The Relationship Between Dimensional Personality Traits and Treatment Outcomes in Clinical and Forensic Settings

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Thesis Portfolio Abstract

Aims: The present thesis portfolio sought to contribute to understanding the mechanisms of change in mental health treatment, by exploring the association between the idiosyncratic client-specific factor of personality traits and outcomes of treatment. Specifically, it sought to understand whether (a) client personality traits predict the outcomes of psychological intervention, and (b) there is a significant relationship between personality traits and treatment outcomes in forensic mental health services (FMHS). **Design:** Two pieces of research were undertaken. A systematic review synthesised the available literature to understand whether five-factor model (FFM; Costa & McCrae, 1990) traits have been shown to predict clinical and psychosocial outcomes of empirically supported psychological interventions. An empirical research project measured the amount of change patients in FMHS showed in clinical and risk factors, after a considerable period of treatment (18 months), and correlated this with patients' scores on a measure of their personality traits. **Results:** The systematic review identified few studies that explored the predictive role of personality traits for outcomes of psychological interventions. Within these, few significant predictive relationships were found. Conscientiousness showed the most predictive value for treatment outcomes. The empirical project found little significant change in clinical and risk outcomes following long-term inpatient treatment and it was therefore not possible to determine whether there was a significant relationship with personality traits. **Conclusions:** Both studies identified challenges to investigating the impact of client personality traits on the course and outcomes of treatment. These include the complexity of the possible interaction of numerous variables in the course of treatment, and the heterogeneity in the research designs and methods used to investigate them. Further research is needed to understand the impact personality traits have on treatment, both as predictors, and moderators for other idiosyncratic variables. Further research is also needed into the effectiveness of treatment in FMHS.

In memory of my grandfather, Igor Georgievich Zhakov, one of my biggest cheerleaders on this journey. His passion and pursuit for knowledge of the field of psychology was inspiring, surpassed only by his work ethic and generosity, which I will forever strive to embody.

Table of Contents

Thesis Portfolio Abstract 1

Table of Contents 3

List of Tables 5

List of Figures 7

List of Appendices 8

Acknowledgments 9

Chapter 1: Introduction to Thesis Portfolio 10

Chapter 2: Systematic Review 15

Abstract 16

Introduction 17

Methods 21

Results 24

Discussion 42

References 51

Supplementary Material 58

Chapter 3: Bridging Chapter 66

Chapter 4: Empirical Research Paper 73

Abstract 74

Introduction 75

Methods 79

Results 87

Discussion 90

References 99

Chapter 5: Extended Methodology 107

Chapter 6: Additional Results 120

Chapter 7: Discussion and Critical Evaluation 127

Extended Discussion for Empirical Paper Additional Results 127

Critical Evaluation 128

Conclusion..... 139

Bibliography 142

Appendix 165

List of Tables

Table 1. *Review Inclusion and Exclusion Criteria* 22

Table 2. *Exclusionary Details* 26

Table 3. *Descriptive Statistics of Included Studies* 27

Table 4. *Summary of Characteristics of Included Studies* 28

Table 5. *Downs and Black Quality Assessment Ratings for the Included Studies* 31

Table 6. *Outcomes Investigated in Each Study and the Measures Used, Organised by Outcome Category* 33

Table 7. *Effect Direction Plot of Association Findings per Five-Factor Model (FFM) Trait* 35

Table 8. *Effect Direction Plot of Predictor Findings per Five-Factor Model (FFM) Trait* 36

Table 9. *Summary of Findings for Five-Factor Model (FFM) Trait Predictors* 42

Table 10. *Details of the Search Strategy* 59

Table 11. *List of Psychological Interventions Recommended by the National Institute for Health and Care Excellence (NICE) Guidelines and Included in the Review* 60

Table 12. *Study Findings of Significant Five-Factor Model (FFM) Trait Relationships (Association and Predictor) with Treatment Outcomes* 63

Table 13. *Correlates Between DSM-5 Personality Traits and the Five-Factor Model (Costa & McCrae, 1990)* 71

Table 14. *Demographics of the Sample (*N *= 20)* 81

Table 15. *Reliability Alpha Coefficients and Clinical Norms Used for HoNOS-secure and HCR-20^{V3} Analysis* 86

Table 16. *Reliable Change Index and Clinically Significant Change Summary and Mean Changes in Scores (n = 16)* 88

Table 17. *Correlations Between Change in HoNOS-secure and HCR-20^{V3} Scale Scores (τ_b) (*n *= 16)* 89

Table 18. *Correlations Between DSM-5 Personality Traits and Change in HoNOS-secure and HCR-20^{V3} Scale Scores (τ_b) and Descriptive Statistics (*n *= 16)*.....90

Table 19. *Standard Error of Measurement (SEM) and Reliable Change Scores (RCS) for the Change in Scores on Each Ouctome Measure Scale (*n *= 16)*.....121

Table 20. *Correlations Between DSM-5 Personality Traits (τ_b) (*n *= 16)*.....124

Table 21. *Treatment Needs for the Forensic Mental Health Services Population* 136

List of Figures

Figure 1. *PRISMA Diagram of Study Inclusion*..... 25

Figure 2. *Plot of Individuals' Pre- and Post-Treatment scores on HoNOS-secure - Clinical Scale, Indicating Reliable Change Index (RCI) and Clinically Significant Change (CSC) (*n *= 16)*..... 122

Figure 3. *Plot of Individuals' Pre- and Post-Treatment scores on HoNOS-secure - Security Scale, Indicating Reliable Change Index (RCI) and Clinically Significant Change (CSC) (*n *= 16)*..... 122

Figure 4. *Plot of Individuals' Pre- and Post-Treatment scores on HCR-20^{V3} Clinical Scale, Indicating Reliable Change Index (RCI) and Clinically Significant Change (CSC) (*n *= 16)*..... 123

Figure 5. *Plot of Individuals' Pre- and Post-Treatment scores on HCR-20^{V3} Risk Scale, Indicating Reliable Change Index (RCI) and Clinically Significant Change (CSC) (*n *= 16)*..... 123

Figure 6. *Frequency of Ratings for Voluntary Status (*N *= 20)*..... 125

List of Appendices

Appendix A. Systematic Review Journal Formatting Guidelines 165

Appendix B. Adapted Downs and Black (1998) Checklist for Measuring Study Quality.....171

Appendix C. Empirical Paper Journal Formatting Guidelines 174

Appendix D. Research Ethics Committee and Health Research Authority Letters Confirming Ethical Approval.....176

Appendix E. Poster Advertising the Research Project 182

Appendix F. Expression of Interest and Consent to Contact Form.....183

Appendix G. Patient Information Sheet.....184

Appendix H. Consent Form 189

Appendix I. Health of the Nation Outcome Scale – Secure (Sugarman & Walker, 2007).....191

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Chapter 1: Introduction to Thesis Portfolio

In Mental Health Services, treatment can consist of a combination of psychological interventions, medication, case management, support groups, hospitalisation, creative therapies, and alternative and complementary therapies. Psychological interventions can be defined as "actions intended to modify processes and systems that are social and psychological in nature (such as cognitions, emotions, behaviours, norms, relationships, and environments) and are hypothesised to influence outcomes of interest" (Grant et al., 2018, p. 2). The term "psychological interventions" will be used interchangeably with "psychological therapies" and "therapies" in this thesis portfolio.

The field of research into the outcomes of psychological interventions for various psychological difficulties and clinical disorders has shown that therapies from different therapeutic frameworks often do not consistently produce evidence of superiority in effectiveness (e.g. Cuijpers et al., 2013; Wampold & Imel, 2015). An ensuing debate has arisen surrounding the causes for such discrepant findings. Some researchers postulate that outcomes of psychological interventions are mainly attributed to common extra-therapeutic factors (e.g. Lambert, 1992) rather than elements of the therapies. They also postulate that therapies are not entirely separate as they have common factors; for example, studies have shown that therapists from different orientations exhibit similar behaviours during treatment (e.g. Trijsburg, Trent, & Perry, 2004). Imel and Wampold (2008) found that non-therapeutic modality specific factors account for 30-70% of variance in outcomes. Other researchers argue that specific elements of the different therapies are responsible for the effectiveness of treatment (e.g. DeRubeis, Brotman, & Gibbons, 2005), and this is often supported by evidence that certain therapies consistently show greater outcomes in some areas, such as Cognitive-Behavioural Therapy (CBT) for major depression and anxiety disorders (Cuijpers, Cristea, Karyotaki, Reijnders, & Huibers, 2016).

Still others argue that the methodology for research into treatment effectiveness is itself problematic, and influences the findings. For example, Budd and Hughes (2009) and Westen, Novotny, and Thompson-Brenner (2004) postulate that randomised controlled trials (RCTs) are unable to effectively compare psychological therapies, because treating psychological interventions as separate entities denies the common elements between them. Furthermore, the reliability and validity of the findings from research into treatment effectiveness may be argued to suffer from a number of established difficulties, such as *publication bias* (whereby many studies that do not find significant results are not published, Dal-Ré et al., 2017), *researcher allegiance* (i.e. the researcher's belief in the validity and superiority of their treatment, Munder et al., 2013), and deficits in the integrity of the research method (e.g. randomisation and blinding in RCTs) and delivery of the investigated treatment (Cuijpers, van Straten, Bohlmeijer, Hollon, & Andersson, 2010). There is also evidence that at least one type of control group for RCTs, waiting list, may overestimate the effectiveness of therapy (Gold et al., 2017). Additionally, most research looks at short to medium term outcomes, which may not adequately capture changes in individuals' lives.

To date researchers have not been able to definitively define the *mechanisms of change* (i.e. "the steps or processes through which therapy [or some independent variable] actually unfolds and produces the change", Kazdin, 2007, p. 3) for psychological interventions, nor ascribe specific weighting or roles to different therapy-specific or common factors (Cuijpers, Reijnders, & Huibers, 2019). Indeed, research into mechanisms of change in psychological therapy largely focuses on individual therapies, and explores the predictive values of individual measured components of their therapy. For instance, a review by Lemmens et al. (2016) sought to investigate the mechanism of change of therapies for depression, by looking at psychological mediators in various forms of psychotherapy for depression. They identified 35 relevant studies, which employed

different therapies: CBT was the most frequently researched intervention (examined in 21/35 studies), followed by third-wave CBT interventions (or components of CBT; 10/35). Most factors of the 39 investigated factors were related to the hypothesised processes specific to the therapy (studies that looked at CBT focussed on CBT processes as mediators; e.g. *Negative Automatic Thoughts*, *Dysfunctional Attitudes*, and behavioural factors; whilst the studies with interventions that employ Mindfulness focussed on factors relevant to this; Rumination, Mindfulness, and Worry). Rumination and Worry can also be considered as depression symptomology (or hypothesised mechanism of the disorder). Therapeutic Alliance was the only non-symptomology or therapy mechanism-specific factor investigated, though this was only considered in 3/35 studies. Individual factors were examined few times and found to be significant in few studies; mostly within their own modality. The authors concluded that research into the mechanism of change is "heterogeneous and unsatisfactory in methodological respect" (Lemmens et al., 2016, p. 95).

The difficulty in synthesising this literature may be due to the continued exploration into therapy-specific factors, rather than exploring non-therapeutic modality specific factor which may affect change across therapies (and/or treatment indications). It is important to understand the factors which may explain the mechanism of change in psychological therapy, both specific to the therapy, and common for all therapies, to understand why some therapies seem to work better for some indications, in different contexts, and why not all individuals benefit from the same therapies in the same way.

Candidate non-therapeutic modality specific factors that may be argued to influence outcome of psychological interventions can be classed broadly into four groups; *contextual* (e.g. catharsis from the formal opportunity to discuss difficult experiences, using formulation within theoretical frameworks to reframe experiences; as proposed by Rosenzweig, 1936); *therapist-specific* (e.g. therapists' personality, warmth, unconditional

positive regard, treatment fidelity, attachment style, and biases or beliefs); *client-specific* (individual social/environmental factors, engagement, motivation and readiness for change, adherence to treatment, particular difficulties/treatment needs, attachment style and personality); and finally within the *therapist-client relationship* (e.g. therapeutic alliance), which is influenced by the other factors (and the relationship between them, e.g. the therapist and client's attachment styles or personality traits).

Personality

Personality is one of the primary individual differences, in the ways that people think, feel and act (McCrae & John, 1992). An individual's personality is made up of traits; "stylistic and habitual patterns of cognition, affect, and behaviour " (Emmons, 1989, p. 3). Personality traits have been shown to be linked to wide-ranging outcomes and life experiences, such as individuals' happiness, health, work satisfaction and performance, quality and satisfaction with close relationships, as well as the formation of identity (Ozer & Benet-Martinez, 2006).

There are a number of ways by which personality may be hypothesised to influence change in psychological therapy and therefore affect treatment outcomes. An individual's propensity for change in therapy may be influenced by their engagement and adherence with treatment. Considering traits from the *five-factor model* (FFM; Costa & McCrae, 1990, further described in the Systematic Review, p. 17), Conscientiousness has been linked with adherence to treatment in physical health settings (e.g. Cheung, LeMay, Saini, & Smith 2014). Openness to Experience relates to individuals' flexibility in thought, experience, and beliefs, which may increase their engagement in therapy. In addition, Openness to Experience has also been linked to greater use of more adaptive, flexible coping response in response to stress (Lee-Baggley, Preece, & DeLongis, 2005), which may facilitate the assimilation of new coping strategies in therapy. Agreeableness has been linked to the

development of therapeutic alliance, which has been shown to be related to outcome and adherence to treatment (e.g. Martin, Garske, & Davis, 2000).

Before we test hypothesised roles for personality in the mechanism of change in psychological therapy, it is important to ascertain whether personality is in fact a significant predictor of treatment outcomes. From a clinical perspective, if personality were to be found to be a significant predictor of outcome, this could form a useful tool for clinicians in the assessment and treatment planning phase. As personality would form only one of many individual factors which may be part of influencing the mechanism of change and therefore response to therapy, it would not serve to denote which individuals will benefit from, and should therefore have access to, certain treatments. Instead, it could be useful in considering whether certain adaptations can be made to facilitate clients' engagement in therapy, as well as help focus and tailor aspects treatment.

A previous study by Bucher et al. (2019) explored the association between personality and treatment outcomes, but no studies to date have looked at whether personality traits are significant predictors of outcome. To aid in this pursuit, this thesis portfolio presents two studies; a systematic review that sought to establish whether personality traits significantly predict outcomes of psychological interventions; and an empirical project that sought to establish whether there is a relationship between personality traits and treatment outcomes in a forensic mental health services.

Chapter 2: Systematic Review

The following paper has been prepared in accordance to Personality and Individual Differences, author guidelines can be found in Appendix A. Two exceptions have been made for ease of reference: table captions are presented above tables, and subheadings have been formatted to match the format of the portfolio. The Supplementary Materials are found at the end of the chapter for the readers' convenience.

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Do Five-Factor Model Personality Traits Predict Outcomes of Psychological Interventions?

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Abstract

Introduction: Clients' personality traits have been hypothesised to impact the course and outcome of psychological interventions. Their predictive value has been investigated in treatment effectiveness studies, though no systematic review has been undertaken to synthesise this literature. The present study sought to establish whether five-factor model (FFM; Costa & McCrae, 1990) personality traits predict clinical and psychosocial outcomes of psychological interventions.

Method: A systematic search of five databases identified seven studies that met the inclusion criteria. A narrative synthesis was undertaken to synthesise the data.

Results: Few significant predictor relationships between FFM traits and outcomes were found. Neuroticism, Extraversion and Openness to Experience were found to significantly predict outcomes for symptom severity in one study each, and Agreeableness significantly predicted treatment completion. Conscientiousness was found to be a significant predictor for abstinence (from gambling), coping skills, symptom severity, remission, and treatment completion, however it was not found to be a significant predictor in over two thirds of outcomes investigated.

Conclusions: Few studies have investigated the predictive role of FFM traits for psychological intervention outcomes, with only one study identified per indication and only cognitive-behavioural interventions represented. Further research into the role of client personality traits and other idiosyncratic variables is warranted to understand the mechanism of change.

PROSPERO registration number *CRD42018110609 (Registered 25th September 2018)*

Introduction

Personality is one of the primary ways in which individuals differ, driving the ways that people think, feel and act (McCrae & John, 1992), and is a candidate idiosyncratic variable that has been hypothesised to form part of the mechanism of change in therapy, affecting the way individuals respond to therapy (e.g. Costa Jr., 2008; Widiger & Presnall, 2013). Significant recent research has explored the connections between normative personality traits and various clinical outcomes/variables. The most researched dimensional model, the *five-factor model* (FFM; Costa & McCrae, 1990), was developed through lexical analysis of personality terms that occur in different languages. The five traits have been shown to be generalised across cultures (e.g. Terracciano & McCrae, 2006), with similar changes across lifespan seen, suggesting a common cross-cultural maturation in personality.

The FFM has been shown to be a useful tool in describing individuals' adaptive and maladaptive traits. Multiple iterations of the model have been developed with slight differences (e.g. Goldberg, 1992; Saucier, 1997), though the original FFM (Costa & McCrae, 1990), which has the broad consensus of literature, consists of five personality trait domains: Neuroticism, Extraversion, Openness to Experience (hereafter "Openness"), Agreeableness and Conscientiousness. In the most widely used measure for FFM, NEO Personality Inventory – Revised (Costa & McCrae, 1992), each trait is made up of six facets.

Neuroticism represents a "tendency to experience psychological distress". Extraversion encompasses individuals' level of sociability and activity, as well as their propensity for positive emotions and pleasure. Openness refers to a person's level of imagination, interest in arts, and flexibility in thought, experience, and beliefs. Agreeableness is a trait that refers to an individual's disposition in interpersonal relations; how trusting, sympathetic and cooperative they are. Conscientiousness represents how

organised and diligent individuals are, as well as how much controlled effort they put into their actions (Costa & McCrae, 1992).

FFM traits have been found to be related to, and even predict, many experiences in life, such as happiness, health, work satisfaction and performance, quality and satisfaction with close relationships, as well as the formation of identity (Ozer & Benet-Martinez, 2006). FFM traits have also been shown to predict the development of clinical disorders. A profile of high Neuroticism, low Conscientiousness, low Agreeableness, and low Extraversion has been shown to be associated with symptoms of various clinical disorders (Malouff, Thorsteinsson, & Schutte, 2005). Multiple longitudinal studies have shown that high Neuroticism and low Extraversion also predict the development and chronicity of both major depression and anxiety disorders (e.g. Clark, Watson, & Mineka, 1994; Kendler, Kuhn, & Prescott, 2004; Krueger, Caspi, Moffitt, Silva, & McGee, 1996). There is some evidence that low Openness is also associated with clinical disorders however the effect sizes are small compared to the other traits (Malouff et al., 2005).

The stability of personality traits has been the subject of longstanding debate. For the purposes of this review, personality traits are considered to be temporally stable constructs, following the *five-factor theory* (a theory created by the FFM authors, explaining how personality is developed and operates, McCrae & Costa, 1996). For discussion about the ongoing debate in the field of personality research regarding the stability and measurement of traits see the Discussion chapter (p. 131).

Personality Traits and Response to Treatment

Previous studies have explored the effect of personality traits on treatment outcome in different areas, finding that the role of personality traits, as well as the consistency of findings, has varied. In research considering treatment for physical health conditions, Neuroticism has been associated with medical non-compliance to asthma

treatment, and Conscientiousness with compliance (Cheung, LeMay, Saini, & Smith 2014). Similarly, lower Extraversion, Agreeableness, and Conscientiousness, but higher Neuroticism, suggested poorer treatment outcomes for depression in patients with acute coronary syndrome (Kim et al., 2016). In the field of substance dependence, however, research has painted apparently conflicting results. For example, with regards to the likelihood and imminence of relapse, researchers have shown significant associations with higher Neuroticism and lower Conscientiousness (Bottlender & Soyka, 2005), low Agreeableness and high Extraversion (Finn & Robinson, 2012), as well as with no FFM traits (Muller, Weijers, Boning, & Wiesbeck, 2008).

A recent meta-analysis by Bucher, Suzuki, and Samuel (2019) was the first to systematically review the association (i.e. observed correlation) between FFM traits and mental health treatment outcomes. This included both psychological and psychopharmacological interventions, though due to heterogeneity of the studies they were unable to undertake separate analysis for different treatments. Whilst using FFM as the framework to organize personality trait measures, they included studies that used any personality measures, including those that were based on different dimensional personality models. They sorted them into corresponding FFM domains according to their developmental and theoretical constructs, and following a coding of measures used by Roberts et al. (2017; in a systematic review of the change in traits following intervention). They found significant associations between FFM traits and treatment outcomes, most notably with more favourable outcomes being associated with lower levels of Neuroticism and higher levels of Extraversion, Agreeableness, Conscientiousness, and Openness. Moreover, they found that Agreeableness was positively associated with therapeutic alliance, whilst Conscientiousness was positively associated with greater abstinence from substances following treatment. When undertaking moderator analyses, they showed that the personality measure used had a significant impact on outcomes, including in studies

that had employed more than one measure, suggesting that the constructs being assessed by non-FFM measures were not equivalent to the FFM traits.

The present study sought to build on Bucher et al.'s (2019) review by considering the predictive role of FFM traits, including in relation to other idiosyncratic client-specific variables, for the outcomes of psychological interventions, specifically. The review will attempt to reduce heterogeneity of studies, compared to Bucher et al. (2019), by adopting a more restrictive definition of measurement of the FFM (only adopting studies that have used established measures for the original FFM framework, as outlined below). Additionally, the present review will aim to increase external validity, by focussing on empirically supported psychological therapies; including studies that employed interventions which are recommended by UK National Institute for Health and Care Excellence (NICE) guidelines (made on the basis of systematic reviews of available evidence) for the target clinical disorder. In doing so, the study will increase our confidence in conclusions that identified variances can be attributed to differences in personality, and different psychological intervention frameworks.

Aims and Objectives

The aims of this review are to establish whether FFM personality traits predict outcomes of psychological interventions, and the magnitude of any findings. In particular, does the presence of higher or lower levels of FFM traits show specific patterns of effects, and are there specific patterns according to treatment indication, type of psychological intervention and specific outcomes?

Methods

Search Strategy and Terms

A systematic search was conducted using five electronic databases: MEDLINE Complete (via EBSCO), PsycINFO (via EBSCO), CINAHL Complete (via EBSCO), PsycARTICLES (via EBSCO) and Scopus, in June 2020. Prior to embarking on this systematic review, the Cochrane Collection and Prospero were also checked for any prior reviews in this subject area. The full search strategy is available in Table 10 in the Supplementary Material. Search terms included variants of FFM (i.e. *big five*, *big 5*, *five factor model*, *five factor personality model* or *neuroticism extraversion openness*), psychological intervention (i.e. *therapy*, *intervention*, *psychotherapy* or *treatment*) and established FFM measures (as listed in Table 1 below; *IPIP*, *international personality item pool*, *big five mini-marker*, *big five aspect*, *neuroticism-extraversion-openness*, *neo personality inventory*, *neo-ffi*, *neo five-factor inventory*, *neo-pi-r* or *big five inventory*), as well as relevant index terms.

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria for the present review is summarised in Table 1. No restrictions were placed on publishing date, presence of comorbidity, or edition of the diagnostic manual used. The psychological interventions recommended by the relevant NICE guidelines are listed in Table 11 in the Supplementary Materials. For clinical disorders with no associated NICE guidance, recommendations made by the most recent published Cochrane Review were used (e.g. for pathological gambling; Cowlishaw et al., 2012). If studies investigated several treatments, only NICE guidelines recommended interventions' data would be extracted. Studies could include medication intervention, however had to analyse and report separate outcomes for each psychological therapy. Whilst focusing on the predictor relationship, association (i.e. correlation or difference in means, reporting *M*, *SD*, and statistical significance) of FFM traits for groups based on outcomes, and mediator

Table 1. *Review Inclusion and Exclusion Criteria*

Inclusion	Exclusion
• Primary peer reviewed research including doctorate-level dissertations	• Non-English language
Population	
• Target difficulty associated with a formal clinical diagnosis • Diagnosed following a recognized diagnostic manual	• Target difficulty subthreshold for clinical diagnosis • Diagnosis not established
Comparator: Five-Factor Model (FFM; Costa & McCrae, 1990)	
• Assessed FFM personality traits • Investigated at least one full FFM domain • Assessed using one of the following established measures for the FFM: o NEO Personality Inventory – Revised (Costa & McCrae, 1992) o NEO Five-Factor Inventory (Costa and McCrae, 1992) o Big Five Aspect Scales (DeYoung, Quilty, & Petersen, 2007) o Big Five Inventory (John, Donahue, & Kentle, 1991) o International Personality Item Pool for NEO-PI-R (IPIP-NEO-120, Johnson, 2014; Maples, Guan, Carter, & Miller, 2014; IPIP-NEO-300, Goldberg, 1999)	• Other dimensional personality models • Only individual facets investigated • Domains that are constituted of an aggregate of facets, deviating from original measure • Other measures that measured an altered FFM (i.e. not Neuroticism, Extraversion, Openness to Experience, Agreeableness, Conscientiousness).
Intervention	
• Established, evidence-based formal psychological therapy, recommended by NICE guidelines, for difficulties associated with the formal clinical diagnosis of the sample • All participants in an analysed group received the same treatment	• Interventions that deviated from the standard application of the therapy • Psychological intervention part of multimodal treatment where effects could not reliably be attributed to the psychological therapy • Combined participants that received different interventions into groups
Outcomes	
• Clinical or psychosocial outcomes, assessed by valid measures or events. • Relationship between baseline FFM trait and post-treatment outcome • Predictor/prognostic relationship investigated and reported	

or moderator relationships were also extracted and reported. Where studies met inclusion criteria, but outcomes were not reported in a way that allowed reliable extraction, the authors of the study were contacted to request additional data.

Study Selection and Data Extraction

The results of the outlined database searches were transferred to Covidence systematic review software (Veritas Health Innovation), for ease of systematic sorting and duplicates were removed. The titles and abstracts were screened for potential eligibility by the first author (AS). Next, all full text articles were screened by AS, and the included studies were screened by a second reviewer (NT) in relation to the outlined inclusion criteria. Data extraction was completed by AS using DistillerSR software (Evidence Partners, Canada), with a pre-defined data extraction form that was piloted on an included study.

Quality and Risk of Bias Assessment

The Downs and Black checklist (i.e. D&B; Downs & Black, 1998), was used to assess the methodological quality and risk of bias of the included studies. The D&B can be used to assess the quality of both randomized and non-randomized studies, and was reported as one of the most useful tools for the assessment of methodological quality in a systematic review by Deeks et al. (2003). It includes 27 questions (*yes* = 1, *no/unable to determine* = 0), covering: Reporting, Internal Validity (Bias and Confounding), External Validity, and Power. For the present review the final question on Power was modified to two questions: (a) whether power analysis was reported to have been undertaken, and (b) whether the study had sufficient power to detect a moderate significant effect (rated as above). A copy of the checklist can be found in Appendix B. Study registration information and additional published reports were checked for additional information (where relevant and available). Quality assessment was done by AS and NT, blind to the other reviewer's ratings, and any disagreements were discussed and where needed resolved by a third reviewer (PB).

Synthesis Approach

The study designs and analysis methods used in the studies were too heterogeneous and meta-analysis was not appropriate, so the review employed a narrative synthesis. The following variables were coded to allow group synthesis: study design, patient status (inpatient vs. outpatient), intervention, FFM domains investigated, outcome investigated. Effect-direction plots (adapted from Thomson & Thomas, 2013) were created from cross-study synthesis, to provide visual summary of effect direction for the role of FFM traits in predicting multiple outcomes across the included studies. Categories of outcome variables were also synthesised separately according to type of treatment and indication to account for confounding variables and determine differences between these.

Results

The electronic database search identified 2055 articles, after duplicates were removed. Figure 1 illustrates the study selection process in a PRISMA flow diagram (Moher, Liberati, Tetzlaff, & Altman, 2009). A large amount of studies explored the role of traits in predicting outcomes in physical health settings (e.g. physical health medication monitoring). The reference lists of the excluded systematic reviews and book chapters, as well as those of included studies, were screened for any relevant studies; no new eligible studies were identified this way. The reasons for exclusion at full-text screening are illustrated in Table 2. There were no disagreements about study inclusion between the two reviewers.

