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Title:

Understanding the influence of patients' and therapists' personality on psychotherapy
treatment outcomes

By:

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A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of
Clinical Psychology

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Faculty of Science
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Declaration

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Word Count**Literature Review**

Excluding references and tables	7302
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Empirical Study

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Lay Summary

The term personality refers to stable patterns of thinking, feeling, and behaving that are unique to each individual. Due to the universal influence of personality traits on a range of human activities and life outcomes, researchers have considered whether personality is relevant in the context of psychotherapy. Thus far, research exploring the influence of therapists' personality on psychotherapy treatment outcomes has been limited when compared to the vast amount of research investigating the influence of patient's personality. However, the studies exploring patients' personality have not controlled for the influence of the therapist which can lead to overestimated effect sizes because individual therapists can vary considerably in their treatment outcomes (i.e., *therapist effects*). There is still much to learn about the influence of therapists' and patients' personality on psychotherapy outcomes. Through the completion of a systematic review and an empirical study this thesis aimed to advance current understandings about the influence of therapists' and patients' personality on psychotherapy treatment outcomes.

The first part of this thesis describes the findings of a systematic review that included 27 papers. The systematic review explored the influence therapists' personality traits had directly on psychotherapy treatment outcomes and indirectly through their influence on therapeutic processes (i.e., interactions that alter the relationship between therapists and patients). Results indicated a relationship between therapists' personality traits and the model of therapy they preferred to deliver to patients. A relationship was also found between therapists' personality traits and interpersonal skills (i.e., the ability to interact well with others) associated with positive psychotherapy outcomes. Current findings need to be considered with caution due to high heterogeneity between studies.

Part two of this thesis depicts an empirical study that used multilevel model analysis on a retrospective dataset to explore the relationship between patient

personality disorder and therapist effects (i.e., the effect therapists have on patient outcomes). Unlike previous research the current study did not reveal a significant therapist effect in any multilevel model analysis. Furthermore, patient personality disorder was not a significant predictor of outcome severity for depression and anxiety once baseline severity was accounted for. This suggests baseline severity is a more reliable predictor of poor treatment outcomes than personality disorder traits. Nevertheless, these findings need to be interpreted with caution due to sample size limitations.

The findings of the systematic review and empirical study are discussed in the context of previous literature. Considerations of the clinical implications and recommendations for future research are also discussed.

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Finally, thanks go to my fellow trainees. It has been an amazing yet challenging three years and I consider myself lucky to have experienced it alongside such inspiring, compassionate, and supportive people.

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Contents

Access to Thesis	II
Declaration	IV
Word Count	VI
Lay Summary	VIII
Acknowledgements	XI
Part One: Literature Review	1
Abstract	2
Introduction	3
Methodology	7
Results	20
Discussion	42
References	50
Appendices	69
Part Two: Research Report	83
Abstract	84
Introduction	85
Methodology	88
Results	99
Discussion	110
References	121
Appendices	135

Part One: Literature Review

Do psychotherapists' personality traits influence treatment processes and outcomes?: A
systematic review

Abstract

Background: The influence of the big five personality traits has been extensively researched in relation to a range of human activities. Previous studies have demonstrated patients' personality traits can impact psychotherapy treatment outcomes. However, there is less understanding and clarity regarding the influence of therapist's personality traits on treatment outcomes.

Methods: A systematic review of the literature exploring the influence of therapists' personality traits on treatment processes and outcomes was carried out. Three databases (Scopus, PsycINFO, and Web of Science) were searched to identify eligible studies ($N = 27$), followed by forward and backward citation methods. A narrative review summarises key findings.

Results: The influence of therapists' personality traits was studied in relation to therapeutic orientation, interpersonal skills, therapist competence and skill, model fidelity, treatment outcomes, therapeutic alliance, and therapist resilience. Findings suggest therapists' personality traits may influence some therapeutic processes which can impact psychotherapy outcomes.

Conclusion: Therapists' personality traits influence their choice of therapeutic orientation and their interpersonal skills. However, it remains unclear if therapists' personality traits influence other aspects of therapeutic processes or outcomes.

Key words: Big Five Personality Traits; Psychotherapists; Treatment Outcomes.

Introduction

Personality has been defined as “the dynamic organization within the individual of those psychophysical systems that determine his characteristic behavior and thought” (Allport, 1961, p. 28). Personality is characterised by individual differences in *personality traits* (i.e., stable patterns of thinking, feeling, and behaving). Allport and Odbert (1936) were the first to explore personality traits and identified over 4500 trait descriptors. Their work paved the way for future trait theorists (Cattell et al., 1970; Goldberg, 1981; McCrae & Costa, 1987; Norman, 1963) who narrowed these descriptors down to five higher order personality traits using factor analysis.

The *Five-Factor Model* (FFM; McCrae & Costa, 1987) is a well-established model of personality offering a structure for ‘normal’ versus ‘pathological’ personality profiles. The *big five* personality traits include *openness to experience* (i.e., appreciation for new ideas and experiences), *conscientiousness* (i.e., tendency to be organised, hardworking, and responsible), *extraversion* (i.e., seeking interaction with the environment and others), *agreeableness* (i.e., inclination to be cooperative and selfless), and *neuroticism* (i.e., proneness to emotional instability; McCrae & Costa, 1987). Each trait represents a continuum of extremes, for example the trait extraversion encapsulates extreme extraversion and extreme introversion with the majority of people placing somewhere between these extremes. Furthermore, each trait encompasses more specific facets, for example extraversion is comprised of sociability, enthusiasm, and assertiveness (McCrae & Costa, 1987).

The FFM is supported by a compelling evidence base and has shown empirical validity over time, across contexts, and cross-culturally (Costa et al., 2005; McCrae & Costa, 1997; Mullins-Sweatt & Widiger, 2006; Santor et al., 1997). There have been a number of standardised measures developed to examine the big five personality traits; one of the most renowned is the Revised NEO Personality Inventory (NEO-PI-R; Costa

& McCrae, 1992). Researchers have used this and other measures to investigate how personality traits influence a range of human activities and life outcomes (Ozer & Benet-Martinez, 2006).

The big five personality traits have been linked to academic performance (conscientiousness and openness; Paunonen & Ashton, 2001), job performance (conscientiousness and emotional stability; Lado & Alonso, 2017), longevity (extraversion, emotional stability, and conscientiousness; Terracciano et al., 2008), psychopathology (neuroticism; Kotov et al., 2010), relationship quality (emotional stability; Donnellan et al., 2005), and interpersonal interactions (agreeableness and extraversion; Cuperman & Ickes, 2009; Sims, 2017).

In the field of psychotherapy, researchers conventionally explore processes associated with treatment outcomes in an attempt to explain how therapy works (Cuijpers et al., 2019; Kazdin, 2007). Process-outcome research investigates the experiences of patients and therapists in psychotherapy sessions (i.e., therapeutic processes) and the impact this has on changes in symptoms and functioning (Crits-Christoph et al., 2013; Orlinsky, 2009). Due to the universal influence of the big five personality traits on functional outcomes, researchers have considered whether personality traits are relevant in the context of psychotherapy (Harkness & Lilienfeld, 1997).

Researchers have observed an influence of patient personality traits on therapeutic alliance (agreeableness, openness, extraversion, and conscientiousness; Coleman, 2006a; Hirsh et al., 2012), treatment participation (extraversion and openness; Beauchamp et al., 2011), treatment adherence (conscientiousness and agreeableness; Bagby et al., 2016), and treatment outcomes (extraversion, conscientiousness, and openness; Ogrodniczuk et al., 2003). Bucher et al.'s (2019) meta-analysis revealed patient neuroticism had negative implications for the majority of therapeutic processes

and treatment outcomes explored, whereas the remaining big five personality traits were predominantly associated with beneficial therapy processes (e.g., attendance, treatment completion, therapeutic alliance) and positive treatment outcomes (i.e., reduced symptom severity).

Less research has explored the impact of therapists' personality on therapy processes and outcomes. Research has consistently demonstrated therapists differ in their treatment outcomes, also known as *therapist effects* (Baldwin & Imel, 2013). It has been consistently documented therapist effects account for 5% of outcome variability (Baldwin & Imel, 2013; Johns et al., 2019). This equates to some therapists being twice as effective as others with recovery rates ranging between 24-96% (Saxon & Barkham, 2012). Whilst researchers have identified dynamic factors (e.g., ability to develop a therapeutic alliance, conducive interpersonal skills, and motivation to improve therapeutic skill) associated with effective therapists, the influence of static factors such as therapists' characteristics (i.e., personality), are less understood (Wampold et al., 2017).

Beutler et al. (2004) reviewed literature exploring therapist characteristics (e.g., age, gender, culture, personality) and their influence on psychotherapy. Inconsistent findings were observed between therapists' personality traits and treatment outcomes. Some research suggested therapists' personality did not influence treatment outcomes (Antonuccio et al., 1982). However, further research revealed personality similarity between patient and therapist predicted early treatment termination (Berry & Sipp, 1991), but also predicted positive therapy outcomes (Herman, 1998). These mixed findings did not allow for firm conclusions to be made about the influence of therapists' personality on treatment outcomes (Beutler et al., 2004). Nevertheless, Heinonen and Orlinsky (2013) later suggested some therapists may exhibit personality traits predisposing them to patterns of interacting that are conducive to therapy.

More recently, Heinonen and Nissen-Lie (2019) conducted a systematic review exploring professional and personal characteristics found amongst effective therapists. The review emphasised the importance of interpersonal skills, intrapersonal variables, ability to cope with difficulties in practice, and attitudes to therapeutic intervention in effective therapists. Authors touched upon the influence of therapists' personality traits (e.g., emotional intelligence) on treatment outcomes (Rieck & Callahan, 2013), however this was not the main focus of the review and authors highlighted the lack of clarity and research in this area.

Since the completion of these reviews additional studies have been published that might provide further clarity concerning the influence of therapists' personality traits on therapeutic processes and treatment outcomes. For example, Casari et al. (2019) explored how therapists' personality influenced the personal style of psychotherapists, Evers et al. (2019) investigated therapists' personality in relation to work involvement and professional development, and Delgadillo et al. (2020) examined the relationship between therapists' personality traits and patients' treatment outcomes.

Rationale

The big five personality traits have been shown to be predictive of a variety of functional outcomes (Ozer & Benet-Martinez, 2006). Researchers have suggested the predictive nature of personality traits may also extend to psychotherapy outcomes (Bagby et al., 2016; Harkness & Lilienfeld, 1997). Research has documented a well-established relationship between patients' personality, therapeutic processes, and treatment outcomes (Bucher et al., 2019). Therefore, it is plausible to assume therapists' personality may also influence psychotherapy processes and outcomes. The influence of therapists' personality on treatment outcomes has been briefly summarised in previous reviews (Beutler et al., 2004; Heinonen & Nissen-Lie, 2019) and conclusions have been inconsistent thus far. However, these reviews are broad and have not comprehensively

investigated the influence of therapists' personality. Moreover, these reviews did not exclusively focus on the well-established FFM of personality, therefore the studies reviewed had an additional source of heterogeneity regarding the theoretical and empirical basis for the measurement of personality. Finally, there are more recently published studies exploring the influence of therapists' personality on psychotherapy processes and outcomes that might offer additional insight.

Aim

With this backdrop, the current review used a systematic approach to answer the following research question 'Do psychotherapists' big five personality traits directly and indirectly (i.e., impacting therapeutic processes) influence treatment outcomes?'.

Method

Protocol Registration

A systematic review protocol was pre-registered with the Open Science Framework (OSF) prior to completing formal searches. This protocol is available at: <https://osf.io/n6ckq/>

Search Strategy and Study Selection

Table 1 provides a summary of the inclusion and exclusion criteria used to select studies for the current review. These criteria aided the development of a search strategy which included terms associated with therapists' personality, treatment outcomes, and therapeutic processes, combined by Boolean operators (See Appendix A).

For the purpose of this systematic review, therapeutic process was defined as "a series of related interactions that progressively alter the nature of the relationship between therapist and client" (Tate, 1967, pp. 40). This was inclusive of the therapeutic contract (e.g., goal setting, treatment modality), therapeutic operations (e.g., client's presentation, therapist's interpretation), therapeutic bond (e.g., therapeutic alliance, rapport), self-relatedness (e.g., client's and therapist's self-esteem, self-awareness), in-

session impacts (e.g., impacts of therapy on clients and therapists), and temporal patterns (stage of treatment; Orlinsky, 2009). As such, the current review concentrates on relationship factors (e.g., therapeutic alliance, therapist empathy, warmth, and acceptance of patients) as well as therapeutic model or techniques (e.g., competence, and adherence to model; Lambert & Barley, 2001; Sprenkle & Blow, 2004). This definition was intentionally broad in order to provide a comprehensive overview of the literature, consistent with the aims of a systematic review.

Three electronic databases; PsycINFO, Scopus, and Web of Science, were searched between the 15th and 20th May 2020. There were no restrictions enforced regarding publication dates of the studies, however studies were required to be peer review articles and published in English.

Table 1.*Research Question, Relevant Inclusion & Exclusion Criteria*

	Inclusion Criteria	Exclusion Criteria
Population	Participants (therapists) over the age of 18, treating patients of any age Including qualified and trainee psychotherapists, psychologists, counsellors, and psychiatrists	Participants (therapists) under the age of 18 Professionals who do not have/are not undergoing psychotherapy training Professionals who do not deliver psychotherapy
Intervention	Any type of psychotherapy or psychological intervention	Medical, psychopharmaceutical and health care interventions
Comparator	N/A	N/A
Outcomes	<i>Personality:</i> Standardised measures of the Five-Factor Model (McCrae & Costa, 1987) personality traits. Measures completed by therapists. <i>Therapy Outcomes:</i> Standardised measures of therapy outcomes; psychological distress, symptomology, or functioning. <i>Therapeutic Processes:</i> Studies that examined therapeutic orientation, alliance, therapy style, treatment fidelity, therapist skill/competence.	Standardised measures of personality traits not associated with the Five-Factor Model. Standardised measures of the Five-Factor Model (McCrae & Costa, 1987) personality traits exploring patient personality. Standardised measures of the Five-Factor Model (McCrae & Costa, 1987) personality traits exploring therapist personality, but completed by patients in relation to therapists.
Setting	Any setting where psychological interventions are delivered to patients in any country. Any setting where therapists' personality might be explored in the context of psychotherapy processes and outcomes.	Any setting where psychological interventions are not delivered to patients. Any setting where therapists' personality might not be explored in context of psychotherapy processes and outcomes.
Study Design	Quantitative research including observational cohort studies, randomised control trials, and cross sectional studies. Published studies which are peer reviewed in scientific journals. Research written in English.	Grey literature, including dissertations that have not been published or reviewed by scientific journals. Qualitative research, narrative papers, editorials, and other forms of media (e.g., newspaper and magazines). Research not published in English.

Studies were selected using PRISMA guidance (Figure 1; Moher et al., 2009). After the removal of duplicate studies (n = 981), titles and abstracts were screened (n = 2188). A remaining 53 studies underwent full-text review. After excluding a further 29 studies (See Appendix B for Reasons for Exclusion), 24 eligible studies remained. A further 3 studies were identified by searching reference lists and applying backward and forward citation techniques to eligible studies. Corresponding authors were also contacted and given three weeks to make any further recommendations beyond eligible studies identified through database searchers. No further eligible papers were identified at this stage. Overall, 27 studies were deemed eligible for inclusion in the current review.

Risk of Bias Assessment

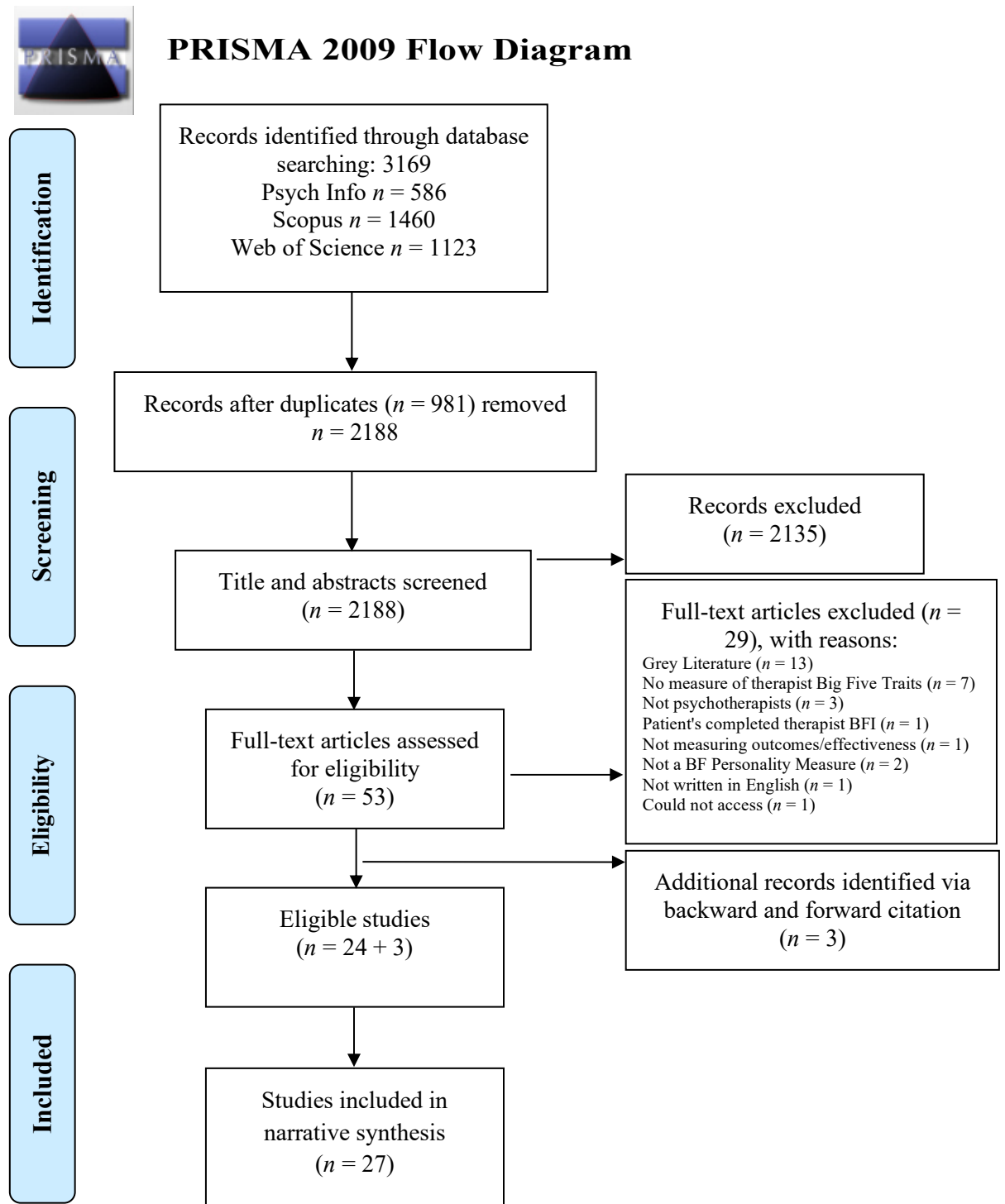
Eligible studies were assessed for risk of bias using the CASP cohort study checklist (Critical Appraisal Skills Programme, 2018). The first author assessed all studies, and a second reviewer independently assessed 13 of the 27 studies to verify inter-rater reliability. Comparisons were made between the overall risk of bias ratings. These ratings were consistent therefore no mediation by a third reviewer was required.

