning.

Implications and conclusion

These findings highlight the significance of unusual experiences and mentalising deficits in the development of extremist ideas, showing the relevance of impulsivity and anhedonia in contributing to extremist thinking. These facets of schizotypy and autism demonstrate vulnerabilities present within the general population that should be considered a basis for future research in understanding other traits that could result in vulnerability to extremist thinking. It is evident that rational and experiential thinking plays a significant role in moderating this relationship, it could be recommended to introduce additional critical thinking programmes to improve higher order thinking to those who demonstrate these vulnerabilities along with ongoing cognitive work on managing mental states generally. Research by Miri, David and Uri (2007) found consistent critical thinking strategies improved student' disposition and ability to think critically.

In environments where radical ideas are at high risk of developing eg. prisons (Kruglasnski et al., 2016) these findings could be utilised in developing further research and eventually implementing programmes to target the

individuals most vulnerable to extreme thinking styles. These findings suggest that if you could improve rationality through developing those skills in vulnerable populations you can reduce extremist thinking, upholding Taspinar (2009)'s view that, ultimately, the prevention of extremist thoughts is the first defence against terror.

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Tables

Table 1: Descriptive statistics for variable scales, showing Cronbach's alpha for reliability.

Descriptive	MEM	OLIFE	RAADS-14	HEXACO-E	REI
α	.86	.8	.79	.81	.86
M	91.41	68.48	43.2	33.74	7.99
SD	13.27	6.43	8.60	152.66	18.29

Note. MEM (Militant Extremist Mindset), OLIFE (Schizotypy scale), RAADS-14 (ASD scale), HEXACO-E (Shortened emotionality subscale), REI (Rationality and Experiential Inventory), α (Cronbach's alpha), M (Mean) and SD (Standard Deviation).

Table 2: Summary table for the multiple regressions conducted, showing which scales were predictive of MEM scores.

Scale	MEM-Total			MEM-PV			MEM-VW			MEM-E		
	<i>P</i>	R	Adjusted R ₂	<i>P</i>	R	Adjusted R ₂	<i>P</i>	R	Adjusted R ₂	<i>p</i>	R	Adjusted R ₂
Demographics	✓	.18	.03	✓	.15	.02	✓	.18	.03	✓	.17	.03
OLIFE	✓	.46	.20	✓	.35	.12	✓	.46	.21	✓	.38	.14
<i>RAADS-14</i>	✓	.47	.21		.36	.12		.47	.21		.39	.14
HEXACO-E		.47	.21		.36	.12		.47	.21		.39	.15
REI	✓	.49	.22	✓	.39	.14		.48	.22		.41	.15

Note. ✓ denotes a significant moderation effect. – shows a negative effect and + is a positive effect. MEM-E (MEM-Excuse), OLIFE-UE (OLIFE-Unusual experiences), OLIFE-CD (OLIFE-Cognitive disorganisation), OLIFE-IA (OLIFE-Introvertive anhedonia), OLIFE-IN (OLIFE-Impulsive non-conformity), RAADS-MD (RAADS-14-Mentalising deficits), RAADS-SA (RAADS-14-Social anxiety), RAADS-SR (RAADS-14-Sensory reactivity), HEXACO-E (HEXACO-Emotionality), REI-E (REI-Experiential) and REI-R (REI-Rationality).

Table 3: Summary table showing the significance from Hayes' moderation PROCESS.

Scale	MEM-Total x RAADS-MD	MEM-Total x OLIFE-UE	MEM-PV x OLIFE-IN	MEM-PV x OLIFE-IA	MEM-VW x OLIFE-UE	MEM-E x RAADS-MD	MEM-E x OLIFE- IA	MEM-E x OLIFE-UE
REI-E								
F	38.9	62.34	17.21	19.54	59.41	21.39	5.49	41.39
<i>p</i>	.001*	.001*	.001*	.001*	.001*	.001*	.001*	.001*
R ₂	.11	.17	.06	.079	.16	.06	.02	.12
REI-R								
F	26.44	60.97	19.63	19.98	62.40	12.23	.35	38.54
<i>p</i>	.001*	.001*	.001*	.001*	.001*	.001*	.79	.001*
R ₂	.09	.171	.06	.07	.17	.04	.00	.12

Note. * denotes a significant moderation of $p < .001^*$. MEM-E (MEM-Excuse), OLIFE-UE (OLIFE-Unusual experiences), OLIFE-CD (OLIFE-Cognitive disorganisation), OLIFE-IA (OLIFE-Introvertive anhedonia), OLIFE-IN (OLIFE-Impulsive non-conformity), RAADS-MD (RAADS-14-Mentalising deficits), RAADS-SA (RAADS-14-Social anxiety), RAADS-SR (RAADS-14-Sensory reactivity), HEXACO-E (HEXACO-Emotionality), REI-E (REI-Experiential) and REI-R (REI-Rationality).

Table 4: Summary table showing the significance from Hayes' moderation PROCESS for low, medium and high presence of the moderator.