Two studies, Lammers, Vroling, Ouwens, Engels, and van Strien (2015) and Vroling, Wiersma, Lammers, and Noorthoorn (2016), used the same sample and were combined for extraction. The final participant sizes differed slightly between the two reports with regards to treatment completion and drop out, however this did not change the results. A further article, Deumens, Noorthoorn, and Verbraak (2012), used a subsample from this study along with further participants, though it was unclear what portion of the original sample

Figure 1. *PRISMA Diagram of Study Inclusion*

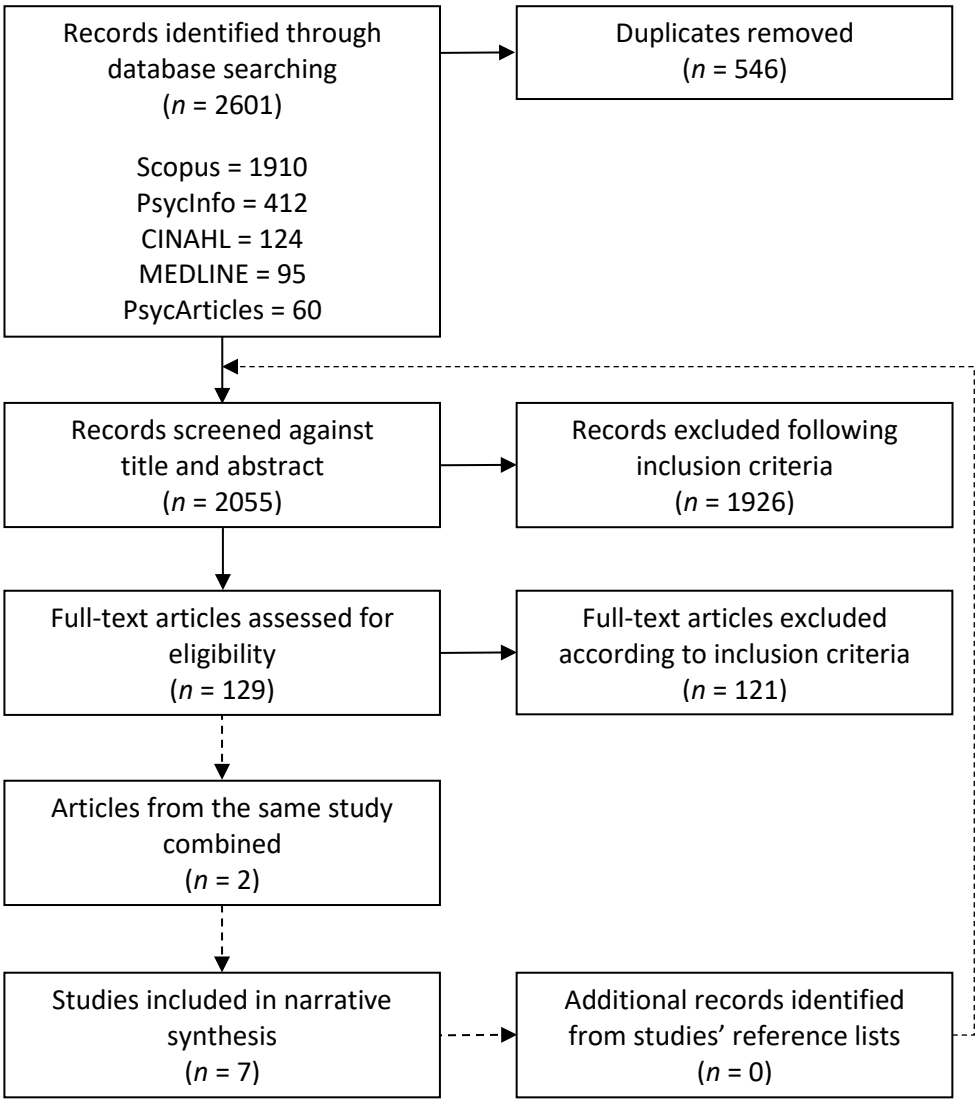

Table 2. *Exclusionary Details*

Reason for Exclusion	*(N = 2047)*
Not applicable research (excluded at first stage of screening)	1926
Study design	
Different intervention groups not separated for analysis[a]	12
Not post-treatment	10
Not primary research (review, book chapter, poster)	10
No intervention	6
Partially duplicate sample of included study (not possible to combine)	1
Indication	
Target difficulty not from diagnosable clinical disorder	12
Intervention	
Not NICE guideline-recommended psychological intervention	20
Intervention not psychological	10
Multimodal treatment or not standard application of intervention	9
Comparator	
Not established/included FFM measure used to assess personality	6
Not FFM dimensional model	5
Outcomes	
FFM personality traits investigated as treatment outcome	8
Only investigated facets of FFM personality traits	4
No statistical outcomes reported (or supplied upon contact)	4
Outcomes not psychosocial (i.e. neurocognitive)	1
Not predictor relationship (i.e. only association, mediator, or moderator)	1
Only indirect role of FFM trait investigated	1
Study did not investigate outcomes of treatment	1

[a] In some cases this included a non-NICE recommended treatment.

this was. They investigated similar outcomes but with slightly different constructs, with conflicting results. It was not possible to meaningfully combine the data from this article; therefore, it was excluded following Cochrane Handbook guidance (Lefebvre et al., 2019, Section 4.6.2). Authors of two further relevant studies were contacted to ask for additional information to meet inclusion criteria. One author did not respond, and the second responded but the information supplied did not match inclusion criteria, therefore neither study could be included. The descriptive statistics of the included studies are shown in Table 3 and a summary of their characteristics is presented in Table 4.

Table 3. *Descriptive Statistics of Included Studies*

Total *N* (% female)	497[a] (71.64)[b]
Median publication year	2013
Primary diagnoses	Binge eating disorder Bulimia nervosa Chronic fatigue syndrome Eating disorder not otherwise specified (bulimic subtype) Mood disorder (with psychotic features) Pathological gambling Psychophysiological insomnia Psychotic disorder not otherwise specified Social anxiety disorder Schizophrenia spectrum
Patient status	Outpatient (100%)
Intervention	Cognitive Behavioural Therapy (CBT) (4) CBT augmented by d-cycloserine or placebo (1) CBT for insomnia (1) Internet-based CBT for bulimia nervosa (1)
Modal treatment duration	12 weeks
Modal follow-up time	1 year[c]
Outcome domains (*N* outcomes)	Abstinence (1) Coping skills (3) Quality of Life (2) Remission (2) Symptom severity and improvement (10) Treatment completion (2)
Five-factor model measure	NEO-PI-R (3) NEO-FFI (4)

Note. Unless otherwise specified, the number in brackets indicates number of studies. Abbreviations: NEO-PI-R, NEO Personality Inventory–Revised (Costa & McCrae, 1992), NEO-FFI, NEO Five-Factor Inventory (Costa and McCrae, 1992).

[a] *N* for Lammers et al. (2015) and Vroling et al. (2016) is from the latter. Final analysed *N* from Beauchamp et al. (2013) in unclear. [b] From 6 of 7 studies as not reported for analysed sample in Beauchamp et al. (2013). [c] From four studies that had a follow-up.

Table 4. *Summary of Characteristics of Included Studies*

Reference	*N*[a] (% female)	Diagnoses	Intervention type and manual (or contents)	Intervention Format	Settings	Study design	Investigated predictor variables (non-FFM)
Beauchamp, Lecomte, Lecomte, Leclerc, and Corbière (2013)	48[b]	• Schizophrenia spectrum • Mood disorder (with psychotic features) • Psychotic disorder	CBT (group) *Manual:* Lecomte, Leclerc, Wykes, and Lecomte (2003)	*Duration:* 24 Sessions of either treatment, twice a week, for 3 months (3-month follow-up) *Delivered by:* 2 therapists (degrees in occupational therapy, nursing, psychology), trained by authors	Canada Outpatient clinics 6 sites	Randomised controlled trial (RCT) (Single blind, randomisation method not reported) *Other intervention:* Skills Training for Symptom Management *Control:* Waiting list	
Lammers, Vroling, Ouwens, Engels, and van Strien (2015); Vroling, Wiersma, Lammers, and Noorthoorn (2016)	376[c] (92.29)	• Binge eating disorder	CBT (group) *Manual:* Fairburn, Marcus, and Wilson (1993)	*Duration:* 20 x 1 Day weekly (6-month follow-up) *Delivered by:* 1 psychologist, 1 sociotherapist, 1 psychomotor therapist	Netherlands Outpatient clinic 2 sites	Naturalistic cohort study	• **Eating disorder pathology** • **Body dissatisfaction** • Body mass index • Demographics: education, age • **Level of depression and psychopathology** • **Social embedding**

Table 4 continued

Reference	N[a] *(% female)*	*Diagnoses*	*Intervention type and manual (or contents)*	*Intervention Format*	*Settings*	*Study design*	*Investigated predictor variables (non-FFM)*
Levallius, Clinton, Högdahl, and Norring (2020)	67 (100)	• Bulimia nervosa • Eating disorders not otherwise specified – bulimic subtype	Internet-based CBT for bulimia nervosa (ICBT) 2 Forms of ICBT: with therapist support via e-mail (BIB-ICBT; Fairburn, Cooper, & Shafran, 2003) and online interaction with therapists (Salut BN[d])	*Duration:* 24 weeks (1-year follow-up) *Delivered by:* 3 psychologists, 1 social scientist.	Sweden Outpatient clinic	RCT (randomisation method not reported) *Control group:* daypatient programme (psychodynamic intensive group)	• **Symptom severity at baseline**
Poppe, Petrovic, Vogelaers, and Crombez (2013)	80 (91.25)	• Chronic fatigue syndrome	CBT (group) *Contents:* stress, gradual activity and sleep management and cognitive therapy	*Duration:* 12 x 2-hour sessions every two weeks *Delivered by:* 4 psychologists, trained by a CBT therapist	Belgium Outpatient clinic	Uncontrolled before and after	• **Acceptance**
Ramos-Grille, Gomà-i-Freixanet, Aragay, Valero, and Vallès (2013)	73 (5.5)	• Pathological gambling	CBT *Contents:* psychoeducation, motivational interviewing, stimulus control, cognitive restructuring, and relapse prevention	*Duration:* 40min sessions. Open programme – as necessary. (1-year follow-up) *Delivered by:* 1 clinical psychologist	Spain Outpatient clinic	Naturalistic follow-up	

Table 4 continued

Reference	N[a] *(% female)*	*Diagnoses*	*Intervention type and manual (or contents)*	*Intervention Format*	*Settings*	*Study design*	*Investigated predictor variables (non-FFM)*
Smits et al. (2013)	169 (43.2)	• Social anxiety disorder	CBT (group; augmented by d-cycloserine or placebo) *Manual*: Hofmann and Otto (2008)	*Duration:* 12 x 2.5Hour weekly sessions *Delivered by*: 2 therapists (profession not reported), trained by authors	USA Outpatient hospital 3 sites	RCT (computer-generated, stratified by symptom severity)	• Demographic variables: sex, age, highest education level, **cohabitation** • **Race/ethnicity** • **Social anxiety symptom severity** • Depressive symptom severity • Comorbidity
van de Laar, Pevernagie, van Mierlo, and Overeem (2015)	60 (68.33)	• Insomnia (psycho-physiological)	CBT for insomnia (CBT-I) *Manual*: Morin and Espie (2003)	*Duration:* 6 x weekly sessions, followed by 1 session after 1 and 3 months *Delivered by:* Not reported	Netherlands Outpatient clinic	Uncontrolled case series	• Temperament and Character Inventory personality traits • **Comorbidity** • **Cognitive coping** • Lack of social support

Note. **Bold** indicates predictor variables other than FFM, that were significant. Further details about non-FFM predictor findings are shown in Table 12 in Supplementary Material.

[a] Only data for interventions that met the inclusion criteria is reported. [b] It is not clear what *N* was used for the final analysis in Beauchamp et al. (2013). Additionally, % female not reported for analysed sample. [c] From Vroling et al. (2016), larger sample as also analysed dropout. [d] Available from http://www2.salut-ed.org/demo/

Quality Assessment Rating

The quality assessment ratings of the included studies are presented in Table 5. All studies were second-rated, with moderate initial agreement (Cohen's κ = .65, 95% CI [.31–.98], $p > .001$). Studies were included in the synthesis regardless of rating score. Three of the included studies were articles which presented additional/secondary analyses of outcomes from studies, with specific criteria used to include participants in these analyses and/or separate participants into groups (Beauchamp, Lecomte, Lecomte, Leclerc, & Corbière, 2013; Lammers et al., 2015; Smits et al., 2013). Due to this, as well as the inclusion criteria for the present review limiting extraction to relevant interventions, the sample sizes for Beauchamp et al. (2013) and Lammers et al. (2015) were smaller than the original study sample. With the exception of Smits et al. (2013), it was not possible to determine whether studies had sufficient power to detect significant effects for the outcomes measured. All included studies employed CBT-based interventions. Five studies reported that their interventions followed a manual or protocol (listed in Table 4), though no studies assessed treatment fidelity explicitly.

Table 5. *Downs and Black Quality Assessment Ratings for the Included Studies*

		External	Internal Validity			
Study ID	Reporting (*n* = 11)	Validity (*n* = 3)	Bias (*n* = 7)	Confounding (*n* = 6)	Power (*n* = 2)	Total (*n* = 29)
BEA2013	7	3	6	2	0	18
LAM2015 & VRO2016	9	3	5	4	0	21
LEV2020	8	1	5	5	0	19
POP2013	7	1	5	3	0	16
RAM2013	10	3	4	4	0	21
SMI2013	9	2	7	5	2	25
VAN2015	10	3	4	3	0	20

Note. Study ID: First three letters of first author surname and year of publication.

Treatment outcomes

The outcomes investigated in the included studies were pooled by category for synthesis. Table 6 presents the outcomes investigated in each study and the measures used. The findings for the associations (i.e. seen correlations between baseline trait scores and treatment outcomes, or differences in baseline trait means between groups, e.g. completers and non-completers) for each trait are presented in Table 7. The findings for the predictor role of each trait for treatment outcomes (analysed by regression or multi-level modelling), are presented in Table 8. The statistical outcomes relating to these findings are portrayed in Table 12 in the Supplementary Materials, including which other (non-FFM) variables were significant predictors for each outcome.

Table 6. *Outcomes Investigated in Each Study and the Measures Used, Organised by Outcome Category*

Study ID	Outcome	Outcome measures used	Description
		Abstinence	
RAM2013	Relapse	Two episodes of gambling during 1-year follow-up	
		Quality of Life (QoL)	
POP2013	Improvement in Mental QoL	36-item Short Form Health Survey (SF-36; Ware & Sherbourne, 1992)	Mental QoL questions
	Improvement in Physical QoL	SF-36	Physical QoL questions
		Coping Skills	
BEA2013	Active coping	Cybernetic Coping Scale (CCS; Edwards & Baglioni, 1993)	Active coping questions
	Passive coping	CCS	Passive coping questions
POP2013	Acceptance	Illness Cognition Questionnaire (Evers et al., 2001)	Acceptance subscale
		Symptom Severity and Improvement	
BEA2013	Psychosis symptomology	Brief Psychiatric Rating Scale–Expanded (BPRS-E; Lukoff, Nuechterlein, & Ventura, 1986)	Total
	Psychosis positive symptoms	BPRS-E	Positive symptoms
	Psychosis negative symptoms	BPRS-E	Negative symptoms
LAM2015	Binge eating pathology	Eating Disorder Inventory (EDI-1; Garner, Olmstead, & Polivy, 1983)	Bulimia subscale
LEV2020	Eating disorder symptomology	Eating Disorder Examination Questionnaire, version 4 (EDEQ; Fairburn & Beglin, 1994)	Change in total score
	Presence of binge eating	EDEQ	Item 17 (binge eating episodes)
	Frequency of binge eating	EDEQ	Item 17 (binge eating episodes)
POP2013	Fatigue severity	Checklist Individual Strength (Vercoulen et al., 1994)	Fatigue severity subscale

Table 6 continued

Study ID	*Outcome*	*Outcome measures used*	*Description*
SMI2013	Social anxiety symptom severity	Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987)	Total
	Social anxiety symptom improvement	LSAS	Change in total score
VAN2015	Clinical improvement in insomnia symptomology	Insomnia Severity Index (ISI; Morin, 1993; Morin, Belleville, Bélanger, & Ivers, 2011)	Decrease in ISI score of >7 points
Remission			
LEV2020	Eating disorder remission	Structured Eating Disorder Interview (SEDI; de Man Lapidoth & Birgegård, 2009)	Not fulfilling diagnostic criteria
	Eating disorder remission	EDEQ	Total within 1SD of community norms
VAN2015	Insomnia remission	ISI	Post-treatment ISI <8
Treatment Completion			
VRO2016[a]	Drop out	Client or therapist-initiated premature discharge	
RAM2013	Drop out	Client-initiated termination, without discussion with the therapist	

Note. Study ID: First three letters of first author surname and year of publication.

[a] Same sample at Lammers et al. (2015)

Table 7. *Effect Direction Plot of Association Findings per Five-Factor Model (FFM) Trait*

Outcome			FFM domain				
Category	Description	Study ID	N	E	O	A	C
Abstinence							
	Abstinence (gambling)[a]	RAM2013	⮟	·	·	·	⮝
Quality of Life (QoL)							
	Mental QoL	POP2013	⮝				
	Physical QoL	POP2013	·				
Coping skills							
	Active coping	BEA2013	·	·	·	·	⮝
	Passive coping	BEA2013	·	·	·	·	·
	Acceptance	POP2013	·				
Symptom severity and improvement							
	Psychosis symptoms total	BEA2013	·	·	·	·	·
	Psychosis positive symptoms	BEA2013	·	·	·	⮟	·
	Psychosis negative symptoms	BEA2013	·	·	·	·	·
	Fatigue severity	POP2013	·				
	Insomnia symptomology	VAN2015	·	·	·	·	·
Remission							
	Insomnia remission	VAN2015	·	·	·	·	·
Treatment completion							
	Completion[a]	VRO2016[b]	·	·	·	⮝	·
	Completion[a]	RAM2013	⮟	·	·	⮝	⮝

Note. Study ID: First three letters of first author surname and year of publication.

Abbreviations: N, Neuroticism; E, Extraversion; O, Openness to Experience; A, Agreeableness; C, Conscientiousness.

Effect direction: ⮝ = positive association, ⮟ = negative association, · = no significant association.

Sample size: large ⮝ = >120; medium ⮝ = 50–120; small ⮝ = <50.

Statistical significance: black arrow = $p < 0.01$; grey arrow = $p < 0.05$.

[a] Outcomes of Abstinence and Completion have been recoded from the opposite outcome (Relapse and Dropout respectively) to ease visual interpretation. [b] Same sample as LAM2015.

Table 8. *Effect Direction Plot of Predictor Findings per Five-Factor Model (FFM) Trait*

Outcome			FFM domain				
Category	Description	Study ID	N	E	O	A	C
Abstinence							
	Abstinence (gambling)[a]	RAM2013	·	·	·	·	▲
Quality of Life (QoL)							
	Mental QoL	POP2013	·				
	Physical QoL	POP2013	·				
Coping skills							
	Active coping	BEA2013	·	·	·	·	△
	Passive coping	BEA2013	·	·	·	·	·
Symptom severity and improvement							
	Psychosis symptoms total	BEA2013	·	·	·	·	·
	Psychosis positive symptoms	BEA2013	·	·	·	·	·
	Psychosis negative symptoms	BEA2013	·	·	·	·	·
	Binge eating pathology	LAM2015	·	▲	·	·	·
	Presence of binge eating	LEV2020	·	△	·	·	·
	Frequency of binge eating	LEV2020	·	·	·	·	·
	Eating disorder (ED) symptoms	LEV2020	·	·	△	·	▲
	Fatigue severity	POP2013	·				
	Social anxiety (SA) symptom severity	SMI2013	▼	·	·	·	·
	SA symptom improvement	SMI2013	·	·	·	·	·
	Insomnia symptomology	VAN2015	·	·	·	·	·
Remission							
	ED remission (diagnostic criteria)	LEV2020	·	·	▲	·	·
	ED remission (community norms)	LEV2020	·	·	·	·	▲
	Insomnia remission	VAN2015	·	·	·	·	·
Treatment completion							
	Completion[a]	VRO2016[b]	·	·	·	▲	·
	Completion[a]	RAM2013	·	·	·	△	△

Note. Study ID: First three letters of first author surname and year of publication. **Bold** outcomes had significant predictors other than FFM traits (listed in Table 12).

Abbreviations: N, Neuroticism; E, Extraversion; O, Openness to Experience; A, Agreeableness; C, Conscientiousness.

Effect direction: △ = positive association, ▽ = negative association, · = not significant.

Sample size: large △ = >120; medium △ = 50–120; small △ = <50.

Statistical significance: black arrow = $p < 0.01$; grey arrow = $p < 0.05$.

[a] Outcomes of Abstinence and Completion have been recoded from the opposite outcome (Relapse and Dropout respectively) to ease visual interpretation. [b] Same sample as LAM2015.

Abstinence

One study explored abstinence as a treatment outcome. Ramos-Grille, Gomà-i-Freixanet, Aragay, Valero, and Vallès (2013) investigated the role of FFM personality traits in predicting relapse and drop out in patients diagnosed with pathological gambling who took part in a protocolised individual CBT programme for pathological gambling. At 1-year follow-up, 29% of patients were classed as abstinent. Abstinent patients showed significantly lower Neuroticism and higher Conscientiousness than patients who had relapsed. Abstinent and relapsed patients did differ significantly in age (t = 2.00, p = .05, Cohen's d = 0.52), with the abstinent group being older, and age showed a significant positive correlation to Conscientiousness (r = .30, p < .01) and Agreeableness (r = .29, p = .01). Conscientiousness was a sole significant predictor for abstinence vs. relapse (lower Conscientiousness predicting dropout), and this effect remained significant after the effect of age was controlled.

Quality of Life

Quality of Life can be defined as "a comprehensive manifestation of personal well-being, which impacts not only the life expectancy of the patient but also affects the efficacy of comprehensive treatment strategies" (Ma et al., 2018, p. 2). One study investigated improvement in Quality of Life (QoL) as a treatment outcome. Poppe, Petrovic, Vogelaers, and Crombez (2013) investigated the role of acceptance and Neuroticism in predicting change in Mental QoL and Physical QoL of patients with chronic fatigue syndrome following group CBT. A significant improvement was found in fatigue severity, Mental QoL, Physical QoL as well as acceptance. No significant relationship was found between Physical QoL and Neuroticism nor Acceptance. Neuroticism showed a significant positive relationship with improvement in Mental QoL, with higher Neuroticism associated with greater improvement; however Neuroticism did not remain a significant predictor for improvement

in Mental QoL when acceptance was entered into the model. Acceptance accounted for 5% more variance, with people with lower acceptance showing greater improvement.

Coping Skills

Two studies explored coping skills outcomes. Beauchamp et al. (2013) explored the predictive value of FFM traits on active and passive coping skills following group CBT for first episode psychosis. Following treatment, 51% of participants showed a reliable clinical improvement in active coping (meeting the general population norm). There was no reliable clinical improvement seen in passive coping. There was a significant positive correlation between active coping and Conscientiousness, and higher Conscientiousness significantly predicted improvement in active coping, explaining 14% of variance. There were no significant associations between any traits and passive coping. Of note, only participants who completed pre-post measures and two-thirds of the sessions or who stayed in the control condition were included in the analyses, however it is not clear how many were in the CBT intervention (the only intervention extracted for this review), except for the linear regression analysis, which included 29 participants. No analyses of any differences between the analysed sample and the original full sample were reported. The authors alluded to a high level of attrition following treatment completion; therefore it is not clear whether the relationship seen between change in active coping and Conscientiousness could be impacted by any characteristic differences in traits of the sample included for analysis (i.e. completers who also returned post-treatment measures).

Poppe et al. (2013) found no significant correlation between Neuroticism and change in acceptance following CBT for chronic fatigue.

Symptom Severity and Improvement

In Beauchamp et al. (2013), 35% of participants showed a reliable clinical improvement (a drop of more than 10 items on the BPRS total score) following treatment.

No significant associations were seen between the FFM traits and change in overall psychosis symptomology, or negative symptoms. A significant negative correlation was seen with Agreeableness and positive symptoms, with lower Agreeableness associated with greater improvement. None of the traits were significant predictors for symptomatic change.

Levallius, Clinton, Högdahl, and Norring (2020) investigated the role of FFM in predicting outcomes from internet-based CBT (ICBT) interventions for bulimic eating disorders. Another article which employed the same sample to investigate the role of FFM in predicting drop out specifically (Högdahl, Levallius, Björck, Norring, & Birgegård, 2016), was not included due to analysing FFM trait facets only. Levallius et al., (2020) analysed combined participant data from an RCT of two forms of ICBT (results not yet published, pilot study: Högdahl, Birgegård, & Björck, 2013), as they stated that the content of the interventions was similar, and they aimed to increase power. Analysis of differences between the combined intervention groups were not reported (Högdahl et al., 2016, reported that there were no significant differences in drop out between the two ICBT groups. The pilot study only employed one form of ICBT). This limits the interpretation of the findings.

Levallius et al. (2020) reported a significant reduction in overall eating disorder (ED) symptom severity over time. Openness and Conscientiousness were significant predictors of symptom reduction, with higher levels of both predicting greater reduction. With regards to binge eating they found that there was a significant reduction in binge eating frequency over time. They found that Extraversion significantly predicted presence vs. absence of binge eating following treatment, with high Extraversion predicting cessation in 77% of cases. Personality traits did not predict change in binge eating frequency.

Similarly, in Poppe et al. (2013) Neuroticism was not significantly associated with, and did not predict, change in fatigue severity following CBT for chronic fatigue.

In a study exploring the pre-treatment predictors of outcomes following CBT for patients with binge eating disorder, Lammers et al. (2015) found a significant reduction in both bulimia symptom scores and body mass index. Extraversion was shown to be a significant predictor for post-treatment bulimia symptom severity, with higher levels predicting greater symptom reduction.

In a secondary article from an RCT on group CBT augmented by d-cycloserine (DCS) and placebo for social anxiety disorder (Hofmann et al., 2013), Smits et al. (2013) investigated which factors would predict treatment outcomes and which factors moderate outcomes of DCS and placebo augmentation. The DCS and placebo augmented groups were combined for analysis of predictors. It can be assumed that the outcomes of the combined group can be interpreted reliably, as Hofmann et al. (2013) reported that there were no significant differences between the two groups in rates of symptom severity and remission. No personality traits were found to be significant predictors of change in social anxiety symptom severity, though higher Neuroticism pre-treatment significantly predicted higher post-treatment symptom severity. With regards to moderators of outcomes between DCS and placebo augmentation, Agreeableness and Conscientiousness were both significant moderators, whereby people with high Agreeableness and low Conscientiousness achieved greater symptom reduction (and more quickly) with DCS augmentation compared to placebo.

van de Laar, Pevernagie, van Mierlo, and Overeem (2015) investigated predictors of remission and improvement in symptom severity following CBT for insomnia (CBT-I) for people with chronic psychophysiological insomnia. No personality traits were significantly correlated with, nor predicted, improvement in insomnia symptoms.

Remission

Two studies investigated remission as a treatment outcome, whereby participants no longer met diagnostic criteria or clinical threshold for the diagnosed disorder. Levallius et al. (2020) used two definitions for remission in their study of ICBT for bulimic eating disorders. The first was no longer meeting criteria on the SEDI (de Man Lapidoth & Birgegård, 2009), for which they found that Openness was a significant positive predictor (predicting 83% of cases), for the likelihood of remission. The second definition was showing a clinically significant improvement in symptomology (such that their post-treatment scores fell within 1*SD* of community population on the Eating Disorder Examination Questionnaire, version 4; Fairburn & Beglin, 1994). They found that Conscientiousness significantly predicted remission in 74% of cases, with higher Conscientiousness increasing remission likelihood.

van de Laar et al. (2015) found no significant relationships between personality traits and remission of insomnia following CBT for insomnia.

Treatment Completion

In Ramos-Grille et al. (2013), 48% of patients had completed treatment at 1-year follow-up. Patients who completed treatment showed significantly lower Neuroticism and higher Agreeableness and Conscientiousness than patients who dropped out. Agreeableness and Conscientiousness were significant predictors of completion vs. dropout, with low scores on both traits predicting drop out.

In a further report from the study reported by Lammers et al. (2015), Vroling et al. (2016) explored the predictive role of FFM traits for dropout from CBT for bulimic eating disorders. They found that treatment completers showed significantly higher Agreeableness than those who had dropped out from treatment, and Agreeableness was a significant predictor for treatment completion (predicting 80.6% of cases).

Discussion

This review sought to investigate whether FFM personality traits predict psychosocial and clinical outcomes of psychological interventions. Table 9 provides a vote count of the results outlined above for predictor roles of FFM traits. Overall, few studies were found to have explored this link, and within these, few associations and predictor

Table 9. *Summary of Findings for Five-Factor Model (FFM) Trait Predictors*

Outcome Category	Outcomes (studies)	FFM domain				
		N	E	O	A	C
Abstinence	1 (1)					▲$_1$
Quality of Life [a]	2 (1)	·	·	·	·	·
Coping skills	2 (1)					△$_1$
Symptom severity	*11 (6)*					
Psychosis (early)	3 (1)					
Binge eating [a]	3 (2)		△$_2$			△$_1$
Eating disorder	1 (1)			△$_1$		
Chronic fatigue	1 (1)		·	·	·	·
Social anxiety [a]	2 (1)	▽$_1$				
Insomnia	1 (1)					
Remission	*3 (2)*					
Binge eating [a]	2 (1)			△$_1$		△$_1$
Insomnia	1 (1)					
Treatment Completion [a]	2 (2)				▲$_2$	△$_1$
Total vote count	21 (7)	▽	△	▲	△	▲

Abbreviations: N, Neuroticism; E, Extraversion; O, Openness to Experience; A, Agreeableness; C, Conscientiousness.

Effect direction: △ = positive effect, ▽ = negative effect, · = not assessed.

Synthesis of multiple outcomes: If >2 outcomes investigated in category: black = >66% of investigated outcomes report effect; grey = 34–65%; empty = <33%.

2 outcomes: black = >50%; grey = <50%.

1 outcome: black = 100%. Number of outcomes indicated in subscript.

Total sample size: large △ = >120; medium △ = 50–120; small △ = <50.

Vote count for predictor role: Trend across outcome categories: red ▲ = significant finding in >66% of the investigated outcome categories; orange ▲ = 34–65%; yellow △ = <33%.

Trend overall: large △ = >66% of all outcomes report effect; medium △ = 34–65%; small △ = <33%.