Data Summary and Synthesis

Studies were examined for any findings associated with the influence of therapists' personality traits on therapeutic processes and treatment outcomes. Any information relating to these topics was summarised in a table and supporting statistics were extracted and collated. Due to the variety of topics explored in the context of therapists' personality traits, studies were clustered and categorised based on common themes associated with therapeutic processes and treatment outcomes, and a narrative synthesis of findings was performed.

Figure 1

PRISMA Flow Diagram for Systematic Study Selection



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit www.prisma-statement.org.

Table 2*Summary of Characteristics of Included Studies*

First Author & Year	Aspects Measured	Country; Setting or Context	Design & Method	Population (n) Therapists (T) Patients (P)	Demographics (age, gender)	Intervention or Orientation	Personality Measure	Outcome or Process Measure
Bielañska, A. (2016)	Therapeutic alliance	Poland; Outpatient clinic for psychosis	Cross-sectional; Survey	T = 11; 5 doctors, 4 psychologists & 2 nurses P = 34 with schizophrenia	T = 3 males, average age 40.3 P= 18 males, average age 37.4,	Integrative psychotherapy CBT (n=232) Integrative with a psychodynamic emphasis (n=129), Integrative without a psychodynamic emphasis (n=76), psychodynamic (n=68), other & psychoanalytic (n=9)	NEO-FFI	Dyadic Therapist-Patient Questionnaire
Blume-Marcovici, A. C. (2003)	Interpersonal skill - Therapists crying in therapy	USA; Online	Cohort; Survey	T = 684; 390 postdoctoral psychology, 273 licenced psychologists, 21 postdoctoral or licence eligible psychologists	515 females, average age 36	Analytic or psychodynamic, Behavioural, Cognitive, Humanistic, Eclectic/integrative	TIPI	ACI
Boswell, J. F. (2009)	Therapeutic orientation	USA; University	Cohort; Survey	T = 46; 26 trainee clinical psychologists, 20 counselling psychologists,	36 females, average age 29		NEO-PI-R	DPCCQ

Table 2 (continued)

First Author & Year	Aspects Measured	Country; Setting or Context	Design & Method	Population (n) Therapists (T) Patients (P)	Demographics (age, gender)	Intervention or Orientation	Personality Measure	Outcome or Process Measure
Branson, A. (2015)	Therapeutic competence and skill - Clinical and academic performance	England; University - Improving Access to Psychological Therapies	Cross-sectional; Survey, Observations, & Grades	T = 140; Trainee psychological wellbeing practitioners (PWPs) & high-intensity therapists (HITs)	PWPs = 78% female, average age 29.5 HITs = 73% female, average age 37.7	CBT	NEO-PI-R	OSCEs, CTS-R, & Academic assessment (marked 0-100)
Buckman, J. (2010)	Therapeutic orientation	England; University	Cohort; Survey	T = 142; clinical psychology trainees; 42 first year, 48 second year, 52 third year	25 males, median age 27	CBT, Psychodynamic, & Systemic	NEO-FFI	TOES, & CTPS
Casari, L. M. (2019)	Interpersonal skill - Personal style	Argentina; Public and private psychotherapy clinics	Cohort; Survey	T = 546; Type of practice, 256 independent, 122 private, 127 public, 44 more than one	87 males, average age 32.8	CBT, Humanistic-Existential, Gestalt, Integrative, Psychoanalysis, & Systemic	BFI	PST-Q
Chapman, B. P. (2009)	Therapeutic alliance	USA; Community mental health training clinics	Cross-sectional; Survey & patient feedback	T = 34; counselling trainees at masters and doctorate level P = 62	T = 27 males, average age 31.3 P = 23 males, average age 28.4	Not recorded	NEO-FFI	WAI-S
Coleman, D. (2006b)	Treatment outcomes	USA; Outpatient mental health clinic	Cross-sectional; Naturalistic survey	T = 15 P = 39	T = 80% female, average age 45.7 P = 72% female, average age 39.2	Not recorded	TDA	WAI, BSI

Table 2 (continued)

First Author & Year	Aspects Measured	Country; Setting or Context	Design & Method	Population (<i>n</i>) Therapists (T) Patients (P)	Demographics (age, gender)	Intervention or Orientation	Personality Measure	Outcome or Process Measure
Delgadillo, J. (2020)	Treatment outcomes	England; Improving Access to Psychological Therapies	Cross-sectional; Surveys & Observation	T = 69; 36 PWPs, 33 CBT therapist P = 4,052	PWPs = 72% female, average age 31.58 CBT = 69.7% female, average age 39.72	CBT	NEO PI-R	OSCEs, CTS-R, PHQ-9, & GAD-7
Demir, I. (2017)	Therapeutic orientation	Turkey; University	Cohort; Survey	T = 333; Third (31%) and fourth year trainees in psychological counselling	81% female, average age 21.6	Humanistic/existential, Cognitive/behavioural, & Postmodern/solution-focused	TUPI	TOPS-R
Evers, O. (2019)	Therapeutic competence and skill - Work involvement	Germany; Training Programme	Cohort; Survey	T = 184, psychotherapy trainees	84.2% female, average age 31.4	Psychodynamic (<i>n</i> =87), psychoanalytic (<i>n</i> =33), and cognitive behavioural (<i>n</i> =64).	NEO-FFI	WIS
Hurt, A. A. (2013)	Therapist resilience - Occupational burnout	USA; Clinicians working with Autism	Cohort; Online Survey	T = 113, Applied behaviour analysis (ABA) therapists	108 females, 42.5% fell within the 26–32 age range	ABA (<i>n</i> =68), TEACCH (<i>n</i> =2), Pivotal-response training (<i>n</i> =3), Embedded routines (<i>n</i> =1), Floortime (<i>n</i> =7), Eclectic (<i>n</i> =23), & Other (<i>n</i> =9)	M5-120	Maslach Burnout Inventory – General Survey, Andrews and Withey Job Satisfaction Scale

Table 2 (continued)

First Author & Year	Aspects Measured	Country; Setting or Context	Design & Method	Population (<i>n</i>) Therapists (T) Patients (P)	Demographics (age, gender)	Intervention or Orientation	Personality Measure	Outcome or Process Measure
Mulkens, S., (2008)	Model fidelity	Netherlands; Clinicians working in Eating Disorder Services	Cohort; Online Survey	T = 139; psychiatry (<i>n</i> = 63), psychology (<i>n</i> = 59), nursing (<i>n</i> = 2), dietetics (<i>n</i> = 4), somatic care (<i>n</i> = 1), and other (<i>n</i> = 10)	127 females, average age 41.4	CBT	TIPI	Rating scale of the use of specific techniques in the treatment of eating disorders
Ogunfowora, B. (2008)	Therapeutic orientation	Canada; Online	Cross-sectional; Survey	T = 493, 274 practitioners and 219 students	Practitioners = 60.6 % female, average age 47.7 Student = 87.2% female, average age 29.9	Psychodynamic, Cognitive-behavioural, Family system, Feminist, Multicultural, Neuropsychological, & Humanistic	HEXACO-PI	TOPS-R
O'Shaughnessy, T. (2013)	Therapeutic competence and skill - Therapist lesbian and gay affirmative therapy competence	USA; Therapists-in-training	Cohort; Survey & vignettes	T = 212, therapists in training. Doctoral students (<i>n</i> = 168), Master's students (<i>n</i> = 30), and "other" degree being pursued (<i>n</i> = 14)	180 female, average age 29.6	Not recorded	NEO-PI-R	SOCCS & LGB - CSI

Table 2 (continued)

First Author & Year	Aspects Measured	Country; Setting or Context	Design & Method	Population (<i>n</i>) Therapists (T) Patients (P)	Demographics (age, gender)	Intervention or Orientation	Personality Measure	Outcome or Process Measure
Parker, Z. J., (2015)	Therapeutic competence and skill - Therapist self-assessment bias	England; Clinicals working with anxiety disorders or trauma	Cross-sectional; Survey	T = 195; Clinical psychologists (<i>n</i> = 32), counselling psychologists (<i>n</i> = 15), psychiatrists (<i>n</i> = 2), nurses (<i>n</i> = 47), social workers (<i>n</i> = 5), counsellors (<i>n</i> = 20), and other mental health professionals (<i>n</i> = 72)	66.7% female, average age 46.5	CBT	TIPI	Walfish et al.'s (2012) Self-Assessment survey
Peters-Scheffer, N. (2013)	Model fidelity	Netherlands; Clinicians working with Autism	Cross-sectional; Survey & Observation	T = 22; P = 35; Autistic or Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), and mild to severe ID.	T = All female, average age 28.8 P = Average age 38.2	Early intensive behavioural intervention - Discrete Trial Teaching	NEO-FFI	Procedural fidelity observation instrument
Poznanski, J. J. (2003)	Therapeutic orientation	Australia; Counselling practice	Cross-sectional; Interviews	T = 103 psychologists	76 female, average age 43.8	Psychodynamic (<i>n</i> = 32), Cognitive-behavioural (<i>n</i> = 28), Family-systemic (<i>n</i> = 24), and Experiential (<i>n</i> = 19)	NEO-FFI	TOM

Table 2 (continued)

First Author & Year	Aspects Measured	Country; Setting or Context	Design & Method	Population (<i>n</i>) Therapists (T) Patients (P)	Demographics (age, gender)	Intervention or Orientation	Personality Measure	Outcome or Process Measure
Rieck, T., (2013)	Treatment outcomes	USA; University	Cross-sectional; Online Survey	T = 32 trainee clinicians from clinical (<i>n</i> = 8), counselling (<i>n</i> = 15), and clinical health (<i>n</i> = 9) programmes P = 133	T = 25 female, average age 26 P = 89 female, average age 32	CBT (48%), Integrative (40%) or other (16%) orientation	NEO-FFI	OQ45.2
Saarnio, P. (2010)	Interpersonal skill	Finland; Inpatient treatment institutions	Cross-sectional; Survey & Vignettes	T = 162; Qualified; Counsellors, Social Workers, Nurse, Physicians or Psychologists	119 females – average age for females 41.1, average age for males 42.7.	Cognitive therapies, Motivational interviewing Solution-focused, Psychodynamic, 12-step therapy, Community treatment	PK5	Interpersonal functioning Valle (1981)
Saarnio, P. (2011a)	Therapeutic orientation	Finland; Inpatient treatment institutions	Cross-sectional; Survey & Vignettes	T = 162; Qualified; Counsellors, Social Workers, Nurse, Physicians or Psychologists	119 females, average age 41.5	Eclectic 38.3% Single-method 61.7%	PK5	Questions about therapeutic orientation
Saarnio, P. (2011b)	Interpersonal skill - Therapist directedness	Finland; Inpatient treatment institutions	Cross-sectional; Survey & Vignettes	T = 162; Qualified; Counsellors, Social Workers, Nurse, Physicians or Psychologists	119 females – average age for females 41.1, average age for males 42.7.	Cognitive therapies, Motivational interviewing Solution-focused, Psychodynamic, 12-step therapy, Community treatment	PK5	Attitudes to MI and directiveness questionnaire

Table 2 (continued)

First Author & Year	Aspects Measured	Country; Setting or Context	Design & Method	Population (<i>n</i>) Therapists (T) Patients (P)	Demographics (age, gender)	Intervention or Orientation	Personality Measure	Outcome or Process Measure
Saarnio, P. (2011c)	Interpersonal skill	Finland; Inpatient treatment institutions	Cross-sectional: Survey & Vignettes	T = 97, Qualified; Counsellors, Social Workers, Nurse,	28.9% male, average age 42.2	Cognitive therapies, Motivational interviewing, Solution-focused, Psychodynamic, 12-step therapy, Community treatment, & Eclectic	PK5	Interpersonal functioning Valle (1981)
Thompson, R. L. (2002)	Interpersonal skill - Universal-diverse orientation	USA; University	Cohort; Survey	T = 106, from graduate counselling programs	86% female, 34.7 average age	No record	NEO-PI-R	Miville-Guzman Universality-Diversity Scale 8-point Likert scale ranging from insight oriented to behaviour oriented and job satisfaction
Topolinski, S. (2007)	Therapeutic orientation & job satisfaction	Germany; Statutory Health Insurance Physicians, & Inpatient Hospitals	Cohort; Survey	T = 184; physicians (<i>n</i> = 67), psychologists (<i>n</i> = 115), and degrees in both disciplines (<i>n</i> = 2)	99 female, 43.4 average age	Analytic psychodynamic, Client centred, Systemic & CBT	NEO-FFI – openness subscale only	
Verschuur, R., (2020)	Model fidelity	Netherlands; Treatment facilities for children with Autism	Cross-sectional; Survey & Observation	T = 41 Level III certified pivotal response treatment therapists P = 41 children with Autism	T = 39 female, average age 35 P = 33 male, average age 8.63	Pivotal response treatment (PRT)	NEO-FFI	PRT fidelity

Table 2 (continued)

First Author & Year	Aspects Measured	Country; Setting or Context	Design & Method	Population (n) Therapists (T) Patients (P)	Demographics (age, gender)	Intervention or Orientation	Personality Measure	Outcome or Process Measure
Wisniewski, L., (2018)	Model fidelity	England; Clinicians working in Eating Disorder Services	Cohort; Online Survey	T = 73; psychologists (56.2%), social workers (20.5%), and professionals from other disciplines (e.g., counselling, psychiatry) (23.3%)	89% female, average age 42	Dialectical behaviour therapy	TIPI	Rating scale of the use of DBT techniques in, DiGiorgio et al. (2012)

Note. Adult Crying Inventory -Short Form (ACI), , Big Five Inventory (BFI), Brief Symptom Inventory (BSI), Counsellor, Theoretical Position Scale

(CTPS), Cognitive Therapy Scale Revised (CTS-R), Development of Psychotherapists Common Core Questionnaire (DPCCQ), Generalise Anxiety

Disorder-7 (GAD-7), HEXACO Personality Inventory (HEXACO), Lesbian, Gay, and Bisexual Affirmative Counseling Self-Efficacy Inventory (LGB –

CSI), M5-120 Questionnaire (M5-120), NEO Five-Factor Inventory (NEO-FFI), Revised NEO Personality Inventory (NEO PI-R), Outcome Questionnaire

45.2 (OQ45.2), Observed Standardised Clinical Examinations (OSCE's), Patient Health Questionnaire-9 (PHQ-9), Persoonallisuustestin Käsikirja (Finnish –

Personality Test Handbook; PK5), Personal Style of the Therapist Questionnaire (PST-Q), Sexual Orientation Counselor Competency Scale (SOCCS), Trait

Descriptive Adjectives (TDA), Ten-Item Personality Inventory (TIPI), Therapeutic Orientation and Experiences Survey (TOES), Theoretical Orientation

Measure (TOM), Theoretical Orientation Profile Scale–Revised (TOPS-R), Working Alliance Inventory—short (WASI), Work Involvement Scales (WIS)

Results

Study Characteristics

Context

Twenty-seven studies were deemed eligible for the current review. The majority of studies were carried out in Western countries including; the United States of America ($n = 8$), Argentina ($n = 1$), Australia ($n = 1$) Canada ($n = 1$), England ($n = 5$), Finland ($n = 4$), Germany ($n = 2$), the Netherlands ($n = 3$), and Poland ($n = 1$). All studies had either cohort ($n = 12$), or cross-sectional ($n = 15$) designs. Most studies were conducted in clinical settings ($n = 19$), and the remaining were carried out during training or in a University setting ($n = 8$). The majority of studies were conducted through the method of survey/questionnaires alone ($n = 16$). Studies also used a combination of surveys and vignettes ($n = 5$), observation ($n = 3$), patient feedback ($n = 1$), and observation and academic performance ($n = 1$). Only one study used interviews to gather data.

Sample

The studies offered a mixture of samples including psychotherapists and psychotherapy students ($n = 20$), and samples including psychotherapists, psychotherapy students, and patients ($n = 7$). The average ages of psychotherapists and psychotherapy students ranged from 21.6 to 47.7 years old, whereas the average ages of patients ranged between 8.63 and 39.2 years old. Additional sample characteristics are presented in Table 2.

It is important to highlight that Saarnio (2010, 2011a, 2011b, 2011c) used the same sample to complete a number of studies. Similarly, Branson and Shafran (2015) and Delgado et al. (2020) used the same dataset in two different analyses.