Scale		MEM-Total	MEM-Total x	MEM-PV x	MEM-PV x	MEM-VW x	MEM-E x	MEM-E x	MEM-E x	
		x RAADS-	OLIFE-UE	OLIFE-IN	OLIFE-IA	OLIFE-UE	RAADS-MD	OLIFE-IA	OLIFE-UE	
		MD								
		<i>p</i>								
REI-E	Lo	✓-	✓-	✓-	✓-	✓-	✓-	-	✓-	
	M	✓-	✓-	✓-	✓-	✓-	✓-	+	✓-	
	Hi	✓-	✓-	✓-	✓-	✓-	✓-	+	✓-	
REI-R	Lo	✓-	✓-	✓-	✓-	✓-	✓-	-	✓-	
	M	✓-	✓-	✓-	✓-	✓-	✓-	+	✓-	
	Hi	✓-	✓-	✓-	✓-	✓-	✓-	+	✓-	

Note. ✓ denotes a significant moderation effect. - shows a negative effect and + is a positive effect. Lo (Low), M (Mean) and Hi (High) standard deviation. MEM-E (MEM-Excuse), OLIFE-UE (OLIFE-Unusual experiences), OLIFE-CD (OLIFE-Cognitive disorganisation), OLIFE-IA (OLIFE-Introvertive anhedonia), OLIFE-IN (OLIFE-Impulsive non-conformity), RAADS-MD (RAADS-14-Mentalising deficits), RAADS-SA (RAADS-14-Social anxiety), RAADS-SR (RAADS-14-Sensory reactivity), HEXACO-E (HEXACO-Emotionality), REI-E (REI-Experiential) and REI-R (REI-Rationality).

Table 5: Summary table showing the Johnson-Neyman calculated zones of significance for the subscales.

Scale	MEM- Total x RAADS- MD	MEM- Total x OLIFE- UE	MEM-PV x OLIFE-IN	MEM-PV x OLIFE-IA	MEM-VW x OLIFE-UE	MEM-E x RAADS- MD	MEM-E x OLIFE- IA	MEM-E x OLIFE-UE
Johnson-Neyman Zone of Significance								
REI-E		>43	>47	>47		<84		<99
REI-R	>95		>54	>50	>36	46-92		>50

Note. This summary table shows the scores > or < the transitional point according to the zone of significance. MEM-E (MEM-Excuse), OLIFE-UE (OLIFE-Unusual experiences), OLIFE-CD (OLIFE-Cognitive disorganisation), OLIFE-IA (OLIFE-Introvertive anhedonia), OLIFE-IN (OLIFE-Impulsive non-conformity), RAADS-MD (RAADS-14-Mentalising deficits), RAADS-SA (RAADS-14-Social anxiety), RAADS-SR (RAADS-14-Sensory reactivity), HEXACO-E (HEXACO-Emotionality), REI-E (REI-Experiential) and REI-R (REI-Rationality).

Appendix A

A list of the Reddit subreddits chosen for recruiting participants. Seven subreddits from the website Reddit were identified and chosen for participant recruitment due to them sharing content related to the themes of this research. Moderators for each subreddit were contacted to ask for permission before posting the study information. A number of subreddits declined the request so this list only contains the subreddits that were posted on.

Table A1: Subreddits chosen for recruitment from Reddit.

Subreddit name
r/samplesize
r/forensicpsychology
r/mbti
r/actualconspiracies
r/autism
r/skeptic
r/quarantineactivities

Appendix B

Demographic information from the sample collected. The following tables reflect the demographic information collected from each participant to be used for analysis. These tables reflect the expanded and condensed versions of the demographic information.

Table B1: Gender demographics obtained from the data set. Participants had the options of recording their gender as 'Female', 'Male', or 'Other'. Participants who selected 'Other' were prompted to fill in a text box with the way they identify their gender.

Gender identity breakdown	Sample size
Female	438
Male	555
Other – Non-binary	5
Other – Floragender	1
Other – Genderfluid	1
Other – AFAB transmasc	1
Other – Transgender male	2
Other – Gender queer	2
Other – Questioning	1
Other – Both genders	1
Excluded responses	2

Note. Identities were recorded as reported by the participant. Responses were excluded if no valid data could be extracted from the response.

Table B2: Condensed gender demographic information used for the analysis.

Gender identity	Sample size
Female	438
Male	555
Other	16
Excluded responses	2

Note. Responses were excluded if no valid data could be extracted from the response.

Table B3: Ethnicity demographics obtained from the data set.

Participants had the options of recording their ethnicity as 'White', 'Asian', 'Black', 'Mixed', or 'Other'. Participants who selected 'Other' were prompted to fill in a text box with the way they identify their Ethnicity.

Ethnicity breakdown	Sample size
White	908
Mixed	47
Asian	27
Black	9
Other – Turkish Cypriot	1
Other – Aborigine	1
Other – Middle Eastern	1
Other – Jewish	1
Other – Russian	1
Other – American Indian	1
Other – Hispanic	4
Other – Latino	1
Excluded responses	5

Note. Identities were recorded as reported by the participant. Responses were excluded if no valid data could be extracted from the response.

Table B4: Condensed ethnicity demographic information used for the analysis.

Ethnicity	Sample size
White	908
Mixed	47
Asian	27
Black	9
Other	16
Excluded responses	5

Note. Responses were excluded if no valid data could be extracted from the response.

Table B5: Religion demographics obtained from the data set.

Participants had the options of recording their religious stance as 'Christian', 'Atheist', 'Agnostic', 'Judaism', 'Islam', 'Buddhism', 'Hinduism', or 'Other'. Participants who selected 'Other' were prompted to fill in a text box with the way they identify their religious stance.

Religion (breakdown)	Sample size
Christian	355
Atheist	438
Agnostic	78
Judaism	13
Islam	9
Buddhism	8
Hinduism	8
Other – Jedi	5
Other – Wicca	4
Other – Pagan	10
Other – Sikh	1
Other – No religion	18
Other – Existentialist	1
Other – Monotheist	1
Other – Satanist	2
Other – Unsure	1
Other – Unitarian Universalist	1
Other – Theist	4
Other – Taoism	1
Other – Omnism	1

Other – Roman Catholic	2
Other – COE	2
Other – Spiritualist	10
Other – Greek Orthodox	1
Other – Bahaí	1
Other – Navajo	1
Other – Non-protestant	1
Other – Asatru	1
Missing/Excluded responses	28

Note. Identities were recorded as reported by the participant. Responses were excluded if no valid data could be extracted from the response.