[a] Outcome with significant predictor other than personality trait (listed in Table 12).

relationships were found. With regard to association, personality traits were considered against clinical outcomes 59 times with only 11 (18.64%) comparisons showing a significant association, whilst predictor roles of traits were investigated in 93 relationships, with only 12 (12.91%) significant predictors found.

In the present study, Neuroticism, Extraversion and Agreeableness were each found to be a significant predictor in only one outcome category, and Openness in two. Neuroticism was a significant negative predictor of symptom severity, specifically for social anxiety (Smits et al., 2013). Their finding fits with what was observed by Wolitzky-Taylor, Arch, Rosenfield, and Craske (2012; this study was not included in the present review due to grouping different treatments for analysis, where one treatment was not a NICE guideline-recommended treatment of anxiety [i.e. Acceptance and Commitment Therapy]), in another study exploring moderators for treatment outcome for anxiety disorders, suggesting that for people with anxiety, higher Neuroticism at the beginning of treatment may predict worse outcomes. As Neuroticism is correlated with a number of psychological difficulties, including anxiety and depression (Malouff et al., 2005), it may be that those with higher Neuroticism exhibited higher pre-treatment symptom severity levels. Smits et al. (2013) did not report having undertaken correlation analysis between initial symptom severity and Neuroticism scores however, so it is not possible to know if this may have been the case for the present sample.

Extraversion was found to be a significant positive predictor for symptom severity and improvement, specifically for binge eating symptoms (improvement in binge eating symptoms following group CBT, Lammers et al., 2015; and likelihood of binge eating cessation following ICBT, Levallius et al., 2020). Lammers et al. (2015) postulated that being more extraverted, perfectionistic, and feeling less ineffective, may help people to engage with the process of change required for treatment. Levallius et al. (2020) did not discuss the possible reason for Extraversion predicting cessation of binge eating.

Agreeableness was found to be a positive predictor of treatment completion, for people receiving individual CBT for pathological gambling (Ramos-Grille et al., 2013) and group CBT for binge eating disorder (Vroling et al., 2016). It could be that low Agreeableness presents a barrier to engagement in treatment and building a therapeutic alliance, which in turn could lead to dropout (Hirsh, Quilty, Bagby, & McMain, 2012).

Openness was a significant positive predictor of improvement in symptom severity from bulimia nervosa (Levallius et al., 2020), reaching remission according to one of the study's two measures of remission, whereby participants no longer met diagnostic criteria, however not to the extent of being within the range of functioning of a non-clinical population, which instead was predicted by Conscientiousness. The positive effect of Openness has been seen in other studies looking at binge eating (e.g. Levallius, Roberts, Clinton, & Norring, 2016; though not in the other study included for review, Lammers et al., 2015). The authors postulate that the effect of greater Openness is facilitating engagement with intervention.

In contrast to the other traits, Conscientiousness was found to be a significant predictor of outcome in each of the categories investigated, for three indications: gambling, early psychosis and binge eating (within binge eating disorder and bulimia nervosa). Conscientiousness was a positive predictor for abstinence, as well as treatment completion (in participants with pathological gambling, Ramos-Grille et al., 2013, though not in binge eating disorder, Vroling et al., 2016), increase in active coping skills (in early psychosis, Beauchamp et al., 2013) and improvement in ED symptomology and likelihood of ED remission (in binge eating disorder, Levallius et al., 2020). It is possible that the discrepancy in prediction findings between the two remission criteria in Levallius et al. (2020) could be due to Conscientiousness presenting a greater impact on remission; therefore symptom improvement is even larger, bringing participants not only out of the diagnostic criteria range, but within non-clinical population means. Indeed, the finding that Conscientiousness

was a significant predictor in the most outcome categories fits with the available literature. Conscientiousness has shown to be highly correlated with treatment adherence, as well as better health behaviours (Hill & Roberts, 2011). It may facilitate improved outcomes following treatment by supporting the development of active coping skills, and thereby aid with responsivity to treatment.

The recent meta-analysis by Bucher et al. (2019) investigated the relationship between personality traits and treatment outcomes by focusing on the association between baseline trait levels and outcomes. Bucher et al.'s study identified a range of associations between five-factor personality variables and clinical outcomes from mental health treatment (including psychological intervention, psychotropic medication, and a combination of these treatments). The present study sought to understand whether some of these relationships were predictive of outcome, specifically for psychological interventions. In contrast to Bucher et al.'s study, outcome categories were considered individually, to account for confounding variables and gain a better understanding of the predictive value of FFM traits for different disorders. Furthermore, the included studies used analysis methods to identify significant predictors (regression and modelling) that allowed them to account for different covariables, to ascertain which of the significant associations found accounted for the largest portion of variability in results (and therefore predicted outcome). Findings for other variables as predictors were extracted to consider the role of personality as a predictor in light of other variables.

Broadly, it can be said that the findings from the present study show a similar pattern as those obtained by Bucher et al. (2019), however the strength and prevalence of this relationship is contrasted. Though this review focussed on predictor relationships, which Bucher et al. did not review, associations were also extracted, and few associations between personality variables and clinical outcomes were obtained. This may be due to the difference in included interventions; Bucher et al. looked at a broad range of treatments,

and a majority of the included studies employed treatments that were not exclusively psychological interventions (i.e. psychological therapies), and these treatments were grouped together for meta-analysis. This study focused only on psychological therapies, and only those that were empirically supported (as recommended by NICE guidelines). Psychological therapy and medication treatment are undeniably different, and may involve different processes, which may be influenced by personality in different ways. Indeed, when analysing possible moderators, Bucher et al. (2019) found that participants in studies that used only medication had significantly stronger associations with Neuroticism (r = -.24) compared to those administered both medication and therapy (r = -.04), supporting the notion that these treatments involve different processes for individuals.

It may be that psychological interventions are less, or differently, affected by personality traits than non-psychological interventions such as medication regimes. Psychological therapy involves more social interaction and engagement by the client than undergoing a medication regimen, so different traits may be more important, as well as different processes. For example, therapeutic alliance has been shown to be predictive of outcomes for psychological interventions (e.g. Martin, Garske, & Davis, 2000). The studies included in this review did not explore moderating roles of personality traits in the development or impact of other variables such as therapeutic alliance. A study by Hirsh et al. (2012; which did not meet inclusion criteria for the present review due to the focus on personality being secondary), looked at the role of therapeutic alliance and Agreeableness in outcomes of Dialectical Behaviour Therapy for borderline personality disorder, and found that therapeutic alliance was a significant predictor of outcome, and Agreeableness was a significant moderator for the development of therapeutic alliance (and therefore had a significant indirect role in greater treatment outcomes, via larger therapeutic alliance improvement).

It is also possible that different psychological interventions are affected differently by personality traits, which this review had sought to explore. For example, clients with higher Conscientiousness may experience greater improvement in more structured therapies such as CBT, having greater influence over active engagement with treatment elements (Widiger & Presnall, 2012), whilst clients with higher Agreeableness could benefit more from therapeutic approaches that have greater focus on process and the therapeutic relationship, due to developing greater therapeutic alliance, as discussed above. Furthermore, individuals may also respond differently to different delivery formats, such as group or individual therapy, depending on their personality profile; for example, group therapy could "offset" difficulties of individuals with low Extraversion and Agreeableness, leading to greater improvement (Talbot et al., 2003). However, due to limited heterogeneity of individual treatments covered, and small sample sizes, Bucher et al. (2019), could only investigate moderating differences between type of treatment (i.e. drug vs. psychological therapy) rather than specific interventions and delivery formats, and the present review only identified studies employing CBT (and there were too few studies to separate delivery formats), so it is not possible to consider further whether therapies from different theoretical frameworks and delivery formats have different relationships with personality traits. Further research into the relationship between personality traits and other idiosyncratic variables and outcomes from treatment is needed in further therapeutic frameworks, so as to allow for review and comparison between modalities.

Based on the findings of this review, Conscientiousness appears to be the FFM trait with the greatest predictor role for treatment outcomes from psychological interventions. However, it was found to be a significant predictor only in less than a third of the outcomes investigated in the included studies (as seen in Tables 8 and 9). It is possible therefore that FFM personality traits are not a key non-therapeutic modality-specific factor of influence for treatment outcomes in psychological intervention, especially when compared to other

idiosyncratic variables. Bucher et al. (2019) had also found that the association between traits and treatment outcomes was significantly moderated by frequency of treatment (with Conscientiousness being more important when treatment sessions were less frequent), as well as duration (with greater association with Extraversion, Openness, and Agreeableness), and treatment settings (inpatient treatment-recipients showed a negative association, whilst outpatients showed a positive association, between Extraversion and favourable treatment outcomes). The limited amount of available literature, and therefore limited breadth of characteristics in the included studies in the present review (e.g. all outpatient, with similar lengths of treatment due to similar therapy used [all CBT-based]), meant that it was not possible to consider the moderating role of these contextual factors. Other idiosyncratic variables besides personality traits (i.e. client-, context-, therapy-, and therapist-specific) may therefore play an equal or more important role than client personality traits for outcomes in psychological intervention. Indeed, five of the seven included studies explored other client-specific variables as predictors as well as personality traits, and they all found that other variables (including baseline severity of psychopathology, social embedding, acceptance, psychiatric comorbidity, body dissatisfaction and cognitive coping styles) were significant predictors of outcome. Due to the heterogeneity of these variables and the measures used to assess them, it was not possible to investigate their moderating role for personality traits' prediction of treatment outcomes across studies. It was also not possible to interpret the relationship between these variables and personality traits from the included studies, however, their role as equal predictors in the final models in the included studies suggests that personality traits are not more important than these other variables in predicting the outcomes of psychological interventions.

It may be that the role of FFM traits varies in different presentations; for instance, in the present study no FFM traits were found to significantly predict any outcomes for the

early psychosis sample. However, it not possible to reliably conclude the predictive value of FFM traits due to the sparsity of available research overall, as well as from individual indications. Despite using a list of 52 psychological therapies (that are recommended by NICE guidelines, as found in Table 11 in Supplementary Material) for inclusion, only studies with various forms of CBT ultimately met other inclusion criteria. It was noted that some studies that employed NICE recommended psychological interventions had employed the interventions with disorders for which they were not the recommended treatment in NICE guidelines, and therefore could not be included in the review. Studies also had to utilise a sample with a clinical diagnosis which was the indication for treatment. This means that studies looking at psychological interventions for subthreshold psychological difficulties were not included. It could be argued that this may limit the external validity of the findings, however this decision was made to allow for planned comparison between studies (e.g. for symptom severity and differences between therapeutic modalities). Despite these restrictions from the inclusion criteria, no restrictions were placed on publication year, psychiatric diagnosis, or diagnostic manual, and very few studies were identified. Only one study was available per indication, and no studies were found for some of the most prevalently researched indications, such as depression and generalised anxiety. It would therefore appear that the sparsity of available research is a limitation of the evidence base.

Future Directions for Research

This review provides a systematic overview of the available evidence of the predictive role of FFM traits for outcomes of psychological interventions. It is apparent that there is a lack of research into the predictive and mediating/moderating role of personality traits for treatment outcomes, in particular for treatment approaches that have an established evidence base. Research which furthers our understanding of factors that contribute towards differential effectiveness of psychological treatments could

meaningfully encompass an enhanced focus on the measurement of personality variables, ideally using well validated and common tools such as the NEO-PI-R. We would encourage any clinicians and researchers who gathered personality measures as part of their battery of measures in treatment, to analyse and publish their outcomes, so as to add to the available evidence base.

As well as further research into the predictive and moderating role of personality traits for treatment outcomes, we recommend research into the predictive role of other idiosyncratic client variables, especially in conjunction with personality, so that their predictive value may be compared. This would allow researchers to begin hypothesising about the overlap, or procedural relationship, between these variables. To allow this to happen, we echo recommendations previously made in conclusions of reviews (e.g. Cuijpers, 2019), that researchers should adopt a set of recommended standardised measures, to allow for later reviews to meaningfully and reliably synthesise their findings.

From a clinical standpoint, whilst the present study has not established a clear predictive role for personality traits for outcomes from psychological interventions, past literature points to their usefulness in treatment planning and psychological formulation–at least in certain contexts. The use of personality measures may assist treatment planning, specifically consideration of adaptations and facilitators for clients' success in therapy. For instance, lower Conscientiousness levels, and particular facets of it, may be useful for considering whether clients may need more support to facilitate their engagement, for example practical considerations to support homework completion. Agreeableness levels may be explored to consider ways to facilitate the development of the therapeutic alliance early in the intervention to prevent chances of dropout.

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Supplementary Material

References for Included Studies

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Table 10. *Details of the Search Strategy*

Fields	Search terms
All included databases	
All fields	"ffm" or "big five" or "big 5" or "five factor model" or "five factor personality model" or "neuroticism extraversion openness"
AND	
Abstract	"therapy" or intervention or psychotherap* or treatment or "therapies"
AND	
All fields	"ipip" or "international personality item pool" or "big five mini-marker*" or "big five aspect*" or "neuroticism-extraversion-openness" or "neo personality inventory" or "neo-ffi" or "neo five-factor inventory" or "neo-pi-r" or “big five inventory”
Additional relevant exploded index terms for each database	
Medline: Medical Subject Headings (MeSH)	“Extraversion, Psychological”; Neuroticism
CINAHL: Subject headings	Psychotherapy
PsycINFO: APA Thesaurus of Psychological Index Terms	"Five Factor Personality Model" or "neuroticism" or "openness to experience" or "agreeableness" or "extraversion" or "conscientiousness"; "Psychotherapy"; "NEO Personality Inventory"

Note. It was later decided that studies using Big Five Mini-Markers to assess five-factor model traits would not be included for review due to using a different five-factor model framework.

Table 11. *List of Psychological Interventions Recommended by the National Institute for Health and Care Excellence (NICE) Guidelines and Included in the Review*

Intervention	Psychiatric Diagnosis
Acceptance and commitment therapy (ACT)	Chronic pain
Adolescent-focused psychotherapy for anorexia nervosa (AFP-AN)	Eating disorder (anorexia nervosa; AN)
Anorexia-nervosa-focused family therapy for children and young people (FT-AN)	Eating disorder (AN)
Applied relaxation	Generalised anxiety disorder (GAD)[a]
Arts therapies	Psychosis
Attachment-based family therapy	Depression (in children and young people; i.e. CYP)
Behavioural activation (BA)	Depression
Behavioural couples' therapy (BCT)	Bipolar disorder[b], depression, substance abuse (drugs and alcohol)
Behavioural support for smoking cessation	Substance abuse/dependence (smoking)
Behavioural therapy (BT)	Antisocial personality disorder (PD), substance abuse/dependence (alcohol)
Binge-eating-disorder-focused guided self-help programme	Eating disorder (binge eating disorder; BED)
Brief strategic family therapy (BSFT)	Alcohol misuse in CYP
Bulimia-nervosa-focused family therapy (FT-BN)	Eating disorder (bulimia nervosa; BN)
Bulimia-nervosa-focused guided self-help programme	Eating disorder (BN)
Cognitive behavioural therapy (CBT)	Antisocial PD, attention-deficit hyperactivity disorder (ADHD), bipolar disorder, body dysmorphic disorder (BDD), chronic fatigue, chronic pain, depression (inc. CYP, 12–18 years), gambling disorder[c], GAD, obsessive compulsive disorder (OCD), panic disorder, psychosis, social anxiety disorder, substance abuse (drugs, comorbid with depression/anxiety)
CBT for Insomnia (CBT-I)	Insomnia
Cognitive analytic therapy (CAT)[d]	Borderline PD
Cognitive processing therapy	Post-traumatic stress disorder (PTSD)
Cognitive stimulation therapy (CST); group	Dementia
Cognitive therapy	PTSD
Computerised CBT (cCBT)	Depression, PTSD (trauma-focussed cCBT)
Counselling	Depression[e], psychosis (if other treatments unavailable)
Dialectical behaviour therapy (DBT)	Borderline PD

Table 11 continued

Intervention	*Psychiatric Diagnosis*
Eating-disorder-focused CBT (CBT-ED)	Eating disorder (AN, BED, BN)
Eating-disorder-focused focal psychodynamic therapy (FPT)	Eating disorder (AN)
Exposure and response prevention (ERP)	BDD, OCD
Eye movement desensitisation and reprocessing (EMDR)	PTSD
Family intervention	Bipolar disorder, psychosis
Family therapy	Depression in CYP (5–11 years)
Functional family therapy (FFT)	Alcohol misuse in CYP
Interpersonal therapy (IPT)	Bipolar disorder, depression (adults and CYP)
Maudsley anorexia nervosa treatment for adults (MANTRA)	Eating disorder (AN)
Mentalisation-based therapy (MBT)	Personality disorders
Mindfulness-based cognitive therapy (MBCT)	Depression[f], personality disorder
Motivational interviewing	Gambling disorder
Multidimensional family therapy (MFT)	Alcohol misuse in CYP
Multisystemic therapy (MST)	Alcohol misuse in CYP, oppositional defiant disorder, conduct disorder
Narrative exposure therapy	PTSD
Non-directive support therapy	Depression in CYP[g]
Parent training programme	ADHD, conduct disorder, oppositional defiant disorder
Prolonged exposure therapy	PTSD
Psychodynamic psychotherapy / Short-term psychodynamic psychotherapy (STPP)	Depression[c], depression in CYP (5–11years), social anxiety disorder
Relaxation therapy	Anxiety in adults with learning disabilities
Reminiscence therapy; group	Dementia
Supportive psychotherapy	Psychosis (if other treatments unavailable)
Social and cognitive problem solving	Conduct disorder, oppositional defiant disorder
Social learning programme	Autism spectrum disorder
Social network and environment-based therapies	Alcohol dependence and misuse
Specialist supportive clinical management (SSCM)	Eating disorder (AN)
Systems integrative family therapy	Depression in CYP (5–11 years)
Therapeutic community	Antisocial personality disorder (comorbid substance abuse), substance abuse (people in prison)
Trauma-focused CBT (TF-CBT)	PTSD

Note. Included interventions were all recommended by NICE Guidelines for the listed disorders (as of June 2020).

[a] For Low intensity GAD: Psychoeducational group, individual non-facilitated self-help based on CBT, individual guided self-help based on CBT. [b] In addition, for bipolar disorder: "Offer a structured psychological intervention (individual, group or family), which has been designed for bipolar disorder and has a published evidence-based manual describing how it should be delivered, to prevent relapse or for people who have some persisting symptoms between episodes of mania or bipolar depression." (Recommendation 1.7.4 of the NICE clinical guideline on bipolar disorder: assessment and management). [c] There are currently no NICE guidelines for treatment of gambling addiction. Recommendations made by the most recent Cochrane Review were used, which found evidence of benefit from CBT (Cowlishaw et al., 2012). [d] CAT was also included as it is held as a recommendation for further research in the review of evidence for guidelines for borderline personality disorder. [e] Counselling and short-term psychodynamic psychotherapy for depression: for people with persistent subthreshold depressive symptoms or mild to moderate depression, only if other treatments were declined. [f] MBCT only for relapse prevention in people who are currently well but have experienced three or more previous episodes of depression. [g] 5-11-year-olds with mild depression continuing after two weeks of watchful waiting, and without significant comorbid problems or active suicidal ideas or plans.

Table 12. *Study Findings of Significant Five-Factor Model (FFM) Trait Relationships (Association and Predictor) with Treatment Outcomes*

Study ID	Treatment Outcome	Significant Association	Significant Predictor	Other significant predictors
Abstinence				
RAM2013	Relapse	N△ (t = 2.33, p = .023, d = .58)[b] C▼ (t = 3.12, p = .004, d = .89)[b]	C▼ (B = -0.11, p = .01, OR = 0.90, 95% CI [0.84, 0.96])[d]	
Quality of Life (QoL)				
POP2013	Mental QoL	N△ (r = .27, p < .05)[a]	-	Acceptance
	Physical QoL	×[a]	-	
Coping skills				
BEA2013	Active coping	C△ (r = .379, p = <.05)[a]	C△ (R^2 = .144, F = 4.709, p = <.05, $ß$ = .379, t = 2.17)[e]	
	Passive coping	×[a]	×[e]	
POP2013	Acceptance	×[a]	-	
Symptom severity and improvement				
BEA2013	Psychosis symptomology	×[a]	×[e]	
	Psychosis positive symptoms	A▽ (r = .315, p = <.05)[a]	×[e]	
	Psychosis negative symptoms	×[a]	×[e]	
LAM2015	Binge eating pathology	-	E▲ ($ß$ = 0.173, t = 2.602, p = .01)[f]	EDI bulimia scale, drive for thinness, interoceptive awareness, ineffectiveness, perfectionism; SCL-90 depression and total
LEV2020	Presence of binge eating	-	E△ (b = -0.048, SE 0.022, p = .030)[d]	Baseline symptom severity (EDEQ score)
	Frequency of binge eating	-	×[g]	
	Eating disorder symptomology	-	O△ (t = 1.85, p = .034)[g] C▲ (t = 3.75, p < .001)[g]	
POP2013	Fatigue severity	×[a]	×[e]	
SMI2013	Social anxiety symptom severity	-	N▼ (b = 2.39, SE = .85, p <.01)[g]	Black or African American race; Single; initial severity of symptoms (LSAS)

Table 12 continued

Study ID	*Treatment Outcome*	*Significant Association*	*Significant Predictor*	*Other significant predictors*
SMI2013	Social anxiety symptom improvement	-	×[g]	Black or African American race; Single; initial severity of symptoms (LSAS)
VAN2015	Insomnia symptomology	×[c]	×[d]	
Remission				
LEV2020	Eating disorder remission (diagnostic criteria)	-	C▲ (*b* = −0.058, SE 0.019, *p* = .002)[d]	Baseline symptom severity (EDEQ score)
	Eating disorder remission (community norms)	-	O▲ (*b* = −0.055, SE 0.023, *p* = .01)[d]	
VAN2015	Insomnia remission	×[c]	×[d]	
Treatment Completion				
VRO2016[h]	Drop out	A▼ (*F* = 0.68, *p* < .01)[b]	A▼ (*B*-weight = -.02, *p* < .01, OR = 0.98, 95% CI [0.96, 0.99])[d]	Low social embedding; medium level of education; EDI bulimia score; and EDES anorectic preoccupation and social adjustment
RAM2013	Drop out	N△ (*t* = 2.12, *p* = .037, *d* = .49)[b] A▽ (*t* = 2.43, *p* = .018, *d* = .56)[b] C▼ (*t* = 2.74, *p* = .008, *d* = .64)[b]	A▽ (*B* = -0.06, *p* = .04, OR = 0.94, 95% CI [0.89, 0.99])[d] C▽ (*B* = -0.08, *p* = .02, OR = 0.92, 95% CI [0.87, 0.99])[d]	

Note. Study ID: First three letters of first author surname and year of publication. All studies investigated all five FFM domains, except Poppe et al. (2013), which investigated only Neuroticism. Only significant findings presented. Statistical data reproduced as reported in the papers. No significant moderator relationships found. FFM domains: N, Neuroticism; E, Extraversion; O, Openness to Experience; A, Agreeableness; C, Conscientiousness.

Abbreviations: EDES, Eating Disorder Evaluation Scale (Vandereycken, 1993); EDEQ, Eating Disorder Examination Questionnaire, version 4 (Fairburn & Beglin, 1994); EDI, Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983); LSAS, Liebowitz Social Anxiety Scale (Liebowitz, 1987); SCL-90, Symptom Checklist (Derogatis, Lipman, & Covi, 1973).

Effect direction: △ = positive effect, ▽ = negative effect, × = no traits with significant association, - = not assessed.

Sample size: final sample size (individuals) in intervention group: large △ = >120; medium △ = 50–120; small △ = <50.

Statistical significance: black arrow = $p < 0.01$; grey arrow = $p < 0.05$; - = no statistical results reported.

Statistical tests: Association: [a] Pearson correlation between trait and change in outcome from baseline. [b] Difference in baseline trait score means (t-test or univariate ANOVA) between dichotomous outcome groups (i.e. abstinent/relapsed, treatment completers/dropout). [c] Mann Whitney *U* test.

Predictor: [d] Logistic regression. [e] Linear regression. [f] Hierarchical linear regression. [g] Multi-level modelling.

[h] Same sample at Lammers et al. (2015)

Chapter 3: Bridging Chapter

The Systematic Review sought to establish whether five-factor model (FFM; Costa & McCrae, 1990) personality traits predict clinical outcomes of psychological interventions, and found several significant predictor relationships, broadly fitting the pattern of associations previously described by Bucher et al. (2019), with lower Neuroticism levels and higher Extraversion, Openness, Agreeableness and Conscientiousness levels associated with more favourable outcomes, though very few trends positive predictor relationships were identified. Conscientiousness was found to be a significant positive predictor for the widest range of outcomes, including abstinence (from gambling), coping skills, symptom severity, remission, and treatment completion, though no significant predictor relationship was seen in over two thirds of outcomes investigated.

It was apparent that the current available literature for the predictive value of client personality traits with regard to outcomes of psychological interventions is very limited. However, research into associations between these factors across treatment types (e.g. Bucher et al., 2019) has shown specific patterns of outcomes, as described above, associated with more favourable outcomes. Specific traits have also been shown to have a mediator role in developing therapeutic alliance (Hirsh et al., 2012). Exploring the relationship between personality traits and treatment outcomes may be useful for other areas where findings are notoriously varied and poor, such as forensic settings, to help understand the complexities of the mechanisms of action and change in treatment. This would also allow clinicians to consider additional adaptations to increase patients' engagement and responsivity to treatment.

Forensic Mental Health Services in the United Kingdom (UK)

Research into treatment outcomes in forensic settings is primarily undertaken in prisons, with heavily standardised group programmes targeting different rehabilitation

needs, both for mental wellbeing and offending behaviour (Buchanan & Grounds, 2011). Research into treatment outcomes of psychological interventions in U.K. inpatient forensic mental health services (FMHS) is scarce, suffering from small sample sizes and low response rates, as well as a lack of longer follow-up (over six months; MacInnes & Masino, 2019). This is largely due to challenges of designing research studies in this setting, where patients' individual needs vary greatly (as does the focus of their treatment and their outcomes, consequently), therefore there is a lack of standardisation of interventions across settings (e.g. Hockenhull et al., 2015) and a sparsity of available routinely collected clinical outcomes measures (Fitzpatrick et al., 2010) to cover a broad range of clinical outcomes for retrospective data collection. Outcomes of the research tend to focus on important behavioural outcomes such as recidivism and re-admissions, whilst few studies focus on clinical outcomes (Empirical Paper Introduction, p. 75). Findings for outcomes in FMHS are generally poor, with high levels of recidivism and re-admission (e.g. Coid et al., 2007, Davies et al., 2007; see the Empirical Paper Introduction and Discussion sections for further discussion, not to be replicated here). Given the high financial cost of FMHS treatment to society (Empirical Paper Introduction, p. 75), as well as the ethical implications of detaining individuals against their will for treatment, it is important to seek to increase the efficacy of treatment in FMHS. As treatment in FMHS is *multimodal* (including the therapeutic milieu, medication, personal and physical security and individually targeted group and individual psychological and occupational interventions), it is difficult to separate and evaluate the efficacy of individual components. Therefore, to aid this pursuit, it is important to understand the factors involved in patients' response to treatment and account for individual differences and their impact on individuals' readiness for treatment, engagement and ability to benefit from treatment as it is delivered in practice.

As seen in the evidence described above, as well as the findings from the Systematic Review into psychological interventions, individuals' personality traits appear to have at least some impact on people's outcomes from psychological interventions in a range of different settings. This may be of particular relevance in FMHS since patients in this setting have been shown to have elevated levels of pathological personality traits (Spaans et al., 2017), including high levels of personality disorders (PDs) and personality pathology which is subthreshold for PD diagnosis. The presence of pathological personality traits may impact on the effectiveness of treatment by impacting responsivity, engagement and adherence with treatment. For instance, antagonistic traits may hinder engagement in treatment, whereby anti-authoritarian attitudes may negatively impact therapeutic relationships (Tetley et al., 2012), whilst a lack of Conscientiousness, and desire to improve relationships with others (i.e. *callousness*), may reduce attendance or commitment to treatment. Individuals with narcissistic traits (i.e. self-aggrandising presentations) have been shown to struggle with reflexivity, particularly regarding potentially shameful behaviours, and place blame on others (Pincus et al., 2014). This in turn leads them to disengage and terminate therapy more often than individuals who do not have elevated levels of these traits (Ellison et al., 2013). Research in forensic settings has shown that not completing treatment may lead to higher reoffending rates than not having any treatment (McMurran & Theodosi, 2007). Significant levels of hostility seen in individuals with both antagonistic and narcissistic traits can also evoke negative attitudes in therapists, which can also lead to a breakdown in therapeutic alliance (Tanzilli et al., 2015), which is key for positive outcomes in psychological interventions (Martin et al., 2000) and rehabilitation programmes (Ward et al., 2004).

Given the high levels seen in FMHS of these personality traits which may be problematic for therapeutic processes, a model of personality which looks at pathological traits would be well suited to capture the personality profile of patients. To allow

comparisons to be drawn with the established evidence base from research into personality traits, such a model should ideally correspond to established models which have been researched for many years, such as the FFM. One such model was recently developed whilst re-evaluating the diagnostic approach to PD whilst updating the Diagnostic and Statistical Manual of Mental Disorders, from the fourth edition revised (DSM-IV-TR; American Psychiatric Association [APA], 2000) to the fifth edition (DSM-5; APA, 2013). This is the DSM-5 Alternative Model for Personality Disorders (APA, 2013; hitherto referred to as the *DSM-5 model*).