Personality Measures

The most common measure of therapist's big five personality traits was the NEO Five Factor Inventory ($n = 9$; NEO-FFI; Costa & McCrae, 1989), followed by the

NEO Personality Inventory-Revised ($n = 5$; NEO-PI-R; Costa & McCrae, 1992), and the Ten Item Personality Inventory ($n = 5$; TIPI; Gosling et al., 2003). Other tools used to measure personality included the Big Five Inventory ($n = 1$; BFI; John et al., 1991), the HEXACO Personality Inventory ($n = 1$; HEXACO-PI; Lee et al., 2008), the M5-120 Questionnaire ($n = 1$; M5-120; Johnson, 2001), the *Persoonallisuustestin Käsikirja* (Finnish – Personality Test Handbook; PK5, 2007), and the Trait Descriptive Adjectives ($n = 1$, TDA; Goldberg, 1992),

Outcome/Process Measures

Eligible studies explored the influence of therapists' personality traits in relation to seven broad topics directly and indirectly associated with treatment outcomes (Llewelyn et al., 2016). These topics included therapeutic orientation ($n = 7$; Wampold, 2015), interpersonal skills ($n = 6$; Anderson et al., 2016), therapist competence or skill ($n = 4$; Branson et al., 2015; Haug et al., 2016), model fidelity ($n = 4$; Prowse & Nagel, 2015), treatment outcomes ($n = 3$), therapeutic alliance ($n = 2$; Horvath et al., 2011), and therapist resilience ($n = 1$; Beutler et al., 2004). Where studies have explored more than one topic they have been categorised based on their primary research focus.

Therapeutic Orientation was measured using the Counsellor Theoretical Position Scale ($n = 1$; CTPS; Poznanski & McLennan, 1999), the Development of Psychotherapists Common Core Questionnaire ($n = 1$; DPCCQ; Orlinsky et al., 1999), the Therapeutic Orientation and Experiences Survey ($n = 1$; TOES; Buckman & Barker, 2010), the Theoretical Orientation Measure ($n = 1$; TOM; Poznanski & McLennan, 2003), and the Theoretical Orientation Profile Scale–Revised ($n = 2$; TOPS-R; Worthington & Dillon, 2003). Other techniques included asking therapists to identify as 'eclectic' or 'single-method', and an 8-point Likert scale ranging from insight oriented to behaviour oriented.

Interpersonal Skill was measured using the Adult Crying Inventory—Short Form ($n = 1$; ACI; Vingerhoets & Cornelius, 2001), the interpersonal functioning method implemented by Valle (1981; $n = 2$), the Miville-Guzman Universality-Diversity Scale ($n = 1$; Mivilfe et al., 1999), the Personal Style of the Therapist Questionnaire ($n = 1$; PST-Q, Fernández-Alvarez et al., 2003), and a 27-item questionnaire exploring attitudes to motivational interviewing and directiveness ($n = 1$; Saarnio, 2011b).

Therapeutic Competence and Skill was measured using a combination of the Observed Standardised Clinical Examinations (OSCEs; Richards & Whyte, 2009), Cognitive Therapy Scale Revised (CTS-R; Blackburn et al., 2001), and Academic assessment marked out of 100 ($n = 1$), a combination of the Sexual Orientation Counselor Competency Scale (SOCCS; Bidell, 2005) and the Lesbian, Gay, and Bisexual Affirmative Counseling Self-Efficacy Inventory ($n = 1$; LGB – CSI; Dillon & Worthington, 2003), a self-assessment survey similar to Walfish et al.’s ($n = 1$; 2012), and the Work Involvement Scales ($n = 1$; WIS; Orlinsky & Rønnestad, 2005).

Model Fidelity was measured using rating scales of the use of specific treatment techniques ($n = 2$; DiGiorgio et al., 2010; Waller et al., 2012), completion of the procedural fidelity observation instrument ($n = 1$; Peters-Scheffer et al., 2013), and a combination of partial interval recording and pivotal response treatment competence scoring ($n = 1$; Cooper et al., 2013).

Treatment Outcomes were measured using the Brief Symptom Inventory ($n = 1$; BSI; Derogatis, 1993), the Outcome Questionnaire 45.2, ($n = 1$; Lambert et al., 1996), and a combination of the Generalised Anxiety Disorder-7 (GAD-7; Spitzer et al., 2006) and the Patient Health Questionnaire-9 ($n = 1$; PHQ-9; Kroenke et al., 2001)

Therapeutic Alliance was measured using a Polish version of the Dyadic Therapist-Patient Questionnaire ($n = 1$; Cechnicki & Wojnar, 1997) and the Working Alliance Inventory – Short ($n = 1$; WAI-S; Busseri & Tyler, 2003).

Therapist Resilience was measured using a combination of the Maslach Burnout Inventory – General Survey (Schaufeli et al., 1996) and the Andrews and Withey's (1976) Job Satisfaction Scale ($n = 1$). An eight point Likert scale exploring job satisfaction was also used ($n = 1$; Topolinski & Hertel, 2007).

Data Analysis

Most studies reported either correlation or regression as the primary analysis ($n = 16$). Others carried out a combination of correlation and analysis of variance procedures ($n = 7$). Few studies completed multi-level modelling ($n = 2$), cluster analysis with analysis of variance ($n = 1$), and Scheffe test analysis ($n = 1$). Further data analysis details can be found in Table 3.

Risk of Bias Assessment

After assessing each eligible study with the CASP cohort study checklist, most studies were considered to have 'moderate' ($n = 21$) risk of bias and the remaining studies were deemed to have 'low' ($n = 6$) risk of bias. No eligible studies were categorised as having 'high' risk of bias. An independent second reviewer completed the same CASP assessment tool for 13 of the 27 studies and was in 100% agreement with the first author's overall risk of bias ratings. This indicated high inter-rater reliability.

The primary sources of bias related to the accuracy of therapy outcome or process measures ($n = 9$, 33% 'moderate' risk of bias), accounting for confounding variables in statistical analysis ($n = 14$, 52% 'moderate' risk of bias), and findings fitting the available evidence ($n = 10$, 37% 'moderate' risk of bias). Some studies exploring therapeutic orientation and process did not use validated measures to explore

these variables but implemented their own measures. Other studies identified confounding variables but did not acknowledge these variables in their statistical analysis. Furthermore, a collection of the studies' findings did not echo findings from previous literature. Refer to Appendix C for a detailed summary table of risk of bias assessments.

Table 3*Summary of Main Findings Reported in Studies Included in Review*

Author	Aspects Measured	Data Analysis	Key Findings/Statistics
Bielañska, A. (2016)	Therapeutic alliance	Pearson correlation and regression	<p>Therapists with greater extroversion reported being more accepting of their patients ($r = .458, p = .006$), feeling more professional ($r = .566, p < .001$), and less uncertain ($r = .422, p = .013$).</p> <p>Therapists with a greater openness reported being more accepting of their patients ($r = .325, p = .041$), feeling more professional ($r = .388, p = .023$), and less uncertain ($r = .342, p = .048$).</p> <p>30% of therapists' acceptance of patients was explained by greater extroversion in therapists and greater neuroticism in patients ($p = .003$).</p> <p>Higher therapist extroversion explained 42% of therapists' professionalism ($p < .001$).</p> <p>53% of therapists' uncertainty was explained by greater therapist openness and conscientiousness, and greater conscientiousness and reduced openness in patients ($p < .001$).</p>
Blume-Marcovici, A. C. (2003)	Interpersonal skill - Therapists crying in therapy	Correlation	<p>No clear trends between therapists' personality and therapists crying in therapy (TCIT) were demonstrated.</p> <p>Openness ($r = .142, p = .001, n = 568$), agreeableness ($r = .132, p = .002, n = 568$), and extraversion ($r = .11, p = .009, n = 568$) were significantly correlated to TCIT tendency, however correlations were small and did not correlate with TCIT frequency or proneness.</p> <p>Therapist neuroticism significantly correlated with crying in daily life. Neuroticism and tendency ($r = .248, p < .001, n = 606$), proneness ($r = .297, p < .001, n = 610$), and frequency ($r = .157, p < .001, n = 606$).</p> <p>There was a small correlation between greater neuroticism and TCIT frequency ($r = .099, p = .012, n = 648$) but no significant relationship between neuroticism and TCIT tendency or proneness.</p>
Boswell, J. F. (2009)	Therapeutic orientation	Cluster Analysis, Univariate ANOVAs, & Multivariate ANCOVAs	<p>Three cluster solution: humanistic/systems/dynamic, psychodynamic, and cognitive-behavioural (CBT). Significant main effect for cluster membership on the NEO PI-R domains of neuroticism (Wilks's $\lambda = .51$), $F(2, 45) = 2.44, p < .05$, and openness (Wilks's $\lambda = .57$), $F(2, 45) = 2.01, p < .05$.</p> <p>Significant differences were found between subject effects between two neuroticism facets and two openness facets. Humanistic/systems/dynamic and psychodynamic clusters were significantly higher than the CBT cluster on 'angry hostility', $F(2, 42) = 5.16, p < .05, \eta^2 = .20$.</p> <p>The psychodynamic cluster was significantly higher than humanistic/systems/dynamic and CBT clusters on 'impulsivity', $F(2, 42) = 5.29, p < .01, \eta^2 = .21$.</p> <p>The humanistic/systems/dynamic cluster was significantly higher than the CBT cluster on 'openness to feelings', $F(2, 42) = 4.87, p < .05, \eta^2 = .20$, and 'openness to values', $F(2, 42) = 3.21, p < .05, \eta^2 = .20$.</p>

Table 3 (continued)

Author	Aspects Measured	Data Analysis	Key Findings/Statistics
Branson, A. (2015)	Therapeutic competence and skill - Clinical and academic performance	Correlation & one-way ANOVA	Agreeableness was significantly related to clinical skills, but only with PWPs reflective ability ($r_s = .33, p = .01$). This association was inconsistent across assessments and training groups.
Buckman, J. (2010)	Therapeutic orientation	Correlation	<p>Preference for CBT was positively correlated with conscientiousness ($r = .31, p < .001$), and negatively correlated with openness to experience ($r = -.31, p < .001$).</p> <p>Psychodynamic preference was negatively correlated with conscientiousness ($r = -.25, p < .001$) but positively with openness to experiences ($r = .23, p < .001$).</p> <p>Preference for systemic therapy was not significantly related to any personality traits.</p> <p>Personality predicted preference for CBT and explained 22% of the variance ($R^2 = .221, F(6,140) = 6.35, p < .001$) with openness to experience having the largest influence ($\beta = -.244, t = -2.978, p = .003$).</p> <p>Preference for psychodynamic therapy was predicted by personality however this only explained 14% of the variance ($R^2 = .137, F(6,141) = 3.558, p < .003$) compared to 35% of the variance when personality and training factors were included. Training factors appeared to be more influential than personality in predicting preference for psychodynamic. Personality and training factors appeared to be equally important in predicting preference for systemic therapy.</p>
Casari, L. M. (2019)	Interpersonal skill - Personal style	Correlation	<p>Personal style of therapists was associated with therapists' personality traits.</p> <p>Therapists' expressive function with patients positively correlated with extraversion ($r = .16, p < .001$) but negatively correlated with conscientiousness ($r = -.01, p = .01$).</p> <p>Engagement function was positively correlated to therapist neuroticism ($r = .17, p < .001$) but negatively correlated with therapist conscientiousness ($r = -.09, p = .02$).</p> <p>Attentional function negatively correlated with therapist conscientiousness ($r = -.09, p = .02$) whereas, instructional function positively correlated with conscientiousness ($r = .21, p < .001$).</p> <p>Operational function correlated negatively with openness to experiences ($r = -.10, p = .01$)</p>

Table 3 (continued)

Author	Aspects Measured	Data Analysis	Key Findings/Statistics
Chapman, B. P. (2009)	Therapeutic alliance	Multilevel modelling	<p>Higher trainee neuroticism was linked with better alliance ratings from patients ($B(SE) = .43 (.17)$, $Z = 2.53$, $p = .011$) but poorer alliance ratings from trainees ($B(SE) = -.33 (.14)$, $Z = -2.38$, $p = .017$). Patients rated the alliance higher with trainees higher in negative affect, ($B(SE) = .36 (.11)$, $Z = 3.24$, $p = .001$), whereas self-reproach was not associated with patient ratings. Lower trainee ratings of the alliance were linked with increased trainee self-reproach ($B(SE) = -.37 (.10)$, $Z = -3.64$, $p < .001$), rather than negative affect.</p> <p>Higher trainee agreeableness was linked with lower trainee ratings of the alliance ($B(SE) = -.22 (.07)$, $Z = -3.21$, $p = .001$). The association was due to the tendency for therapists higher in non-antagonistic orientation to rate their alliance lower, $B(SE) = -.33 (.07)$, $Z = -4.29$, $p < .001$, and not associated with trainee's prosocial orientation.</p> <p>Higher trainee openness was linked with poorer patient ratings of the alliance ($B(SE) = -.18 (.09)$, $Z = -2.05$, $p = .041$). No subcomponent of openness reached significance, however a trend suggested patients rated the alliance lower for trainees higher on the intellectual interests component of openness, ($B(SE) = -.20 (.12)$, $Z = -1.65$, $p = .10$).</p>
Coleman, D. (2006b)	Treatment outcomes	Q-Correlation, Bivariate correlation, & Regression	<p>Global personality match between therapist and client personality traits was strongly associated with lower symptoms ($r = -.50$, $p < .01$).</p> <p>There was no relationship between global personality match and alliance for the whole sample. However, global personality similarity was moderately associated with better alliance for female patients ($r = .40$, $p < .05$).</p> <p>The validity of global personality similarity over patient personality in predicting symptom outcome was explored by placing similarity and client neuroticism into a regression model.</p>
Delgadillo, J. (2020)	Treatment outcomes	Multilevel modelling & machine learning algorithm (LASSO)	<p>Therapists' personality traits were found to be associated with treatment effects. For PWPs, an above-average level of agreeableness was significantly associated with poorer treatment outcomes; PHQ-9 = ($B(SE) = .02 (.01)$, $p = .03$), GAD-7 = ($B(SE) = .02 (.008)$, $p = .01$). For CBT therapists, an above-average level of openness to experience was significantly associated with poorer treatment outcomes; PHQ-9 = ($B(SE) = .04 (.02)$, $p = .02$), GAD-7 = ($B(SE) = .04 (.02)$, $p = .03$).</p> <p>Therefore, extremely high agreeableness and openness were specifically associated with poorer treatment outcomes. Secondary analyses revealed links between therapist competency, and personality traits. PWPs, competence (mean OSCE) was weakly correlated with neuroticism ($r = .20$, $p < .001$) and extraversion ($r = .19$, $p < .001$). CBT therapists competence (mean CTS-R) was weakly correlated with all big five personality traits ($r = .07$ to $.41$, $p < .001$) apart from conscientiousness.</p>

Table 3 (continued)

Author	Aspects Measured	Data Analysis	Key Findings/Statistics
Demir, I. (2017)	Therapeutic orientation	Hierarchical multiple regression	<p>Preference for a specific theoretical orientation was strongly associated with professional variables, rather than personality traits.</p> <p>The only theoretical orientation to show significant, yet weak, associations with personality variables was the humanistic approach.</p> <p>Personality variables explained 4% of the variation in humanistic/existential orientated trainees ($F(5, 294) = 2.82, p < .01$), specifically higher agreeableness ($r = .13, p < .05$) and openness ($r = .11, p < .05$).</p> <p>Introducing personality variables to CBT orientated trainees in a hierarchical multiple regression revealed no significant change in R^2, ($F(5, 297) = 0.18, p > .05$), similar was found amongst solution focused/postmodern trainees ($F(5, 297) = 2.16, p > .05$).</p>
Evers, O. (2019)	Therapeutic competence and skill - Work involvement, and professional development	Hierarchical multiple regression	<p>Healing involvement (i.e., basic relational skills, experience of agency, affirmative relational style, constructive coping) was positively correlated with extraversion ($r = .29; p < .001$; two-tailed) and conscientiousness ($r = .20; p = .006$), and negatively correlated with neuroticism ($r = -.26; p < .001$).</p> <p>Stressful involvement (i.e., frequent difficulties in practice, feelings of anxiety or boredom in working with clients, avoidant coping) was positively correlated with neuroticism ($r = .45; p < .001$) and agreeableness ($r = .26; p < .001$), and negatively correlated with conscientiousness ($r = -.24, p = .001$).</p>
Hurt, A. A. (2013)	Therapist resilience - Occupational burnout	Pearson correlations, Stepwise multiple regressions	<p>Neuroticism was positively correlated with exhaustion ($r = .38, p < .001$) and cynicism ($r = .25, p = .008$), and negatively correlated with professional efficacy ($r = -.25, p < .001$) and job satisfaction ($r = -.308, p = .001$).</p> <p>Extraversion and conscientiousness shared significant negative correlations with cynicism ($r = -0.32, p = .001$; $r = -0.21, p = .031$) and positive correlations with professional efficacy ($r = 0.41, p < .001$; $r = 0.37, p < .001$).</p> <p>Agreeableness showed a significant positive correlation with professional efficacy ($r = 0.32, p = .001$), but not job satisfaction.</p> <p>Correlational analyses of individual facets revealed;</p> <p>Extraversion facets yielded 16 statistically significant correlations (range = .19–.42), agreeableness revealed six correlations (range = .20–.40), conscientiousness revealed seven correlations (range = 0.23–0.39), neuroticism revealed 17 correlations (range = .20 to .36) and openness revealed just 1 significant correlation ($r = .23$).</p> <p>The regression model was significant for exhaustion, ($R^2 = .146, F(4,102) = 4.376, p = .003$), the only significant contributor was neuroticism, ($\beta = .400$). With regards to cynicism, the model was significant, ($R^2 = .118, F(4,102) = 3.42, p = .012$) and the only significant contributor was extraversion, ($\beta = .234$). For professional efficacy, the model was significant, ($R^2 = .247, F(4,102) = 8.35, p < .001$) with extraversion as the only significant contributor ($\beta = .257$). Lastly, when assessing job satisfaction, the model was significant, ($R^2 = .197, F(4,102) = 6.27, p < .001$) and the only significant contributor was extraversion ($\beta = .370$).</p>

Table 3 (continued)