Table B6: Condensed religion demographic information used for the analysis.

Religion	Sample size
Atheists	455
Believers	454
Agnostics	93
Missing/Excluded	7

Note. Responses were excluded if no valid data could be extracted from the response.

Table B7: Employment status demographics obtained from the data set. Participants had the options of recording their employment status as 'Part-time/Zero-hour', 'Full time', 'Student', 'Unemployed', 'Retired', or 'Other'. Participants who selected 'Other' were prompted to fill in a text box with the way they identify their employment status.

Employment status	Sample size
Part time/zero-hour	125
Full time	468
Student	195
Unemployed	53
Retired	115
Other – Self-employed	40
Other – Illness/Disability/Unfit	11

Note. Identities were recorded as reported by the participant.

Table B8: Employment status demographics obtained from the data set. Participants had the options of recording their education level in years in a blank text box. A large amount of data could not be recorded for this demographic as lots of participants left the box blank or put answers that could not be interpreted correctly.

Education in years	Sample size
0-5	1
6-11	39
12-13	64
14-16	272
17-18	209
19-21	84
21+	51
Missing/Excluded	289

Note. Education was recorded by coding responses from the participant into educational year brackets corresponding. Responses were excluded if no valid data could be extracted from the response.

Appendix C

Appendix C shows the tables provided for the statistical analysis' conducted. These tables show the ANOVA's and Multiple Regressions which were previously presented as summary tables in the report body.

Appendix C - Table 1: ANOVA's for GENDER. Analysis of variance conducted on the predictor variable of gender; this was conducted to determine if the predictor was significant before the multiple regressions were run.

Scale	Male Mean	(SD)	Female Mean	(SD)	df	<i>F</i>	<i>p.</i>
MEM-Total	91.12	13.83	91.91	12.39	2	2.77	.063
MEM-PV	34.07	5.73	35.52	4.47	2	9.61	.001*
MEM-VW	28.52	6.15	28.72	5.61	2	3.71	.025
MEM-E	28.52	6.30	27.68	6.33	2	2.97	.063
<i>Error</i>					988		

Note. * denotes p values of significance, $p < .01$. MEM-Total, MEM-PV (MEM-Pro-Violence), MEM-VW (MEM-Vile World) and MEM-E (MEM-Excuse).

Appendix C - Table 2: ANOVA's for EDUCATION. Analysis of variance conducted on the predictor variable of education; this was conducted to determine if the predictor was significant before the multiple regressions were run.

Scale	6-11 years	(SD)	12-13 years	(SD)	years 14-16	(SD)	years 17-18	(SD)	years 19-21	(SD)	years 21+	(SD)	df	F	p.	
MEM-	89.01	12.06	93.36	12.89	93.77	13.36	93.67	11.57	90.85	11.87	86.96	14.55	5	3.82	-.002	
Total																
MEM-PV	34.75	6.04	34.09	5.2	34.07	5.69	35.45	4.32	35.21	4.73	34.15	4.81	5	2.17	.056	
MEM-VW	28.13	5.04	29.22	6.21	29.83	6.04	29.41	5.57	28.07	5.28	26.88	6.04	5	3.27	.006	
MEM-E	26.16	5.63	30.05	5.79	29.87	5.93	28.81	5.78	27.56	5.95	25.92	7.1	5	7.02	.001*	
<i>Error</i>													715			

Note. * denotes p values of significance, $p < .01$. MEM-Total, MEM-PV (MEM-Pro-Violence), MEM-VW (MEM-Vile World) and MEM-E (MEM-Excuse).

Appendix C - Table 3: ANOVA's for EMPLOYMENT. Analysis of variance conducted on the predictor variable of employment; this was conducted to determine if the predictor was significant before the multiple regressions were run.

Scale	Unemployed	(SD)	Part-time	(SD)	Full time	(SD)	Student	(SD)	Retired	(SD)	Self-employed	(SD)	df	F	p.
MEM-Total	89.90	12.8	96.22	11.21	92.63	12.89	87.82	13.63	87.64	13.88	90.3	14.28	5	9.23	.001*
MEM-PV	34.58	6.05	34.95	4.84	34.79	5.22	34.8	5.36	34.53	5.11	34.86	6.79	5	.14	.983
MEM-VW	28.55	5.67	30.82	5.56	29.08	5.85	26.63	5.87	27.26	5.99	28.14	5.3	5	9.96	.001*
MEM-E	26.77	5.74	30.44	5.49	28.97	6.04	26.4	6.63	25.85	6.66	27.3	6.17	5	11.97	.001*
Error															977

Note. * denotes p values of significance, $p < .01$. MEM-Total, MEM-PV (MEM-Pro-Violence), MEM-VW (MEM-Vile World) and MEM-E (MEM-Excuse).

Appendix C - Table 4: ANOVA's for ETHNICITY. Analysis of variance conducted on the predictor variable of ethnicity; this was conducted to determine if the predictor was significant before the multiple regressions were run.

Scale	White (SD)	Mixed (SD)	Asian (SD)	Black (SD)	Other (SD)	df	F	p.					
MEM-Total	91.77	13.12	91.06	11.82	80.64	12.62	85.89	17.04	89.12	14.19	4	4.91	.001*
MEM-PV	34.74	5.34	34.74	4.38	33.34	4.95	32.89	4.65	35.18	4.89	4	.79	.532
MEM-VW	28.72	5.52	28.6	5.52	24.08	5.52	26.89	7.99	26.82	5.80	4	4.34	.002
MEM-E	28.32	6.23	27.72	6.24	23.32	6.53	26.11	8.3	27.12	7.03	4	4.26	.002
<i>Error</i>													986

Note. * denotes p values of significance, $p < .01$. MEM-Total, MEM-PV (MEM-Pro-Violence), MEM-VW (MEM-Vile World) and MEM-E (MEM-Excuse).