To introduce the model by which pathological personality traits have been assessed within the Empirical Paper, the following narrative introduces the diagnostic approach to PD and the challenges it presents, and describes the development process of the DSM-5 model.

The DSM-5 Alternative Model for Personality Disorders

PDs are a group of disorders (10 in the DSM-5) where an individual's personality traits are maladaptive, inflexible and impact in a pervasive, negative and harmful manner on them and their interpersonal relationships (APA, 2013). PDs are understood to have a biopsychosocial origin, whereby people may have a genetic predisposition to the development of a PD, and experiences of difficult life events, including relationships, coupled with individual factors in youth such as: individuals' temperament and personality traits, developed coping strategies, mental representations of themselves, others and the outside world (including attachment), and their narrative identities (Shiner, 2009).

The approach and criteria for diagnosing and classifying PD has been criticised from many angles, including poor diagnostic efficiency (Grilo et al., 2001), arbitrary cut-offs (Widiger & Trull, 2007), high comorbidity rates (Oldham et al., 1992) and simultaneously heterogeneity between patients with the same diagnosis (Johansen et al., 2004). Indeed,

that is a difficulty shared across clinical disorders, and remains a core argument against its value in treatment versus the use of formulation (Bentall, 2004). It is far more likely for a person to meet a diagnosis of more than one disorder than to fit the criteria of one exclusively (Brown et al., 2001). Furthermore, the diagnostic system for PD does not cover personality psychopathology adequately, as evidenced by the "PD-not otherwise specified" (PD-NOS) diagnosis being widely overused (Verheul & Widiger, 2004).

For this reason, when it came time to develop the DSM-5, a Personality and Personality Disorder Work Group (i.e. the Work Group) sought to move classification towards a dimensional trait based understanding of personality pathology, reflecting the established dimensional models of non-clinical personality (e.g. FFM). They developed a classification model in which a combination of the presence of pathological personality traits and ratings of functional impairment across *self* (identity, self-direction) and *interpersonal* (empathy, intimacy) domains would be needed to diagnose PD (Skodol et al., 2011). They also proposed seven categorical diagnoses, based on the previous 10 in the DSM-IV-TR (APA, 2000), which were based on matching specific trait facets with original DSM-IV (APA, 1994) criteria. An extra diagnosis, "PD: trait specified", was the only new one and did not have a set trait profile, rather allowing for an independent configuration that entails marked impairment.

The Work Group developed this model through a three-step process (Krueger et al., 2011) of literature reviews of the traits covered by PD diagnoses in the DSM-IV-TR (APA, 2000) and the dimensional models widely used in literature (Widiger & Costa, 1994, Widiger & Simonsen, 2005). Experts in the field were then consulted on the clinical usefulness of these, and removed any that were redundant, and a questionnaire was produced to assess for the presence of these traits. After extensive psychometric analyses a 220-item instrument, the Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012), was finalised, with 25 primary trait facets and five higher order trait domains of personality

pathology (hitherto referred to as “traits”). The resulting DSM-5 hierarchical dimensional trait system resembles most closely maladaptive variants of the domains of the FFM (Costa & McCrae, 1990). Table 13 shows the personality trait correlates between the two models. The fifth DSM-5 model trait, Psychoticism, has repeatedly shown inconsistencies in the literature; both in the relationship between it and FFM’s Openness, and with corresponding domains in other models (Trull & Widiger, 2013). The correlations with this trait therefore remain not hypothesized but explored (Morey et al., 2015). Ultimately, the APA Board of Trustees placed the model in Section III of the DSM-5 (Emerging Measures and Models) for further study, until more empirical evidence for the model and diagnostic system is produced. Nevertheless, it was still deemed a working alternative to the established diagnostic model, and diagnoses from the DSM-5 model may be made by using the DSM-5 code “Other Specified Personality Disorder” (301.89) and using the DSM-5 model for specification. Researchers have hailed the shift as “having the potential to transform psychopathology assessment in a manner that makes diagnosis increasingly evidence-based and clinically useful” (Hopwood & Sellbom, 2013).

Table 13. *Correlates Between DSM-5 Personality Traits and the Five-Factor Model (Costa & McCrae, 1990)*

DSM-5 Personality Trait	FFM Personality Trait
Negative Affect	Neuroticism
Detachment	*Extraversion*
Antagonism	*Agreeableness*
Disinhibition	*Conscientiousness*
Psychoticism	Openness

Note. Italicized traits are reversed and correlate in a negative manner.
Abbreviation: DSM-5, Diagnostic and Statistical Manual of Mental Disorders, 5th edition (American Psychiatric Association, 2013).

Since the present Empirical Paper was first designed, a new revision of the International Classification of Diseases (11th ed., [ICD-11]; World Health Organization, 2019) has been published. This classification system has also moved towards a dimensional trait- and severity of impairment-based diagnostic approach to PD, focusing on core personality dysfunction. The 10 PD categorical diagnoses from the DSM-IV-TR and ICD-10 (and maintained in the DSM-5) were removed and replaced by a general diagnosis of "Personality Disorder" with three severity levels: "Mild Personality Disorder", "Moderate Personality Disorder", and "Severe Personality Disorder". The diagnosis can be specified by prominent assessed trait qualifiers: Negative Affectivity, Detachment, Dissociality, Disinhibition, and Anankastia. There are no *polythetic* criteria (where a minimum number of symptom criteria must be present to meet a disorder/non-disorder threshold, as in the ICD-10 and DSM-IV-TR) for the diagnosis in the ICD-11. Instead, diagnosis is based on a global evaluation of personality functioning. In addition, the ICD-11 allows for coding of a subthreshold "Personality Difficulty", as well as a "Borderline Pattern" qualifier. The latter was put in as a response to the wider community of clinicians and researchers' argument that several decades of research shows strong evidence for a separate clinical profile for Borderline PD, and it was felt that it would help by serving as a "familiar indicator for choosing psychotherapeutic treatment consistent with established theory and treatment manuals" (Bach & First, 2018, p. 5). This qualifier does require the presence of five of nine polythetic criteria.

Aims of the Empirical Paper

The Empirical Paper sought to contribute to the research into factors affecting patients' clinical outcomes in FMHS, by investigating whether individual differences in personality traits may influence patients' response to treatment.

Chapter 4: Empirical Research Paper

The following paper has been prepared in accordance to the Journal of Forensic Psychology Research and Practice; author guidelines can be found in Appendix C. Tables have been included in position and British English spelling has been used for the purpose of the thesis portfolio. Additional documents included for the purpose of the portfolio only are included in the appendices and indicated in text. The manual for the Historical Clinical Risk Management-20, Version 3 (Douglas et al., 2013) and the Personality Inventory for the DSM-5 (Krueger et al., 2012) are not included for copyright reasons.

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The Relationship Between DSM-5 Dimensional Personality Traits and Clinical Outcomes in Forensic Inpatient Services

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Abstract

Introduction: Treatment in forensic mental health services (FMHS) is multimodal and the patient population is complex, with varied presentations. To understand more about the mechanism of change of treatment in FMHS, it is important to explore the role of patient characteristics. Research suggests that individuals' personality traits have an impact on their outcomes from treatment in a range of settings including mental health. The present study sought to establish whether personality traits are significantly associated with clinical and risk outcomes in FMHS.

Method: Twenty patients in FMHS (minimum 18 months admission) completed the Personality Inventory for DSM-5 (Krueger et al., 2012). Their personality traits were correlated with their change in treatment outcome scores from admission (Health of the Nation Outcome Scale – Secure [HoNOS-secure]; Sugarman & Walker, 2007; and the Historical Clinical Risk Management-20, Version 3, [HCR-20^{V3}]; Douglas et al., 2013). Reliable change indices were used to determine the whether they had made reliable and clinically significant change.

Results: Few individuals made reliable change on the HoNOS-secure Clinical (18.75%) and Security (12.5%) scales, as well as the HCR-20^{V3} Clinical (18.75%) and Risk (31.25%) scales respectively, with only one individual's change showing clinically significant change, on the HCR-20^{V3} Clinical scale. No significant correlations were detected between personality traits and changes in HoNOS-secure and HCR-20^{V3} scales.

Conclusion: It was not possible to determine the relationship between personality traits and clinical and risk outcomes due to little significant change being demonstrated. Further research is needed, both into the outcomes of treatment in FMHS and the association between personality traits and response to treatment.

Keywords: Personality traits, DSM-5 personality traits, forensic, treatment outcomes, secure services, Personality Inventory for the DSM-5 (PID-5)

Introduction

In the United Kingdom (UK), treatment in inpatient forensic mental health services (FMHS) is provided for "(a) individuals with a mental disorder (including neurodevelopmental disorders) who (b) pose, or have posed, risks to others, and (c) where that risk is usually related to their mental disorder" (Joint Commissioning Panel for Mental Health, 2013, p. 3). There are currently approximately 630 beds in High Secure Units (HSU), 2800 beds in Medium Secure Units (MSU), and 2500 beds in Low Secure Units (LSU; Centre for Mental Health, 2019), with population rates of psychiatric detention at 74.8 per 100,000 (Hewlett & Horner, 2015).

Treatment in FMHS, as defined by the Mental Health Act 1983 (amended by the Mental Health Act 2007, [MHA]), is *multimodal*; it includes "nursing, psychological intervention and specialist mental health habilitation, rehabilitation and care" and serves the purpose "to alleviate, or prevent a worsening of, the disorder or one or more of its symptoms or manifestations" (s. 145). From the perspective of the National Health Service (NHS), it equally serves the purpose of treating clinical needs and reducing risk (which are only in some cases linked), both for the individual and for the protection of others (NHS England; 2014, 2018a, 2018b). Evidence for effective treatments for people in FMHS is limited however (Knabb et al., 2011), and long-term outcomes, from the few available studies, are poor. Davies et al. (2007) followed up on patients from MSU after 20 years and found that 49% of patients had been reconvicted and 38% had been readmitted to FMHS. Additionally, they found that 57 patients (10.29%) had died during the follow-up period, one third from suicide. The average length of stay is 18–24 months but reaches five years for 10–20% patients (Rutherford & Duggan, 2007). This therefore causes an ethical issue, as detention for treatment is largely involuntary (Gunn & Taylor, 2014), and patients are not receiving timely, effective treatment. Furthermore, treatment in FMHS is not only restrictive, but also expensive for society, with annual equivalent costs per bed currently

ranging between £153,300–357,335 (for LSU and HSU respectively), and 20% of the U.K. mental health services budget going towards secure care (Centre for Mental Health, 2019). It is important therefore to target research to understand the mechanisms of change and factors involved in outcomes of treatment in FMHS.

Personality Traits and Treatment Outcomes

One form of individual difference that has been shown to have an impact on treatment outcomes in clinical settings are personality traits. In recent years, the understanding and description of pathological personality traits, such as those found within forensic populations (Spaans et al., 2017), has begun to shift away from a diagnostic model, towards models that include trait-based classification and formulation. In the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5; American Psychiatric Association [APA], 2013) Section III, a dimensional model of personality traits was developed as a novel way to conceptualise personality pathology and diagnose personality disorders (PDs) in clinical populations (i.e. *DSM-5 model*; see the Bridging Chapter for a discussion on the background and development of this, p. 69). This model includes five pathological personality trait domains: Negative Affect, Detachment, Antagonism, Disinhibition, and Psychoticism (hitherto *DSM-5 personality traits*). It was drawn from established dimensional models of personality traits, primarily the five-factor model (FFM; Costa & McCrae, 1990), which has been extensively researched across various population groups. The personality trait correlates between the two models can be seen in Table 13 (Bridging Chapter, p. 71).

A recent meta-analysis by Bucher et al. (2019), showed a pattern of associations between FFM traits and various outcomes of mental health treatments. Broadly, they found that a pattern of lower levels of Neuroticism and higher levels of Extraversion, Agreeableness, Conscientiousness, and Openness to Experience (i.e. lower Negative Affect,

Detachment, Antagonism and Disinhibition and higher Psychoticism, in the DSM-5 Model) were associated with more improvement in outcomes such as abstinence, treatment attendance and completion, working alliance, coping skills, symptom severity, and other client-rated experience such as satisfaction with therapy and confidence. Psychoticism has repeatedly shown inconsistencies in the literature, both in the relationship between it and FFM's Openness, and other corresponding domains in other models (Trull & Widiger, 2013), so researchers conclude that for now the correlations with this trait remain not hypothesized but explored (Morey et al., 2015). Detachment has also shown a balance of conflicting results (Morey et al., 2015).

Personality Traits in FMHS

Pathological personality traits (e.g. antisocial and narcissistic personality domains) are common in the forensic population, regardless of whether PD is formally diagnosed. For instance, Spaans et al. (2017) undertook a meta-analysis of self-reported personality traits in forensic populations, finding significantly higher levels of antisocial and psychopathic features (which correlate to Antagonism in the DSM-5 model). Indeed, antisocial behaviours themselves can be conceptually linked to different personality dimensions. In a meta-analysis on the relationship between antisocial behaviours and dimensions of personality featuring 59 studies, Miller and Lynam (2001) found that the FFM dimensions of Agreeableness and Conscientiousness were negatively correlated with antisocial behaviours, whilst Neuroticism was positively correlated (within the DSM-5 model this would correlate to a positive correlation with Antagonism and Disinhibition, and a negative correlation with Negative Affect).

A review by Hopwood and Sellbom (2013) on the implications of the DSM-5 model for forensic psychology concludes that future research should continue to expound upon the recent uptake of investigations into stable personality-relevant dynamics, one of "the

fundamental dimensions along which individuals tend to vary" (Hopwood & Sellbom, 2013, p. 320) and their effect on dynamic risk factors, which focus on clinical and risk management variables and are amenable to treatment (Douglas & Skeem, 2005). To the best of the researcher's knowledge, no studies have investigated the effects of dimensional personality traits on response to the multimodal treatment provided in FMHS.

This study sought to bridge this gap, to understand whether personality traits are a form of individual differences that explain peoples' response to treatment in FMHS and what the nature of this relationship may be. The findings are relevant both for the improvement of treatment outcomes and reduction of risk, as well as to help inform the most effective and cost-effective use of resources.

Hypotheses and Research Questions

It is hypothesised that patients' response to treatment in FMHS will be impacted by the presence of DSM-5 personality traits. As evidence of the relationship between these traits and response to treatment has been conflicting so far, the following hypotheses are made, following the balance of available evidence for each trait:

Compared to participants who did not respond to treatment (i.e. show significant reliable and clinical change), those that did respond will have:

1. Lower scores for Negative Affect and Antagonism.
2. Higher scores for Disinhibition.

As evidence for Psychoticism and Detachment remains scarce and divided, including the validity of the Psychoticism trait (e.g. Morey et al., 2015), an exploratory stance will be employed for the following research question:

- Is there a significant relationship between Detachment and Psychoticism and response to treatment?

Methods

Ethical Approval

Ethical approval for the study was sought and granted by the NRES Committee East Midlands – Leicester Central (Appendix D).

Design and Inclusion Criteria

This study employed a cross-sectional design. The predictor variable was DSM-5 personality traits (five traits made up of 25 personality facets). The criterion variable was treatment response, as measured by the amount of change on two outcome measures following a period of treatment in hospital. For a detailed discussion of the planned method and reasons for changing this, see the Extended Methodology chapter (p. 109).

To be included in the study patients had to have been resident in FMHS for a minimum of 18 months, consistent with findings of the average length of stay, to ensure adequate opportunity to benefit from treatment. Participants had to have at least two available data sets of the routine assessments of clinical need and risk (described below) completed in their clinical files. As some patients had transferred from other units during their period of admission, it was not possible to access their baseline measures. A secondary inclusion criterion of a minimum of six months between individuals' pre- and post-treatment measurement points was adopted. Participants had to have an adequate understanding of conversational or written English in order to complete study procedures. Potential participants were excluded if they were experiencing significant mental health symptoms such that they are not able to participate in routine ward-based activities and/or lacked capacity to make an informed choice about participation.

Participants

Participants were recruited from the two largest providers of FMHS in the East of England (Suffolk, Norfolk, Cambridgeshire); Norfolk and Suffolk NHS Foundation Trust (NSFT), and Kneesworth House Hospital, part of Priory Group (formerly Partnerships in Care), in Royston, UK. The FMHS at NSFT include MSU at Norvic Clinic in Norwich, and LSU at Hellesdon Hospital in Norwich and Foxhall House in Ipswich. Kneesworth House includes LSU, MSU and Locked Rehabilitation. It was not possible to establish how many patients met eligibility criteria across the services due to eligibility verification occurring after patients had signed expression of interest.

Twenty patients agreed to take part in the study. A further 13 had signed up to express interest but did not participate (eight declined to participate, three did not meet eligibility criteria and one patient was discharged). Participant demographics can be found in Table 14. Participants' ages ranged between 30–84. The most prominent diagnostic category was PD. Five participants (35.71%) had more than one PD diagnosis whilst two (14.28%) had a diagnosis of Mixed PD from the International Classification of Diseases, 10th Revision (ICD-10; World Health Organization, 2004), a diagnosis used when symptoms of several PD are present, but "do not demonstrate the specific pattern of symptoms" of the other PD diagnoses. A further two participants (14.29%) were diagnosed according to the new 11th Revision of the ICD (ICD-11; World Health Organization, 2019) dimensional classification of PD, with defined prevalent traits. Seventeen participants (85%) had an index offence, of which nine (52.94%) had more than one. Further to the index offence categories in Table 14, there were a number of offences that no more than two people had; Absconding from lawful custody; Aggravated vehicle taking; Child abduction; Burglary; Kidnapping; Murder; Rape; Robbery; Sexual assault; Sexual assault on minor; Theft; and Threats, conspiracy or incitement to murder. The time between first and most recent assessments ranged between 272–2972 days (*M* = 1098.81, *SD* = 811.75) or 8.94–97.71

Table 14. *Demographics of the Sample (*N *= 20)*

Gender	*n* (%)
Male	16 (80)
Female	4 (20)
Level of Security	
Medium secure	12 (60)
Low secure	6 (30)
Locked rehabilitation	2 (10)
Legal Status (U.K. Mental Health Act 1983)	
Detained under Section 3[a]	3 (15)
Detained under Section 37[b]	6 (30)
Detained under Section 47, 48 or 49[c]	11 (55)
Diagnosis Category	
Comorbidity (more than one diagnosis)	10 (50)
Personality Disorder	14 (70)
Psychotic Disorder	9 (45)
Paraphilic Disorder	2 (10)
Substance Use or Dependency Disorder	2 (10)
Bipolar Disorders	1 (5)
Depressive Disorder	1 (5)
Learning Disability (Mild)	1 (5)
Trauma and Stressor-Related Disorder	1 (5)
Index Offence Category (U.K. Criminal Law) (*n* = 17)	
Malicious wounding and other like offences	8 (47.1)
Arson	3 (17.6)
Attempted murder	3 (17.6)
Other offences	17

[a] This is a *civil* section of the U.K. Mental Health Act 1983 (amended by the Mental Health Act 2007) used to detain psychiatric patients outside of the criminal justice system. [b] This is a *criminal justice* section used to detain psychiatric patients after being convicted for an offence. [c] This is used to transfer prisoners to a psychiatric hospital for treatment.

months for HoNOS-secure, and 198–2194 days (*M* = 995.25, *SD* = 640.62), or 6.51–72.13 months, for HCR-20^{V3}.

Procedure

Non-randomised convenience sampling was employed. A poster advertising the study was put up in each participating ward (Appendix E). The researcher (AS) attended each ward and the nursing team indicated patients (without sharing any personal details) who had been resident at the service for a minimum of 18 months (though other eligibility criteria was not yet ascertained, following ethical approval). The researcher approached these patients to ask whether they would be happy to hear about the research study. All those who were interested were told about the study, then invited to participate. They were also told that participants would receive a reward for participating, in the form of being entered into a prize draw to win one of fifteen £15 Amazon vouchers, and that the study and researcher were independent from their treatment, and their choice whether to participate would not affect their treatment. Patients signed up to express their interest and consent to contact (Appendix F), and the gatekeeping clinician (ward psychologist or Responsible Clinician) checked their eligibility according to inclusion criteria. Eligible patients met with the researcher to go through the Patient Information Sheet (Appendix G) and give informed consent (Appendix H) to participate, and then completed the questionnaire outlined below. Further information about the procedure and particular considerations for the population can be found in the Extended Methodology chapter (p. 107 and p. 116 respectively).

Measures

Personality Inventory for the DSM-5 (PID-5; Krueger et al., 2012)

The PID-5 is a 220-item self-report measure which was created by the DSM-5 Personality and Personality Disorders Work Group to assess DSM-5 personality traits. It measures the presence of 25 personality trait facets which are then grouped into the five DSM-5 personality traits. Each item is rated on a 4-point scale, with several items

corresponding to a personality facet. Personality facets are grouped together by their corresponding personality domain and an average of their combined scores is calculated on a 4-point scale to create an average score for each domain. Reliability of DSM-5 personality traits as measured by the PID-5 are high (in Krueger et al., 2012, Cronbach's α ranged .72–.96, median = .86).

Health of the Nation Outcome Scale – Secure (HoNOS-secure; Sugarman & Walker, 2007; Appendix I)

The HoNOS-secure tracks treatment outcomes and on-going security needs of patients in FMHS, by rating clinical need for care and risk management. It is commissioned by NHS England for all FMHS (NHS England; 2014, 2018a, 2018b), first completed within three months after admission, then at subsequent Care Programme Approach meetings taking place at 6-month intervals. It is part of a group of outcome measures originating from the Health of the Nation Outcome Scales (HoNOS; Wing et al., 1998), which comprises 12 clinician-rated items relating to behaviour, impairment, symptoms, and social functioning outcomes, originally designed for use with working-age adults. Other HoNOS tools have been amended for specialist populations. HoNOS-secure covers the original 12 HoNOS items (i.e. Clinical scale), as well as an additional 7-item Security scale. Any item that is rated above "1" must receive a targeted approach in the patient's care plan and a risk management strategy. It was standardised in the UK and has been shown to have moderate to substantial inter-rater consistency (in Dickens et al., 2007, Cronbach's α = .73 for Security and .79 for the Clinical scale) and be a reliable outcome measure when used in routine clinical practice (Kappa values > .53 for six out of seven items for Security scale, and > .65 for eight out of 12 items on the Clinical scale; Sugarman et al., 2009). In a review of 19 routine outcome measures, Shinkfield and Ogloff (2014) found that HoNOS-secure is one of six suitable to be used in FMHS, due to covering a broad range of relevant outcomes in the

areas deemed necessary: Functioning, Recovery, Risk, and Placement Pathway (for further discussion see the Discussion chapter, p. 135).

Historical Clinical Risk Management-20, Version 3 (HCR-20^{V3}; Douglas et al., 2013)

HCR-20^{V3} is a structured professional judgement tool (Department of Health, 2007), standardised in a North American population, for the assessment and management of the risk of violence. It allows the assessor to establish the presence and relevance of 20 known risk factors for violence from Historical, Clinical and Risk Management domains, and enables the development of targeted risk management strategies to support individuals (Douglas et al., 2014). It has high reliability shown in several smaller studies (in Douglas & Belfrage, 2014, intraclass correlation ranged .94–.98 for the Historical scale, .86–.95 for Clinical, .75–.90 for Risk, and .94–.98 for the Total score). Further studies have looked at the previous version of the HCR-20 (Version 2, Webster et al., 1997; e.g. O'Shea & Dickens, 2015), and a high internal consistency has been shown between V2 and V3 (r = .84 for Total sum scores, .87 for Historical, .76 for Clinical and .82 for Risk, Douglas & Belfrage, 2014). The use of HCR-20^{V3} in adult FMHS in England is recommended by the U.K. government (Department of Health and Social Care, 2009) and is a commissioning requirement for HSU (NHS England, 2014). Though it is used clinically as an assessment of risk for forward-planning, it has been used as a measure of clinical and risk outcomes in research (e.g. Longdon et al., 2018).

Voluntary Status

Participants were also asked to indicate on a 10-point Likert scale "Do you believe that you need treatment in hospital?" (1 = no/strongly disagree to 10 = yes/strongly agree) to consider whether they agree with their need for treatment, as volunteering to take part in treatment has been shown to have significant positive effects on clinical progress (Parhar

et al., 2008). The results and discussion of the analysis of this data can be found in the Additional Results and portfolio Discussion chapters (p. 125 and 127 respectively).

Data Collected from Clinical Files

A file review was undertaken to extract participant data, including: demographics, diagnosis, index offence, MHA section, engagement in formal psychological intervention, and whether they were established on a medication regime. Inconsistencies in reporting and recording data prevented meaningful secondary analysis of these factors. HoNOS-secure and HCR-20^{V3} scores from the first available and two most recent assessments were obtained. The final analysis utilised only the first (T1) and most recent (T2) available scores.

Analysis

Data analysis was conducted using IBM SPSS Statistics v25. Kendall rank correlations (i.e. Kendall's tau-b; τ_b) were considered between DSM-5 personality trait average scores and the change (between T1 and T2) on HoNOS-secure Clinical and Security scale scores and HCR-20^{V3} Clinical and Risk scale scores. The Holm–Bonferroni method (Holm, 1979) was used post hoc to adjust *p* values to control for familywise error rates. Reliable and clinically significant change criteria (Jacobson et al., 1984; Jacobson & Truax, 1991) were applied to identify reliable changes in Clinical and Security needs on the HoNOS-secure, and the Clinical and Risk subcategories of the HCR-20^{V3}.

Reliable Change Index and Clinically Significant Change Calculations

Reliable Change Indices (RCI) (Jacobson & Truax, 1991) were used to assess whether the amount of change on a measure is greater than would be expected given measurement error. The threshold for reliable change is calculated using the standard deviation and reliability of the measure (see the Extended Methodology section for the formula, p. 114). These are used to produce a range of change scores that includes 95% of

the change scores that would occur by chance. The individuals whose post-treatment scores are outside of this range are considered to have experienced reliable change on that specific measure. Jacobson et al.'s (1984) "Criterion *a*" methodology was used for defining Clinically Significant Change (CSC). This methodology states that the level of functioning after therapy should fall outside the range of the clinical population by more than 1.96 *SD* (towards a decrease in dysfunction) to be a clinically significant improvement. Table 15 shows the alpha coefficients used when calculating the RCI for each outcome measure, and the normative data used for calculating CSC. Clinical norms were selected from studies that had the closest match to the present sample characteristics. For detailed information about RCI and CSC calculation method, as well as the process for choosing reliability data and clinical norms for calculation, see the Extended Methodology chapter (p. 114).

Several participants were excluded pairwise from elements of the analysis. Four participants were excluded from analysis of treatment outcomes on HoNOS-secure due to missing assessment data (*n* = 16). Three participants were excluded from analysis of

Table 15. *Reliability Alpha Coefficients and Clinical Norms Used for HoNOS-secure and HCR-20^{V3} Analysis.*

	Cronbach's α	Clinical Norms *M* (*SD*)
HoNOS-secure		
Clinical Scale	.79[a]	11.90 (6.25)[b]
Security Scale	.73[a]	11.73 (4.23)[b]
HCR-20^{V3}		
Clinical Scale	.94[c]	5.73 (2.36)[d]
Risk Scale	.93[c]	4.67 (1.83)[d]

Abbreviations: HCR-20^{V3}, Historical Clinical Risk Management-20, Version 3; HoNOS-secure, Health of the Nation Outcome Scale-secure.

[a] Data from Dickens et al. (2007). [b] Data from Dickens et al. (2010). [c] Data from Douglas and Belfrage (2014). [d] Data from Neil et al. (2020).

HCR-20^{V3} treatment outcomes due to missing assessment data, and one due to too short assessment interval (< 6 months; *n* = 16). All 20 participants' data was retained for demographics and PID-5 descriptive statistics.

Results

Response to Treatment

RCI and CSC were calculated using the Leeds Reliable Change Indicator: Simple Excel$^{(tm)}$ (Morley & Dowzer, 2014). Table 16 shows the proportions of individuals who showed reliable and clinically significant change. It can be assumed with a confidence level of 95% that a reliable change has occurred if an individual's change score is greater than the reliable change score for the measure (see Extended Methodology and Additional Results section for further information and plots of individuals' scores, p. 114 and p. 121 respectively). Most individuals did not show reliable or clinical change on either measure. There were three individuals who showed reliable improvement in scores on the Clinical scale of HoNOS-secure, and two on the Security scale, though neither of these changes were clinically significant. With regards to the HCR-20^{V3}, three individuals showed reliable improvement on the Clinical scale, of which one individual's improvement was also clinically significant, whilst five individuals showed reliable deterioration. On the Risk scale, five individuals showed reliable improvement, though none of these were clinically significant, and six showed reliable deterioration.

A Kendall's tau-b correlation employing a two-tailed test of significance was run to determine the relationship between changes on HoNOS-secure and HCR-20^{V3} scales, as shown in Table 17. There were no significant correlations between any of the measures' scales. A weak negative association was seen between the changes of HoNOS-secure Security and HCR-20^{V3} Risk scales, and a weak positive correlation was seen between HoNOS-secure Clinical and HCR-20^{V3} Clinical scales. Both correlations were not statistically

Table 16. *Reliable Change Index and Clinically Significant Change Summary and Mean Changes in Scores (n = 16)*

	T1 Mean (*SD*)	T2 Mean (*SD*)	Change Mean (*SD*)	Correlation between T1 & T2 (*r*)	Change Effect Size (Cohen's *d*)	Reliably Deteriorated (%)	No Reliable Change (%)	Reliably Improved (%)	CSC (%)
HoNOS-secure									
Clinical	8.37 (6.19)	5.75 (3.86)	2.62 (5.77)	.415	.49	0 (0)	13 (81.25)	3 (18.75)	0 (0)
Security	15.75 (5.21)	12.44 (7.02)	3.31 (3.98)	.829***	.49	0 (0)	14 (87.5)	2 (12.5)	0 (0)
HCR-20^{V3}									
Clinical	4.38 (2.78)	4.94 (2.82)	-0.56 (2.56)	.583*	-.20	5 (31.25)	8 (50)	3 (18.75)	1 (6.25)
Risk	6.69 (2.73)	6.50 (2.37)	0.19 (2.59)	.491	.07	6 (37.5)	5 (31.25)	5 (31.25)	0 (0)

Note. Change in scores between first and most recent available HoNOS-secure and HCR-20^{V3} assessments. Maximum possible scores: HoNOS-secure Clinical = 48, Security = 28; HCR-20^{V3} Clinical = 12, Risk = 12.