Author	Aspects Measured	Data Analysis	Key Findings/Statistics
Mulkens, S., (2008)	Model fidelity	Spearman's correlation	<p>Greater clinician extraversion was associated with a greater use of some core CBT-ED techniques (diaries ($r = .232, p < .05$), cognitive restructuring ($r = .192, p < .05$), and exposure ($r = .190, p < .05$)).</p> <p>Conscientiousness was associated with a mixed pattern of technique use (greater use of exposure ($r = .205, p < .05$) and schema therapy ($r = .206, p < .05$), and seeing patients for longer when diaries were not completed ($r = .194, p < .05$)).</p> <p>Emotional stability ($r = -.266, p < .001$) and openness to experiences ($r = -.220, p < .001$) were associated with less continuation of therapy without weighing.</p> <p>Emotional stability was also associated with a greater use of surveys ($r = .205, p < .001$)).</p>
Ogunfowora, B. (2008)	Therapeutic orientation	Correlations, Hierarchical multiple regression	<p>Conscientiousness was found to predict preference for the cognitive-behavioural orientation in practitioner ($\beta = .20, p < .01$), and student samples ($\beta = .37, p < .001$)).</p> <p>Openness was found to predict preference for the humanistic/existential orientation in practitioner ($\beta = .25, p < .001$), and student samples ($\beta = .29, p < .001$)). However, this orientation was negatively predicted by conscientiousness in practitioner ($\beta = -.14, p < .05$), and student samples ($\beta = -.14, p < .05$)).</p> <p>Psychodynamic orientation was predicted by greater openness ($\beta = .13, p < .05$) and lower agreeableness ($\beta = -.14, p < .05$) in practitioners, but not students.</p> <p>The feminist orientation was also predicted by openness ($\beta = .23, p < .001$) in students. Whereas agreeableness and openness were found to predict preference for the feminist and multicultural orientations in the practitioner sample ($\beta = .19, p < .001$ and $\beta = .13, p < .05$; $\beta = .14, p < .05$ and $\beta = .15, p < .05$)).</p> <p>The family systems orientation was predicted by agreeableness ($\beta = .16, p < .01$) in practitioners, and extraversion in students ($\beta = .18, p < .01$)).</p> <p>Neuropsychological orientation was predicted by conscientiousness ($\beta = .24, p < .001$) and emotionality ($\beta = .16, p < .05$) in the student sample only.</p>

Table 3 (continued)

Author	Aspects Measured	Data Analysis	Key Findings/Statistics
O'Shaughnessy, T. (2013)	Therapeutic competence and skill - Therapist lesbian and gay affirmative therapy competence	Correlations & MANOVAs	<p>There were positive correlations between therapist openness to experience and all Sexual Orientation Counsellor Competency Scale subscales; awareness ($r = .252, p < .01$), skills ($r = .261, p < .01$), and knowledge ($r = .164, p < .05$). A positive correlation was also revealed between openness to experience and Lesbian, Gay, & Bisexual Affirmative Counselling Self-Efficacy (LGB-CSI; $r = .349, p < .01$).</p> <p>There was a main effect for openness to experience, $F(10, 382) = 2.695, p = .003$ Wilks $\lambda = .873, \eta^2 = .066$, observed power = .965. After controlling for sexual orientation, number of LGBT clients, and relationships with LGBT individuals, clinicians did not significantly differ on their case conceptualization or self-reported competency based on client vignettes, $F(5, 191) = .442, p = .819$, Wilks $\lambda = .989$, or presenting problem of clients in the vignette, $F(5, 191) = 1.005, p = .416$, Wilks $\lambda = .974$. There were no interaction effects. Follow-up univariate analyses for participant personality revealed a significant result with LGB-CSI scores, $F(2, 195) = 6.862, p = .001, \eta^2 = .066$, and Sexual Orientation Counsellor Competency Scale Awareness scores, $F(2, 195) = 5.585, p = .005, \eta^2 = .054$, with participants with higher levels of openness having higher scores on these measures.</p>
Parker, Z. J., (2015)	Therapeutic competence and skill - Therapist self -assessment bias	Pearson's correlations, Multiple linear regressions, & ANOVAs	<p>Three personality traits were associated with therapist self-rating of skill when treating general ($F = 12.5, p < .001$, 23.3% of variance explained) and anxious ($F = 16.5, p < .001$, 29.2% of variance explained) patients; emotional stability (general: $\beta = .242, t = 3.47, p < .001$, anxious; $\beta = .304, t = 4.56, p < .001$), conscientiousness (general; $\beta = .223, t = 3.32, p < .001$, anxious; $\beta = .295, t = 4.58, p < .001$), and openness (general; $\beta = .217, t = 3.26, p < .001$, anxious; $\beta = .152, t = 2.37, p = .019$). Emotional stability was positively related to therapists' perceptions of team skill (general; $\beta = .277, t = 2.78, p = .006$, anxious; $\beta = .201, t = 2.06, p = .042$) and therapist agreeableness was related to perceptions of team skill but only with anxious patients ($\beta = .189, t = 2.03, p = .042$).</p> <p>Associations were found between specific therapists' personality traits (greater conscientiousness, emotional stability and openness) and therapists' perceptions of patient recovery. Therapists higher in conscientiousness believed fewer of their anxious patients simply improved ($\beta = -.206, t = 2.66, p = .009$), whereas low therapist conscientiousness was associated with reports of patient deterioration ($\beta = -.247, t = 3.22, p = .002$). Therapists with lower emotional stability had poorer perceptions of therapy outcomes, although these outcomes were more comparable to true clinical outcomes.</p>
Peters-Scheffer, N. (2013)	Model fidelity	Correlation, Multiple regression	Therapists who displayed more openness to experiences showed lower procedural fidelity ($\beta = -.35, p < .05$).

Table 3 (continued)

Author	Aspects Measured	Data Analysis	Key Findings/Statistics
Poznanski, J. J. (2003)	Therapeutic orientation	Scheffe tests	There were significant differences among the four groups (psychodynamic, cognitive behavioural, family systemic, experiential) of psychologists on mean NEO-FFI scores for neuroticism: $F(3, 99) = 2.8, p < .05$, and openness to experience: $F(3, 99) = 8.45, p < .001$. Psychodynamic psychologists scored higher on neuroticism compared with cognitive-behavioural psychologists, while cognitive-behavioural psychologists scored lower on openness compared with all other groups.
Rieck, T. (2013)	Treatment outcomes	Correlation & Regression	Therapist neuroticism scores correlated significantly with patient change scores ($r = .44, p = .01$). Emotional intelligence (EI) and neuroticism accounted for a significant amount of variance in patient-change scores. The interaction between EI and neuroticism scores accounted for variance in patient-change scores beyond main effects, $F_{\text{change}}(1,28) = 6.74, p = .015$. The final regression model accounted for 46% of patient outcome variance with neuroticism and the interaction term (EI x Neuroticism) accounting for 10.4% and 13.1% of the variance.
Saarnio, P. (2010)	Interpersonal skill	χ^2 test, Correlations, t -test, & MANOVA	Female therapists were significantly more agreeable (friendliness PK5) and open to experiences when compared to male therapists. Moreover, the facet belonging to the factor extraversion (social activity) showed women were significantly more lively ($p = .02$) than men. There were some significant correlations between personality and interpersonal functioning. Agreeableness (friendliness PK5) was significantly correlated with, respect for clients ($r = .20; p = .05$) and concreteness ($r = .29; p = .004$). There was a close-to-significant correlation with empathy and openness to experiences ($r = .19; p = .06$).
Saarnio, P. (2011a).	Therapeutic orientation	χ^2 test, Correlations, t -test, one-way ANOVAs, & repeated measures ANOVAs	There were significant associations between personality traits and technical eclecticism, lengthy therapy training, and enthusiasm for work. Eclectic therapists were less conscientious than single-method therapists ($t = 2.3, p = .002$). Therapists who had completed lengthy training were less conscientious ($t = -2.8, p = .006$), but more extroverted ($t = 1.9, p = .05$) and open to experiences ($t = 3.6, p < .001$). Therapist agreeableness ($F = 4.7, p = .01$), emotional stability ($F = 4.5, p = 0.1$), and openness to experience ($F = 5.8, p = .004$) increased significantly with enthusiasm for work.
Saarnio, P. (2011b).	Interpersonal skill - Therapist directedness	χ^2 test, Correlations, t -test, & MANOVAs	There were no statistically significant differences between the directiveness groups among the personality factors or facets.

Table 3 (continued)

Author	Aspects Measured	Data Analysis	Key Findings/Statistics
Saarnio, P. (2011c)	Interpersonal skill	χ^2 test, correlations, <i>t</i> -test, MANOVAs, & Cluster analysis	Cluster analysis based on therapists' personality traits was carried out. This revealed three groups that were significantly different to one another ($p < .001$) Group 1: Higher extraversion, agreeableness, and openness to experiences, but lower conscientiousness Group 2: Lower extraversion, agreeableness, and emotional stability, but higher conscientiousness Group 3: Revealed scores close to the average norms There were significant differences ($p < .001$) between groups on interpersonal functions of empathy, genuineness, respect for client, and concreteness. Group one rated more highly on all interpersonal functions, followed very closely by group 2. Interpersonal functioning was lower for group 3 when compared to the other two groups.
Thompson, R. L. (2002)	Interpersonal skill - Universal-diverse orientation	Bivariate correlations & Regression	Openness to experience was correlated with M-GUDS scores ($r = .558, p < .01$) followed by agreeableness ($r = .279, p < .01$) and extroversion ($r = .276, p < .01$). A negative correlation was found between neuroticism and M-GUDS scores ($r = -.260, p < .01$). Regression analysis using openness to experience as a predictor variable was statistically significant ($F(5,101) = 11.053, p < .001$). Adjusted R^2 effect size indicated openness to experience was the main predictor of M-GUDS scores ($\beta = .516, t = 5.535, p < .001$). Bivariate correlations between openness facet scores and overall M-GUDS scores revealed large correlations between M-GUDS and 'openness to aesthetics' ($r = .511, p < .01$) and M-GUDS and 'openness to values' ($r = .463, p < .01$). A second regression analysis using the openness facet scores as predictor variables and total M-GUDS scores as the dependent variable was statistically significant ($F(6, 101) = 11.142, p < .0001$). Openness to experience subscales predicted 41% of M-GUDS variance. 'Openness to aesthetics' was the main contributor to the regression prediction ($\beta = .317, r = 3.394, p = .001$) followed by openness to values ($\beta = .239, r = 2.620, p < .01$)
Topolinski, S. (2007)	Therapeutic orientation (TO) & job satisfaction	Spearman's correlation	No personality traits were related to the TO of therapist's during initial training. However, current psychoanalytic attitude was positively related to openness ($r = .25, p < .001$). Among all therapists, occupational context (self-employed vs. working in a hospital) and openness explained 26% of the variance observed in job satisfaction ($\beta = .30, t = 3.14, p < .05$).
Verschuur, R., (2020)	Model fidelity	Pearson's correlations	Fidelity to PRT implementation was not significantly related to openness to experience or conscientiousness.
Wisniewski, L., (2018)	Model fidelity	Pearson's correlations	There was no relationship between clinicians' use of individual DBT methods or cluster membership and their levels of anxiety, personality type, or demographic factors.

Table 3 (continued)

Note. ANOVA = Analysis of variance, CBT = Cognitive Behavioural Therapy, CTS-R = Cognitive Therapy Scale Revised, GAD-7 = Generalise Anxiety Disorder-7, MANOVA = Multivariate analysis of variance, M-GUDS = Miville-Guzman Universality-Diversity. Scale OSCEs = Observed Standardised Clinical Examinations, PHQ-9 = Patient Health Questionnaire-9, PWPs = Psychological Wellbeing Practitioners, t = t -test for equality of means, χ^2 = chi-squared test

Narrative Review of Findings

As described above, eligible studies were categorised across seven broad topics. Where studies reported findings relating to more than one of these topics, the findings relevant to each topic are summarised in the corresponding sections. For simplicity, the following section summarises key findings across these domains and more detailed information about statistical analyses and results can be found in Table 3.

Therapeutic Orientation

Seven studies explored the relationship between therapists' big five personality traits and therapeutic orientation. Some studies explored specific orientations individually ($n = 5$) whereas others explored clusters of therapists for example, eclectic versus single-method or by clustering some theoretical orientations together ($n = 2$). Six studies reported significant associations between therapists' personality traits and theoretical orientation (Boswell et al., 2009; Buckman & Barker, 2010; Demir & Gazioglu, 2017; Ogunfowora & Drapeau, 2008; Poznanski & McLennan, 2003; Saarnio, 2011a). However, one study did not reveal any significant associations (Topolinski & Hertel, 2007).

Common findings associated a cognitive behavioural orientation with higher therapist conscientiousness (Buckman & Barker, 2010; Ogunfowora & Drapeau, 2008), lower openness (Buckman & Barker, 2010; Poznanski & McLennan, 2003), and lower neuroticism (Boswell et al., 2009). Alternatively, the psychodynamic orientation was associated with lower therapist conscientiousness (Buckman & Barker, 2010; Ogunfowora & Drapeau, 2008) and agreeableness (Ogunfowora & Drapeau, 2008), but higher openness (Buckman & Barker, 2010; Ogunfowora & Drapeau, 2008) and neuroticism, specifically greater levels of 'angry hostility' and 'impulsivity' when compared to therapists of the cognitive behavioural orientation (Boswell et al., 2009; Poznanski & McLennan, 2003). The humanistic/existential orientated therapists shared

some similar personality traits with psychodynamically orientated therapists, with lower conscientiousness (Ogunfowora & Drapeau, 2008), and higher openness (Boswell et al., 2009; Demir & Gazioğlu, 2017; Ogunfowora & Drapeau, 2008) and agreeableness (Demir & Gazioğlu, 2017). Similar to psychodynamic therapists, humanistic therapists also showed higher levels of neuroticism, specifically 'angry hostility' when compared to cognitive behavioural therapists (Boswell et al., 2009). Systemically orientated therapists were not identified by specific personality traits (Buckman & Barker, 2010). When exploring eclectic versus single-method therapists, eclectic therapists demonstrated lower conscientiousness (Saarnio, 2011a).

Only one study did not reveal a significant relationship between therapists' personality traits and therapeutic orientation. However, the study did report a significant finding suggesting a psychoanalytic attitude was positively related to openness (Topolinski & Hertel, 2007). This conclusion appears to fit the findings summarised above suggesting the psychodynamic orientation is linked with higher therapist openness to experience.

To summarise, therapists' big five personality traits appeared to influence their preferred therapeutic orientation. Therapists with a preference for a cognitive behavioural approach reported higher conscientiousness, those with a preference for a psychodynamic approach reported higher openness and neuroticism, whereas those with a preference for humanistic approaches reported higher openness, agreeableness, and neuroticism.

Interpersonal Skills

Six studies explored the relationship between interpersonal skills and therapists' personality traits. Several interpersonal skills were investigated including specific interpersonal skills (e.g., empathy, respect for patients; $n = 2$; Saarnio, 2010; 2011b), personal style of the therapist (e.g., engagement, expression, attention; $n = 1$; Casari et

al., 2019), therapist directedness (i.e., giving instructions confrontational in nature; $n = 1$; Saarnio, 2011a), therapists crying in therapy ($n = 1$; Blume-Marcovici et al., 2013), and universal-diverse orientation (i.e., appreciating difference between self and other; $n = 1$; Thompson et al., 2002). Although varied, these factors are skills associated with communication and building relationships with others which is crucial in psychotherapy success (Anderson et al., 2009). Most studies revealed some significant findings ($n = 5$).

Certain personality traits (e.g., agreeableness, extraversion, and openness) were repeatedly associated with beneficial interpersonal skills, to varying strengths and statistical significance. High scores on these personality traits were commonly linked to elevated empathy, genuineness, respect for clients, concreteness (Saarnio, 2010; 2011c), expressive function (extraversion; Casari et al., 2019), and universal-diverse orientation (Thompson et al., 2002). A weak association was also found between these personality traits and therapists' tendency to cry in therapy (Blume-Marcovici et al., 2013).

Although therapists with higher extraversion, agreeableness, and openness, but lower conscientiousness demonstrated greater interpersonal functioning, Saarnio's (2011c) study found therapists with lower extraversion, agreeableness, and emotional stability, but higher conscientiousness, also rated higher on interpersonal functioning compared to therapists with personality traits similar to the norm. Conscientiousness was positively associated with instructional function (i.e., strategies used to establish and regulate therapy sessions) but negatively related to attentional function (i.e., ways in which the therapist seeks information), engagement (i.e., therapists commitment to their task in general versus their patients), and expressive functioning (i.e., therapists emotional exchange with patients; Casari et al., 2019).

Furthermore, neuroticism was negatively correlated with universal-diverse orientation (Thompson et al., 2002), but positively related to engagement function (Casari et al., 2019).

Saarnio's (2011b) study exploring therapist directiveness demonstrated no statistically significant differences amongst different therapists' personality traits.

To synthesise these findings, therapists' big five personality traits were observed to be linked to interpersonal skills beneficial to therapy. Therapists who self-reported higher agreeableness, openness, and extraversion also reported interpersonal skills supportive of advantageous therapy processes and outcomes.

Therapeutic Competence and Skill

Four studies focused on how therapists' personality traits might influence therapeutic competence and skill. Delgado et al. (2020) also explored therapeutic competence, although this was not the main focus of the paper, these findings are also discussed in this section. There were a variety of topics explored associated with therapeutic competence and skill, these included clinical and academic performance (n = 2; Branson & Shafran, 2015; Delgado et al., 2020), lesbian and gay affirmative therapy competence (n = 1; O'Shaughnessy & Spokane, 2013), self-assessment bias (i.e., overestimation of competence; n = 1; Parker & Waller, 2015), and work involvement (i.e., professional competence and development; n = 1; Evers et al., 2019). All studies revealed at least one significant relationship between therapists' personality traits and therapeutic competence and skill.