Appendix C - Table 5: ANOVA's for RELIGION. Analysis of variance conducted on the predictor variable of religion; this was conducted to determine if the predictor was significant before the multiple regressions were run.

Scale	Agnostic	(SD)	Atheist	(SD)	Believer	(SD)	Df	F	p.
MEM-Total	90.78	12.70	91.58	13.08	91.25	13.51	2	.17	.846
MEM-PV	34.61	5.73	34.82	5.16	34.56	5.31	2	.29	.747
MEM-VW	28.42	5.85	28.48	5.94	28.65	5.90	2	.12	.886
MEM-E	27.75	6.41	28.28	6.12	28.04	6.49	2	.34	.712
<i>Error</i>							986		

Note. * denotes p values of significance, $p < .01$. MEM-Total, MEM-PV (MEM-Pro-Violence), MEM-VW (MEM-Vile World) and MEM-E (MEM-Excuse).

Appendix C – Table 6: Multiple hierarchical regression coefficients, standard errors, significance and confidence intervals for demographics, OLIFE, RAADS-14, HEXACO-E and REI predicting MEM-Total.

Scale	Gender	Educational	Employment	Ethnicity	UE	OLIFE-CD	OLIFE-IA	OLIFE-IN	OLIFE-	-MD	RAADS	SA	RAADS-SR	RAADS-	HEXACO-E	REI-E	REI-R
Standardised	-.14	.02	-.04	-.04	-.29	-.01	-.06	-.06		-.16		.04	-.02		.01	-.11	.06
-β																	
SE	.80	.31	.35	.56	.17	.18	.18	.20		.11		.14	.18		.07	.03	.03
<i>p</i>	.001*	.48	.01	.12	.001*	.76	.11	.09		.001*		.33	.58		.90	.001*	.05
<u>95% CL</u>																	
LL	-5.25	-.38	-1.67	-1.95	-1.37	-.40	-.65	-.74		-.61		-.14	-.45		-.13	-.15	.00
UL	-2.12	.82	-.30	.23	-.92	.29	.06	.05		-.19		.42	.23		.15	-.05	.12

Note. * denotes *p* values of significance, *p* < .001*. OLIFE-UE (OLIFE-Unusual experiences), OLIFE-CD (OLIFE-Cognitive disorganisation), OLIFE-IA (OLIFE-Introvertive anhedonia), OLIFE-IN (OLIFE-Impulsive non-conformity), RAADS-MD (RAADS-14.-Mentalising deficits), RAADS-SA (RAADS-14-Social anxiety), RAADS-SR (RAADS-14-Sensory reactivity), HEXACO-E (HEXACO-Emotionality), REI-E (REI-Experiential) and REI-R (REI-Rationality).

Appendix C – Table 7: Multiple hierarchical regression coefficients, standard errors, significance and confidence intervals for demographics, OLIFE, RAADS-14, HEXACO-E and REI predicting MEM-PV.

Scale	Gender	Educational	Employment	Ethnicity	UE	OLIFE-CD	OLIFE-IA	OLIFE-IN	OLIFE-MD	RAADS-SA	RAADS-SR	HEXACO-E	REI-E	REI-R
Standardised	-.14	.04	.01	-.01	-.10	.07	-.18	-.17	-.09	.02	.02	.1	-.10	.12
-β														
SE	.34	.13	.15	.23	.07	.07	.08	.08	.05	.06	.08	.03	.01	.01
<i>p</i>	.001*	.2	.81	.79	.01	.09	.001*	.001*	.04	.68	.56	.01	.001*	.001*
<u>95% CL</u>														
LL	-2.08	-.09	-.26	-.52	-.31	-.02	-.54	-.56	-.18	-.09	-.1	.03	-.06	.02
UL	-.77	.42	.32	.4	-.04	.27	-.24	-.23	-.01	.14	.19	.14	-.01	.08

Note. * denotes *p* values of significance, *p* < .001*. MEM-PV (MEM-Pro-Violence), OLIFE-UE (OLIFE-Unusual experiences), OLIFE-CD (OLIFE-Cognitive disorganisation), OLIFE-IA (OLIFE-Introvertive anhedonia), OLIFE-IN (OLIFE-Impulsive non-conformity), RAADS-MD (RAADS-14-Mentalising deficits), RAADS-SA (RAADS-14-Social anxiety), RAADS-SR (RAADS-14-Sensory reactivity), HEXACO-E (HEXACO-Emotionality), REI-E (REI-Experiential) and REI-R (REI-Rationality).

Appendix C – Table 8: Multiple hierarchical regression coefficients, standard errors, significance and confidence intervals for demographics, OLIFE, RAADS-14, HEXACO-E and REI predicting MEM-VW.