Abbreviations: CSC, Clinically Significant Change; HCR-20^{V3}, Historical Clinical Risk Management-20, Version 3; HoNOS-secure, Health of the Nation Outcome Scale-secure.

*p < .05. **p < .01. ***p < .001. All two-tailed.

Table 17. *Correlations Between Change in HoNOS-secure and HCR-20^{V3} Scale Scores (τ_b) (*n = *16)*

	1	2	3
1. HoNOS-secure — Clinical	–		
2. HoNOS-secure — Security	.12	–	
3. HCR-20^{V3} — Clinical	.24	.17	–
4. HCR-20^{V3} — Risk	-.12	-.22	-.07

Note. Change in scores between first and most recent available HoNOS-secure and HCR-20^{V3} assessments.

Abbreviations: HCR-20^{V3}, Historical Clinical Risk Management-20, Version 3; HoNOS-secure, Health of the Nation Outcome Scale-secure.

*p < .05. **p < .01. ***p < .001.

significant. The effect size for pre-post treatment on each scale (Cohen's *d*) was calculated using a calculator of *d* from the test statistics of dependent t-tests (Lenhard & Lenhard, 2016), employing Kendall's tau-b data for the correlation between T1 and T2 means.

Correlation Between Personality Traits and Response to Treatment

A Kendall's tau-b correlation employing a two-tailed test of significance was run to determine the relationship between the DSM-5 personality traits and response to treatment, as shown in Table 18. No significant correlations were detected between personality traits and changes in HoNOS-secure and HCR-20^{V3} scales. With the small sample size (n = 16), the smallest significant correlation that could have been detected was .6, as calculated using G*Power 3 (Faul et al., 2007). Whilst non-significant, several weak associations were seen, as well as one moderate association. Antagonism had a weak positive correlation with change on the HoNOS-secure Clinical scale, and a moderate negative correlation with change on the HCR-20^{V3} Risk scale. Disinhibition showed weak

Table 18. *Correlations Between DSM-5 Personality Traits and Change in HoNOS-secure and HCR-20^{V3} Scale Scores (τ_b) and Descriptive Statistics (*n *= 16)*

	Negative Affect	Antagonism	Disinhibition	Detachment	Psychoticism
HoNOS-secure					
Clinical	.01	.26	-.15	.01	.05
Security	-.13	.14	.23	-.21	-.09
HCR-20^{V3}					
Clinical	-.11	.08	-.15	-.11	-.24
Risk	.15	-.31	.24	.25	.05
M	1.28	0.54	1.17	0.92	0.93
SD	0.61	0.46	0.55	0.55	0.62
Range	0.30–2.77	0.21–2.08	0.00–1.49	0.07–1.87	0.00–2.00

Note. Change in scores between first and most recent available HoNOS-secure and HCR-20^{V3} assessments.

Abbreviations: HCR-20^{V3}, Historical Clinical Risk Management-20, Version 3; HoNOS-secure, Health of the Nation Outcome Scale-secure; PID-5, Personality Inventory for the DSM-5.

*p < .05. **p < .01. ***p < .001.

positive associations with change on the HoNOS-secure Security and the HCR-20^{V3} Risk scales. Detachment showed a weak negative association with change on the HoNOS-secure Security scale, and a weak positive association with change on the HCR-20^{V3} Risk scale. Psychoticism had a weak negative association with change on the HCR-20^{V3} Clinical scale. As stated, none of these associations were statistically significant. There were no associations with Negative Affect.

Discussion

This study sought to establish whether there is a relationship between DSM-5 personality traits and clinical outcomes of treatment in FMHS, as measured by change in

scores on the HoNOS-secure and HCR-20^{V3} between admission and at least six months of treatment (87.5% of participants had received > 12 months of treatment). No significant relationship between any of the personality traits and change on the outcome measures were found. A secondary key finding of this study was that, with regards to treatment response, few people showed significant reliable change (ranging from 12.5% on the HoNOS-secure Security scale to 31.25% on the HCR-20^{V3} Risk scale), and only one person (5%) showed clinically significant change, seen on the HCR-20^{V3} Clinical scale. The lack of significant change will have impeded the possibility of establishing a relationship with personality traits.

Several hypotheses can be made to explain the present findings. These must be considered in light of the evidence base and the reliability of the study's findings, due to strengths and limitations of the methodological design.

Treatment is Not Effective

The first hypothesis is that treatment delivered in FMHS is not effective at treating the complex and varied difficulties presented by patients with complex mental health presentations, histories, and significant risks towards themselves and/or others, at least as measured by the HoNOS-secure and HCR-20^{V3}. This could be explained either by the complexity of the clinical group or by deficiencies in the treatments themselves. As previously stated, treatment outcome studies for FMHS are scarce and vary greatly. The vast majority of studies looking at treatment outcomes in FMHS focus on outcomes of reconviction, imprisonment and readmission rather than clinical factors relating to patients' mental health or wellbeing, which presumably are, to some degree, intermediate steps towards impacting the longer-term behavioural outcomes. Other studies looking at clinical outcomes have previously found change, though often not a large amount. For example, in a study also looking at clinical outcomes as measured by the HoNOS-secure and HCR-20

(Version 2), Longdon et al. (2018) found significant improvements on the HoNOS-secure Clinical Scale at six and 12 months of treatment, though fewer than half of participants had made clinically significant improvements, and no improvements were seen on the Security scale or HCR-20. It is reasonable therefore to expect to have seen some change in the clinical outcome measures.

Sample Size

The sample size was low in this study and therefore lacked power, which could affect the ability to detect significant effects. Indeed, correlations smaller than .6 could not be detected. However, analysis of treatment outcomes employed RCI and CSC methodology (Jacobson et al., 1984; Jacobson & Truax, 1991), which focuses on each individual's change compared to the clinical norm population; therefore, the results for change on each of the measures' scales are not impacted by sample size.

Measure of Change

It can be further hypothesised that the two measures used for treatment outcomes (HoNOS-secure and HCR-20^{V3}) did not capture clinical improvement from effective treatment. Whilst HoNOS-secure and HCR-20^{V3} are arguably highly relevant measures for assessing meaningful change in the population being studied, there are potentially some limitations which could impact on their ability to reliably detect meaningful change in the current sample.

Lack of Change in Scores May Not Indicate Lack of Improvement. It is possible that a lack of change in HoNOS-secure and HCR-20^{V3} scores, despite reliable completion of the measures, would not indicate a lack of clinical improvement. Longdon et al. (2018) hypothesised that lack of significant change in risk items (HoNOS-secure Security scale or the HCR-20) seen alongside an improvement in the HoNOS-secure Clinical scale could in fact be an indicator of progress in "identifying and quantifying risks" (p. 256). However, in

this present study this does not seem to be the case, as minimal change was seen on the HoNOS-secure Clinical as well as all scales, which precludes assumption of any clinical improvement. Dickens et al. (2010) had also found no significant change in HoNOS-secure Clinical scores between baseline and final rating (discharge or end of study period, whichever came first), but having tracked intermediate ratings, they identified an increase in Clinical scale scores in the first quartile of the treatment period followed by a significant improvement. A limitation of the present study procedure is that intermediate ratings were not collected, therefore it is not possible to ascertain whether this pattern may have occurred. Additionally, looking at subscale totals rather than item-level scores (as was done in the present study) may miss changes in presentation, such as when certain items could improve whilst others deteriorate. For example, a portion of individuals undergoing psychological therapy for Post-Traumatic Stress Disorder have been shown to experience a worsening of symptoms at the start of therapy (Foa et al., 2002; Tarrier et al., 1999), and a short-term increase in marital conflict and distress is reportedly experienced by some individuals in marital therapy (Hunsley & Lee, 1995).

Discrepancy in Measure Completion. The measures were filled in as part of routine clinical practice rather than purposefully for research. It is possible that the approach to completing these varies between services and indeed individual raters. Both measures can be completed by individual clinicians or in collaboration with multidisciplinary team (MDT) colleagues; and based solely on file reviews or also refer to patient interviews and MDT discussion. This inconsistency may mean that the chosen measures were not valid, comparable measures of treatment outcome. However, the HoNOS-secure and HCR-20^{V3} are the only measures consistently completed across all services in the UK for all patients (HCR-20^{V3} completed only if the patient presents a risk of violence).

Are the Measures Capturing Clinical Improvement?. It could be further hypothesised that these measures do not capture a complete picture of what would be

defined as clinical and risk changes in response to treatment. As stated, the purpose of treatment in FMHS is to treat clinical needs and reduce individuals' risk both towards themselves and others (NHS England; 2014, 2018a, 2018b). The difficulties experienced by patients in FMHS are complex. Individuals have often experienced significant adverse events, including marginalisation in society and poverty. These experiences will have contributed to developing maladaptive coping mechanisms (e.g. substance use, anger, self-harm) and ways of meeting their perceived needs (e.g. crime; Ward, 2010), and their responses to their distress become expressed as the symptoms which fit diagnoses of mental disorders (Johnstone & Boyle, 2018). Their needs therefore are complex and wide-ranging and are often linked in intricate ways, therefore capturing (and rating) change which can be constituted as improvement is a challenging endeavour. Furthermore, as treatment is multimodal and patients may receive different components due to differing needs, it can be difficult to contrast and compare outcomes.

Nevertheless, HoNOS-secure has been shown to capture a good breadth of relevant factors for patients in FMHS compared to other measures (Shinkfield & Ogloff, 2014), and the HCR-20 (all versions combined) is the most widely used violence risk assessment in the world (Singh, 2013). Both the HoNOS-secure and HCR-20^{V3} capture an overview of patients' clinical presentation during the assessment period whilst looking at a range of clinical factors, to rate how much difficulty individuals are experiencing in each and therefore require support and management (for the risk of violence in the case of HCR-20^{V3}), and it is reasonable to expect these factors to change during treatment in FMHS.

Patient-Specific and External Factors Affecting Treatment Uptake and Outcomes

Many factors could impact on individuals' experiences and needs at different times, as well as their ability to engage in, and benefit from, different treatments, which may not be due to the effectiveness of the treatment. For example, the environment in FMHS can

sometimes be challenging, and factors such as a ward social environment and atmosphere may impact individuals' clinical presentation and wellbeing at different times (e.g. Hamrin et al., 2009, Long et al., 2011). They can also affect patients' engagement (Casey et al., 2007) and responsivity to treatment (Howells & Day, 2003), which in turn affect treatment outcomes. Therapeutic alliance with staff has been shown to moderate the likelihood of inpatient violence and disturbed behaviour (Long et al., 2011) and be a key feature of effective rehabilitation programmes (Ward et al., 2004).

Richter et al. (2018) found that patients' cognitive abilities had a significant causal relationship with their treatment outcomes in FMHS, whereby cognitive impairment mediated their ability to make progress in psychosocial treatment and therefore change in violence risk. Additionally, patients' desire and motivation to engage with treatment can have a significant impact on treatment outcomes (Parhar et al., 2008). Due to the small sample size it was not possible to analyse the relationship between participants' agreement with their need for treatment (as measured by their responses to the question "Do you believe that you need treatment in hospital?") and their outcomes, nor any relationship with personality traits (see Additional Results and Extended Discussion chapters, p. 125 and 127). It was also not possible to determine potential effects of sample bias or demand characteristics.

In summary, despite constraints in the available data for measuring clinical outcomes of treatment, the measures used would be expected to be able to capture change following treatment in FMHS. However, the limitation of the narrow picture captured by the collected data means that it is not possible to exclude the possibility that a lack change in scores may not actually indicate a lack of improvement. Therefore, it is not possible to reliably conclude that participants did not show clinical improvement.

Measurement of Personality Traits

It must also be noted that the self-reported measurement of pathological personality traits may not have been an accurate or complete representation of participants' personality profile. It has been estimated that as many as 30% of civil forensic patients (Mittenberg et al., 2002), and nearly 20% of criminal forensic patients (Rogers et al., 1998), may over-report psychiatric symptoms. This is often intentional, for perceived gain such as less restrictive interventions, or due to a demand bias. In attempt to ensure that participants would not intentionally alter their responses, participants were explicitly told that the researcher is entirely separate from their treatment team, that their results would have no impact on their treatment and would be reported anonymously in the manuscript. However, it is not possible to ascertain that they trusted this and therefore had not altered their responses. Clinical presentation may also impact on responding, such as the more severe/prominent reporting of negative or "undesirable" personality traits by patients experiencing a major depressive episode (Bagby et al., 2008) or diagnosed with borderline PD (McGee Ng et al., 2016). The sample size did not allow for exploration of diagnostic differences in reported personality traits and how this related to expected profiles seen in certain diagnoses. As PID-5 is a relatively new measure and put forward by DSM-5 for research purposes rather than new clinical guidance, little published research with normative data exists, precluding the ability to compare our sample's findings.

Null Hypotheses

Finally, the null hypotheses must be considered, that there is no relationship between DSM-5 personality traits and clinical outcomes of treatment in FMHS, at least in terms of the outcomes that were the focus of the study. Previous studies looking at the relationship between personality traits and treatment outcomes in a variety of healthcare populations, as well as psychological interventions, have found mixed and contradicting

results, including at times no relationship (e.g. in substance abuse, Muller et al., 2008; and PTSD, van Emmerik et al., 2011). Furthermore, the temporal stability of personality traits is subject to debate, and as the present study measured personality traits at post-treatment, we cannot rule out that personality traits may have been subject to change following treatment. (For a discussion of the debate about the stability of traits and implications of this for the field of research into treatment effectiveness and possible predictors of outcomes, see the Discussion chapter, p. 131). However, the lack of apparent significant change in treatment outcomes, which had been an intermediary assumption for the research question, meant that it would not have been possible to establish a relationship between personality traits and treatment outcomes.

Clinical Implications and Future Research

The present findings of a lack of response to treatment echo the known issues of poor outcomes within research into FMHS. There is a dearth of standardization in use of established psychometrics across FMHS, as well as minimal requirements for collection of data regarding a broad range of clinical outcomes. This causes further impediment to the possibility of expanding the evidence-base. The possible implications of treatment not being effective for people in FMHS are significant, given the ethical and financial implications of detaining people (most often) against their will, for the purpose of treatment. Equally, if these findings are due to limitations of the measures used to capture treatment outcome, this may suggest that, as the only measures commissioned to be used across all services (and available concurrently for all patients in the two present recruitment sites), when they are used alone to track clinical outcomes nationally, the data is limited and misleading. If they are the only standardly completed outcome measures to contribute clinical data to decision-making, the process and outcomes of the clinical decision-making process may need to be examined and guidelines revisited. However, it

cannot be discounted that the findings of this study lacked significant power due to a small sample size and provide a limited overview of change in response to treatment, which therefore precludes reliable interpretation.

Therefore, the needs that drove the present study—to understand whether there is a link between personality traits as an idiosyncratic client-specific factor, and response to treatment—remain. Furthermore, it is clear both through the findings of this study, whereby little reliable or clinically significant change was seen in response to treatment, as well as the sparsity of evidence available, that further research into the outcomes of treatment in FMHS is warranted. Researchers should aim to recruit a large sample and capture as broad a range of outcomes, and over as long a time period, as possible. Areas of clinical outcome to cover should include the need for clinical intervention and risk management, and specific established measures of symptomatology relevant to each patient (e.g. a measure of psychotic symptoms for patients who have diagnoses of Psychotic Disorders and are receiving interventions for this). Researchers could supplement outcome measures with clinician and patient opinions regarding subjective improvement (e.g. *My Shared Pathway*, part of the Department of Health Quality, Innovation, Productivity and Prevention Programme for Secure Services), both to qualify changes and to provide a richer understanding of possible confounding factors when measuring treatment outcome.

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Chapter 5: Extended Methodology

This chapter offers additional information to the Methods section of the Empirical Paper. It presents details of the procedure undertaken with participants, as well as the planned design and analysis for the study, and a discussion about why it was not possible to employ this due to recruitment difficulties. Considerations for choosing an alternative design and analysis are presented, along with further information about the Reliable Change Index methodology and the choice of studies for clinical population data for comparison of means. Finally, ethical considerations for the research population are presented.

Procedure

Prior to recruitment

The researcher (first author, AS) attended staff multidisciplinary meetings at each recruitment site to promote the study and outline inclusion criteria. Clinicians were asked to review the criteria and confirm (without sharing any personal details) that there would be an adequate sample available. A date was agreed for the researcher to attend each ward to undertake recruitment.

Recruitment

After attending the services to promote the study (see Procedure section in Empirical Paper, p. 82), the researcher met with gatekeeping clinicians to review the list of patients that had signed to express their interest in participating, and confirm that they met inclusion criteria. Participants' literacy and comprehension levels were discussed to consider whether any adaptations would be necessary to facilitate their participation (i.e. how the questionnaire would be administered). If participants had identified difficulties, it was agreed that the researcher would automatically administer their questionnaire individually and read out the questions to them to ascertain that they understood the

questions and assist their understanding if needed. The gatekeeping clinician spoke to patients that did not meet inclusion criteria to explain this to them.

Initial Meeting to Gain Informed Consent

The researcher met with potential participants for an initial meeting to discuss their participation (see Empirical Paper Methods section, p. 82, and Ethical Considerations regarding Confidentiality below) and gain informed consent. If there were several consenting participants on the same ward, each participant was asked during their initial meeting whether they would be happy to complete the questionnaire in a room with other participants. This was done to maximise researcher time to facilitate maximum recruitment potential. The initial meeting was then concluded, and a time was agreed for the researcher to return to administer the PID-5 questionnaire (individually or in groups). The researcher spoke with the nursing team to ascertain whether it would be appropriate for the individuals to be in a room together and whether there were any known relational difficulties or risk factors which should preclude this.

Questionnaire Administration

Where participants had agreed to complete the questionnaire together with other people, the researcher administered the questionnaire to a maximum of five participants in a room on the ward. Participants were asked to sit at different locations in the room to ensure confidentiality of their responses on the questionnaire. The researcher explained the format of the questionnaire before beginning and answered any general questions that participants had about filling out the questionnaire. If participants had item-specific questions the researcher directed them to answer questions according to their interpretation, so as not to unduly influence their responses. Participants were asked their preference regarding how to complete the questionnaire; to have questions read aloud by the researcher with participants circling their answers on their pieces of paper, or for each

participant to read and complete their questionnaire independently. The majority of groups preferred to read it independently. The PID-5 took approximately 40 minutes to complete.

Where participants had chosen to complete the questionnaire on their own, they met individually with the researcher and were offered the options of; reading and completing the questionnaire on their own; having the researcher read the questions out loud whilst participants circled their answers themselves; or for the researcher to read the questions out loud and also circle the answers that the participant would give verbally.

Once the questionnaire was administered, the researcher met with each participant individually to debrief. Participants were directed to their Participant Information Sheet (Appendix G) where there was information about how to withdraw from the study if they wished to, including a telephone number for the researcher (see Contacting the Researcher below for information about this), and contact details for research supervisors and the service's Patient Advice and Liaison Service, should any concerns arise.

Data Collection

The researcher attended the services on a separate day, after the PID-5 had been completed, to undertake file reviews for relevant data (as outlined in the Empirical Paper Methods section).

Planned Study Design and Data Analysis

The study was originally planned to have a cross sectional between-subjects design with two groups. The independent variable (IV) was to be treatment response with two groups, *responders* and *non-responders* to treatment, and the dependent variable was to be each DSM-5 personality trait domain (five domains made up of 25 personality facets).

Assessment ratings for the HoNOS-secure and HCR-20^{V3} were collected for three time-points: admission (or first available assessment if transferred from a different service; T1) and most recent two assessments (T2 and T3). The following criteria was planned to

separate participants into the two IV groups (applied to each individual), subject to the final spread of data allowing for a balanced sample. Responders would have shown a change of over 1 *SD* (as a proportion of the total possible score) in HoNOS-secure and HCR-20^{V3} scores between T1 and T2, and this would have to have been sustained between T2 and T3. This change would denote a large effect size, indicative of clinically significant change (Wise, 2004). If it had not been sustained, they would be classed as non-responders. An independent second person would follow the criteria to separate participants into the two groups and inter-rater reliability would have been calculated with Cohen's κ.

The difference between the responders' and non-responders' average scores on each of the five DSM-5 personality domains of the PID-5 would be analysed using two-tailed between-participants t-tests and a significance level of $\alpha = .05$. If parametric assumptions were not met, Mann-Whitney *U* tests would be used at a significance level of $\alpha = .05$.

Secondary analysis was planned to explore the moderating effects of voluntary status, age, gender, diagnosis, index offence, legal status (Mental Health Act 1983, amended by the Mental Health Act 2007, [MHA]), engagement in formal psychological therapy, concordance with a medication regime, and number of incidents during the assessment period prior to T2 and T3. These secondary analyses were planned to be done using chi-square, t-tests, and analysis of variance, with post-hoc adjustments made for multiple testing.

Recruitment Difficulties

A target sample size of 68 (34 per IV group) was sought to detect medium-large effects ($d = .7$) with 80% power using a two-tailed t-test between means, with a significance level of $\alpha = .05$, as calculated using the G*Power 3 computer program (Faul et al., 2007). During initial discussions, clinicians from the participating sites indicated that this number of patients meeting the inclusion criteria would be readily available. Despite previous

questionnaire-based research in FMHS indicating that a 60-70% response rate is realistic (Beazley & Gudjonsson, 2010), a much smaller proportion ultimately participated. It is not possible to calculate the final response rate due to the study procedure not capturing the total eligible patients, as eligibility was not ascertained until participants had signed their expression of interest and consent to share details and be contacted by the researcher. There are several contributing factors for the difficulties in recruitment.

Presentation of the Study to Patients and Consent to Contact

Ethical considerations regarding gaining consent to contact potential participants about the study, prevented the researcher from establishing patients' eligibility ahead of speaking with them. Instead, the researcher spoke with clinicians from each service to ascertain the best opportunity to approach all patients at each ward as a group. It was indicated that this should be in regular patient meetings held every morning. However, it was found that very few patients attended the patient meeting on the first ward visited; therefore the researcher did not have an opportunity to speak to most of the patients about the study. Subsequently, few patients signed up to express interest and give consent to be contacted by the researcher. As there were 11 wards and the recruitment sites required considerable travel it was only feasible to attend once per ward. Wishing to avoid missed opportunities to recruit potential participants due to the low number of patients attending the ward meeting, it was agreed with gatekeeping clinicians that the researcher would attend each ward, and the nursing team would indicate patients who had been resident at the service for a minimum of 18 months. In keeping with ethical approval, personal details were not recorded and other eligibility criteria was not ascertained at this stage, prior to receiving signed consent to contact (as described above). Ward staff were asked to present the study information and expression of interest form to any patients who

were potentially eligible but were away on leave at the time of the researcher's visit (which was the case for a number of patients).

Challenges posed by ethical considerations of data protection as well as time constraints on the researcher's ability to attend in person to attempt to recruit more participants, meant that few participants were recruited during the available recruitment period. In addition, several participants (*n* = 8, 27.59% of eligible potential participants who signed the expression of interest form) who had expressed interest and whose eligibility was confirmed, had decided not to participate when they met with the researcher to go through the Participant Information Sheet (Appendix G).

Confirmation of Eligibility

Further to a small number of participants being recruited during the recruitment phase, several participants also had to be excluded from analysis due to not having the required assessment data or not having been admitted in services for long enough, despite their gatekeeping clinicians having confirmed their eligibility. Indeed, as described in the Empirical Paper Methods section (p. 79), a number of participants were found to not have available baseline measures (as they had transferred from other units) after they had participated in the study, therefore a secondary criteria of a minimum of six months between T1 and T2 measures was adopted to minimise exclusion of participants' data.

Although clinicians from each ward at the two recruitment sites were asked to indicate in advance of recruitment approximately how many patients would meet length of stay eligibility criteria, to estimate that enough participants would be available, the information supplied was found to be overestimated. As previously described in the study procedure (see Empirical Paper Methods section, p. 82), the researcher undertook file reviews after the PID-5 questionnaire had been completed, with the assumption that the participants would have the required information as their gatekeeping clinician had

confirmed their eligibility. However, in several cases participants were found not to have the required data which excluded their data from analysis (see Participants subsection of the Empirical Paper Methods section, p. 80, for detailed reasons for exclusion).

It is possible that changing the order of participation, whereby the file review for data extraction would occur straight after gaining consent, prior to PID-5 completion, would have allowed the researcher to ascertain that participants were eligible before administering the PID-5. However, this option would not have met ethical considerations; the researcher would have full access to medical records for patients who could turn out to not be eligible to participate in the study. Additionally, participants who were found eligible after their data was extracted from their medical file could also change their mind about participation when they met the researcher again to complete the PID-5; leading to the same ethical problem as well as a significant loss of time for the researcher. Therefore, the only ethical and feasible option for the process of determining participant eligibility was for clinicians to do this, placing the onus of accurate verification on them. The location of required data to confirm eligibility (length of stay minimum 18 months and availability of minimum two HoNOS-secure and HCR-20^{V3} assessments) on the electronic patient record systems (EPR) used by the services was not consolidated and will have made checking this an arduous task for clinicians. There were staff team changes during the recruitment period, which cumulated in difficulties and delays in communication, which further precluded the possibility of further recruitment efforts in the available recruitment time-period.

Methods Adjustment

Due to a small sample size and the lack of significant change in assessment scores, it was not possible to split participants into groups of responders and non-responders. It was decided that a correlation analysis would be the only way to explore the relationship between the DSM-5 dimensional personality traits and response to treatment. The choice

of test was determined by checking for satisfaction of statistical assumptions (as discussed in the Additional Results chapter, p. 120). As the recruited sample size was small, it was decided that the most robust method for calculating change in response to treatment would be using Reliable Change Index (RCI) and Clinically Significant Change (CSC).

Reliable Change Index and Clinically Significant Change Calculation

As described in the Methods and Results sections of the Empirical Paper (pp. 85-87), Jacobson and Truax's (1991) methodology for calculating RCI and CSC (Jacobson et al., 1984) determines whether individuals have shown a change (difference between scores) on measures following treatment that is significant at the 95% level, indicating that it is not due to a measurement error.

An RCI is calculated for each individual, which indicates that the change in scores is significant at the 95% level when the RCI is higher than 1.96. The formula to compute the RCI can be seen in Equation 1:

$$RCI = \frac{X_2 - X_1}{S_{diff}} \ , \tag{1}$$

where X_1 represents the individual's pre-treatment score, X_2 represents their post-treatment score, and S_{diff}, is the standard error of difference between the two assessment scores, which can be calculated using the standard error of measurement (*SEM*) as seen in Equation 2:

$$S_{diff} = \sqrt{2(SEM)^2} \ . \tag{2}$$

The *SEM* is estimated by using reliability data for the measure (either test-retest or Cronbach's α), as seen in Equation 3:

$$SEM \ = \ SD_1\sqrt{1 - r_{xx}} \, , \tag{3}$$

where SD_1 represents the *SD* of the test group and r_{xx} represents the reliability of the measure. A Reliable Change Score (RCS) is calculated for the scale, as shown in Equation 4,

which gives the actual change in scores needed to reach significantly meaningful change (95%) on the scale.

$$S_{diff} \times 1.96 \quad (4)$$

Jacobson et al.'s (1984) "Criterion *a"* was used to determine whether individuals' change in scores was clinically significant as well as being reliable. This methodology is used when data is not available for a normative (non-clinical) sample, as is the case for both HoNOS-secure and HCR-20^{V3}, which are inherently used only for a specialist forensic population (HoNOS-secure) or where a significant risk of violence is expected (HCR-20^{V3}). Instead data for a clinical sample is used to determine whether individuals have moved out of a clinical range. Equation 5 shows the formula for calculating this:

$$a = M_1 + 2SD_1 \quad (5)$$

where M_1 represents the Mean of the clinical population group pre-treatment.

Choosing Reliability Data and Clinical Norms for Calculation

As described in the Methods section of the Empirical Paper (p. 85), Jacobson et al.'s (1984) "Criterion *a*" methodology requires data from clinical populations to determine whether individuals have made CSC. For a clinically significant improvement, individuals' post-treatment scores should fall outside the range of the clinical population, (i.e. 1.96 *SD* beyond the mean, towards a decrease in dysfunction). Clinical population norms were therefore needed for the HoNOS-secure and HCR-20^{V3}. To increase reliability, studies were chosen to match the characteristics of the present sample. The following studies were chosen for reliability data for the measures (Cronbach's α) and clinical population norms (*M* and *SD*).