Due to the variability of topics explored, the findings are heterogeneous but traits of openness, conscientiousness, and emotional stability were most frequently discussed. O'Shaughnessy and Spokane (2013) found therapist openness to experience positively correlated with self-rated lesbian, gay, and bisexual affirmative competence, as well as awareness, skill, and knowledge as measured by the Sexual Orientation Counselor Competency Scale. Similarly, Parker and Waller (2015) demonstrated therapist openness, as well as emotional stability and conscientiousness were positively associated with therapist self-rated skill when working with general and anxious client

groups. Additionally, therapists exhibiting these personality traits thought it was more probable their clients would recover. Lower conscientiousness was associated with therapist reports of patient deterioration, and higher neuroticism was associated with poorer insight regarding therapy outcomes. Evers et al. (2019) discovered healing involvement (e.g., basic relational skills, experience of agency, affirmative relational style, and relational competence) positively correlated with extraversion and conscientiousness, but negatively correlated with neuroticism. Whereas stress involvement (e.g., negative reactions to clients, frequent difficulties in practice, and avoidant coping) was positively associated with neuroticism and agreeableness yet negatively associated with conscientiousness.

Branson and Shafran (2015) found only therapist agreeableness was significantly related to clinical skill, specifically, reflective ability amongst psychological wellbeing practitioners (PWPs). However, in a secondary analysis of the same dataset, Delgado et al. (2020) found PWP's competence had a weak association with higher neuroticism and extraversion, whereas CBT therapist competence had a weak association with all big five personality traits apart from conscientiousness.

Collation of the literature revealed no clear associations between therapists' big five personality traits and their therapeutic competence and skill. As such, firm conclusions about the influence of therapists' personality on therapeutic competence and skill could not be drawn.

Model Fidelity

A further four studies explored the relationship between therapists' personality and model fidelity. Each study explored different intervention fidelity which included cognitive behavioural therapy (CBT; Mulken et al., 2018), applied behaviour analysis (ABA; Peters-Scheffer et al., 2013), pivotal response treatment (PRT; Verschuur et al., 2020), and dialectical behaviour therapy (DBT; Wisniewski et al., 2018). Half of these

studies revealed significant findings regarding therapists' personality traits and model fidelity.

Peters-Scheffer et al. (2013) found a negative relationship between therapists' openness to experience and procedural fidelity when delivering ABA to autistic children. Although Verschuur et al. (2020) expected to find a similar result, their research did not reveal any significant findings. They attributed this null finding to a small sample size which meant findings were vulnerable to Type II error.

Mulkens et al. (2018) revealed therapists were not delivering CBT reliably to patients with eating disorders. They noted significant differences between therapists with certain personality traits and the CBT-ED techniques they reported using. Extraversion was associated with increased use of core CBT-ED techniques such as diaries, cognitive restructuring, and exposure, whereas conscientiousness was linked with a mixture of exposure, schema therapy, and spending more time with patients when diaries were incomplete. Therapist openness and emotional stability were related to increased therapy discontinuation without weighing. Therapists who were more emotionally stable were also more likely to use surveys. Wisniewski et al. (2018) similarly explored the influence of therapists' personality in delivery of DBT techniques to patients with eating disorders, however no significant findings were revealed.

Exploration of studies investigating model fidelity did not offer enough evidence to suggest a link with therapists' big five personality traits. As such, the influence of therapists' personality on model fidelity remains unclear.

Treatment Outcomes

Three studies explored the relationship between therapists' personality traits and treatment outcomes and all revealed significant results. Coleman (2006b) found similarities between therapist and patient personality traits (global personality match) were strongly related to a reduction in post-treatment symptoms. Rieck and Callahan

(2013) specifically explored therapist neuroticism and patient treatment outcomes. They found therapist neuroticism was associated with reduced psychological symptoms, however this was moderated by emotional intelligence of the therapist. Finally, Delgadillo et al. (2020), found above-average openness to experience amongst CBT therapists, and above-average agreeableness amongst PWP's were significantly associated with poorer treatment outcomes. Unlike Rieck and Callahan (2013), Delgadillo et al. (2020) did not find associations between therapist neuroticism and treatment outcomes.

To conclude, variability amongst findings from studies exploring associations between therapists' big five personality traits and treatment outcomes meant reliable inferences about the relevance of therapists' personality could not be made.

Therapeutic Alliance

Two studies specifically explored the relationship between therapists' personality traits and the therapeutic alliance (Bielańska et al., 2016; Chapman et al., 2009). Chapman et al. (2009) highlighted therapist neuroticism, agreeableness, and openness were linked with therapeutic alliance ratings. Patients rated the therapeutic alliance higher for therapists with higher neuroticism and lower openness. Alternatively, therapists with higher neuroticism rated the therapeutic alliance lower than therapists with lower neuroticism. Likewise, therapists higher in agreeableness also rated their therapeutic alliance lower than therapists with lower agreeableness. Further analyses identifying specific personality facets linked to therapeutic alliance demonstrated therapists with higher non-antagonistic orientation (compliance) received lower alliance ratings by patients. A non-significant trend was also observed implying therapists with higher intellectual interest (openness to ideas) reported a poorer therapeutic alliance with their patients.

When exploring patient and therapist ratings of the therapeutic relationship, Bielańska et al. (2016) found therapists higher in extraversion and openness were more accepting of their patients. They reported 30% of therapists' acceptance of their patients could be explained by therapist extraversion and patient neuroticism. Additionally, although it was not the focus of the research, Coleman (2006b) also reported a global personality similarity between therapists and female patients was moderately associated with an improved therapeutic alliance, suggestive of gender differences.

In summary, there were conflicting findings in research concerning the influence of therapists' big five personality traits and therapeutic alliance. Therefore, at this time, no definitive conclusions can be made about the links between therapists' personality and therapeutic alliance.

Therapist Resilience

Finally, one study focused on the impact of therapists' personality traits on occupational burnout (Hurt et al., 2013). A further two studies mention job satisfaction (Topolinski & Hertel, 2007) and enthusiasm for work (Saarnio, 2011a) in the context of therapists' personality traits. Due to the association between job satisfaction and occupational burnout amongst mental health workers (Ogresta et al., 2008) the findings from these studies are also discussed.

Hurt et al. (2013) found therapist neuroticism was positively associated with exhaustion and cynicism but negatively associated with professional efficacy. Alternatively, therapists with higher extraversion and conscientiousness exhibited less cynicism and higher professional efficacy. Therapists with higher agreeableness were also deemed to have greater professional efficacy. Job satisfaction was predicted positively by therapist extraversion and negatively by therapist neuroticism. These findings are supportive of those highlighted by Evers et al. (2019) who found therapists higher in neuroticism experienced more stress involvement.

Alternatively, Topolinski and Hertel (2007) suggest therapist openness to experience along with occupational context accounted for 26% of the variance in therapist job satisfaction. Furthermore, Saarnio's (2011a) research revealed therapists with higher agreeableness, emotional stability, and openness reported greater enthusiasm for work.

Conclusively, there was limited research exploring the relevance of therapists' big five personality traits and therapist resilience. Consequently, there was not enough evidence to clearly determine the relationship between therapists' personality and therapist resilience.

Discussion

The current systematic review aimed to explore and synthesize research investigating the influence of therapists' big five personality traits on therapeutic processes and treatment outcomes.

Summary of the Evidence

The studies synthesised in this systematic review used a variety of methodologies to measure several therapy constructs relating to processes and outcomes in order to examine their relation to therapists' personality. Despite this wide heterogeneity in study design and focus, some aspects of therapy processes show discernible and consistent patterns of findings which are summarised below.

The area most commonly explored concerning the influence of therapists' personality was therapist alignment or preference for a particular theoretical orientation. The literature suggests higher therapist conscientiousness is associated with a cognitive behavioural orientation, higher openness and neuroticism are linked with a psychodynamic orientation, and higher openness and agreeableness are associated with a humanistic/existential orientation. Therefore the current systematic review offers

support for a relationship between therapists' personality traits and preferred therapeutic orientation. Furthermore, there is emerging evidence indicating therapeutically advantageous interpersonal skills (e.g., empathy, respect, and expressive function) are associated with higher therapist agreeableness, extraversion, and openness. However, due to the limited number of studies and discrepant designs, no firm conclusions could be drawn regarding the relationship between therapists' personality traits and therapeutic competence and skill, model fidelity, treatment outcomes, therapeutic alliance, and therapist resilience.

Theoretical Considerations

Over the last few decades the big five personality traits have been widely explored as predictors of occupational processes and outcomes (Barrick et al., 2001). This literature has consistently demonstrated relationships between specific big five personality traits and job performance (Barrick & Mount, 1991; Lado & Alonso, 2017), satisfaction (Bui, 2017), and motivation (Judge & Ilies, 2002), as well as specific job performance measures such as counterproductivity (Berry et al., 2007), leadership (Judge et al., 2002), and contextual performance (Chiaburu et al., 2011). These findings have been consistently found across a variety of occupations and contexts, therefore it was reasonable to assume the same conclusions may be found amongst therapists.

A relationship between therapists' personality traits and preferred therapeutic orientation has been frequently demonstrated (Arthur, 2000; Heinonen & Orlinsky, 2013). Researchers have identified therapeutic models differ in their approaches to psychological intervention (Heinonen & Orlinsky, 2013). For example, certain models prioritise goals, tasks, and structure (CBT; Reinecke & Freeman, 2003), whereas others rely on abstract concepts (psychodynamic; Arthur, 2001) or understanding the uniqueness of individuals (humanistic; Tremblay et al., 1986). Therefore, it is unsurprising researchers have found the cognitive-behavioural orientation attracts

individuals who value order, achievement, and self-discipline (Scragg et al., 1999), the psychodynamic orientation appeals to individuals who are creative, imaginative, and intellectually curious (Soldz & Vaillant, 1999), and the humanistic orientation invites sympathetic, altruistic, and cooperative individuals (Hummel, 2009).

Previous literature supports the observed relationship between therapists' personality traits and successful interpersonal interactions. Extraversion and agreeableness have long been considered pertinent in behaviours of socialisation (Golderberg et al., 1998). Extraversion is associated with sociability and confidence in the presence of others (McCrae & Costa, 1987). These characteristics are beneficial in the initiation of conversation, engaging others, and considering others' needs (Du et al., 2020; Simpson et al., 1993). Warmth, kindness, and empathy are all characteristics associated with agreeableness, and are essential in the provision of emotional support and conflict resolution (Buhrmester et al., 1988; Du et al., 2020). Additionally, openness has been linked to universalism, promoting the acceptance of difference, new ideas, and equality (Douglas et al., 2016). Unexpectedly, conscientiousness also appeared to be linked with facilitative interpersonal skills, suggesting integrity associated with social responsibility, self-control, and honesty could also be imperative in the delivery of psychotherapy (Jensen-Campbell & Malcolm, 2007; Roberts et al., 2005). The aforementioned personality traits and associated interpersonal skills are pertinent when understanding the influence of therapists' influence on therapeutic processes and treatment outcomes given the social premise in which psychological intervention is delivered (Schöttke et al., 2017).

The variability and lack of conclusive findings regarding the influence of therapists' personality on therapeutic competence and skill, model fidelity, treatment outcomes, therapeutic alliance, and therapist resilience mirror inconclusive findings from previous reviews. Beutler et al. (2004) shared inconsistent findings when reporting

on therapists' personality and treatment outcomes and highlighted the challenges when researching this area. Similarly, the current review found certain therapeutic processes had not been investigated as rigorously as others resulting in contrasting findings and inadequate evidence to draw firm conclusions.

In contrast, the review by Heinonen and Nissen-Lie (2019) discussed some therapist intrapersonal qualities (e.g., reflective functioning, mindfulness, and neuroticism) may be important in therapeutic work, however only discussed one study specifically exploring therapists' personality traits. Consequently, there was no clear evidence specific big five personality traits amongst therapists resulted in better treatment delivery or outcomes. Instead, the review highlighted the importance of basic relational skills and interpersonal style in effective therapists which supports previous research (Bennet-Levy, 2019; Wampold et al., 2017). Bennet-Levy (2019) suggested whilst researchers have started to strengthen the evidence base exploring the personal and interpersonal qualities of effective therapists, there remains an insufficient amount of evidence. Bennet-Levy (2019) emphasised personal practice and self-reflection would facilitate changes in personal and interpersonal qualities to develop more effective therapists.

Methodological Considerations

The relationships reported between therapists' personality and treatment processes and outcomes in the current review were observed amongst a set of highly heterogenous studies. Not only was there significant variance amongst the aims and variables explored by eligible studies, but also in the context, sample, and techniques used to measure these variables. The diversity of included studies could mean conclusions drawn in the current review regarding the influence of therapists' personality could be inaccurate.

Furthermore, due to the variety of therapeutic processes and outcomes explored in relation to therapists' personality traits, clarity around key concepts and themes could be lacking, with many themes overlapping. The themes identified in this review are considered highly interrelated meaning distinction between themes and distinguishing findings from each theme independently from others is difficult. Therefore, interpretations of the current findings need to be considered in the context of the complex interaction between therapeutic processes and treatment outcomes.

Strengths and Limitations

This systematic review explored the influence of therapists' personality traits on therapeutic processes and treatment outcomes. The review included several hallmarks of good practice including the pre-registration of a review protocol prior to carrying out searches, searching at least three databases, conducting reverse and forward citation searches, as well as seeking an independent risk of bias assessment (See Appendix D for PRISMA Checklist).

Nevertheless, the findings should be considered in relation to a number of limitations. The current review excluded grey literature, and research not published in English. Exclusion of grey literature means the current review is susceptible to publication bias, however this criterion ensured all included studies were peer reviewed and are of higher methodological quality and credibility. The search strategy was relevant to the aims of the current review and very few studies were identified through reverse and forward citations suggesting the search strategy was comprehensive. Despite its breadth in scope, the current review used a specific and consistent conceptualisation of personality meaning any research that implemented personality measures not specific to the big five personality traits were excluded. This leaves the current review vulnerable to selection bias and limits the conclusions to the FFM of personality.

Findings from the current review have limited generalisability. Due to the diverse samples and settings employed by the eligible studies the collated findings may not be comparable, but also may not be applicable to the various settings where therapists work. Furthermore, many of the studies used student or trainee samples, that when compared to qualified samples demonstrated discrepant findings (Ogunfowora & Drapeau, 2008). Moreover, most of the research was conducted in Western and European countries, therefore findings are not generalisable to other countries (Schmitt et al., 2007).

Finally, the eligible studies also had methodological limitations. Many studies had small samples recruited via opportunity sampling methods, which increases the likelihood of self-selection bias. The majority of studies gathered data through the use of surveys and questionnaires often completed through therapists' self-report, therefore results are vulnerable to participants responding to demand characteristics or responding in ways deemed socially desirable. Furthermore, measures used to explore dependent variables were sometimes not validated or verified through use in previous research. Additionally, when exploring therapist effects, statistical methods properly estimating these effects are essential. Only two multilevel model studies were included which were able to explore variables at the patient level (i.e., outcome, alliance) and therapist level (i.e., personality). Therefore the literature available is highly deficient in studies using appropriate statistical methods to explore the influence of therapists' personality traits on treatment processes and outcomes. Lastly, the lack of coherent and consistent conclusions of the current review might be a result of trying to interpret false positives (Type 1 errors). Many of the reviewed studies investigated big five personality traits in relation to various criterion variables without making conjectures about the relationship. This contributes to "fishing and error rate" threats to the validity of the original studies.

Implications

Findings from this review could have a number of inferences. If further evidence advocates particular personality profiles are conducive to an individual being effectively trained as a psychotherapist, being more receptive to effective treatment modalities, being more interpersonally competent, producing better therapy outcomes, and being less likely to burnout, this insight could be used to inform therapist selection and training procedures, as previously considered by Waller and Turner (2016).

Once training, it could be helpful to consider how trainee therapists' personalities might influence their philosophical understandings of the world and therefore their preference and receptiveness to be trained in a particular therapy model (Lyddon & Bradford, 1995; Poznanski & McLennan, 2003). Psychotherapy training programmes often provide training in line with evidence-based practice, however this might create a dissonance between the treatment modality imposed by programmes and the trainee's philosophical orientation. This incompatibility could result in low trainee morale and motivation which could inevitably lead to a waste of public money as suggested by Buckman and Barker (2010).

If trainees or qualified therapists have personality traits deemed less amenable to adhering to a specific therapy model, a successful interpersonal style, or reduced resilience, it might advocate the need for closer supervision or further training. Additionally, supervision might promote trainee reflection on self-awareness and self-monitoring during therapy sessions to reduce undesirable impacts of therapists' personality traits on therapeutic processes and treatment outcomes. Furthermore, supervisors could use their awareness of supervisee personality traits to support personal and professional development and consider the impact these traits could have on the supervisory relationship.

Lastly, evidence has suggested patient personality traits can influence engagement in therapy and treatment outcomes. Widiger and Presnall (2013) have advocated therapists plan treatment for patients based on patient personality traits. One way this could be achieved is through carefully selecting therapists in accordance with patient's presenting needs, but also by considering the interaction between the patient and therapist personality profile in producing desirable therapy outcomes.

Further Directions

There appears to be a general lack of coherence amongst the findings from some of the domains included in this systematic review. Replication studies are needed to better understand the relationship between therapists' personality traits and model fidelity, therapeutic alliance, and therapeutic resilience. These studies need to ensure appropriate statistical methods are used as to accurately measure the influence of therapist variables (i.e., personality) on therapy processes and outcomes. Researchers may also consider other therapeutic processes that might also be influenced by therapists' personality traits, for example patient drop-out rates, treatment adherence, and treatment completion. Furthermore, it would be beneficial to enhance the literature exploring whether complementary or convergent therapist and patient personality profiles make for advantageous therapeutic processes and better treatment outcomes.

Conclusions

Therapists' personality traits influence their choice of therapeutic orientation and their interpersonal skills. However, it remains unclear if therapists' personality traits influence other aspects of therapeutic processes or treatment outcomes. The relationship between personality, processes and outcomes is complex, and may require research designs that can examine the interactions between these three domains. In particular, future research about the interaction between therapists' and patients' personality traits may be informative.