Scale	Gender	Educational	Employment	Ethnicity	UE	OLIFE-UE	OLIFE-CD	OLIFE-IA	OLIFE-IN	OLIFE-CD	-MD	RAADS-SA	RAADS-SR	RAADS-SR	HEXACO-E	REI-E	REI-R
Standardised	-.14	.02	-.09	-.04	-.25	-.08	-.1	-.03	-.03	-.13	.06	-.03	-.03	-.03	-.07	.08	
-β																	
SE	.36	.14	.16	.25	.07	.08	.08	.09	.09	.05	.07	.08	.08	.03	.01	.01	
<i>p</i>	.001*	.55	.003**	.15	.001*	.07	.005**	.34	.34	.003**	.18	.48	.41	.03	.01		
<u>95% CL</u>																	
LL	-2.30	-.19	-.77	-.85	-.64	-.3	-.39	-.26	-.26	-.24	-.04	-.21	.09	-.05	.01		
UL	-.90	.34	-.16	.13	-.34	.01	-.07	.09	.09	-.05	.21	.10	.04	-.00	.07		

Note. * denotes *p* values of significance, $p < .001^*$. ** denotes *p* values of significance, $p < .005^{**}$. MEM-VW (MEM-Vile-World), OLIFE-UE (OLIFE-Unusual experiences), OLIFE-CD (OLIFE-Cognitive disorganisation), OLIFE-IA (OLIFE-Introvertive anhedonia), OLIFE-IN (OLIFE-Impulsive non-conformity), RAADS-MD (RAADS-14-Mentalising deficits), RAADS-SA (RAADS-14-Social anxiety), RAADS-SR (RAADS-14-Sensory reactivity), HEXACO-E (HEXACO-Emotionality), REI-E (REI-Experiential) and REI-R (REI-Rationality).

Appendix C - Table 9: Multiple hierarchical regression coefficients, standard errors, significance and confidence intervals for demographics, OLIFE, RAADS-14, HEXACO-E and REI predicting MEM-E.

Scale	Gender	Educational	Employment	Ethnicity	UE	OLIFE-CD	OLIFE-IA	OLIFE-IN	OLIFE-MD	RAADS-SA	RAADS-SR	HEXACO-E	REI-E	REI-R
Standardised	-.05	-.01	-.1	-.05	-.28	-.02	.13	.05	-.14	.02	-.04	-.05	-.09	-.05
-β														
SE	.4	.15	.17	.28	.08	.09	.09	.10	.05	.07	.09	.04	.01	.02
p	.1	.87	.001*	.15	.001*	.68	.001*	.19	.002**	.7	.33	.18	.1	.11
<u>95% CL</u>														
LL	-1.44	-.33	-.88	-.98	-.74	-.21	-.14	-.07	-.27	-.11	-.23	.12	-.06	.06
UL	.12	.27	-.22	.11	-.42	.14	.50	.33	-.06	.17	.09	.02	-.10	.01

Note. * denotes p values of significance, $p < .001^*$. ** denotes p values of significance, $p < .005^{**}$. MEM-E (MEM-Excuse), OLIFE-UE (OLIFE-Unusual experiences), OLIFE-CD (OLIFE-Cognitive disorganisation), OLIFE-IA (OLIFE-Introvertive anhedonia), OLIFE-IN (OLIFE-Impulsive non-conformity), RAADS-MD (RAADS-14-Mentalising deficits), RAADS-SA (RAADS-14-Social anxiety), RAADS-SR (RAADS-14-Sensory reactivity), HEXACO-E (HEXACO-Emotionality), REI-E (REI-Experiential) and REI-R (REI-Rational)

Appendix D

This appendix contains the letter of ethical approval received from the ethics committee for this research.



**University of
Nottingham**
UK | CHINA | MALAYSIA

Faculty of Medicine & Health Sciences Research Ethics Committee

Faculty Hub
Room E41, E Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham, NG7 2UH
Email: FMHS-ResearchEthics@nottingham.ac.uk

27 March 2020

Ms Maisie King

MSc Student Forensic and Criminological Psychology
c/o Dr Vincent Egan
Associate Professor
Centre for Forensic and Family Psychology
Division of Psychiatry and Applied Psychology
School of Medicine
Room B23 YANG Fujia Building
Jubilee Campus, Wollaton Road
Nottingham, NG8 1BB

Dear Ms King

Ethics Reference No: 498-2002 – please always quote	
Study Title: Do Critical Thinking and Emotionality Moderate the Relationship Between Extremist Mindsets, Autism, and Schizotypy?	
Chief Investigator/Supervisor: Dr Vincent Egan, Associate Professor, Dr Simon Duff, Associate Professor, Centre for Forensic and Family Psychology, Division of Psychiatry and Applied Psychology, School of Medicine.	
Lead Investigators/student: Maisie King, MSc Forensic and Criminological Psychology, School of Medicine.	
Proposed Start Date: 01.03.2020	Proposed End Date: 30.05.2020

Thank you for submitting the above application and the following documents were received:

- FMHS REC Application form and supporting documents version 2.0: 26.03.20

These have been reviewed and are satisfactory and the project has been given a favourable opinion.

A favourable opinion has been given on the understanding that:

1. The protocol agreed is followed and the Committee is informed of any changes using a notice of amendment form (please request a form).
2. The Chair is informed of any serious or unexpected event.
3. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely

pp Lomas

Dr John Williams, Associate Professor in Anaesthesia and Pain Medicine
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

Executive summary

The target for this executive summary is the psychology department within prisons because the results obtained suggest potential intervention approaches that could be provided to moderate extremist thinking in individuals identified as vulnerable within the prison system (amongst other systems).

Gradual shifts in the architecture of terrorism have remodelled the accessibility of extremism, the face of terror no longer represents elaborate organisational infrastructures, instead modern acts of terror can now be easily perpetrated by individuals acting alone with a single blade, or access to a car. The Global Terrorism Index (2019) identified increase in the global breadth of incidents, whilst death rates fall, indicating the need to focus on the grassroots prevention of individuals who engage with extremism. Prior findings by Monahan (2012) has highlighted the complexity in understanding what makes an individual vulnerable to extremism, broad factors such as mental health issues, criminal histories, social class, and education all fail to provide sufficient predictive information about what makes an individual vulnerable to extremism. To reflect those limitations this research intended to approach this issue by focusing on personality traits dispersed within the general population, hypothesising that strong expression of the explored traits will correlate with increased extremist thinking styles.