HCR-20^{V3}. Few studies have looked at the reliability of the HCR-20^{V3}. The most recent available study of the HCR-20^{V3}'s reliability (Howe et al., 2016) was considered,

however due to the study's methodological limitations described by the researchers, namely the lack of standardization of the timing of HCR-20^{V3} rating by researchers of the same individual (e.g. where some were completed at the beginning of an admission and some post-discharge), it was decided that their findings were unreliable. The study ultimately chosen (Douglas & Belfrage, 2014) was one conducted by the measure authors, conducted on a small sample during final stages of HCR-20^{V3} development. It was the study with the closest sample characteristics of the present study's sample; with similar legal status (though according to Swedish legislation); age; and gender distribution. Clinical population normative data was obtained from Neil et al. (2020). This recent study was chosen instead of the study used for reliability data as it used a relatively large sample whose characteristics were similar to the present sample; similar setting of U.K. FMHS, legal status, and age.

HoNOS-secure. Reliability data (Cronbach's α) for the HoNOS-secure was obtained from Dickens et al. (2007). It was one of the few studies to have measured and reported the internal reliability of the measure and used a sample with similar characteristics, as above. Clinical population norms were obtained from Dickens et al (2010). This study's sample was large, and the sample characteristics were the closest found to the present study. The study used for the measure's reliability was not used due to patients having been discharged from MSU to community, thereby not matching the clinical characteristics of our sample.

Ethical Considerations for the Research Population

Several ethical considerations were made in planning this study, given the vulnerable nature of this population, detained under the MHA.

Consent and Self-Report

Previous research has shown that using self-report methods in forensic populations that show deviant or disruptive behaviours is not always reliable; in many cases patients may be granted progressive leave and benefits, or, conversely, have their sentence extended or receive enforced treatment, according to the results of their assessments, treatment adherence and stability (Milton et al., 2005; Spaans, et al., 2015). It was important to make explicit that the research was independent of the services and that the decision to participate or not would have no bearing on patients' treatment, to ensure that individuals would not be coerced to participate, and that their responses would remain as truthful as possible. Capacity was assessed according to standard trust policy. Clinicians were informed to notify the researcher if they felt that any potential participants, who were excluded from participation due to not having capacity during the researcher's visit, had regained capacity and still wanted to participate in the study. Those patients could then undergo the same inclusion process as other participants.

Confidentiality

Participants were made aware both in the information and consent forms and during the interview with the researcher, prior to providing consent to being involved in the study, that their information would be kept confidential; although this would need to be broken if it was felt that they or others were at risk of harm or if a crime was reported. Participants were informed that if this occurred, a professional at the service would have to be informed. In this instance any relevant information was handed over immediately following the interview and where possible, they were also informed if this procedure needed to be put in place (providing that it did not place the participant or anyone else under increased risk), and this was documented. Participants were offered the option in

advance to have their ratings from the PID-5 shared with their lead clinician, to provide more information to benefit their treatment.

Reward

Participants were entered into a prize-draw to win one of fifteen £15 Amazon vouchers. This was discussed with local clinicians and they had expressed that it is standard local practice for research done in their services. Following Health Research Authority guidelines for Payments and Incentives in Research, it was agreed that this would form recompense "proportionate to the level of burdens involved" (Health Research Authority, 2014), and would not form coercion.

Potential Risks to the Researcher

To ensure the personal safety of the researcher whilst conducting participant interviews in inpatient settings, all local safety protocols were followed onsite, including attending site inductions, and having an additional member of staff present where needed. Handover information was sought from the nurse in charge prior to the session to ascertain that the potential participants were not in a period of distress or heightened risk. After the interview, the researcher did a handover to the nurse in charge that the participant had been seen, and whether there were any clinical concerns raised by their presentation.

Contacting the Researcher

Participants were provided with a mobile telephone number for the researcher which they could use if they needed to discuss their involvement in the study, or wanted to withdraw from the study (during the period stated on the Participant Information Sheet). If a participant used this number to report to the researcher about any distress they were experiencing, then this would have been reported to a professional at the service immediately and documented. It was explained to participants that the researcher would

only be contactable during office hours (Monday-Friday, 9am-5pm) and that any issues unrelated to the study should be directed towards their care team. An answerphone message was left on the phone so that this message could be reinforced, and the mobile phone was switched off outside of working hours to maintain researcher-participant boundaries. No contact was made via this method.

Chapter 6: Additional Results

This chapter provides additional results for the Empirical Paper. It outlines the statistical assumptions that were checked for the correlation analyses, and the considerations made where these were violated. It presents results of an exploratory analysis for associations between the DSM-5 personality traits, and the descriptive statistics for Voluntary Status and relationships between diagnostic groups and DSM-5 personality traits.

Statistical Assumptions

As discussed in the Extended Methodology chapter (Methods Adjustment section, p. 113), correlation analysis was chosen to explore the association between response to treatment and DSM-5 personality traits. The following statistical assumptions for the Pearson product-moment correlation (i.e. Pearson's correlation) must be satisfied: (a) having two continuous variables, (b) that are paired, (c) have a linear relationship, (d) have no significant outliers, and (e) the data must be normally distributed. The first two assumptions are determined by the study design and procedure; in the present study both assumptions were met. Determining the linearity of the relationship between the variables, as well as the presence of significant outliers was done by visual inspection of scatterplots. Finally, a Shapiro-Wilk's test was used to determine whether the data for each variable was normally distributed. This showed that the data for Antagonism was not normally distributed ($p = .042$), whilst the remaining variables were normally distributed ($p > .05$). Upon visual inspection of the scatterplots of the association between the five personality traits and changes in outcome measures (four scales in total) in response to treatment, it was difficult to establish linearity due to the small sample size, though it was evident that there was a large number of tied outcomes (primarily scores of "0" on the amount of change on the outcomes measure scales).

Therefore, a non-parametric alternative to the Pearson correlation was required, that is, *Kendall rank correlation* (i.e. Kendall's tau-b) or *Spearman correlation*. Kendall's tau-b is recommended when data contains tied ranks and a small sample (e.g. Field, 2009), as was the case in the present study, therefore it was chosen as the analysis method. The two statistical assumptions for Kendall's tau-b are that (a) the two variables should be measured on an ordinal or continuous scale, and (b) representing paired observations; both assumptions were satisfied.

Reliable Change Index and Clinically Significant Change: Individual Scores

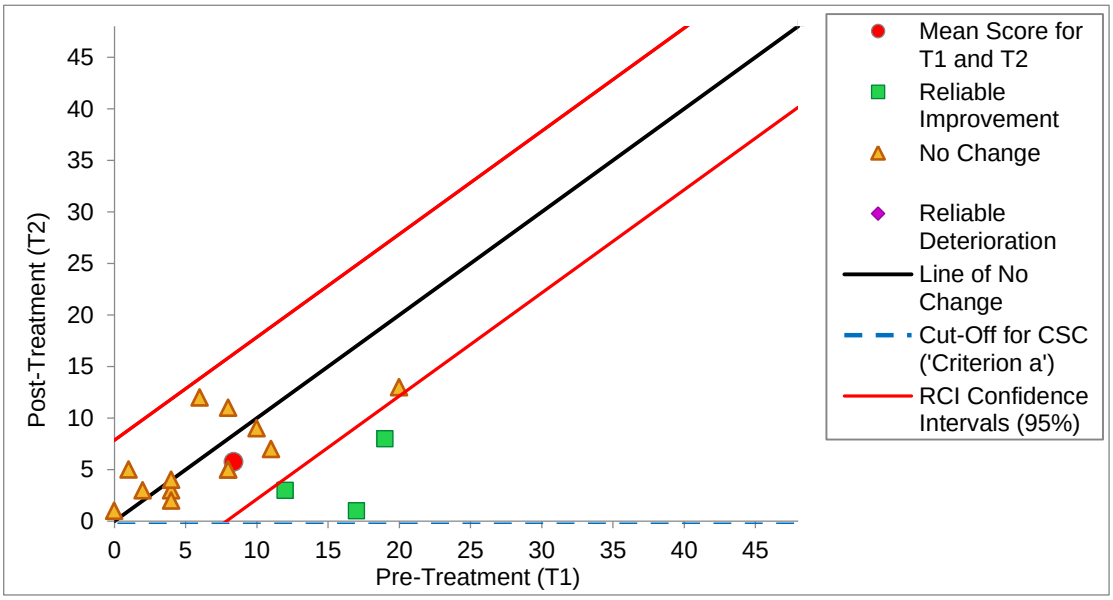
The standard error of measurement and Reliable Change Scores for each measure, against which each individual's data was compared to determine whether they had made reliable significant change, can be found in Table 20. Figures 2–5 show plots for each outcome measure scale, with individuals' pre- and post-treatment data points (T1 and T2), in relation to the RCI and using Jacobson et al.'s (1984) "Criterion *a*" to calculate cut-offs for clinically significant change. A decrease in scores indicates a decrease in clinical need on both measures (i.e. functional improvement).

Table 19. *Standard Error of Measurement (SEM) and Reliable Change Scores (RCS) for the Change in Scores on Each Ouctome Measure Scale (*n *= 16)*

	SEM	RCS
HoNOS-secure		
Clinical	2.83	7.86
Security	2.71	7.50
HCR-20^{V3}		
Clinical	0.68	1.89
Risk	0.72	2.00

Abbreviations: HCR-20^{V3}, Historical Clinical Risk Management-20, Version 3; HoNOS-secure, Health of the Nation Outcome Scale-secure.

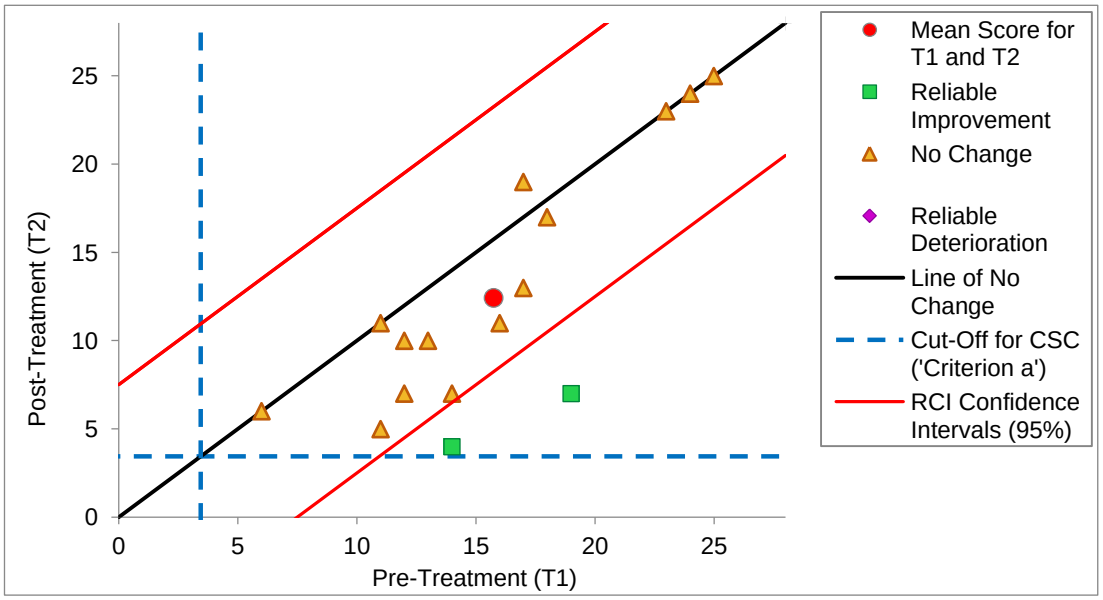
Figure 2. *Plot of Individuals' Pre- and Post-Treatment scores on HoNOS-secure - Clinical Scale, Indicating Reliable Change Index (RCI) and Clinically Significant Change (CSC) (*n *= 16)*



Note. The *SD* for the clinical population was large therefore the cut-off score for CSC calculated with "Criterion *a*" (Jacobson et al., 1984) was -0.35. However, "0" is the lowest possible score on the HoNOS-secure, therefore no cut-off score applied to this scale and no individuals made CSC.

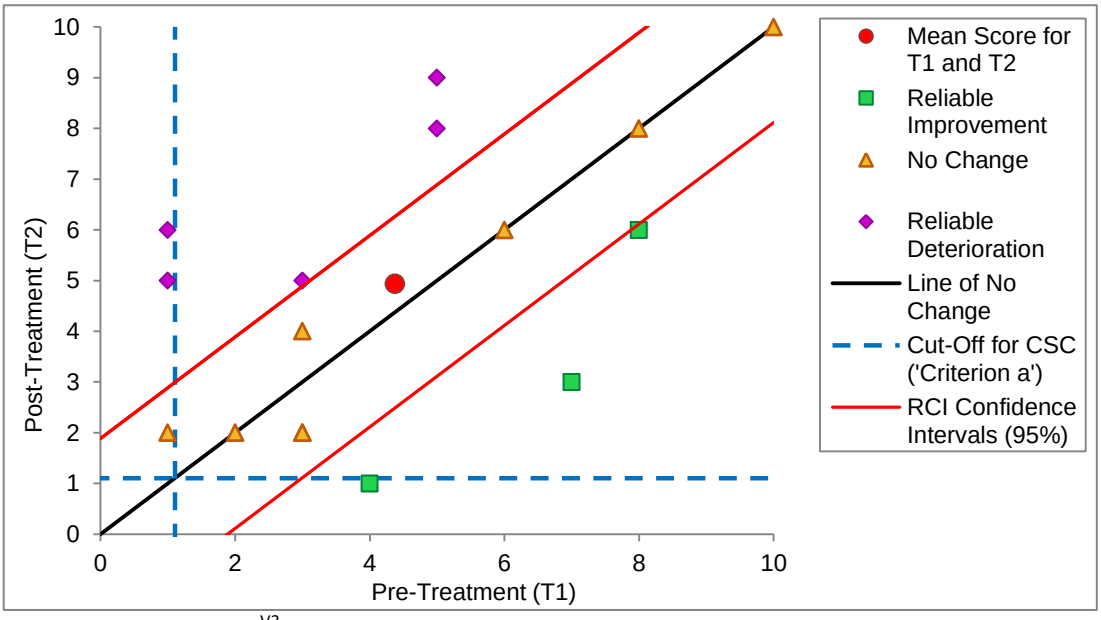
Abbreviation: HoNOS-secure, Health of the Nation Outcome Scale-secure.

Figure 3. *Plot of Individuals' Pre- and Post-Treatment scores on HoNOS-secure - Security Scale, Indicating Reliable Change Index (RCI) and Clinically Significant Change (CSC) (*n *= 16)*



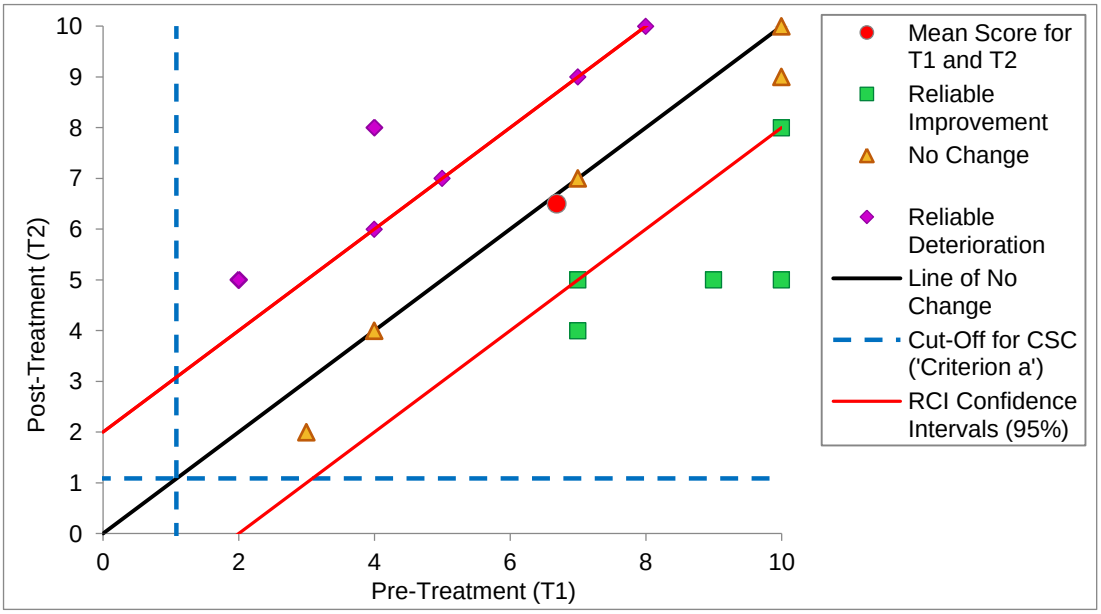
Abbreviation: HoNOS-secure, Health of the Nation Outcome Scale-secure.

Figure 4. *Plot of Individuals' Pre- and Post-Treatment scores on HCR-20^{V3} Clinical Scale, Indicating Reliable Change Index (RCI) and Clinically Significant Change (CSC)* (n = *16)*



Abbreviation: HCR-20^{V3}, Historical Clinical Risk Management-20, Version 3.

Figure 5. *Plot of Individuals' Pre- and Post-Treatment scores on HCR-20^{V3} Risk Scale, Indicating Reliable Change Index (RCI) and Clinically Significant Change (CSC)* (n = *16)*



Abbreviation: HCR-20^{V3}, Historical Clinical Risk Management-20, Version 3.

Associations Between Personality Traits

To contribute to research on the PID-5, a Kendall's tau-b correlation was run to determine whether there were significant associations amongst the DSM-5 personality traits (using a two-tailed test of significance). As seen in Table 21, all traits besides Antagonism showed non-significant associations with other traits that were weak or moderate. Antagonism was the only trait to have no associations with any other trait. Only one significant association was seen, which was a moderate positive association between Detachment and Psychoticism (p = .005). Several non-statistically significant associations were seen. Detachment also showed a weak positive correlation with Disinhibition, and a moderate positive association with Negative Affect. Psychoticism additionally showed a moderate positive association with Negative Affect and a weak positive association with Disinhibition. A weak positive association was seen between Disinhibition and Negative Affect.

Table 20. *Correlations Between DSM-5 Personality Traits (τ_b) (*n *= 16)*

DSM-5 Personality Trait	*M* (*SD*)	1	2	3	4
1. Negative Affect	1.28 (0.61)				
2. Antagonism	0.54 (0.46)	-.06			
3. Disinhibition	1.17 (0.55)	.25	-.10		
4. Detachment	0.92 (0.55)	.40	-.13	.22	
5. Psychoticism	0.93 (0.62)	.40	.14	.22	.46*

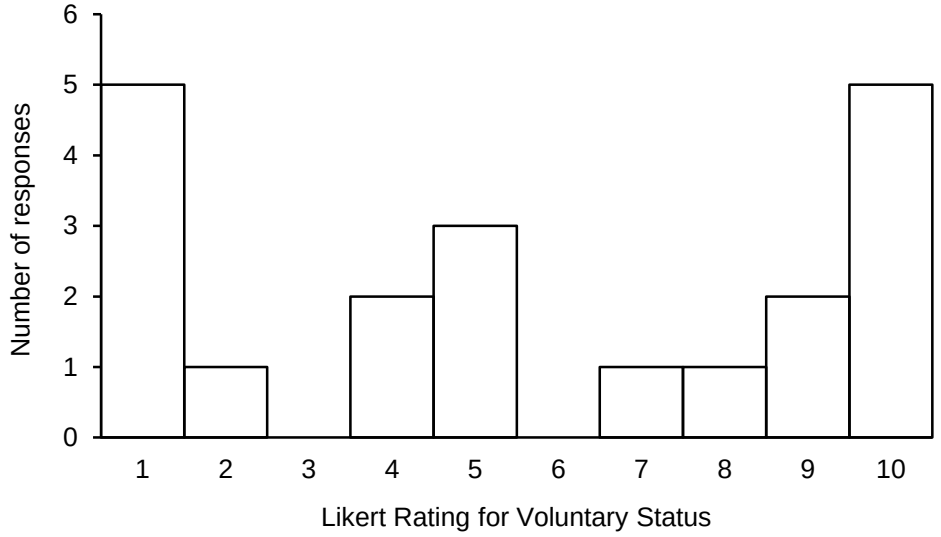
Abbreviation: PID-5, Personality Inventory for the DSM-5.

*p < 0.01, two-tailed, significant once adjusted using Holm-Bonferroni post hoc to account for familywise error rates.

Voluntary Status

As can be seen in Figure 6, responses for whether participants believe they should be in hospital for treatment varied greatly, with 25% (*n* = 5) rating the minimum, and 25% rating the maximum (*M* = 5.65, *SD* = 3.65). It was not possible to analyse correlation between voluntary status and response to treatment and personality traits as the data did not meet parametric assumptions (the data was not linear or normally distributed) nor assumptions for non-parametric correlation analysis (i.e. Kendall's tau and Spearman correlation) as visual inspection of the scatterplots for the relationship between voluntary status and change on the HoNOS-secure and HCR-20^{V3} scales revealed that the data was not monotonic and therefore precluded the usefulness of the analysis. Given that the responses constituted direct responses rather than observed effects, it would not have been appropriate to transform the data into a monotonic spread. The spread of the data also did not allow for meaningful separation into groups for point bi-serial correlation.

Figure 6. *Frequency of Ratings for Voluntary Status (*N *= 20)*



Non-Significant Correlation Between Personality Traits and Treatment Outcome

As presented in the Empirical Paper Results section (p. 89), while no significant correlations were found between personality traits and treatment outcomes on the HoNOS-secure and HCR-20^{V3}, several weak associations were seen as well as one moderate association. This is of note, as the available sample size could only detect correlations larger than .6. In particular, one association was close to attaining significance, and was the sole moderate association. Antagonism had a moderate negative correlation with change on the HCR-20^{V3} Risk scale (τ_b = -.309, p = .055), suggesting that patients with greater Antagonism showed less change in risk factors. This fits with the findings of Miller and Lynam (2001), that Agreeableness (from the five-factor model [FFM]; Costa & McCrae, 1990) was negatively correlated with antisocial behaviours (which would correspond to a positive correlation with Antagonism, as seen in Table 13, p. 71).

Chapter 7: Discussion and Critical Evaluation

This chapter provides a discussion of the Additional Results from the Empirical Paper, presented in the previous chapter, as well as building on the Discussion sections of the Systematic Review and Empirical Paper, and the Extended Methodology chapter, to provide a discussion and critical evaluation of the thesis portfolio as a whole. Reflections on the research process are presented, as well as the theoretical and clinical implications of the findings, and recommendations for future directions in research.

Extended Discussion for Empirical Paper Additional Results

Associations Between Personality Traits

A significant positive correlation was seen between Detachment and Psychoticism. This is consistent with existing literature; whilst research into the DSM-5 model is still in its early stages, the FFM correlates for these two traits, Extraversion and Openness (inversely correlated, as seen in Table 13, p. 71), have consistently been found to be significantly associated (e.g. Aluja et al., 2002; Costa & McCrae, 1992; Zuckerman et al., 1993). Researchers have suggested that this is in fact due to the two traits "sharing an important amount of common variance, suggesting that these two dimensions are not independent" (Aluja et al., 2003, p. 672).

Voluntary status

As explained in the Methods and Discussion sections of the Empirical Paper (p. 84 and p. 95), it was not possible to analyse the relationship between participants' agreement with their need for treatment and their outcomes, nor any relationship with personality traits, due to the small sample size. The chosen measure for this however had limitations. Single-item measures generally suffer from poor reliability and criterion validity when used for complex constructs (Sarstedt & Wilczynski, 2009). In this case, it is likely that the

question did not capture nuances of motivation and beliefs about treatment. For example, it is possible that individuals may feel that they do need treatment but not in hospital, or that the treatment they are receiving is not the right one. The question could also be interpreted as agreement with a custodial sentence or involuntary detention under the MHA. Additionally, it is impossible to separate confounding variables such as individuals' affect whilst responding. For example, their response could be influenced by factors such as recent events and interpersonal relations. Therefore, this measure likely did not adequately capture participants' motivation, which is a factor that relates to "the competing demands of therapy rehabilitation and security" (Hodge and Renwick, 2002).

In addition, the small sample size prevented analysis of the relationship between participants' level of security and their motivation and treatment outcomes. Level of security has been postulated to be relevant for motivation and engagement (e.g. Long et al., 2011). In the *good lives model*, McMurran and Ward (2004) suggest that having a greater proportion of treatment programme elements that build skills that can facilitate the achievement of patients' goals, rather than focus primarily on risk management, will maximise motivation for change and satisfaction with the treatment. Accordingly, the shift in this balance created by different levels of security (i.e. more risk management required in high compared to medium and low security levels, respectively), may correspond to increased motivation and satisfaction (Long et al., 2011).

Critical Evaluation

The strengths and limitations of the methodology used in the Systematic Review and the Empirical Paper are evaluated in their respective Discussion sections (p. 42 and p. 90, respectively). Additionally, both the planned and alternative methodology employed for the Empirical Paper (due to recruitment difficulties) are critically evaluated in the Extended Methodology chapter (p. 107), and therefore will not be replicated here. Overall, the

reliability and interpretation of the findings of the two studies is limited with regards to understanding the role that personality traits have in the outcomes of psychological interventions, as well as outcomes of multimodal treatment in forensic mental health services. Nevertheless, the particulars of their findings are important, with regards to their theoretical, clinical and ethical implications. Elements of the chosen methodologies, as well as possible alternatives, will be discussed alongside these sections, with suggestions for required future research approaches.

Systematic Review Line of Enquiry and Approach

The approach employed in the Systematic Review was robust in systematically identifying, assessing and synthesising the available evidence base, using a clearly defined set of inclusion criteria. As a result, few studies were identified, which is likely the result of a limited amount of research available into predictors of outcomes of empirically supported (in this case recommended by the National Institute for Health and Care Excellence [NICE] guidelines) psychological interventions, specifically looking at personality traits. Therefore, in order to continue to learn about the role of client-specific idiosyncratic factors such as personality traits in the course of treatment, an alternative methodology may be recommended. Realist synthesis (Pawson et al., 2005) is an alternative to meta-analysis and narrative synthesis of systematic reviews, originally presented for use in "complex social interventions which act on complex social systems". It may also be useful for psychological interventions, when seen as complex processes, where the mechanism of change relies on many co-variables, stemming from clients, therapists, therapeutic framework/intervention and context (as explored in the Introduction chapter, p. 10). It aims to distil "what works for whom, in what circumstances, in what respects and how" (Pawson et al., 2005, p. 21). To do this, researchers (a) make explicit "the underlying assumptions about how an intervention is meant to work and what impacts it is expected to have" (p. 21), (b) identify

empirical evidence for this framework, and (c) "focus on explaining the relationship between the context in which the intervention is applied, the mechanisms by which it works and the outcomes which are produced" (p. 21). This approach would be useful in such a complex area, with numerous possible influences, from both therapeutic framework-specific and non-therapeutic framework specific factors, was well as procedural elements. Realist synthesis has also been recommended for use in research into treatment effectiveness in FMHS. Hockenhull et al. (2015) reviewed the sample of included studies from two systematic reviews into interventions to reduce or prevent interpersonal violence. They found that the studies were too heterogeneous to allow meaningful synthesis, even by division into distinct groups. Their conclusion was that either a "major topic prioritization exercise" (p. 18) is needed to focus research, or to employ a realist synthesis approach, to understand "what works, for whom, and in what context" (p. 18).

Theoretical Implications

The Role of Personality Traits in Predicting the Course and Outcome of Treatment

The Systematic Review and Empirical Paper were both unable to find evidence of a significant predictor role for FFM personality traits in treatment outcomes neither from psychological therapies; nor a significant correlation with treatment outcomes in FMHS. However, limitations in both studies impacted the reliability of these findings (as discussed in both articles' Discussion sections), mainly through a distinct sparsity of available studies for the Systematic Review, and a lack of significant treatment outcomes in the Empirical Paper. It is not possible therefore to conclude whether personality traits do have a significant role in determining engagement and outcome from treatment. However, a further question arises in this field of research, which affects the study of this relationship—the theoretical construct of personality, and whether personality traits are stable.

The Stability of Personality Traits. There is substantial longitudinal evidence that traits change naturally over the life span, related to changes in individuals' lives, which has been consistent across a number of studies (e.g. Roberts et al., 2006; Specht et al., 2011; Terracciano et al., 2005). Researchers have shown that during the period of adolescence, when people become more aware of social judgement, and go through a period of increased connection with peers, as well as exploration of their identity and place in the world, adolescents have higher Neuroticism, Extraversion and Openness. At the same time, with a combination of developing frontal lobe structures and corresponding impulse control, as well as hormonal changes, they can be more critical of others, struggle to understand consequences and seek instant gratification, with corresponding lower Agreeableness and Conscientiousness than that of adults. Extraversion and Openness then decline over the lifespan, whilst Agreeableness increases. Conscientiousness however increases from adolescence to early adulthood and then decreases again into later adulthood, whilst Neuroticism has been seen to increase in middle age and then decline in older age, as older adults become less afraid of social evaluation and become more inclined to defend their beliefs (Roberts et al., 2006; Terracciano et al., 2005). This pattern has been seen across cultures (Terracciano & McCrae, 2006).

The stability of people's personality traits, or their propensity for change due to outside experiences, has been long debated. Some researchers believe that traits are amenable to change, and have explored them as an outcome of therapy, where studies have shown a significant change in reported traits post-treatment (Roberts et al., 2017). A possible explanation for these changes could lie in the nature of the methods for measuring personality. The most common method for measuring personality traits is using self-report questionnaires. Whilst research has shown that individuals experiencing clinical disorders such as depression tend to display higher levels of Neuroticism, it has also been shown that individuals experiencing a major depressive episode think of themselves more negatively,

so are more likely to answer a personality measure in a way that will make them score highly in more "undesirable" or maladaptive traits than they actually have (Bagby et al., 2008). If they are thinking of their actions in recent times, their answers may be more about their symptomology than their more pervasive personality traits (Hirschfeld et al., 1983). Furthermore, the common designs for intervention studies may also pose challenges to the interpretation of findings—as personality is measured at pre-treatment (whilst actively experiencing symptomology), the change following therapy may be state-dependent; reflecting change in the disorder rather than a change in their traits (Du et al., 2002).