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References of papers included in review denoted by asterisk (*)

Appendix

Appendix	Title	Page(s)
Appendix A	Search Strategy	70
Appendix B	Reasons for Exclusion Table	74
Appendix C	Risk of Bias Table	79
Appendix D	PRISMA Checklist	81

Appendix A - Search Strategy

PsychInfo		
<u>Personality</u>	1.	exp Five Factor Personality Model/
	2.	Big Five Personality.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	3.	Five Factor Model.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	4.	NEO Five-Factor Inventory.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	5.	NEO Personality Inventory.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	6.	Big Five Inventory.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	7.	big-five Mini-Marker*.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	8.	big five Mini-Markers.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	9.	International Personality Item Pool.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	10.	Ten-Item Personality Inventory.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	11.	Five Item Personality Inventory.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	12.	neuroticism.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	13.	extraversion.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	14.	openness.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	15.	agreeableness.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	16.	conscientiousness.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	17.	extroversion.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	18.	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
<u>Psychotherapist</u>	19.	therapist.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	20.	psychologist.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	21.	psychoanalyst.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	22.	psychological wellbeing practitioner.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]

	23.	counsellor.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	24.	counselor.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	25.	clinician.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	26.	practitioner.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	27.	19 or 20 or 21 or 22 or 23 or 24 or 25 or 26
Outcome/Process	28.	exp Treatment Outcomes/
	29.	exp Therapeutic Processes/
	30.	clinical outcome.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	31.	therapy outcome.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	32.	symptom improvement.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	33.	treatment success.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	34.	treatment protocol.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	35.	therapy protocol.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	36.	competence.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	37.	skill.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	38.	ability.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	39.	personal style of therapist.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	40.	working alliance.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	41.	therapeutic alliance.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	42.	therapeutic relationship.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	43.	attitude.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	44.	attendance.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	45.	completion.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	46.	drop-out.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	47.	drop out.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	48.	adherence.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	49.	empathy.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]

	50.	satisfaction.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	51.	acceptability.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	52.	theoretical orientation.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	53.	theoretical model.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh]
	54.	28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53
Combination	55.	18 and 27 and 54

Scopus	
<u>Personality</u>	(TITLE-ABS-KEY ("Big Five Personality" OR "Five Factor Model" OR "Five-Factor Model" OR "NEO Five-Factor Inventory" OR "NEO Five Factor Inventory" OR "NEO Personality Inventory" OR "NEO-PI R" OR "Big Five Inventory" OR "big-five Mini-Marker*" OR "big five Mini-Markers" OR "International Personality Item Pool" OR "Ten-Item Personality Inventory" OR "Five Item Personality Inventory" OR neuroticism OR extraversion OR openness OR agreeableness OR conscientiousness OR extroversion))
AND	
<u>Psychotherapist</u>	(TITLE-ABS-KEY (therapist OR psychotherapist* OR psychologist* OR psychoanalyst* OR "psychological wellbeing practitioner" OR counselor* OR counsellor* OR clinician* OR practitioner))
AND	
<u>Outcome/Process</u>	(TITLE-ABS-KEY ("clinical outcome*" OR "therap* outcome*" OR "symptom* improvement*" OR "treatment success*" OR "therapy success" OR orientation OR model OR "theoretical orientation" OR "theoretical model" OR preference OR fidelity OR "treatment protocol" OR "therap* protocol" OR competenc* OR skill OR ability OR "personal style of therapist*" OR "working alliance" OR "therapeutic alliance" OR "therapeutic relationship*" OR attitude* OR attendance OR completion OR "drop-out" OR "drop out" OR adherence OR empathy OR satisfaction OR acceptability))

Web of Science Search Strategy		
<u>Personality</u>	#1	"Big Five Personality" OR "Five Factor Model" OR "Five-Factor-Model" OR "NEO Five-Factor Inventory" OR "NEO-FFI" OR "NEO Personality Inventory" OR "NEO-PI" OR "NEO-PI R" OR "Big Five Inventory" OR BFI OR "big-five Mini-Marker*" OR "big five Mini-Markers" OR "International Personality Item Pool" OR IPIP OR "Ten-Item Personality Inventory" OR TIPI OR "Five Item Personality Inventory" OR FIPI OR "Inventory of Personal Characteristics " OR "IPC-7" OR "HEXACO Personality Inventory" "HEXACO" OR "Hogan Personality Inventory" OR "Big Five Aspect Scales" OR "Structured Interview for the Five-Factor Model of Personality" OR SIFFM OR neuroticism OR extraversion OR openness OR agreeableness OR conscientiousness OR extroversion
<u>Psychotherapist</u>	#2	therapist OR psychotherapist* OR psychologist* OR psychoanalyst* OR "psychological wellbeing practitioner" OR counselor* OR counsellor* OR clinician* OR practitioner

<u>Outcome/Process</u>	#3	"clinical outcome*" OR "therap* outcome*" OR "symptom* improvement*" OR "treatment success*" OR "therapy success" OR orientation OR model OR "theoretical orientation" OR "theoretical model" OR preference OR fidelity OR "treatment protocol" OR "therap* protocol" OR competenc* OR skill OR ability OR "personal style of therapist*" OR "working alliance" OR "therapeutic alliance" OR "therapeutic relationship*" OR attitude* OR attendance OR completion OR "drop-out" OR "drop out" OR adherence OR empathy OR satisfaction OR acceptability
<u>Combination</u>	#4	#3 AND #2 AND #1

Appendix B - Reasons for Exclusion Table

Table 4

Studies screened and excluded from review

First Author	DOI	Reason for Exclusion
Bakker, A. B. (2006)	https://doi.org/10.3200/SOCP.146.1.31-50	Not psychotherapists
Brown, L. A. (2011)	https://doi.org/10.1177/0145445510393730	No measure of therapist BF
Butlein, D. A. (2005)	a	Grey Literature
Chapman, B. P. (2008)	https://doi.org/10.1097/MLR.0b013e31817924e4	Not psychotherapists
Chavira, D. A. (2009)	https://doi.org/10.1097/NMD.0b013e3181b97d4d	No measure of therapist BF
Cubero, C. G. (2009)	b	Grey Literature
Duberstein, P. R. (2008)	https://doi.org/10.1007/s11606-008-0780-0	Not psychotherapists
Graceffo, R. A. (2015)	c	Grey Literature
Heinonen, E. (2003)	https://doi.org/10.1080/10503307.2013.814926	No measure of therapist BF
Herskovitz- Kelner, N. (1995)	d	Grey Literature
Hixson, T. P. (2004)	e	Grey Literature
Jacobs-Caffey, L. A. (1995)	f	Grey Literature
Jersak, H. (2002)	g	Grey Literature
Johansen, R. (2013)	https://doi.org/10.1016/j.comppsy.2013.05.016	No measure of therapist BF
Kutsko, K. (2019)	h	Grey Literature/ Not a BF Personality Measure
Leary, M. M. (2009)	https://doi.org/10.1108/01437730910968697	Not a BF Personality Measure
Marlett, K. E. (2008)	i	Not a standardise measure of therapist effectiveness/ Grey Literature
Morgan, J. (2013)	j	Grey Literature
Nelson, T. D. (2007)	https://doi.org/10.1007/s10488-006-0111-x	No measure of therapist BF
Palmer, J. M. (1991)	k	Grey Literature

Table 4 (continued)

First Author	DOI	Reason for Exclusion
Peter, B. (2017)	https://doi.org/10.3389/fpsyg.2017.00840	Not a BF Personality Measure
Ray, C. L. (1999)	^l	Grey Literature
Russell, K. (2020)	https://doi.org/10.1080/09515070.2020.1733492	Patient's completed therapist BFI
Saarnio, P. (2010)	https://doi.org/10.1080/07347324.2010.511077	Not measuring outcomes/effectiveness
Samuel, D. B. (2018)	https://doi.org/10.1159/000487362	No measure of therapist BF
Scandell, D. J. (1997)	https://doi.org/10.1080/03033910.1997.1010558161	Could not access
Stiles, W. B. (1998)	https://doi.org/10.1037/0022-006X.66.5.791	No measure of therapist BF
Tatman, A. W. (2005)	^m	Grey Literature
Taubner, S. (2014)	https://doi.org/10.1055/s-0033-1358720	Not written in English

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- ^fJacobs-Caffey, L. A. (1995). *A study of countertransference awareness and behavior in light of therapist personality characteristics, level of experience, gender and theoretical orientation*. [Doctoral Dissertation, Pennsylvania State University]. ProQuest Information & Learning.
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- ⁱ Marlett, K. E. (2008). *Personality characteristics of counseling students at a Midwest Evangelical seminary as correlates of success, satisfaction, and self-perceived effectiveness*. [Doctoral Dissertations, Liberty University]. ProQuest Information & Learning.
- ^j Morgan, J. (2013). *The relationship between therapist personality and the working alliance in the treatment of borderline personality disorder*. [Doctoral Dissertation, Massachusetts University]. ProQuest Information & Learning.
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- ^k Palmer, J. M. (1991). *The effect of therapist orientation and personality style on the treatment outcome in psychotherapy with children defined as disruptive in school*. [Doctoral Dissertation, Adelphi University]. ProQuest Information & Learning.
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- ^l Ray, C. L. (1999). *The influence of time assessment and personality on the working alliance in career counseling*. [Doctoral Dissertation, University of Akron]. ProQuest Information & Learning.
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Table 5 (continued)

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	
First Author & Year	Clearly focussed issue	Cohort recruitment	Accuracy of personality measure	Accuracy of therapy outcome or process measure	Identification of important confounding factors	Taking confounding factors into account	Completeness of results	Precision of results	Believability of results	Applicability to intended population	Fit the wider available evidence	Implications of study	Overall Risk of Bias
O'Shaughnessy, (2013)	Low	Low	Low	Moderate	Low	Low	Low	Low	Low	Low	Moderate	Low	Moderate
Parker, (2015)	Low	Low	Low	Moderate	Low	Low	Low	Low	Low	Low	Low	Low	Moderate
Peters-Scheffer, (2013)	Low	Low	Low	Low	Low	Low	Low	Low	Moderate	Low	Moderate	Moderate	Moderate
Poznanski, (2003)	Low	Low	Low	Low	Low	Moderate	Low	Moderate	Low	Low	Low	Low	Moderate
Rieck, T. (2013)	Low	Low	Low	Low	Low	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Saarnio, P. (2010)	Low	Low	Low	Moderate	Low	Moderate	Low	Moderate	Low	Low	Moderate	Low	Moderate
Saarnio, P. (2011).	Low	Low	Low	Moderate	Low	Moderate	Low	Moderate	Poor	Low	Poor	Moderate	Moderate
Saarnio, P. (2011a)	Low	Low	Low	Moderate	Low	Moderate	Low	Moderate	Moderate	Low	Moderate	Moderate	Moderate
Saarnio, P. (2011b)	Low	Low	Low	Moderate	Low	Moderate	Low	Moderate	Moderate	Low	Moderate	Moderate	Moderate
Thompson, R. L. (2002)	Low	Low	Low	Low	Moderate	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Topolinski, S. (2007)	Low	Low	Low	Moderate	Low	Low	Low	Low	Moderate	Low	Moderate	Low	Moderate
Verschuur, R., (2020)	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Moderate	Low	Moderate
Wisniewski, L., (2018)	Low	Low	Low	Moderate	Low	Low	Low	Low	Low	Low	Low	Low	Moderate

Note. High risk = less than half Low, Moderate risk = between half Low and 10 Low, Low Risk = All

Appendix D - PRISMA Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	6
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	7
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	7
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	9
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	8
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	70
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	11
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	10
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	7 & 9
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	10
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	11
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	10

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	10
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	20
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	20
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	23
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	25
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	34
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	79
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	41
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	45
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	48
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	N/A

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

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Part Two: Research Report

Do patients' personality disorder traits influence variability of psychotherapy outcomes
between therapists?

Abstract

Background: Variability amongst treatment outcomes between therapists are known as therapist effects (TEs). Comorbid personality disorders (PDs) have negative effects on patient outcomes for both depression and anxiety. The objective of the current research was to examine the role of patient personality on the variability in outcomes between therapists.

Methods: Data from the StratCare randomised control trial was analysed using two-level multilevel models, nesting patients within therapists. After applying inclusion criteria, the selected sample included $N = 689$ patients nested within $N = 48$ therapists. Therapists in the sample treated between 5 and 34 patients. Of the 689 patients included, 86% were deemed to meet the threshold indicating PD.

Results: Positive correlations were demonstrated between patient personality and post-treatment depression and anxiety scores. No significant TEs were found in any multilevel models. Patient PD was associated with higher than average post-treatment depression and anxiety scores, increasing these by 0.80 points (depression) and 0.72 points (anxiety). However, controlling for the effects of baseline severity on post-treatment outcomes made the influence of patients' PD non-significant.

Conclusion: In the current sample, patient personality did not influence TEs. Baseline severity was a more reliable predictor of poorer treatment outcomes than patients' PD traits. However, patients with likely PD appeared to have higher baseline severity compared to patients without PD. Future studies could examine interactions between patients' and therapist' personality traits.

Key words: Therapist Effects; Patient Personality; Multilevel Modelling

Introduction

A vast amount of research has explored the effectiveness of psychotherapy and factors influencing treatment outcomes (Lambert, 2013; Wampold & Imel, 2015). Variability in treatment effectiveness has been observed in efficacy trials (Cuijpers et al., 2013; Cuijpers et al., 2014; Vittengl et al., 2016) and practice-based studies (Pybis et al., 2017). One approach to explain the variability of treatment outcomes is to identify patient-specific characteristics that distinguish those who benefit more or less from psychotherapy, so as to understand how treatment might be improved and personalised for individuals at particular risk of poor treatment response.

Numerous patient features have been studied over the last four decades (Bohart et al., 2013), including patients' demographics (e.g., gender, age, ethnicity), socioeconomic status (e.g., employment, income, neighbourhood deprivation), preferences and expectations about therapy, motivation to change, psychological mindedness, behaviours related to therapy (e.g., attendance and active participation), personality, interpersonal style, attachment style, coping style, reactance/resistance, and various clinical features (e.g., symptom severity, comorbidity, chronicity, etc.). Several of these patient-factors now have replicated empirical support in meta-analyses of primary studies, such as expectancy (Constantino et al., 2011), preferences (Swift et al., 2018), socioeconomic status (Finegan et al., 2018), coping style (Beutler, Harwood, Kimpara, et al., 2011), reactance (Beutler, Harwood, Michelson, et al., 2011), and motivation and readiness to change (Krebs et al., 2018).

One patient feature investigated as a potential predictor of psychological and pharmacological treatment outcomes is personality disorder (PD). There is high comorbidity between PD and mental health difficulties (McGlashan et al., 2000). Research has estimated comorbidity between depression and PD to be within 40% and 80% (Friborg et al., 2014; Wongpakaran et al., 2015). Comorbidity rates have been

shown to be less for anxiety disorders and are anticipated to be between 35% and 52% (Friborg et al., 2013). Comorbid PDs have negative effects on treatment outcomes for depression and anxiety (Gorwood et al., 2010; Newton-Howes et al., 2014; Telch et al., 2011). In a United Kingdom (UK) primary care setting, Goddard et al. (2015) explored the effect of PD traits on therapy outcomes in an Improving Access to Psychological Therapies (IAPT) service. They found patients' PD traits were associated with poorer treatment outcomes. More recently, Delgadillo et al. (2017) replicated this finding concluding patients' PD traits predicted poorer treatment outcomes in another IAPT service.

When exploring the impact of patient factors on treatment outcomes it is important to control for the influence of therapists as outcomes can vary amongst therapists, this is known as *therapist effects* (Kim et al., 2006; Wampold & Brown, 2005). Although variability in therapist outcomes is normal, some therapists achieve consistently poorer or better outcomes (Baldwin & Imel, 2013). As such, it is important to design research that can account for therapist effects (TEs) so treatment effects are not overestimated (Wampold & Serlin, 2000). Saxon and Barkham (2012) explored the influence of patient baseline severity and risk on TEs and found patient baseline severity and risk moderated TEs. This finding illustrates some therapists are better at treating patients who are more complex and impaired. PD has been linked to higher baseline severity of depression (Banyard et al., 2021) and anxiety (Telch et al., 2011), as well as increased risk to self (Krysinska et al., 2006). Furthermore, PD has been predictive of poorer treatment outcomes (Newton-Howes et al., 2014; Telch et al., 2011). Therefore, it is plausible to assume TEs may also vary according to patient PD meaning, some therapists may produce poorer or better treatment outcomes when working with patients with PD.

Current Study

In consideration of the previous literature, the current research uses multilevel modelling (MLM) to examine if TEs remain constant across patients with likely PD and whether TEs are moderated by the presence of personality pathology in patients.

Rationale

Due to the range of variability between therapist outcomes as reported by Baldwin and Imel (2013) and Johns et al. (2019) it is pertinent to better understand the impact of TEs on therapy outcomes. Average TEs of 5% have been robustly reported, although there is still limited knowledge about what contributes to this phenomenon. The current research is the first to explore the relationship between TEs and patients' personality pathology.

Clinical Value

Research exploring TEs is important to better understand the determinants of therapist variability. A better comprehension of TEs will support researchers in examining ways to reduce variability between therapists and discover how to optimally train therapists to improve their effectiveness with specific patient subgroups. If a relationship is found between patients' personality pathology and TEs, this research may promote better allocation of patients to therapists and prompt further research exploring potential theories or interventions to explain and reduce therapist variability (Saxon et al., 2017; Wampold et al., 2017). The current research may also encourage mental health services to adapt their delivery of interventions for patients with PD. Furthermore, findings could raise a need for further training and supervision to support therapists working with patients with PD (Goddard et al., 2015).

Objectives

The objectives of the proposed research were:

- 1) To investigate the magnitude of TEs by applying multilevel modelling to data from a multi-site controlled trial exploring evidence-based psychological therapies for depression and anxiety.
- 2) To compare the outcomes of therapists identified as above and below average in their effectiveness.
- 3) To examine if patients' personality pathology influences (e.g., *moderates*) the variability in outcomes between therapists.

Hypotheses

- 1) A TE between 3% and 7% (Johns et al., 2019) will be observed.
- 2) Patients' personality pathology will influence (e.g., *moderate*) the variability in outcomes between therapists, that is patients' with likely PD will experience poorer treatment outcomes.