One trait explored within this research was schizotypy, a personality disorder characterised by the pervasive social and mental impairments, and distorted thinking (DMS-5, 2013). Schizotypy has been associated with increased conspiratorial belief which can be likened to extreme thinking (Hart & Graether, 2018), this would indicate an individual with high traits of schizotypy may be more vulnerable to embracing extremist ideology. The second trait

explored by this research was autism, defined by DSM-5 (2013) as expressed deficits in social interaction, communication and a tendency for repetitive and restrictive behaviour, which are similar to the characteristics of schizotypy. Deficits in reasoning and inference judgements are fundamental traits of autism (Georgiou et al., 2019), which could result in a vulnerability for extremist thinking. Furthermore, evidence does show a higher percentage of individuals with autism are identified as lone actors in terror offences compared to the general population (Corner, Gill & Mason, 2005). A shared trait in both autism and schizotypy is impaired socio-emotional functioning, which is why emotionality is the third trait explored. Emotionality is defined as the way in which individuals express emotional experiences. Kenworthy and Miller (2002) found emotionality has a key role in the way people perceive themselves and others which could then impact their thinking style, and in turn extremist views. This research additionally intended to show whether the relationship shown between personality traits and extremist mindset could be moderated by increased rational thinking.

Individuals with autism and schizotypy both have impairments in mental functioning and processing which may be impacting the individual's ability to think critically about information and could result in extremist thinking styles. Subsequently, research finds individuals with analytical thinking have reduced belief in conspiracy Van Prooijen, Douglas and De'Inocencio (2017), indicating the importance rational processing may have in moderating the relationship between the identified personality traits and an extremist mindset.

Data was collected using an online questionnaire that containing scales for schizotypy, autism, emotionality, rationality and extremist mindsets. This was distributed on various social media platforms, collecting 1009 participants. To

analyse the data obtained a series of statistical tests were run, firstly a series of analysis of variance's (ANOVA's) were conducted to determine which demographic information was most salient in the model. This showed that gender, education, employment and ethnicity were all significant, whereas religion was not. Religion was dropped from the model moving forward in the analysis. Following this four multiple regressions were conducted to show how much each trait scale and its subscales could explain the overall militant extremist mindset score for the total and for each of its subscales, finding that overall schizotypy and autism did have significant effects on extremist thinking styles. Finally, a test was done to identify if there was a moderation effect shown by rational and experiential thinking, which was shown to be a significant negative effect indicating the more rational thinking the individual had the lower the extremist thinking styles were, regardless of schizotypy or autism traits being present. In conclusion this research did show the relationship between traits of schizotypy and autism and extremist thinking, and how rationality has a critical role in reducing this relationship. No significance was found for emotionality, which may be a result of subscales for autism already accounting for the effects.

The implication that these findings have is the understanding that individuals who have traits of schizotypy or autism may be more vulnerable to having extremist thoughts, these vulnerabilities could be treated as predisposition to extreme thinking and should be addressed as soon as characteristics become prominent. In addressing these traits, it is clear now that rational and experiential thinking can reduce the strength of the relationship between schizotypy, autism and extremist mindset, suggesting increased rationalisation introduced to these vulnerable individuals will reduce the

likelihood of pervasive extreme thoughts. It is recommended on the basis of the findings from this study that future research is conducted looking at the relationship between schizotypy, autism and holding extremist ideologies to strengthen the support for the findings. Future research should identify what intervention could be implemented to improve rationality within these vulnerable individuals, as a successful intervention that improves rationality could be provided to prevent extremist mindsets developing strongly.

If future studies replicate these findings it indicates a clear route for defusing extremist mindsets, and in turn this may reduce risk of terror offences occurring because these vulnerable individuals could be targeted for rational thinking interventions. In environments where individuals are able to be identified such as within prisons, secure hospitals, or education settings, these rational thinking intervention programmes can be provided as a precaution. Extreme ideas have been shown to increase within prison settings, (Kruglanski et al, 2016), which may make these environments key recruitment locations and therefore require focused interventions for those with predisposed vulnerabilities.

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PowerPoint Presentation Slides

The role of rationality in moderating the relationship between extremist mindsets and schizotypy, autism and emotionality.

Maisie King
lpymk4@Nottingham.ac.uk

1

Aims and rationale

Aims	Rationale
Show a significant + relationship between schizotypy and extremist thinking.	Schizotypy and autism demonstrate impaired cognitive functioning (DSM-5, 2013). Schizotypy has significant links with conspiratorial thinking which can be related to extremist thinking (Georgiou et al., 2019).
Show a significant + relationship between autism and extremist thinking.	
Show a significant + relationship between emotionality and extremist thinking.	
Identify that the relationship between these personality traits and extremist thinking can be moderated negatively by rational thinking.	
<p>Corner, Gill and Mason (2005) show disproportionate representation of individuals with autism in perpetration of lone terror offences.</p> <p>Deficits in socio-emotional function is a shared feature of schizotypy, autism and emotionality, making emotionality a key feature to explore.</p> <p>Demonstrating moderation indicates that rational thinking development could be explored as an intervention.</p>	

2

Methods

1009 participants were recruited online through social media posts. Participants were 44% male, 43.8% female, and 1.6% other. Ages ranged from 18-85.

Participants 132 questions, formulated from scales for schizotypy (OLIFE), Autism (RAADS-14), emotionality (HEXACO-E), rational thinking (REI), and the militant extremist mindset (MEM).