On the other side of the argument, personality traits are considered a temporally stable construct (McCrae & Costa, 1996). Proponents of this argue that environmental effects on personality traits have seldom been replicable (e.g. Bouchard & Loehlin, 2001; Neyer & Asendorpf, 2001). The original authors of the FFM wrote that the debate is misrepresented, as "stable does not mean immutable" (Costa & McCrae, 2006). They agree with findings that changes occur with age, and have posed that this may occur due to either environmental influences common to all cultures or biologically based intrinsic maturation, and they believe the later has more credence (p. 27). In their *five-factor theory of personality*, built upon the growing evidence base into the possible mechanism of personality based on the use of their instruments (NEO Personality Inventory – Revised, and NEO Five-Factor Inventory; Costa and McCrae, 1992) across many countries, McCrae and Costa (1999) posit that there are distinct parts to personality. The FFM are *basic tendencies*, which are "abstract psychological potentials" (p. 143) that are "directly accessible neither to public observation nor private introspection" (p. 143). They are biologically based and do not change, whilst *characteristic adaptations* (the concrete manifestations of the basic tendencies; e.g. behaviour, personal strivings and attitudes) are influenced by the basic tendencies as well as dynamic processes and external influencers. Therefore, it may be

these characteristic adaptations that are inadvertently captured and discussed when measuring and exploring personality traits.

Challenges to studying this state versus trait construct of personality due to empirical research designs and measurement methods, limit the reliability of both sides to the argument. Moreover, the framework chosen impacts the available evidence base (both empirical and review). For example, both studies presented in this thesis adopted the view that traits are stable; in the Empirical Paper this meant that a cross-sectional design was used, and personality was measured only post-treatment, which would not capture any change which may have occurred in personality throughout (or as a result of) treatment. Similarly, in the Systematic Review, all identified studies considered only baseline trait scores to correlate with outcomes, without measuring traits post-treatment. As with the Empirical Paper, it is not possible to know if change in personality traits occurred. It could be said that this impedes meaningful interpretation of treatment predictor findings, since we cannot be sure that the assessed traits were temporally stable constructs rather than, for example, symptom-related, and therefore what these findings signify. Whilst it was not possible to compare pre- and post-treatment personality traits, as the service does not routinely use any personality measures for all patients, a possible alternative could have been to collect personality measures at two time points, with a substantial period in between (e.g. 6-12 months or as long as possible within research-period constraints). However, given the difficulties with recruitment outlined in the Extended Methodology chapter (p. 110), this may not be feasible.

It is important therefore to continue to understand more about the function of personality, to be able to learn more about the mechanisms of clinical disorders as well as treatment for them. Future research may benefit from administering personality measures at multiple time points to view whether personality traits have changed alongside other outcomes, and balancing this with a consideration of whether baseline levels of traits

predict outcomes (i.e. if personality traits have changed then this would not be a sound investigation). Researchers are encouraged not to adopt one side of the state versus trait argument exclusively.

Clinical Implications of the Empirical Paper

Treatment Outcomes in FMHS

As described in the Bridging Chapter (p. 66) and Empirical Paper Introduction and Discussion sections (p. 75 and p. 91, respectively), outcomes of treatment in U.K. FMHS are generally poor, with high levels of recidivism and re-admission (e.g. Coid et al., 2007, Davies et al., 2007). The empirical paper found a lack of significant change in clinical and risk outcomes following a minimum of 18 months in FMHS. This raises important clinical and ethical implications, which are discussed in the Empirical Paper Discussion section (p. 97). Treatment in FMHS involves a deprivation of liberty (see Empirical Paper Introduction section p. 75), deemed necessary for the wellbeing and safety of patients and the public, and is intended to be time bound, with the aim to improve the patient's symptomology, distress and risk to themselves and others. The findings of the present study, and several other studies (some of which have been discussed in this thesis portfolio, e.g. Coid et al., 2007; Davies et al., 2007; Longdon et al., 2018), where treatment effectiveness has not been established, must therefore be considered seriously. The potential implications include inappropriate deprivation of liberty (as it does not fulfil the intended purpose), and ineffective use of public funds. Creating a national database of routinely collected outcomes measures could allow for organising large-scale evaluation of FMHS, similarly to the U.K. Improving Access to Psychological Therapies (IAPT) service, to allow for the establishment of a robust evidence base and inform best practice (and areas of further research).

Measuring Outcome of Treatment in FMHS

As well as the findings for outcomes of treatment, the tools used to measure and evaluate change are important and a key issue in FMHS which was highlighted by the Empirical Paper.

There are a number of different assessed outcomes in mental health services (including FMHS), which include symptom reduction, patient-defined outcomes (e.g. goals or subjective experience), improvement in Quality of Life (i.e. adaptive functioning), intermediate events or goals based on the chosen intervention's theoretical framework and therapist's assumptions, possible negative outcomes (or unintended consequences), and health-economic outcomes (Cuijpers, 2019). Most clinical research in FMHS prioritises symptom reduction, and behavioural risk-related outcomes.

The Empirical Paper sought to explore the relationship between DSM-5 personality traits and changes in a broad range of clinical outcomes. Whilst deciding which treatment outcome measures to use for the study, the list of outcomes considered pertinent to the needs of the forensic population in Shinkfield and Ogloff's (2014) review of routine outcome measures (ROMs) for forensic mental health services (FMHS) was considered. This includes domains of *functioning (clinical/psychosocial), recovery, risk,* and *placement pathway*, as shown in Table 19.

Local clinicians from the planned recruitment services were contacted to ascertain which ROMs, that cover outcomes from these domains, are routinely administered and completed for most patients in both services. It was found that only the HoNOS-secure and HCR-20^{V3} were completed as standard; the HoNOS-secure is commissioned (NHS England; 2014, 2018a, 2018b), and HCR-20^{V3} is recommended (Department of Health and Social Care, 2009) for use in FMHS. Neither measure covers all the domains listed in Table 19, though this is also the case for all ROMs reviewed by Shinkfield and Ogloff (2014). Despite this, the HoNOS-secure is one of the ROMs that they recommended for use in FMHS, as it was found

Table 21. *Treatment Needs for the Forensic Mental Health Services Population*

Domain	Treatment Needs
Functioning (clinical/psychosocial)	Psychiatric symptoms Psychosocial Relationships (including social withdrawal) Personality Activities of Daily Living Cognitive Insight (Mental health, offending) Physical health Vocational (including activities)
Recovery	Client perspective of Recovery Service perspective of Recovery
Risk	to SELF to OTHERS of SUBSTANCE USE of RE-OFFENDING – Violence – Sexual violence – General recidivism
Placement Pathway	Level of security required (i.e., low, medium or high) Whether current security placement is appropriate Legislative requirements Purpose of treatment (mental health, offending)

Note. Adapted from "A review and analysis of routine outcome measures for forensic mental health services" by G. Shinkfield, and J. Ogloff, 2014, *International Journal of Forensic Mental Health, 13*(3), 256. Copyright 2014 by Informa UK Limited.

to cover most of the domains, be brief and easy to use, provide quantitative data, have a research base, have established psychometric properties and be applicable for both inpatient and outpatient FMHS. The previous version of the HCR-20 (Version 2, Webster et al., 1997) was not one of the recommended tools, due to covering a limited range of functioning domains, which is to be expected from a specific assessment tool for violence, as well as not being brief or easy to use as it requires formal training and experience to

administer, and consideration of a large volume of data from numerous sources. Nevertheless, it is a well-established measure for the assessment and risk-management planning for violence and provides a good overview of risk factors, which were a focus for the study. Therefore, it was decided that the HCR-20^{V3} would also be used to provide as much clinical data as possible.

This emphasised some of the challenges of researching treatment effectiveness in FMHS; the breadth of relevant outcomes and their intricate relationship, and the sparsity of standardised measurement of these many outcomes. Indeed, one of the senior local clinicians expressed that this discussion had led her to believe that the ROMs routinely collected by the service are not sufficient and they would consider undertaking a service evaluation project to look at which measures could be added to their ROMs to provide the most useful information for ongoing evaluation, treatment-planning and clinical decision-making. It is interesting to note that Personality is one of the treatment needs (i.e. areas subject to change in treatment) in Shinkfield and Ogloff's (2014) review, positing their position in the debate about the constructs of personality, discussed above. It is evident that gathering routine outcome measurement in forensic services is challenging, and the measures used focus primarily on the treatment needs identified by stakeholders. Focusing research on this however may not capture change that is meaningful, in individuals with complex difficulties, which stem from many sources. In recent years research has turned to the meaning of success in treatment.

Recovery Focus. When Livingston (2016) examined the complexity of the idea of "success" in FMHS treatment from the perspectives of patients and service providers, they found that collectively six themes arose: normal life, independent life, compliant life, healthy life, meaningful life, and progressing life. This shows that people who provide or use FMH services emphasize a broad range of processes and outcomes, apart from public safety, when they think about success. FMHS in the UK are currently using a recovery and

outcomes-based approach called *My Shared Pathway* (part of the Department of Health Quality, Innovation, Productivity and Prevention Programme for Secure Services), which is completed by patients, supported by their key workers. The seven outcome areas are; My mental health recovery; Stopping my problem behaviours; Getting insight; Recovery from drug and alcohol problems; Making feasible plans; Staying healthy; My life skills; and My relationships. This measure of subjective experience of progress is central to the evaluation of treatment and any related decision-making, showing how key these elements are as outcomes of treatment, though not captured by the HoNOS-secure and HCR-20^{V3}. It stands to reason that research into treatment effectiveness should include recovery focused outcomes, to build a holistic picture of the outcomes, alongside behavioural, symptom-reduction and health-economic considerations.

Future Research isnto Outcomes of Treatment in FMHS

The need to better evaluate treatment effectiveness in FMHS remains. Large recruited sample sizes are needed and various areas of outcomes should be explored along with behavioural outcomes, including: the need for clinical intervention and risk management, specific established measures of symptomatology relevant to each patient (e.g. a measure of psychotic symptoms for patients who have diagnoses of Psychotic Disorders and are receiving interventions for this), motivation, satisfaction with treatment, and recovery-focussed patient-identified outcomes. Both clinician- and patient-rated measures should be used to evaluate subjective improvement (and therapeutic alliance). In addition, utilising a large sample size spanning different levels of security would allow for comparison between these settings and help to understand how environmental and procedural differences impact change, further shedding light on the process of change and recovery following treatment in FMHS. Finally, establishing a national database of ROMs

from FMHS would overcome some of the challenges in attaining a substantial sample size, to allow for adequately powered analysis, as well as greater external validity.

Conclusion

As stated in the Introduction chapter, the studies in this thesis portfolio sought to examine whether personality is a significant idiosyncratic predictive factor for outcomes following psychological intervention and treatment in FMHS, to consider whether there is strong evidence to suggest that it may play a role in the mechanism of change in psychological intervention. It is not possible to meaningfully interpret the predictive value of personality traits for outcomes of both psychological intervention and treatment from the findings of the present studies.

As evidenced by the findings of the Systematic Review, it can be difficult to disentangle personality from many other variables which may have an impact on treatment outcomes. Therefore, one may ask whether there remains a rationale to continue exploring the relationship between personality and treatment outcomes, and the role that personality may play in the mechanism of change. It is important to understand the mechanism of change in psychological intervention to help improve outcomes for individuals, by choosing the correct treatments for them, making necessary adaptions, as well as making improvement to the treatments themselves if necessary. The lack of findings for predictive value of personality traits for outcomes, coupled with findings that other idiosyncratic variables were significant predictors whenever also examined, indicates that personality would not have a central role in the mechanism of action and predicting outcome on its own. However, it is likely to have a mediating role in the development of other factors which may be more central to the mechanism of change, such as therapeutic alliance, which has been shown to significantly predict outcome of psychological interventions (Martin et al., 2000).

The study of potential individual predictors of change is not bringing the research community closer to understanding the mechanism of change in psychological therapy or treatment in FMHS, especially through a body of research that is very heterogenous. To meaningfully undertake research into the mechanism of change it is important to do so top down – by establishing a hypothesised theory for the mechanism of change which can be tested. Arguably, understanding the exact role of each individual contributing factor is not feasible, nor as important, as gaining empirical support and therefore understanding of the interplay of a multitude of factors. Indeed, individuals do not represent delineated extremes of factors, rather a complex embodiment of factors, affected by their biopsychosocial experience.

Therefore, using a method of creating conceptual understanding of the mechanism of intervention, such as realist synthesis, would allow the research community to build a unified theory of mechanism of change in psychological intervention, including relevant common factors, both for psychological interventions, and multimodal treatment in FMHS. This would bring greater consensus and orient research to empirically test the proposed mechanisms, ideally by examining their mediator roles (which would show how their presence impacted outcome over the course of treatment). Previous attempts to synthesise available research (e.g. Lemmens et al., 2016) or predictive or mediating factors, including the present systematic review, have shown that the evidence base is very heterogenous. Consensus is needed for research methods, including design, analysis methods and standardisation of assessment instruments. Measurement of potential variables should be done at baseline, mid-treatment, and post-treatment to allow for reliable and meaningful interpretation of the relationship between factors and therefore their mechanism.

In addition, research into the mechanisms of change in individual therapies has tested the role of theoretical constructs, rather than actual techniques (Petrik & Cronin, 2014). It is important to establish ways to measure actual delivered techniques rather than

hypothesised theoretical constructs. This is particularly important for research comparing the effectiveness of interventions; while they may vary by philosophical construct, the therapeutic techniques delivered may not contrast in practice. This would be important to understand when interpreting and testing the interventions' mechanisms of action, as well as allowing to target change and improvement in interventions, by understanding the value of individual techniques.

If personality traits, amongst other factors, were found to have a significant mediator role in the mechanism of action for psychological interventions, a potential risk could be that some clinicians may erroneously interpret that individuals with certain personality profiles, or other measured factors, would not benefit from certain therapies, and therefore restrict access to those interventions. This should not occur without explicit evidence that certain therapies may cause specific harm or poor outcomes for individuals with specific profiles, which the current evidence base, and employed methodologies, do not provide, and clinicians would have to remember that research provides evidence of statistical links between factors, whilst a complex mechanism of multiple factors will be relevant, which we do not yet understand. Furthermore, clinical judgement (following professional guidelines) still needs to be applied to best meet the particular treatment needs of individuals (whose profiles will be individual), as well as, most importantly, clients' own preference. Instead, as with the current system of clinical application of evidence base (e.g. NICE Guidelines), gaining further understanding of what work best for whom and when, should provide support in treatment planning for clinicians. This would help them consider what measured factors (including personality traits) may affect individuals' response to treatment, allowing them to make adaptations to facilitate clients' uptake and improvement. For example, providing increased structure and considering practical support for homework completion for individuals with lower levels of certain facets of Conscientiousness.

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Appendix

Appendix A. Systematic Review Journal Formatting Guidelines

Personality and Individual Differences – Guide for Authors

Relevant extract retrieved from: https://www.elsevier.com/journals/personality-and-individual-differences/0191-8869/guide-for-authors

Additional Information: Article Types and Length

Manuscripts must be submitted using double-spacing including line and page numbers. These should not exceed the word count provided below. The word count includes: title, abstract, full text, references and footnotes/acknowledgements. Tables and figures are not considered in the word count but only those essential to the study should be included in the body of the paper; all other tables, etc. should be placed as supplemental material.

Lengthier reviews, theoretical and expository articles, and meta-analyses: Articles of exceptional quality and importance will be considered for publication and typically be no more than 10,000 words. Longer papers may be submitted and will be considered at the discretion of the editors; in your covering letter, please justify why you are requesting greater than 10,000 word count.

Review articles: These papers are typically in the 5,000-10,000 word range and provide a critical analysis of important and new topics related to personality and individual differences. Please select Review Article from the dropdown menu upon submission.

Single study research articles: Single study research articles should not exceed 5000 words.

PREPARATION

Reporting Requirements:

All empirical submissions are required to: (a) provide sufficient detail on the samples studied and the population from which they constitute a random or convenience sample; (b) compile basic descriptive statistics of all variables of relevance used in the study (e.g., indices of central tendency and dispersion; reliability coefficients for scale scores); and (c) report effect sizes for focal tests (correlations r and regression weights beta count as effect size measures). In addition to these required reporting practices, we encourage but do not strictly require (a) providing 95% CIs around focal effect size estimates, (b) detailing any a priori power considerations made that led to the final sample size, and (c) whether and where any data, materials, code or syntax, or additional analyses of the reported studies can be found openly accessible; authors may include such information as “supplemental information” for inclusion in the online publication.

Power:

For empirical studies, we recommend but do not strictly require at least 80% power for focal statistical tests.

References

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the article number or pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

Formatting requirements

There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions.

If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes.

Divide the article into clearly defined sections.

Figures and tables embedded in text

Please ensure the figures and the tables included in the single file are placed next to the relevant text in the manuscript, rather than at the bottom or the top of the file. The corresponding caption should be placed directly below the figure or table.

Article structure

Subdivision - numbered sections

Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods

Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

Theory/calculation

A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

Results

Results should be clear and concise.

Discussion

This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

• **Title**. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.

• **Author names and affiliations**. Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

• **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.

• **Present/permanent address**. If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author

actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Highlights

Highlights are optional yet highly encouraged for this journal, as they increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.

Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

Abstract

An abstract, not exceeding 200 words should constitute the first page of the article.

Keywords

Immediately after the abstract, provide a maximum of 8 keywords, reflecting the essential topics of the article, which may be taken from both the title and the text. These keywords will be used for information retrieval systems and indexing purposes.

Abbreviations

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Formatting of funding sources

List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article.

Figure captions

Ensure that each illustration has a caption. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables

Tables and figures should be constructed so as to be intelligible without reference to this text, each table and column being provided with a heading. Tables. Captions should be typewritten together on a separate sheet. The same information should not be reproduced in both tables and figures.

References

References should be prepared using the Publication Manual of the American Psychological Association for style. They should be placed on a separate sheet at the end of the paper, double-spaced, in alphabetical order.

References should be quoted in the text by giving the author's name, followed by the year, e.g. (Hubbard & Ramachandran, 2001) or Hubbard and Ramachandran (2001).

For *more than two authors*, all names are given when first cited, but when subsequently referred to, the name of the first author is given followed by the words et al., as for example--First citation: Reuter, Roth, Holve and Hennig (2006) but subsequently, Reuter et al. (2006).

References to journals should include the author's name followed by initials, year, paper title, journal title, volume number and page numbers, e.g.

> [1] Nettle, D. (2006). Schizotypy and mental health amongst poets, visual artists, and mathematicians. *Journal of Research in Personality, 40*, 876-890.

References to books should include the author's name followed by initials, year, paper title, editors, book title, volume and page numbers, place of publication, publisher, e.g.

> Fitzgerald, M. (2004). Autism and creativity: Is there a link between autism in men and exceptional ability? Hove and New York: Brunner-Routledge.

Or

Thompson, J. (2006). The Mad, the 'Brut', the 'Primitive' and the Modern. A discursive history. In F. Andrada, E. Martin, & A. Spira (Eds.), Inner worlds outside (pp. 51-69). Dublin: Irish Museum of Modern Art.

Web references

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references should be listed separately after the reference list under a different heading - Web References.

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Data references

This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

Reference formatting

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the article number or pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct. If you do wish to format the references yourself they should be arranged according to the following examples:

Journal abbreviations source

Journal names should be abbreviated according to the List of Title Word Abbreviations.

Appendix B. Adapted Downs and Black (1998) Checklist for Measuring Study Quality

Authors & Year:		
Reporting		**Yes = 1, No = 2**
1.	**Is the hypothesis/aim/objective of the study clearly described?**	
2.	**Are the main outcomes to be measured clearly described in the Introduction or Methods section?** If the main outcomes are first mentioned in the Results section, the question should be answered no.	
3.	**Are the characteristics of the patients included in the study clearly described?** In cohort studies and trials, inclusion and/or exclusion criteria should be given. In case-control studies, a case-definition and the source for controls should be given.	
4.	**Are the interventions of interest clearly described?** Treatments and placebo (where relevant) that are to be compared should be clearly described.	
5.	**Are the distributions of principal confounders in each group of subjects to be compared clearly described?** **** Only this question: Yes = 2, Partial = 1, No = 0*** A list of principal confounders is provided.	*
6.	**Are the main findings of the study clearly described?** Simple outcome data (including denominators and numerators) should be reported for all major findings so that the reader can check the major analyses and conclusions. (This question does not cover statistical tests which are considered below).	
7.	**Does the study provide estimates of the random variability in the data for the main outcomes?** In non normally distributed data the inter-quartile range of results should be reported. In normally distributed data the standard error, standard deviation or confidence intervals should be reported. If the distribution of the data is not described, it must be assumed that the estimates used were appropriate and the question should be answered yes.	
8.	**Have all important adverse events that may be a consequence of the intervention been reported?** This should be answered yes if the study demonstrates that there was a comprehensive attempt to measure adverse events. (A list of possible adverse events is provided).	
9.	**Have the characteristics of patients lost to follow-up been described?** This should be answered yes where there were no losses to follow-up or where losses to follow-up were so small that findings would be unaffected by their inclusion. This should be answered no where a study does not report the number of patients lost to follow-up.	
10.	**Have actual probability values been reported (e.g. 0.035 rather than <0.05) for the main outcomes, except where the probability value is less than 0.001?**	
	Total:	
External Validity		**Yes = 1, No/Unable To Determine = 0**
11.	**Were the subjects asked to participate in the study representative of the entire population from which they were recruited?** The study must identify the source population for patients and describe how the patients were selected. Patients would be representative if they comprised the entire source population, an unselected sample of consecutive patients, or a random sample. Random sampling is only feasible where a list of all members of the relevant population exists. Where a study does not report the proportion of the source population from which the patients are derived, the question should be answered as unable to determine.	

12.	**Were those subjects who were prepared to participate representative of the entire population from which they were recruited?** The proportion of those asked who agreed should be stated. Validation that the sample was representative would include demonstrating that the distribution of the main confounding factors was the same in the study sample and the source population.	
13.	**Were the staff, places, and facilities where the patients were treated, representative of the treatment the majority of patients receive?** For the question to be answered yes the study should demonstrate that the intervention was representative of that in use in the source population. The question should be answered no if, for example, the intervention was undertaken in a specialist centre unrepresentative of the hospitals most of the source population would attend.	
	Total:	
Internal Validity - Bias		**Yes = 1, No/UTD = 0**
14.	**Was an attempt made to blind study subjects to the intervention they have received?** For studies where the patients would have no way of knowing which intervention they received, this should be answered yes.	
15.	**Was an attempt made to blind those measuring the main outcomes of the intervention?**	
16.	**If any of the results of the study were based on "data dredging", was this made clear?** Any analyses that had not been planned at the outset of the study should be clearly indicated. If no retrospective unplanned subgroup analyses were reported, then answer yes.	
17.	**In trials and cohort studies, do the analyses adjust for different lengths of follow-up of patients, or in case-control studies, is the time period between the intervention and outcome the same for cases and controls?** Where follow-up was the same for all study patients the answer should yes. If different lengths of follow-up were adjusted for by, for example, survival analysis the answer should be yes. Studies where differences in follow-up are ignored should be answered no.	
18.	**Were the statistical tests used to assess the main outcomes appropriate?** The statistical techniques used must be appropriate to the data. For example nonparametric methods should be used for small sample sizes. Where little statistical analysis has been undertaken but where there is no evidence of bias, the question should be answered yes. If the distribution of the data (normal or not) is not described it must be assumed that the estimates used were appropriate and the question should be answered yes.	
19.	**Was compliance with the intervention/s reliable?** Where there was non compliance with the allocated treatment or where there was contamination of one group, the question should be answered no. For studies where the effect of any misclassification was likely to bias any association to the null, the question should be answered yes.	
20.	**Were the main outcome measures used accurate (valid and reliable)?** For studies where the outcome measures are clearly described, the question should be answered yes. For studies which refer to other work or that demonstrates the outcome measures are accurate, the question should be answered as yes.	
	Total:	
Internal validity - confounding (selection bias)		**Yes = 1, No/UTD = 0**
21.	**Were the patients in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited from the same population?**	

	For example, patients for all comparison groups should be selected from the same hospital. The question should be answered unable to determine for cohort and case control studies where there is no information concerning the source of patients included in the study.	
22.	**Were study subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited over the same period of time?** For a study which does not specify the time period over which patients were recruited, the question should be answered as unable to determine.	
23.	**Were study subjects randomised to intervention groups?** Studies which state that subjects were randomised should be answered yes except where method of randomisation would not ensure random allocation. For example alternate allocation would score no because it is predictable.	
24.	**Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable?** All non-randomised studies should be answered no. If assignment was concealed from patients but not from staff, it should be answered no.	
25.	**Was there adequate adjustment for confounding in the analyses from which the main findings were drawn?** This question should be answered no for trials if: the main conclusions of the study were based on analyses of treatment rather than intention to treat; the distribution of known confounders in the different treatment groups was not described; or the distribution of known confounders differed between the treatment groups but was not taken into account in the analyses. In non-randomised studies if the effect of the main confounders was not investigated or confounding was demonstrated but no adjustment was made in the final analyses the question should be answered as no.	
26.	**Were losses of patients to follow-up taken into account?** If the numbers of patients lost to follow-up are not reported, the question should be answered as unable to determine. If the proportion lost to follow-up was too small to affect the main findings, the question should be answered yes.	
	Total:	0
Power		**Yes = 1, No/UTD = 0**
27.	**Did the study report having conducted a *power* analysis?** Sample sizes have been calculated to detect a difference of x% and y%.	
28.	**If *yes* - Did the study have sufficient power to detect a clinically important effect?**	
	Total:	0
	GRAND TOTAL:	0

Appendix C. Empirical Paper Journal Formatting Guidelines

Journal of Forensic Psychology Research and Practice - 'Instructions for Authors'

Relevant information retrieved from: https://www.tandfonline.com/action/authorSubmission?show=instructions&journalCode=wfpp21

Preparing Your Paper

Articles, Commentary, Practice Update, Case Report, and Ethics, Psychology and Public Policy

Should be written with the following elements in the following order: title page; abstract; keywords; main text introduction, materials and methods, results, discussion; acknowledgments; declaration of interest statement; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figures; figure captions (as a list)

Style Guidelines

Please refer to these quick style guidelines when preparing your paper, rather than any published articles or a sample copy.

Please use American spelling style consistently throughout your manuscript.

Please use double quotation marks, except where "a quotation is 'within' a quotation". Please note that long quotations should be indented without quotation marks.

Formatting and Templates

Papers may be submitted in Word or LaTeX formats. Figures should be saved separately from the text. To assist you in preparing your paper, we provide formatting template(s).

Word templates are available for this journal. Please save the template to your hard drive, ready for use.

If you are not able to use the template via the links (or if you have any other template queries) please contact us here.

References

Please use this reference guide when preparing your paper.

[Link: https://www.tandf.co.uk//journals/authors/style/reference/tf_APA.pdf]

Checklist: What to Include

Author details. All authors of a manuscript should include their full name and affiliation on the cover page of the manuscript. Where available, please also include ORCiDs and social media handles (Facebook, Twitter or LinkedIn). One author will need to be identified as the corresponding author, with their email address normally displayed in the article PDF

(depending on the journal) and the online article. Authors' affiliations are the affiliations where the research was conducted. If any of the named co-authors moves affiliation during the peer-review process, the new affiliation can be given as a footnote. Please note that no changes to affiliation can be made after your paper is accepted.

Funding details. Please supply all details required by your funding and grant-awarding bodies as follows:
For single agency grants
This work was supported by the [Funding Agency] under Grant [number xxxx].
For multiple agency grants
This work was supported by the [Funding Agency #1] under Grant [number xxxx]; [Funding Agency #2] under Grant [number xxxx]; and [Funding Agency #3] under Grant [number xxxx].

Disclosure statement. This is to acknowledge any financial interest or benefit that has arisen from the direct applications of your research. Further guidance on what is a conflict of interest and how to disclose it.

Figures. Figures should be high quality (1200 dpi for line art, 600 dpi for grayscale and 300 dpi for color, at the correct size). Figures should be supplied in one of our preferred file formats: EPS, PDF, PS, JPEG, TIFF, or Microsoft Word (DOC or DOCX) files are acceptable for figures that have been drawn in Word. For information relating to other file types, please consult our Submission of electronic artwork document.

Tables. Tables should present new information rather than duplicating what is in the text. Readers should be able to interpret the table without reference to the text. Please supply editable files.

Equations. If you are submitting your manuscript as a Word document, please ensure that equations are editable. More information about mathematical symbols and equations.

Units. Please use SI units (non-italicized).

Using Third-Party Material in your Paper

You must obtain the necessary permission to reuse third-party material in your article. The use of short extracts of text and some other types of material is usually permitted, on a limited basis, for the purposes of criticism and review without securing formal permission. If you wish to include any material in your paper for which you do not hold copyright, and which is not covered by this informal agreement, you will need to obtain written permission from the copyright owner prior to submission. More information on requesting permission to reproduce work(s) under copyright.