Method

Design

Current research involved quantitative data analysis of retrospective data collected as part of the StratCare trial (described below). This was a multi-site randomised controlled trial (RCT) exploring evidence-based psychological interventions in two IAPT services.

Setting

IAPT services provide low and high intensity psychological interventions for patients with depression and anxiety. Typically, low intensity interventions comprise of up to eight sessions of psychoeducation based on principles of cognitive behavioural therapy (CBT), whereas high intensity interventions can comprise of up to 20 sessions of psychological intervention including CBT, interpersonal psychotherapy, counselling, and other evidence-based approaches. Interventions are highly structured, protocol-

driven, and recommended by the National Institute for Health and Care Excellence (NICE, 2010). Interventions are delivered by psychological wellbeing practitioners (PWPs), counsellors, or psychotherapists qualified at post-graduate level.

Data Source

Data was sourced from the StratCare RCT which was partly funded by Mindlife UK (See Appendix A for Trial Registration). The trial explored the effectiveness of stratified care for anxiety and depression. It investigated whether ‘*complex*’ cases benefited from being matched to high intensity intervention in contrast to the normal stepped-care approach whereby patients receive low intensity intervention prior to high intensity intervention. Data was collected between August 2018 and December 2019. Further details of the StratCare trial (inclusion criteria, measures, analyses, etc.) are available in the public domain at <http://www.isrctn.com/ISRCTN11106183>.

Outcome Measures

Throughout the StratCare trial, the Patient Health Questionnaire-9 (PHQ-9; See Appendix B) and General Anxiety Disorder-7 (GAD-7; See Appendix C) outcome measures were completed by patients at initial assessment and each subsequent therapy session. The Work and Social Adjustment Scale (WSAS; See Appendix D), and Standardised Assessment of Personality – Abbreviated Scale (SAPAS; See Appendix E) were completed during initial assessment sessions. The WSAS was also completed during the last therapy session.

PHQ-9 (Kroenke et al., 2001)

The PHQ-9 is a nine-item measure used to explore symptoms of depression. The items are based on the criteria for major depressive disorder as described in the Diagnostic and Statistical Manual-IV (DSM-IV). Participants rate items based on the last two weeks using a four-point Likert scale: 0 (*‘not at all’*), 1 (*‘several days’*), 2 (*‘more than half the days’*), or 3 (*‘nearly every day’*). This produces a score between 0

and 27. A score of ten or more indicates clinically significant symptoms of depression with sensitivity and specificity of 88% (Kroenke et al., 2001). The PHQ-9 is a validated measure, with Cronbach's alpha scores of .89 and .86 demonstrating good internal and test re-test reliability (Kroenke et al., 2001).

GAD-7 (Spitzer et al., 2006)

The GAD-7 is a seven-item measure used to measure symptoms of anxiety disorders. Items are based on the criteria for generalised anxiety disorder (GAD) as described in the DSM-IV. Participants rate items based on the last two weeks using a four-point Likert scale: 0 (*'not at all'*), 1 (*'several days'*), 2 (*'more than half the days'*), or 3 (*'nearly every day'*). This produces a score between 0 and 21. A score of eight or more indicates clinically significant symptoms likely to meet diagnostic threshold for an anxiety disorder (e.g., GAD, panic disorder, social anxiety disorder, obsessive-compulsive disorder, and post-traumatic stress disorder) with sensitivity of 77% and specificity of 82% (Kroenke et al., 2007). The GAD-7 is a validated measure, with Cronbach's alpha scores of .92 and .83 demonstrating good internal and test re-test reliability.

WSAS (Mundt et al., 2002)

The WSAS is a five-item measure used to assess impaired functioning in five domains: work, home management, social leisure activities, private leisure activities, and family and close relationships. Participants indicate how much their difficulties impair their ability to engage in each domain using an eight-point Likert scale (0 = *'no impairment'* to 8 = *'very severe'* impairment). A score between 0 and 40 is produced where high scores indicate greater functional impairment. The WSAS is a validated measure with Cronbach's alpha scores of .70 and .94 demonstrating good internal and test re-test reliability (Mundt et al., 2002).

SAPAS (Moran et al., 2003)

The SAPAS is an eight-item measure used to screen for the presence of PD derived from the Standardized Assessment of Personality (SAP; Mann et al., 1981). Participants respond 'yes' or 'no' to items screening for different PD traits indicative of Axis-II disorders such as impulsivity, cyclothymia, and paranoia (Mann et al., 1981). A score between 0 and 8 is produced. Moran et al. (2003) reported cut-off scores of three or four accurately identified the presence of PD in a clinical population where PD prevalence was high. A cut-off score of three accurately identified a diagnosable PD (based on DSM-IV criteria) in 90% of participants and offered the greatest balance of sensitivity (94%) and specificity (85%; Moran et al., 2003).

Ethics

Ethical approval for the current research was granted by the University of Sheffield's Department of Psychology Ethics Committee (Appendix F). The StratCare trial also received ethical approval from the West of Scotland Research Ethics Service, 18/07/18, ref: 18/WS/0114. Evidence of ethical approval for the StratCare trial is available in Appendix G, as is Health Research Authority approval in Appendix H. The StratCare trial gained ethical approval for participant data to be used in future research projects after obtaining participant consent.

StratCare trial patients and therapists were provided with participant information forms (Appendix I & J). Patients were required to provide verbal consent and therapists were required to provide written consent (Appendix K) to take part in the StratCare trial. By providing informed consent participants agreed for their data to be shared and re-analysed in future research. As such, data collected in the StratCare trial could be used in the current study.

Original StratCare Dataset

The original dataset represented data from two different IAPT services managed by Lancashire Care NHS Foundation Trust and Rotherham, Doncaster and South

Humber NHS Foundation Trust. The dataset included a sample of $N = 951$ patients (65% female, 95% white, 19.7% unemployed) and $N = 133$ therapists which were linked via an anonymised therapist identifier. Therapists saw between 1 and 41 patients each (Mean (M) = 17.1, Standard Deviation (SD) = 11.2). Therapy was time-limited with a mean number of 6.6 (SD = 4.9) contacts. The StratCare trial used the following inclusion and exclusion criteria:

Patient Inclusion Criteria

- 1) 18 years of age and older.
- 2) Referred through General Practitioners and self-referrals to IAPT services.
- 3) Met clinically significant anxiety and depression based on PHQ-9 and GAD-7 scores during initial assessment.
- 4) Received low or high intensity IAPT interventions.

Patient Exclusion Criteria

- 1) Ineligible to receive therapy via IAPT services.
- 2) Patients who did not attend therapy sessions after initial assessment.

Therapist Inclusion Criteria

- 1) PWPs and psychotherapists who carried out routine assessments at the participating IAPT services.
- 2) Employed by a participating IAPT service on a permanent or temporary contract lasting the duration of the StratCare trial.

Therapist Exclusion Criteria

- 1) Unqualified therapists, therapists undergoing training, and therapists who did not carry out routine assessments at participating IAPT services.
- 2) Therapists whose contracts were shorter than the timescale of the StratCare trial.

As the StratCare trial explored the effectiveness of a stratified care model, patients received one of the following treatment pathways: a) low intensity intervention

(LIT; $n = 512$), b) high intensity intervention (HIT; $n = 365$), or c) LIT followed by HIT (LIT + HIT; $n = 74$).

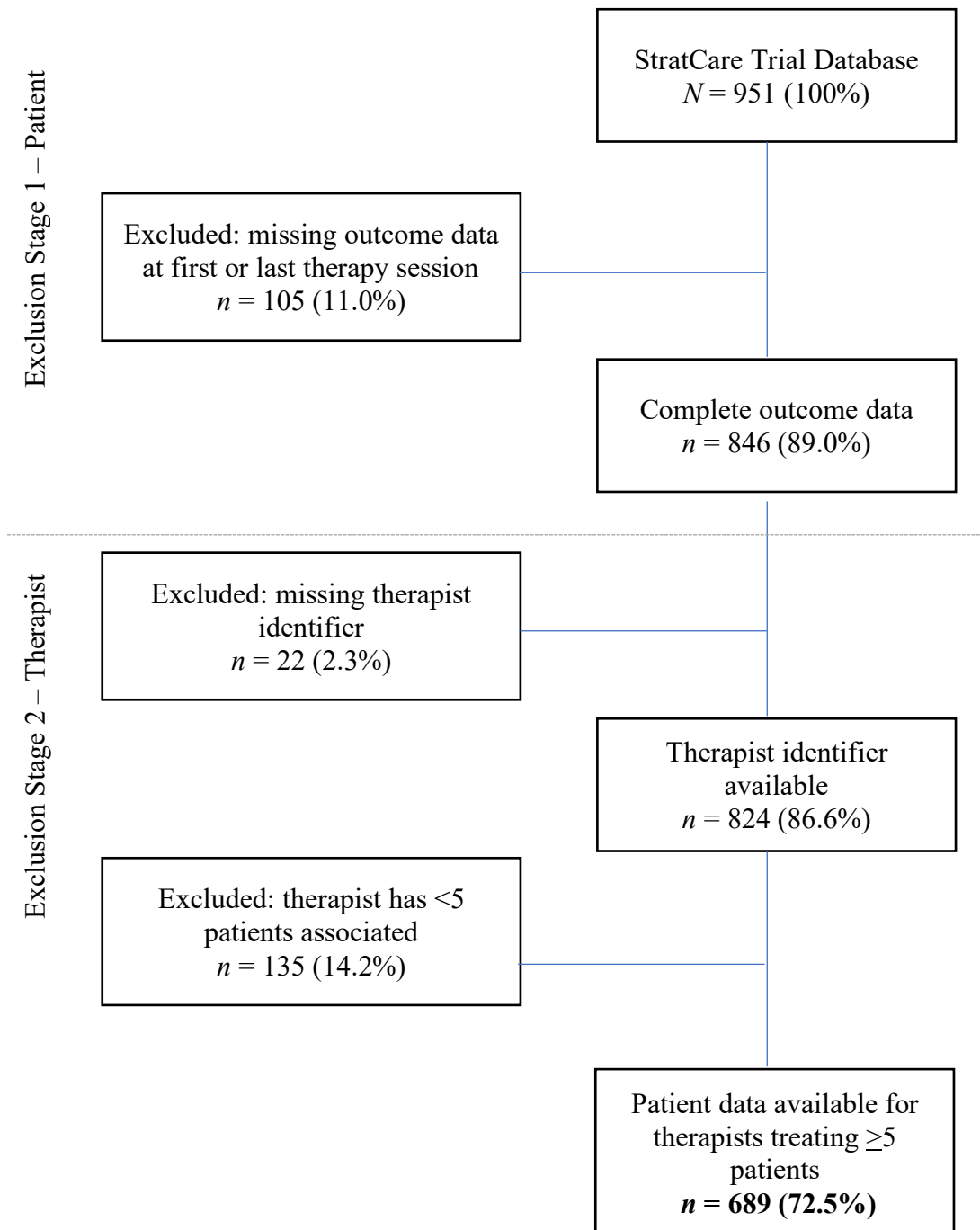
Study-Specific Dataset

For the purpose of the current research, LIT data from patients who received both LIT and HIT was not included in data analysis to avoid overrepresentation of these patients in the sample. This decision was in line with the aims of the research as patients with PD are more likely to be allocated to HIT (Goddard et al., 2015).

When choosing patients for analysis inclusion criteria pertaining to patients were satisfied first, followed by inclusion criteria for allocated therapists. Inclusion criteria were applied to obtain a sample that would be able to determine TEs (Schiefele et al., 2017; see Figure 1). Firstly, as the current research required pre and post-treatment outcomes, patients were excluded if they were missing PHQ-9 and GAD-7 data from their first or last therapy sessions ($n = 105$). There were no missing data for the SAPAS as this was completed for all participants during initial assessment. Secondly, multilevel model analysis requires an ability to link patients with allocated therapists. As such, any patient data missing the anonymised identifier for their allocated therapist were excluded ($n = 22$). Lastly, patient data was excluded if a therapist had treated less than five patients, as this would hinder multilevel model analysis required to determine TEs ($n = 135$; Schiefele et al., 2017).

Figure 1

STROBE diagram of inclusion and exclusion of patients from the StratCare trial database.



Selected Sample Characteristics

The final sample included $N = 689$ patients (treatment pathways: LIT = 60.7%, HIT = 32.7%, LIT & HIT = 6.7%) and $N = 48$ therapists. Therapists included in the study sample treated between 5 and 34 patients each ($M = 19.1$, $SD = 8.8$). Of the 689

patients included, 86% ($n = 594$) were deemed to meet the threshold on the SAPAS indicating likely PD. Additional sample characteristics of included and excluded patients can be viewed in Table 1. Further patients were excluded during analysis if patient-level data relevant to MLM were missing.

Table 1

Comparison of included and excluded patient characteristics

	Included ($n = 689$)	Excluded ($n = 262$)		
Patient Demographic/Characteristic	Mean (SD)/%	Mean (SD)/%	Test statistic (d.f.)	p
<i>Demographics</i>				
Patient age	38.3 (14.6)	38.2 (14.3)	$t(949) = 0.14$	.89
Female	63.7%	68.5%	$\chi^2(1) = 1.97$	.16
White	95.5%	94.7%	$\chi^2(1) = 0.30$	.58
Not employed	19.2%	21.0%	$\chi^2(1) = 0.40$	.53
<i>Clinical Characteristics</i>				
SAPAS at initial assessment	4.0 (1.4)	3.9 (1.5)	$t(949) = 0.96$	.34
SAPAS score ≥ 3	86.2%	82.4%	$\chi^2(1) = 2.14$	.14
WSAS at initial assessment	20.8 (9.2) $n = 658$	19.1 (9.5) $n = 260$	$t(916) = 2.43$	.02
Initial session PHQ-9	13.2 (6.5)	14.10 (5.8) $n = 138$	$t(825) = -1.49$	.14
Final session PHQ-9	8.8 (6.6)	9.7 (6.6) $n = 243$	$t(930) = -1.93$	.06
Initial session GAD-7	12.4 (5.5)	13.1 (5.4) $n = 138$	$t(825) = -1.27$	.20
Final session GAD-7	8.1 (6.0)	8.9 (5.8) $n = 243$	$t(930) = -1.72$	.09
Number of Contacts	6.4 (4.7)	7.3 (5.4)	$t(949) = -2.73$	.006
Planned Ending	71.1% $n = 644$	64.5% $n = 245$	$\chi^2(1) = 3.66$	.056

Table 1 (continued)

Note. SD = Standard deviation, d.f. = Degrees of freedom, SAPAS = Standardised Assessment of Personality – Abbreviated Scale (≥ 3 indicative of diagnosable PD), WSAS = Work and Social Adjustment Scale, PHQ-9 = Patient Health Questionnaire-9, GAD-7 = General Anxiety Disorder-7, t = t -test for equality of means, χ^2 = chi-squared test.

Statistical Analysis

Preliminary analyses used IBM SPSS (version 25) to explore treatment outcome data to determine the effectiveness of treatment. Paired samples t -tests examined the change in outcome scores for the PHQ-9 and GAD-7 completed during initial (pre) and last (post) therapy sessions. This was supplemented with pre-post treatment effect sizes (Cohen's d) using the equation recommended by Minami et al. (2008) to aid interpretation about the magnitude of treatment effects. Furthermore, separate paired samples t -tests determined the change between pre and post-treatment scores for patients with likely PD and those without. Additionally, Pearson's correlations explored the relationship between patient PD and post-treatment scores for depression and anxiety.

The primary analysis involved MLM using MLwiN software, which incorporates Integrative Generalised Least Squares algorithms (Charlton et al., 2020). The multilevel models consisted of two-levels, with patients (level 1) nested within therapists (level 2). Continuous variables (e.g., age, baselines severity, SAPAS scores) were grand mean centred (Wampold & Brown, 2005) to aid interpretability. Categorical variables with multiple labels were reduced to a smaller number of categories to facilitate interpretation of models and to enhance statistical power (i.e., sample size within cells). As such, two unemployment categories were formed; '*unemployed*' (included: '*unemployed job seeker*', '*long-term sick or disabled*', and '*unemployed, not seeking work*') and '*others*' as a reference category (included: '*employed*', '*student*',

'homemaker or carer', *'voluntary work'*, and *'retired'*). Similarly, two categories were formed for ethnicity (*'white British'* and *'minority ethnic group'*), dropout status (*'completed'* and *'dropped out'*), and previous LIT intervention (*'Prior LIT'* and *'No prior LIT'*). Previous LIT intervention was included as a patient-level variable to account for LIT intervention for patients who received LIT followed by HIT intervention.

In line with established model-building procedures, multilevel models were developed in progressive steps (Raudenbush, 1993). As the primary objective of current research was to explore the influence of patients' personality on TEs the first analysis focused on examining this. Two single-level (patient-level) regression models (SLRMs) were developed for depression and anxiety with post-treatment PHQ-9 and GAD-7 scores inputted as the dependent variables in the respective models. The only patient-level variable added to this model was the initial SAPAS score (i.e., indicator of PD). Subsequently, the significance of patient PD as an explanatory variable was determined by z-ratios (dividing derived coefficients by the corresponding standard error). Where values were greater than 1.96 a significance level of 5% was indicated. Following this, random intercept multilevel models (RIMLMs) were developed by adding a random intercept at the therapist-level. There were no explanatory variables added at the therapist-level beyond a unique therapist identifier. If a random intercept is significant it demonstrates significant variability at the therapist-level. Significant improvements from the SLRMs to the RIMLMs were determined by comparing the change between the $-2 \times \log$ likelihoods against the chi-square statistic for the additional degrees of freedom. To determine the percentage of total variance being accredited to TEs therapist-level variance was divided by the total variance to determine the intraclass correlation coefficient (ICC). The ICC was multiplied by 100 to provide an estimated TE and the significance of the TE was determined by calculating z-ratios.