Participants received a debrief sheet and links to de-radicalisation websites after completion.

Planned analysis: Analysis of Variance, Multiple Regression, and Hayes moderation PROCESS.

Demographics including age, gender, education, Employment status, ethnicity, and religion were collected for each participant.

3

Results of research

Hypothesis	Result
Schizotypy predicts extremist mindset	Supported*
Autism predicts extremist mindset	Partially supported**
Emotionality predicts extremist mindset	Not supported
Rational and experiential thinking moderates the relationship between the predictor variables and extremist thinking	Supported***

*OLIFE subscales: unusual experiences, introverted anhedonia, and impulsive nonconformity predicted all subscales of MEM.

** RAADS-14 subscale metalising deficits predicted extremist mindset total; it did not predict any of the other MEM subscales.

*** REI thinking significantly reduced the relationship between the predictors and MEM in all instances aside OLIFE introverted anhedonia and the MEM-Excuse subscale.

4

Implications and future suggestions

The findings show schizotypy and autism are predictors of extremist mindset, and these relationships can be moderated by rational and experiential thinking.

The current frequency of lone-wolf terror attacks show it is imperative to understand what distinguishes the individuals who engage in this to those who do not.

Thus suggesting approaches to anti-radicalisation could benefit from targeting individuals with increased vulnerability to extremist thinking styles with interventions that improve rationality.

Environment with high risk of radical ideology (eg. prison, Kruglanski et al, 2016) could provide additional intervention to these individuals, which will moderate the extremist thinking and could prevent terror offences.

Future Research
Explore what other personality traits may influence extremist mindset
Identify other moderators
Test the success of rationality as a moderator

5

References and additional information

Corner, E., Gill, P., & Mason, O. (2016). Mental Health Disorders and the Terrorist: A Research Note Probing Selection Effects and Disorder Prevalence. *Studies in Conflict & Terrorism*, 39(6), 560-568. DOI:10.1080/1057610X.2015.1120099

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Anti-radicalisation debrief links:
<https://www.elearning.prevent.homeoffice.gov.uk/edu/screen1.html>
<https://www.youtube.com/watch?v=79MTkVumCcQ>

6

Reflective Report

Conceptualisation

Early concepts were established in October 2019 upon reviewing the ideas I had originally submitted in my MSc application, these ideas were discussed and revised my supervisor Dr Vincent Egan during our first meeting (10/10/2019). I initially felt as though the ideas I had submitted during my application no longer reflected my research interest and I wanted to change them to focus one my interests and be more salient in the research area. Once discussed with my supervisor we began drawing ideas from my idea, and the amended idea was established as my project basis. The focus of my project shifted from looking at antisocial behaviour and its relationship with schizotypy to exploring the relationship between schizotypy and extremism. The redirection of my research project concept resulted in me spending time doing research in the area to develop a project that appropriately addressed questions and could contribute to gaps in the literature (10/10-7/11/2019)

Following the redirection of my research I spent the next weeks doing extensive background research for my project. I collated papers, made notes and read about radicalism and what findings currently existed about its predictors. At this point I found research highlighting that autism may be another trait that could be considered important. This shaped my project idea further into looking at two personality traits which may predict extremism. As my idea was broadening, I organised another supervision to streamline my idea. I brought my background knowledge and a loose plan of action to discuss in order to be productive.

The next supervision I had on 4/11/19 involved the discussion of my project and the limitations I had currently reached. We discussed the issues with

measuring extremism, as the very nature of it makes it a difficult topic to study. I emailed a researcher asking for permission to use an English version of their extremist attitudes scale however the scale was only produced in Russian. I discussed with my supervisor alternative methods for measuring extremist attitudes, and the Militant Extremist Mindset (Stankov, Saucier & Knzevic, 2018) was suggested. We discussed using a critical thinking questionnaire to test whether critical thinking could moderate the relationship between the predictor variables (personality traits) and the outcome variable (extremist mindset). The initial critical thinking scale I considered was the California Critical Thinking Disposition scale by Facione, Facione and Giancarlo (2000), however this required payed access, so an alternative was chosen. Upon discussion with my supervisor we concluded that I could use rational thinking as a measure. I identified the Rational and Experiential Inventory (Pacini and Epstein, 1999) as my measure for rationality as a moderator. Since the prior meeting I had also calculated G*Power to determine the number of participants to obtain. We additionally discussed my statistical analyses chosen for the project, with the main analysis chosen as multiple regression with Hayes moderation PROCESS conducted. Following this meeting my goals were to begin writing up the draft proposal and ethics application for this research, and to continue doing background research for further comprehension.

I had supervision on 7/11/19 to continue discussing how I would approach recording rationality in my participants. This discussion was to ensure I had all the correct materials for progressing with my proposal, which was reassuring to me. During this supervision I found a short-scales for autism, RAADS-14 (Eriksson, Andersen & Bejerot, 2013), which was decided upon because it was a shortened scale that maintained reliability. I confirmed the use of

OLIFE (Mason, Linney & Clarridge, 2005) as a scale for schizotypy, MEM, REI and RAADS-14 for my project. Moving forward from this supervision I had to continue writing my proposal and ethics. On 18/11/19 I completed and passed the ethics and integrity test online.

Design

My draft proposal was submitted on the 17/11/19. The write up for this was initially challenging as I felt I had a lot to discuss within the word count, this is something I have had to be careful with throughout the process as I have learnt I have a tendency to write far more than the word count allows. This proposal included the questionnaire I had made from the chosen scales.