Appendix D. Research Ethics Committee and Health Research Authority Letters

NHS
Health Research Authority

East Midlands - Leicester Central Research Ethics Committee
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

15 March 2018

Ms Alison Babitsky
Department of Clinical Psychology
University of East Anglia
Norwich Research Park, Norwich
NR4 7TJ

Dear Ms Babitsky

Study title:	**The relationship between DSM-5 dimensional personality traits and changes in dynamic clinical and risk factors in response to multimodal treatment in forensic services**
REC reference:	**18/EM/0035**
IRAS project ID:	**229977**

Thank you for your letter of 12 March 2018, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact hra.studyregistration@nhs.net outlining the reasons for your request.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

Confirming Ethical Approval

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Copies of advertisement materials for research participants [Advertisement poster]	1	26 February 2018
Covering letter on headed paper [Response to Provisional Opinion]	1	26 February 2018
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Sponsor letter and Insurance]	1	21 December 2017
GP/consultant information sheets or letters [Clinician Information letter]	2	26 February 2018
IRAS Application Form [IRAS_Form_08012018]		08 January 2018
Letter from sponsor [Sponsor letter and insurance]	1	21 December 2017
Participant consent form [Consent to Contact & Expression of Interest]	2	26 February 2018
Participant consent form [Consent form]	2	26 February 2018
Participant information sheet (PIS) [Participant Information Sheet]	2	26 February 2018
Research protocol or project proposal [Research Proposal]	2	26 February 2018
Summary CV for Chief Investigator (CI) [Chief Investigator CV]	1	06 December 2017
Summary CV for supervisor (student research) [Primary academic supervisor CV]	1	06 December 2017
Summary CV for supervisor (student research) [Secondary academic supervisor CV]	1	06 October 2017
Summary, synopsis or diagram (flowchart) of protocol in non technical language [Study flowchart]	1	06 December 2017
Validated questionnaire [Personality Inventory for DSM-5 (PID-5)]	1	06 December 2017
Validated questionnaire [HoNOS-secure]	1	06 December 2017

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators

- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:
http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

18/EM/0035	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project.

Yours sincerely

pp. 

Reverend Keith Lackenby
Chair

Email:nrescommittee.eastmidlands-leicestercentral@nhs.net

Copy to: *Tracy Moulton*
Dr Bonnie Teague, Norfolk and Suffolk NHS Foundation Trust (NSFT)

NHS
Health Research Authority

Ms Alison Babitsky
Department of Clinical Psychology
University of East Anglia
Norwich Research Park, Norwich
NR4 7TJ

Email: hra.approval@nhs.net

19 March 2018

Dear Ms Babitsky

Letter of HRA Approval

Study title:	**The relationship between DSM-5 dimensional personality traits and changes in dynamic clinical and risk factors in response to multimodal treatment in forensic services**
IRAS project ID:	**229977**
REC reference:	**18/EM/0035**
Sponsor	**University of East Anglia**

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further from the HRA.

How should I continue to work with participating NHS organisations in England?
You should now provide a copy of this letter to all participating NHS organisations in England, as well as any documentation that has been updated as a result of the assessment.

Following the arranging of capacity and capability, participating NHS organisations should **formally confirm** their capacity and capability to undertake the study. How this will be confirmed is detailed in the "*summary of HRA assessment*" section towards the end of this letter.

You should provide, if you have not already done so, detailed instructions to each organisation as to how you will notify them that research activities may commence at site following their confirmation of capacity and capability (e.g. provision by you of a 'green light' email, formal notification following a site initiation visit, activities may commence immediately following confirmation by participating organisation, etc.).

It is important that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details of the research management function for each organisation can be accessed here.

How should I work with participating NHS/HSC organisations in Northern Ireland, Scotland and Wales?
HRA Approval does not apply to NHS/HSC organisations within the devolved administrations of Northern Ireland, Scotland and Wales.

IRAS project ID	229977

If you indicated in your IRAS form that you do have participating organisations in one or more devolved administration, the HRA has sent the final document set and the study wide governance report (including this letter) to the coordinating centre of each participating nation. You should work with the relevant national coordinating functions to ensure any nation specific checks are complete, and with each site so that they are able to give management permission for the study to begin.

Please see IRAS Help for information on working with Northern Ireland, Scotland and Wales.

How should I work with participating non-NHS organisations?
HRA Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?
The document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics, and is updated in the light of changes in reporting expectations or procedures.

I am a participating NHS organisation in England. What should I do once I receive this letter?
You should work with the applicant and sponsor to complete any outstanding arrangements so you are able to confirm capacity and capability in line with the information provided in this letter.

The sponsor contact for this application is as follows:

Name: Alison Babitsky
Email:A.Babitsky@uea.ac.uk

Who should I contact for further information?
Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **229977**. Please quote this on all correspondence.

Yours sincerely,

Steph Blacklock
Senior Assessor

Email: hra.approval@nhs.net

Copy to: *Tracy Moulton, Sponsor Contact*
Dr Bonnie Teague, Norfolk and Suffolk NHS Foundation Trust (NSFT), Lead R&D Contact

Appendix E. Poster Advertising the Research Project

University of East Anglia

Norfolk and Suffolk NHS
NHS Foundation Trust

PRIORY

Would you like to answer a questionnaire about yourself and have a chance to win a £15 Amazon voucher?

A study is being run through the University of East Anglia to explore the link between people's personality and their response to treatment in forensic services.

The meeting would last 60 – 90 minutes. You would be asked to complete a questionnaire about how you act or feel in different situations.

Participants must be aged 18+, and have been in hospital for at least 18 months

Participants that take part in the study will be entered in a prize draw to win one of fifteen Amazon vouchers worth £15.

Alison Babitsky (Chief Investigator) will be coming soon to tell patients about the study and answer any questions you will have.

Speak to someone from the Psychology team for more information

Thank you for reading this!

Appendix F. Expression of Interest and Consent to Contact Form

University of East Anglia

Norwich Medical School
Postgraduate Research Office
Elizabeth Fry Building
University of East Anglia
Norwich
NR4 7TJ
E: alison.babitsky@nhs.net
T: 07804567684

IRAS Project ID: 229977

EXPRESSION OF INTEREST FORM

Title of Study: The relationship between personality and treatment effects in forensic services

Chief Investigator: Alison Babitsky

Please write your name if you are interested in taking part in this study. By writing your name you confirm that:

1. You have received the Participant Information Sheet for the study (version 2, dated February 26, 2018).

2. You give consent for the Chief Investigator to know your name and contact details.

3. I will check with your Psychologist or Responsible Clinician that you meet the criteria for the study. If you do, you will be offered a time for me to come and meet you to talk about the study and answer any questions you have. You will then decide if you want to take part.

Name	Signature	Date

Version 2 – February 26, 2018

Norfolk and Suffolk NHS
NHS Foundation Trust

PRIORY

Appendix G. Patient Information Sheet

Norwich Medical School
Postgraduate Research Office
Elizabeth Fry Building
University of East Anglia
Norwich
NR4 7TJ
E: a.babitsky@uea.ac.uk
T: 07804567684

IRAS Project ID: 229977

Participant Information Sheet

"The relationship between personality and treatment effects in forensic services."

I would like to invite you to take part in this study. Before you decide if you would like to take part please read this information sheet. It will tell you why the study is being done and what it will involve. Please feel free to talk to others about it if you wish, such as staff on your ward. If you would like to contact me to ask any questions or have more information please do so using the contact details above.

What is the study about?

This study is looking at peoples' personality and how they respond to treatment in hospital. Getting a better understanding of this will help future efforts to make treatment in hospital be as helpful as possible. It could also help hospitals choose which assessments are the most useful.

Why have I been asked to take part?

You have been asked to take part in this study because you are a patient in a secure hospital. This study is for people over the age of 18, who have been in hospital for at least 18 months.

Do I have to take part?

No, you do not have to take part. Taking part in this study is completely your choice. I am separate from the hospital and this research is not part of your treatment. If you choose not to take part, it will not affect your care in any way. If you choose to take part now, you may change your mind and withdraw at a later time.

What happens to me if I take part?

1. If you would like to take part you will put your name on a list to show that you are interested in taking part. Signing this will not mean that you have already agreed to take part.

2. I will check with your psychologist or Responsible Clinician that you fit the criteria for the study. If you do, you will be offered a time for me to come and meet you.

3. We would meet one time and this would last between 1hour and 1 and a half hour. We would talk about the study and any questions you have. You will decide if you want to take part.

4. If you decide to take part, I would ask you to complete a questionnaire about yourself and how you usually act or feel. (If it would not be possible to do this on the same day then we would arrange another time to meet for this)

5. After you will have finished the questionnaire we will be able to talk about your experience of answering it. Then our meeting will be over.

6. With your permission I will then get some information from your medical file.

7. To thank people for participating, we are running a prize draw for all participants with the chance to win one of fifteen Amazon vouchers of £15. I will contact the winners in December 2018 to give them the vouchers.

What type of information will you get from my file?

With your permission I will get this information from your medical file:

- Age
- Gender
- Diagnosis
- What Mental Health Act (1983) section you are under.
- Information about your index offence.
- Whether you have had psychological therapy.
- What medication you are taking.
- Whether you have been involved in any incidents in the past year.
- Information about your risk assessments, which are done at each of your CPA reviews.

This information will be collected to have a better understanding of how you have responded to being in hospital, and to see if there are any links with different personality types.

Will my taking part be kept confidential?

Your taking part will be kept confidential. Only your Responsible Clinician and Psychologist will be told that you are taking part in the study. Your answers from the questionnaire will not be shared with anyone without your permission.

If you would like, I could share the result of your questionnaire with your Psychologist. Doing this would give the Psychologist working with you more information, which could help with your treatment. I would only do this with your permission.

If I should become concerned about a risk of harm to you or somebody else during our meeting then I will I will have to tell other people in your care team.

What will happen to my information?

Your questionnaire answers and the information collected from your medical file will be entered into a computer so that it can be looked at together with other people's responses. It will not have your personal details on it. Your personal information will be stored and handled securely following ethical and legal practices. Only I, as the Chief Investigator will have access to your personal details.

A thesis report will be written, describing the findings of the study. This report will not have any of your personal information and no one will be able to identify you from it. This report may be published (in print or online) for others to read, and/or presented at a conference. If you would like a summary of this report I would be happy to send you one after the work has been completed.

Following the Data Protection Act (1998), and University of East Anglia research data management policy, the information collected for the study will be kept securely for 10 years at the University of East Anglia.

Please note, responsible members of the University of East Anglia, Priory Group, and the Norfolk and Suffolk NHS Foundation Trust Research and Development team, may be given access to the information gathered about you for the study, if they need to monitor or audit the study. This is sometimes done to ensure that the research is complying with applicable regulations.

What are the possible benefits of taking part?

You will not directly benefit from taking part in this study. You may find it interesting to answer a questionnaire about your personality and how you respond to the world around you. The study will help understand the link between different personalities and how people respond to treatment in hospital. This will help to improve our understanding

of why different people respond to treatment differently, which may help to improve services and care that is received by others in the future.
To thank people for taking part, we are running a prize draw, with the chance to win one of fifteen Amazon vouchers of £15.

What are the possible disadvantages of taking part?

Meeting me and completing the questionnaire will take about 1 hour – 1 and a half hours. Thinking about the way that you act or feel in different situations is a very personal topic for you. If during our meeting you would feel upset about these topics we would talk about this together. We would also talk about how other professionals in the ward team can support you following our meeting. If you would feel that you did not want to continue, we could end the session.

What will happen if I do not wish to carry on with the study?

You are free to withdraw from the study at any time up until I have finished collecting data. Once all of the questionnaires are collected and I begin to bring together the information, it will not be possible for you to withdraw. This is planned to be in September 2018. If you want to withdraw from the study before September 2018 you can contact me and let me know. You would not have to give a reason for not wanting to continue. Deciding to withdraw would not affect any part of the care that you receive from the hospital.

What if there is a problem?

If you have any concerns about any part of this study, we can talk about this and I will do my best to answer your questions. You can also contact my supervisor, Dr Peter Beazley, using the contact details given below. If you have any complaints or you would like general advice you may also contact the Patient Advice and Liaison Service (PALS) at NSFT on 01603421191.

Who organises and funds this research?

This study is being done as part of a Doctorate of Clinical Psychology course at the University of East Anglia.

Who has reviewed the study?

This study has received ethical approval by:

- NHS England Health Research Authority.

It has been reviewed and approved by the Research and Development departments at:

- Norfolk and Suffolk NHS Foundation Trust
- Priory Group.

Additional contact details:

Supervisor: Dr Peter Beazley
Clinical Psychologist and Senior Clinical Tutor
Doctoral Programme in Clinical Psychology, University of East Anglia
Email: p.beazley@uea.ac.uk
Tel: 01603 593084

Patient Advice and Liaison Service (PALS)
Norfolk and Suffolk NHS Foundation Trust
Tel: 01603421191

Version 2 – February 26, 2018

Norfolk and Suffolk NHS
NHS Foundation Trust

PRIORY

Appendix H. Consent Form

Norwich Medical School
Postgraduate Research Office
Elizabeth Fry Building
University of East Anglia
Norwich, NR4 7TJ
E: a.babitsky@uea.ac.uk
T: 07804567684

IRAS Project ID: 229977

CONSENT TO PARTICIPATE FORM

Title of Study: The relationship between personality and treatment effects in forensic services

Chief Investigator: Alison Babitsky

(Initial boxes)

1. I confirm that I have read and understand the Participant Information Sheet (version 2, dated February 26, 2018) for this study. I have had time to think about the information, ask questions and get satisfactory answers.	
2. I understand that my taking part is voluntary and that I am free to withdraw at any time up until November 2018, without giving any reason.	
3. I understand that the Chief Investigator, Alison Babitsky, will have access to my medical notes to get information about me that is needed for this study (as detailed in the information sheet).	
4. I understand that monitors or auditors from: • NHS Health Research Authority, • University of East Anglia, • Norfolk and Suffolk NHS Foundation Trust Research & Development, • Priory Group Research Department, may look at relevant sections of my medical notes and data collected about me during the study, where it is relevant to my taking part in this study. I give permission for these persons to have access to my records.	
5. I understand that my taking part in the study will be kept confidential. My Responsible Clinician and ward Psychologist will know that I am taking part in the study. No one will know my responses or information.	
6. I understand that a report of the study will be written and may be submitted for publication. This report will not have any identifiable information about me.	
7. I understand that if the Chief Investigator has concerns about my safety or the safety or someone else, or if I report a crime, they will have to speak to my care team and relevant authorities.	
8. I agree to take part in the above research study.	

Additional options: (Initial boxes to agree)

8. I would like the result of my personality questionnaire to be shared with my ward Psychologist. *(Name of your ward Psychologist):*	
9. I would like to get a written summary of the findings from the study. *(If yes, please provide your email address or preferred postal address for this to be sent to you when the study is completed):* Email: Other postal address:	

Participant:

_____ _____

Name Hospital & Ward

_____ _____

Date Signature

Chief Investigator:

_____ _____ _____

Name Date Signature

Version 2 - February 26, 2018

PRIORY

Health of the Nation Outcome Scales

for Users of Secure and Forensic Services

St Andrew's HEALTHCARE

HoNOS-*secure*: Security Scales A to G

Bring up-to-date the fullest available clinical history and risk assessment of the service user.

Review past incidents/behaviours, attitudes held, current progress, etc.

Assess the most serious potential problem in the "near future" (weeks or months). ***Where relevant, consider if living unsupported in the community***. 'Potential' implies significant likelihood. Where outcome is unpredictable (e.g., overdose, fire), assess in proportion to degree of risk likely to occur.

Then, rate the conclusions of the risk assessment and the ***current*** need for secure care. Note - this may or may not be the same as care currently provided.

HoNOS-*secure* v.2.b Feb 2007. Authors: Philip Sugarman and Lorraine Walker, St Andrew's Hospital, Billing Road, Northampton, NN1 5DG. Developed from HoNOS (Royal College of Psychiatrists Research Unit, London) and HoNOS-MDO (Philip Sugarman and Hazel Everest), originally commissioned by the Department of Health.

A. Rate risk of harm to adults or children

0. Nil significant.
1. "Minor", e.g., altercation; non-contact sex offence; damage to property; waste-bin fire.
2. Significant injury; major fire; sex assault.
3. Serious - wounding, arson endangering life, rape, disability.
4. Grave - including homicide, near-fatal injury, profound trauma.

B. Rate risk of self-harm (deliberate or accidental)

0. Nil significant.
1. E.g., minor self-harm/overdose; marked neglect of hygiene; undernourished.
2. Significant injury or disfigurement; in-patient medical treatment for overdose; burns; starvation, etc.
3. Disability by any form of self-harm.
4. Actual or near suicide; jumping from height.

C. Rate need for building security to prevent escape

0. Open community residence.
1. Open facility on psychiatric campus.
2. Low security; PICU; high dependency; restricted exit with security features.
3. Medium security; airlock; secure building design and compound.
4. High security, security features comparable to closed prison.

D. Rate need for a safely-staffed living environment

0. No need - unstaffed residence appropriate.
1. Day care; home treatment; 24-hr staff/in-patient, but with unescorted community leave.
2. 24-hr staff/in-patient care without unescorted community leave.
3. Enhanced/continuous/special observation measures.
4. Occasional or frequent seclusion; more than one staff continuously.

E. Rate need for escort on leave (beyond secure perimeter). *Do not include need for a driver.*

0. No inclination to abscond; alert individual; behaves appropriately.
1. One escort as may wander, fall, be run over, return late, behave inappropriately.
2. Maximum two escorts to contain behaviour or deter absconsion.
3. Maximum three escorts to contain behaviour or deter absconsion.
4. Requires special arrangements; four escorts; special vehicle; police assistance.

F. Rate risk to individual from others

0. Nil significant.
1. Bullying; disempowerment; unwanted attention; disadvantage.
2. Abuse; assault; swindle; serious harassment; prostitution.
3. Serious victimisation or injury; rape; severe media hostility.
4. Death, serious disability, profound trauma.

G. Rate need for risk management procedures

0. Nil; or standard CPA, i.e., basic care planning.
1. Enhanced CPA; ongoing team clinical risk assessment.
2. Specialist clinical risk management; relapse prevention or other special therapy.
3. Requires *compulsory* check, search or test re drugs; weapons; visits; mail/phone.
4. Invasive or intensive checks, searches, tests or similar restriction.

<u>Next step</u> - in adult secure/forensic setting, complete Scales 1-12. In other settings use HoNOS-LD, HoNOS-65, HoNOS-CA, HoNOS-ABI, etc.

Rating instructions HoNOS-*secure* ~ Scales 1 to 12

1. Do not include information rated in an earlier item, unless stated otherwise.
2. Rate the MOST SEVERE problem during the period rated, e.g., the last two weeks.
3. Note that for these scales:-

0 = no problem
1 = minor problem requiring no action
2 = mild problem but definitely present
3 = moderately severe problem
4 = severe to very severe problem
9 = no information available

1. Overactive, aggressive, disruptive or agitated behaviour

Include behaviour due to any cause (drugs/alcohol/dementia/psychosis/depression), etc. Do not include bizarre behaviour, rated at Scale 6. Rate sexual behaviours at Scale 8 (I), but rate any violence/intimidation here.

0. No problems of this kind during the period rated.
1. Some irritability, quarrels, restlessness, disruptive behaviour, etc.
2. Includes occasional aggressive gestures, pushing, pestering or provoking others; threats or verbal aggression; lesser damage to property (e.g., broken cup or window, cigarette burns); marked over-activity or agitation.
3. Physically aggressive to others or animals (short of rating 4); persistently threatening manner; more serious over-activity or destruction of property (e.g., broken doors, minor fire setting to bins/ashtrays, etc).
4. At least one serious physical attack on others or on animals; destructive of property (e.g., dangerous fire setting); use of weapons; persistent serious intimidation behaviour.

2. Non-accidental self-injury

Do not include accidental self-injury (due to dementia or severe learning disability); the cognitive problem is rated at Scale 4 and injury at Scale 5. Do not include illness/injury as a direct consequence of drug/alcohol use rated at Scale 3 (e.g., cirrhosis of liver or injury resulting from drunk driving are rated at Scale 5).

0. No problem of this kind during the period rated.
1. Fleeting thoughts about self-harm or suicide, but little risk; no self-harm.
2. Mild risk during period; includes non-hazardous self-harm (e.g., wrist scratching, not requiring physical treatment); persistent or worrying thoughts about self-harm.
3. Moderate to serious risk of deliberate self-harm; includes preparatory acts (e.g., collecting tablets, secreting razor blade, making nooses, suicide notes).
4. Serious suicidal attempt and/or serious deliberate self-harm during period (i.e., person seriously harmed self, or intended to, or risk death by their actions).

3. Problem drinking or drug taking

Do not include aggressive/destructive behaviour due to alcohol/drug use, rated at Scale 1. Do not include physical illness or disability due to alcohol or drug use, rated at Scale 5.

0. No problem of this kind during the period rated (e.g., minimal cannabis use, drinking within health guidelines).
1. Some over-indulgence but within the social norm (e.g., significant cannabis use, other low risk activity).
2. Loss of control of drinking or drug taking, but not seriously addicted (e.g., regular cannabis use, drinking above health guidelines); (in controlled settings - occasional positive urine tests, loss of leave or delayed discharge on account of attitude or behaviour towards drink and drugs).
3. Marked dependence on alcohol or drugs with frequent loss of control, drunk driving; (in controlled settings - drug debts, frequent attempts to obtain drugs; persistent pre-occupation with drink/drugs; repeated intoxication or positive urine tests).
4. Incapacitated by alcohol/drug problems.

4. Cognitive problems

Include problems of memory, orientation and understanding associated with any disorder: learning disability, dementia, schizophrenia, etc. Do not include temporary problems (e.g., hangovers) resulting from drug/alcohol use, rated at Scale 3.

0. No problem of this kind during the period rated.
1. Minor problems with memory and understanding (e.g., forgets names occasionally).
2. Mild but definite problems (e.g., has lost the way in a familiar place or failed to recognise a familiar person); sometimes mixed up about simple decisions; major impairment of long term memory.
3. Marked disorientation in time, place or person; bewildered by everyday events; speech is sometimes incoherent; mental slowing.
4. Severe disorientation (e.g., unable to recognise relatives, at risk of accidents, speech incomprehensible); clouding or stupor.

5. Physical illness or disability problems

Include illness or disability from any cause that limits or prevents movement, or impairs sight or hearing, or otherwise interferes with personal functioning (e.g., pain). Include side effects from medication; effects of drug/alcohol use; physical disabilities resulting from accidents or self-injury associated with cognitive problems, drink driving, etc. Do not include mental or behavioural problems rated at Scale 4.

0. No physical health problem during the period rated.
1. Minor health problem during the period rated (e.g., cold, non-serious fall).
2. Physical health problem imposes mild restriction on mobility and activity (e.g., sprained ankle, breathlessness).
3. Moderate degree of restriction on activity due to physical health problem (e.g., has to give up work or leisure activities).
4. Severe or complete incapacity due to physical health problems.

6. Problems associated with hallucinations and delusions

Include hallucinations and delusions irrespective of diagnosis. Include odd and bizarre behaviour associated with hallucinations or delusions, such as thought disorder. Do not include aggressive, destructive or overactive behaviours attributed to hallucinations or delusions, rated at Scale 1.

0. No evidence of hallucinations/delusions during period rated.
1. Somewhat odd or eccentric beliefs not in keeping with cultural norms.
2. Delusions or hallucinations (e.g., voices, visions) present, but little distress to patient or manifestation in bizarre behaviour (i.e., clinically present but mild).
3. Marked preoccupation with delusions or hallucinations, causing much distress and/or manifested in obviously bizarre behaviour (i.e., moderately severe clinical problem).
4. Mental state and behaviour is seriously and adversely affected by delusions or hallucinations, with severe impact on patient/others.

7. Problems with depressed mood

Do not include over-activity or agitation, rated at Scale 1. Do not include suicidal ideation or attempts, rated at Scale 2. Do not include delusions or hallucinations, rated at Scale 6.

0. No problems associated with depressed mood during period rated.
1. Gloomy or minor changes in mood (not regarded as "depression").
2. Mild but definite depression and distress (e.g., feelings of guilt; loss of self-esteem, but not amounting to a clinical episode of depression); troublesome mood swings.
3. Depression with inappropriate self-blame, preoccupied with feelings of guilt, at a level likely to attract diagnosis and treatment; clinically problematic swings of mood.
4. Severe or very severe depression, with guilt or self-accusation.

8. Other mental and behavioural problems

Rate only the most severe clinical problem not considered at items 6 and 7. Specify type of problem by entering the appropriate letter: A phobic; B anxiety; C obsessive compulsive; D stress; E dissociative; F somatoform; G eating; H sleep; I sexual (*for sexual behaviour problem, see guidance in brackets*); J other, specify.

0. No evidence of any of these problems during period rated.
1. Minor non-clinical problems; (*impolite sexual talk/gestures*).
2. A problem is clinically present, but there are relatively symptom-free intervals and patient/client has degree of control, i.e., mild level; (*excessively tactile or non-contact sexual offence or very provocative, e.g., exposes self, walks around semi-naked, peeping into bedrooms, etc.*).
3. Constant preoccupation with problem; occasional severe attack or distress, with loss of control, e.g., avoids anxiety provoking situations, calls neighbour to help, etc.; moderately severe level of problem; (*sexual assault, e.g., touching breast/buttock/genitals over clothing*).
4. Severe, persistent problem dominates most activities; (*more serious sexual assault, i.e., genital contact, sexual touching under clothing*).

9. Problems with relationships

Rate the patient's most severe problem associated with active or passive withdrawal from social relationships, and/or non-supportive, destructive or self-damaging relationships. Take into account limited access to outside relationships in secure settings, include patients/inmates/staff relationships.

0. No significant problems during the period.
1. Minor non-clinical problem.
2. Definite problems in making or sustaining supportive relationships; patient complains and/or problems are evident to others.
3. Persisting major problems due to active or passive withdrawal from social relationships, and/or to relationships that provide little or no comfort or support.
4. Severe and distressing social isolation due to inability to communicate socially and/or withdrawal from social relationships.

10. Problems with activities of daily living

Rate the overall level of functioning in activities of daily living (ADL) (e.g., problems with basic activities of self-care; eating, washing, toilet), also complex skills; budgeting, organising where to live, recreation, mobility, use of transport, self-development, etc. Include any lack of motivation for using self-help opportunities, as this contributes to a lower overall level of functioning. Do not include lack of opportunities for exercising intact abilities and skills (e.g., in secure settings), rated at levels 11 and 12.

0. No problems during period rated; good ability to function in all areas.
1. Minor problems only (e.g., untidy, disorganised).
2. Self-care adequate, but major lack of performance of one or more complex skills (see above); needs occasional prompting.
3. Major problems in one or more area of self-care (eating, washing, dressing, toilet, etc.); has a major inability to perform several complex skills; needs constant prompting or supervision.
4. Severe disability/incapacity in all or nearly all areas of self-care and complex skills.

11. Problems with living conditions

Rate overall severity of problems with quality of living conditions and daily domestic routine. Are basic necessities met (heat, light, hygiene)? If so, is there help to cope with disabilities and a choice of opportunities to use skills and develop new ones? Do not rate the level of functional disability itself, rated at Scale 10.

N.B. Rate patient's usual accommodation whether community, open or secure setting (hospital or prison). If in acute ward/other temporary care, rate home accommodation.

0. Accommodation and living conditions acceptable; help to keep disability at Scale 10 to lowest level possible, supportive of self-help.
1. Accommodation reasonably acceptable although there are minor or transient problems (e.g., not ideal location, not preferred option, doesn't like the food, etc.).
2. Significant problems with one or more aspects of the accommodation/regime (e.g., restricted choice; inflexible programme; staff or household have little understanding of how to limit disability, or how to help use or develop new or intact skills).
3. Distressing multiple problems with accommodation/regime (e.g., some basic necessities absent, environment has minimal/no facilities to improve patient's independence); unnecessarily restrictive physical security (e.g., no access to outdoors, awaiting transfer to less secure facilities).
4. Environment unacceptable (e.g., lack of basic necessities or patient at risk of eviction/arbitrary transfer); 'roofless' or highly restrictive living conditions otherwise intolerable making patient's problems worse; severe physical confinement (e.g., much of daytime locked in room/cell, confined unnecessarily in seclusion or unfurnished room).

12. Problems with occupation and activities

Rate overall level of problems with quality of day-time environment. Is there help to cope with disabilities, opportunities for maintaining or improving occupational and recreational skills and activities? Consider factors - stigma, lack of appropriate Qualified Staff, access to supportive facilities (e.g., staffing/equipment at Day Centres, workshops, social clubs). Do not rate level of functional disability itself, rated at Scale 10.

N.B. Rate patient's usual situation, whether in community, open or secure setting (hospital or prison). If in acute ward/temporary care, rate activities during period before admission.

0. Patient's day time environment acceptable; helps to keep disability rated at Scale 10 to lowest level possible; supportive of self-help.
1. Minor or temporary problems (e.g., late giro cheques; reasonable facilities available but not always at desired and appropriate times, etc.).
2. Limited choice of activities; lack of reasonable tolerance (e.g., unfairly refused entry to public library/baths; lack of day areas); lack of facilities in large establishment; handicapped by lack of permanent address; insufficient carer/professional support; or helpful day setting available but for very limited hours.
3. Marked deficiency in skilled services available to help minimise level of existing disability; no opportunities to use intact skills or develop new ones; unskilled care difficult to access; no activity areas available; leave withheld from small establishment causes restriction.
4. Lack of opportunity for daytime activities makes problem worse; long periods of enforced inactivity each day (e.g., prison cell).