Feedback from my draft proposal was given on 20/12/19, which discussed adding another predictor variable to my design, emotionality. I did additional research on emotionality and due to impairments in emotional functioning being a shared trait in the expression of schizotypy and autism. Therefore, I included emotionality as it could be a relevant predictor for extremism. My completed ethics application and proposal were submitted on 27/01/20.

Data collection

I finalised my 132 questions on Jisc by 23/03/20 whilst I waited on ethics. At this point (23/03/2020) teaching was transitioning to online teaching, as the university was closing due to the global threat of COVID-19. This did impact me in a significant way, whilst online data collection was not impacted, I found it harder to focus and produce quality work as I had to move back home with my parents and siblings.

I received favourable opinion from the ethics committee on 26/03/20 subject to ensuring I had included my demographics questions and amended my information sheet and debrief contained the required information without jargon.

I launched my questionnaire on Jisc on 27/03/20 and shared it in multiple places online. My godfather shared my research for me due to his extensive reach and politicalised followers who could participate, he had around 18k twitter followers at the time who follow him for his no-apology libertarian opinions, which resulted in a larger participants size than anticipated. (Subsequently this received RTs from Julia Hartley-Brewer, Patrick O'Flynn and a number of other large politically charged accounts).

I had 1,009 completed responses when I finished collecting data on 12/04/20. Jisc reveals that 2,214 participants accessed the questionnaire and did not complete it, indicating perhaps it was too lengthy which could be revised in the future. In the future I could try and make my questionnaire more engaging to ensure attrition was not this high again.

Analysis

I contacted my supervisor on 21/04/20 to discuss my analysis. Statistics is something that I find daunting and therefore this is the section I felt as I needed the most help navigating. We discussed over email what approach I needed to take to clean the data prior to analysing it. I recoded the data for any reversed questions and checked scale reliability by the 22/04/2020. However, this had to be done again due to me making errors in my recoding. Recoding required the use of syntax on SPSS which was a feature I was not familiar with. I then spent time in May recoding the data again, removing data that had been coded as having too many skipped questions and analysing demographic information. It took me a long time to comprehend the processes on SPSS and as a result this took me the longest to complete. As mentioned prior I moved home due to COVID-19 and I found May a particularly challenging month in my

personal life with numerous family members having very significant health crisis' making progressing with academic work difficult.

By 3/06/2020 I had run ANOVA's on my demographics and attempted to complete the multiple regressions. I decided to run a multiple regression for the total MEM score, and each of its individual subscales in order to get a fuller picture of the predictive value of the variables. On 4/06/2020 I had a supervision session on Microsoft teams, we discussed my current data and the errors that had occurred whilst analysing it. I had to correct a number of data sets using mean responses to that question as in a few cases some individuals missed a question, and missing data impacted the analysis'.

On 11/06/20 I had another teams supervision, this was to check if my ANOVAs were looking correct and to determine how to progress with the multiple regressions. The goals from this session were to tidy up my data set further, include demographics in the regressions and to do both the MEM-Total and subscales. In the follow up meeting on 15/06/20 I discussed my progress with interpreting the regression outputs, checking my effect sizes using ETA, and how to make my outputs easier to comprehend. Going forward from this supervision I felt very confident in my statistical ability as it had taken me a few attempts and re-runs of the multiple regressions to be able to understand what my data was showing. The next steps I had to complete was re-running my multiple regression and including the variables on the same lines to prevent the output being too complicated. We discussed where to include particular tables in my report and which journal I would be writing for, I chose the Journal of Threat Assessment and Management as it suits the nature of this project and implications in understanding extremism. My supervisor noticed at this point I had made an error in the reversing of some of my questions which meant I had

to redo all of my analysis after fixing this error, but now with better understanding it only took a few hours.

In the next supervision I had on 17/06/20 we discussed the moderation analysis I conducted. I found this quite stressful initially, but after reading statistics textbooks and watching Youtube tutorials I was able to understand the process and interpret my Hayes PROCESS moderation effects.

Write up

I began my write up for the full report on the 20/05/20, this was mostly focusing on my introduction, methods and procedural sections. As mentioned, I found focusing on my write up challenging during the lockdown imposed within the UK due to stressors at home. One major disturbance to my write up was having poor wifi, meaning I had no spaces to work from as everyone else in my family also required spaces to work, I would often write in my parents' bedroom as this had the best connection. Whilst not a huge detriment, it did make my write up more challenging as I did not have my typical studious environment and it may have impaired my ability to concentrate entirely. COVID-19 caused significant deficits to my working environments, and it restricted me from having consistent and typical 'social down time'. I usually take breaks from academic work by skateboarding to release energy and give myself a physical and mental break however this was not always possible during lockdown. I would end up working until extremely late hours as my days felt like they had become one. Whilst this did impair me, I feel as though I did overcome this as I have managed to complete my research project and dissertation portfolio without any extensions or extenuating circumstances requests.

Following completion of my analysis I wrote the results section and the discussion of my results. I began making my PowerPoint presentation which was

completed by 29/06/20 and writing my executive summary. I wrote my executive summary targeting the criminal justice system, specifically prisons as I thought anti-radicalisation research would be beneficial to those in charge of the psychology departments within the instructions. The executive summary was finished by 15/06/20.

Receiving my draft feedback (24/06/20) was mostly focused on making my tables easier to digest within my work and not overwhelming readers with information, which was all able to be amended in a couple of days.

Whilst a lot of the things that impacted my write up were beyond my control, I did take away from it the importance of self-motivation. The feelings of joy and capability when I made progress with my statistical analysis' was extremely rewarding as I have always struggled engaging in mathematical work. In the future when working towards big projects such as this I think I have learnt a lot from this journey, I have learnt the importance of managing my workload and having self-determination despite adversities beyond my control.

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