Results were graphically examined using caterpillar plots. These plots rank individual therapist residuals (i.e., the impact of individual therapists whilst controlling for patient personality) produced by RIMLMs with 95% confidence intervals (CIs). Most effective therapists are displayed on the left denoted by negative residuals (i.e., a reduction in PHQ-9 & GAD-7 scores), whereas least effective therapists are displayed on the right denoted by positive residuals (Wampold & Brown, 2005). Therapist CIs passing the average therapist residual (i.e., zero) are deemed to have average effectiveness. Alternatively, therapist CIs not passing the average indicate effectiveness significantly above or below average.

Similar to the process outlined above, more comprehensive SLRMs and RIMLMs were developed that included additional explanatory patient-level variables. First, pre-treatment PHQ-9 and GAD-7 scores were added to the respective depression and anxiety models, followed by the alternate pre-treatment measures (i.e., pre-treatment GAD-7 added to the depression model). Next, patient-level demographic variables (e.g., age, gender, ethnicity, employment status) followed by clinical variables (e.g., SAPAS, WSAS) were added to the models. Where appropriate, variable interactions were also included in the SLRMs. Again, significance was determined by z-ratio calculations. Random intercepts were added at the therapist-level to produce RIMLMs. In the same way as before, significant improvements from the SLRMs to the RIMLMs were computed. Similarly, the ICC was calculated and the significance of the TE determined.

Finally, exploratory analyses were performed to further examine interactions between patient PD and post-treatment GAD-7 and PHQ-9 scores. This included one-way analyses of variance (ANOVA) and linear graphical representation.

Results

Treatment Outcomes

To determine the overall effectiveness of treatment, baseline severity and treatment outcomes were compared prior to the development of RIMLMs. Both PHQ-9 and GAD-7 scores reduced post-treatment, indicating a decrease in depression and anxiety symptom severity. Pre-post treatment effect sizes were in the moderate-to-large range for the full sample (PHQ-9 $d = 0.68$; GAD-7 $d = 0.78$). Refer to Table 2 for further comparisons between pre and post-treatment scores and effect sizes.

Table 2

Summary of Clinical Outcomes

Outcome Measure	Group	Mean initial (SD)	Mean final (SD)	Mean change (SD)	Pre-post effect size	t (d.f)
PHQ-9	All Patients	13.2 (6.5)	8.8 (6.6)	4.4 (5.8)	0.68	20.10 ^{***} (688)
	No PD ^a	12.1 (7.0)	7.3 (6.4)	4.8 (6.2)	0.69	7.53 ^{***} (94)
	PD ^b	13.4 (6.4)	9.0 (6.6)	4.4 (5.7)	0.68	18.64 ^{***} (593)
GAD-7	All Patients	12.4 (5.5)	8.1 (6.0)	4.3 (5.5)	0.78	20.69 ^{***} (688)
	No PD	11.4 (5.5)	6.7 (5.8)	4.7 (5.8)	0.85	7.84 ^{***} (94)
	PD	12.6 (5.5)	8.3 (6.0)	4.3 (5.4)	0.77	19.14 ^{***} (593)

Note. SD = Standard deviation, d.f = Degrees of freedom, PHQ-9 = Patient Health Questionnaire- 9, GAD-7 = General Anxiety Disorder-7, PD = Personality disorder

^a Patients scoring <3 on the Standardised Assessment of Personality – Abbreviated Scale (SAPAS)

^b Patients scoring ≥ 3 on the SAPAS

^{***} $p < .001$

Furthermore, positive correlations were demonstrated between SAPAS scores and post-treatment scores for the PHQ-9 (*Pearson's* $r = .176, p < .001$) and the GAD-7 (*Pearson's* $r = .173, p < .001$). Correlations suggest post-treatment severity is significantly associated with higher scores on the SAPAS, although the magnitude of the correlation was small.

Patient Personality & Therapist Effects

The main focus of the current research was to explore the influence of patients' personality on TEs. As such, two RIMLMs were developed (See Appendix L). Refer to Tables 3 and 4 for corresponding statistics in relation to depression and anxiety multilevel models.

Table 3

Random intercept multilevel model for PHQ-9 & SAPAS where therapists treated ≥ 5 patients

	β	Standard Error	Confidence Interval (95%)	p
<i>Fixed Part^a</i>				
Constant ^b	8.80	0.27	8.27 – 9.33	<.001
Initial Assessment SAPAS	0.80	0.18	0.46 – 1.17	<.001
<i>Random Part^c</i>				
Patient-level Variance ($n = 689$)	41.54	2.30		
Therapist-level Variance ($n = 48$)	0.51	0.67		
ICC	0.012			
-2*loglikelihood:	4530.63			

Note. SAPAS = Standardised Assessment of Personality – Abbreviated Scale, ICC = intraclass correlation coefficient (i.e., therapist effect)

^a Case-mix model

^b Patient Health Questionnaire- 9 (PHQ-9) collected during last therapy session

^c Multilevel model

Table 4

Random intercept multilevel model for GAD-7 & SAPAS where therapists treated ≥ 5 patients

	β	Standard Error	Confidence Interval (95%)	p
<i>Fixed Part^a</i>				
Constant ^b	8.12	0.24	8.27 – 9.33	<.001
Initial Assessment SAPAS	0.72	0.16	0.46 – 1.17	<.001
<i>Random Part^c</i>				
Patient-level Variance ($n = 689$)	34.48	1.91		
Therapist-level Variance ($n = 48$)	0.32	0.53		
ICC	0.009			
-2*loglikelihood:	4400.61			

Note. SAPAS = Standardised Assessment of Personality – Abbreviated Scale, ICC = intraclass correlation coefficient (i.e., therapist effect)

^a Case-mix model

^b General Anxiety Disorder-7 (GAD-7) collected during last therapy session

^c Multilevel model

These models revealed a positive main effect of patient PD (Initial Assessment SAPAS) on post-treatment severity of depression and anxiety, indicating for each additional score on the SAPAS measure, an additional 0.80 (PHQ-9) and 0.72 (GAD-7) was added to the respective post-treatment scores. The ICCs suggest therapists only accounted for 1.2% (depression model) and 0.9% (anxiety model) of outcome variance. Neither goodness-of-fit indices (i.e., lower -2*loglikelihoods statistics & coefficient z-ratio) were satisfied indicating no significant relationship between patient PD and TE in the current sample.

Patient Level Predictors

Please refer to Tables 5 and 6 for statistics relating to the case-mix models produced for depression and anxiety. SLRMs revealed positive main effects of baseline severity of depression (First Session PHQ-9) and functional impairment (Initial Assessment WSAS) in both depression and anxiety models. A positive main effect for baseline severity of anxiety (First Session GAD-7) was only demonstrated in the anxiety model. From these findings it can be concluded the more severely depressed, anxious, and functionally impaired patients are initially, the poorer their post-treatment outcomes. Age appeared to have a negative main effect in both models. As patient age increased, symptom severity decreased on outcome measures of depression and anxiety. Furthermore, unemployment at initial assessment had a significant main effect with higher post treatment severity in both depression and anxiety models. Neither of the models had a significant main effect of patient PD on post-treatment scores of depression and anxiety after controlling for significant case-mix features. Further exploration of patient PD is discussed later in the results section.

Table 5

Random intercept multilevel model for PHQ-9 where therapists treated ≥ 5 patients

	β	Standard Error	Confidence Interval (95%)	p
<i>Fixed Part^a</i>				
Constant ^b	8.51	0.27	7.98 – 9.04	<.001
First Session PHQ-9	0.57	0.03	0.50 – 0.63	<.001
Patient Age	-0.03	0.01	-0.06 – -0.01	.022
Unemployed	1.57	0.52	0.54 – 2.59	.003
Initial Assessment WSAS	0.09	0.02	0.04 – 0.14	<.001
<i>Random Part^c</i>				
Patient-level Variance ($n = 658$)	24.51	1.40		
Therapist-level Variance ($n = 48$)	1.02	0.59		
ICC	0.039			
-2*loglikelihood:	3992.97			

Note. WSAS = Work and Social Adjustment Scale, ICC = intraclass correlation coefficient (i.e., therapist effect)

^a Case-mix model

^b Patient Health Questionnaire- 9 (PHQ-9) collected during last therapy session

^c Multilevel model

Table 6*Random intercept multilevel model for GAD-7 where therapists treated ≥ 5 patients*

	β	Standard Error	Confidence Interval (95%)	<i>p</i>
<i>Fixed Part^a</i>				
Constant ^b	7.84	0.25	7.35 – 8.33	<.001
First Session GAD-7	0.22	0.11	0.01 – 0.42	.044
First Session PHQ-9	0.15	0.04	0.06 – 0.23	.001
Patient Age	-0.04	0.01	-0.06 – -0.01	.003
Unemployed	0.86	0.50	-0.12 – 1.83	.084
Initial Assessment WSAS	0.08	0.02	0.04 – 0.13	.001
Initial Assessment SAPAS x First Session GAD-7 (Interaction)	0.05	0.02	0.01 – 0.10	.026
<i>Random Part^c</i>				
Patient-level Variance (<i>n</i> = 658)	22.08	1.26		
Therapist-level Variance (<i>n</i> = 48)	0.75	0.50		
ICC	0.032			
-2*loglikelihood:	3921.03			

Note. PHQ-9 = Patient Health Questionnaire- 9, WSAS = Work and Social

Adjustment Scale, SAPAS = Standardised Assessment of Personality – Abbreviated Scale, ICC = intraclass correlation coefficient (i.e., therapist effect)

^a Case-mix model

^b General Anxiety Disorder-7 (GAD-7) collected during last therapy session

^c Multilevel model

Therapist Effects

The RIMLMs for depression and anxiety are displayed in Tables 5 and 6 (See Appendix M for RIMLMs). The ICCs suggest therapists accounted for 3.9% (depression model) and 3.2% (anxiety model) of outcome variance. Although the ICC, indicative of TE, met one of the goodness-of-fit indices by demonstrating significantly lower $-2 \times \log$ likelihoods statistics (5.23, $p = .02$, and 3.77, $p = .052$, respectively) the coefficient z-ratio criteria (1.74 and 1.54, respectively) were not satisfied in either model. As such, results do not indicate a significant TE on post-treatment scores when case mix is accounted for.

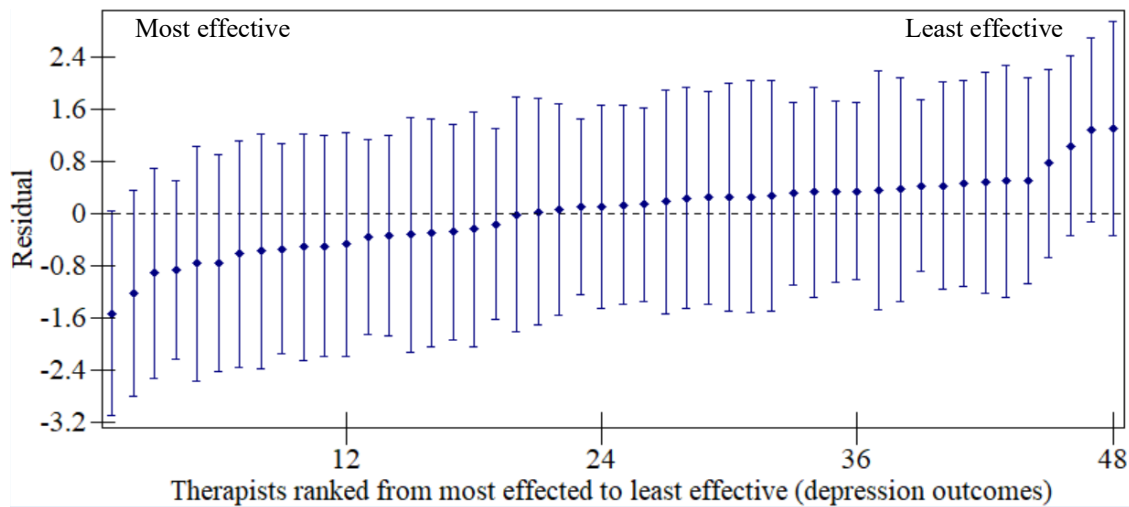
Prior to patient-level variables being added (i.e., empty MLMs) therapists only accounted for 2.0% (depression model) and 1.8% (anxiety model) of the variance in outcomes (See Appendix N for empty MLMs).

Graphical Representation of the Multilevel Models

Figures 2 and 3 depict caterpillar plots visually representing therapists' effectiveness in treating patients from the current sample. Most effective therapists are indicated on the left (i.e., a reduction in PHQ-9 & GAD-7 scores) and least effective therapists are on the right. Although both models follow the general trend of what is expected when exploring TEs (above average, average, and below average), the CIs at 95% are large, overlap considerably, and pass zero. As such, current research could not reliably group this sample of therapists in terms of their TE.

Figure 2

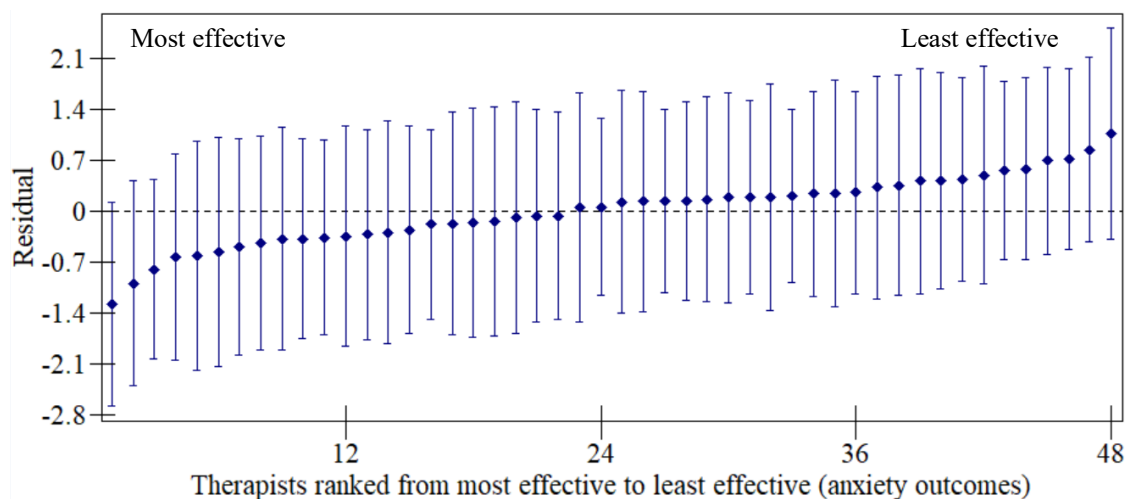
Caterpillar plot showing therapist effectiveness based on depression outcome severity



Note. The plot shows 95% confidence intervals. Each point represents an individual therapist.

Figure 3

Caterpillar plot showing therapist effectiveness based on anxiety outcome severity



Note. The plot shows 95% confidence intervals. Each point represents an individual therapist.

Exploratory Analysis

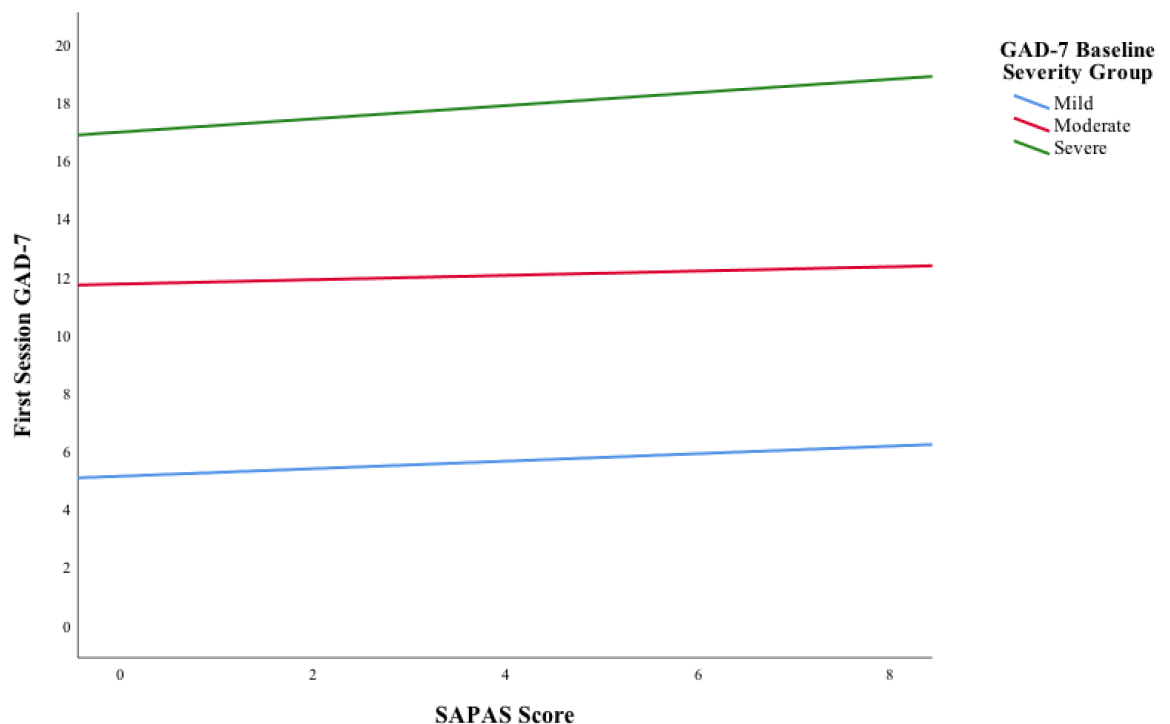
Anxiety

Exploratory analyses examined the relationship between patient PD and baseline severity for anxiety due to the observed interaction between these patient factors in the SLRM for anxiety.

After categorising patients' initial session GAD-7 scores into groups (mild = 0-9, $n = 213$, moderate = 10-14, $n = 202$, severe = 15+, $n = 274$) a one-way ANOVA was conducted. The ANOVA revealed mean SAPAS scores significantly differed between GAD-7 baseline severity groups ($F(2,686) = 9.01, p < .001$). SAPAS scores increased as baseline anxiety severity groups increased from mild ($M = 3.8, SD = 1.4$), to moderate ($M = 3.9, SD = 1.4$), to severe ($M = 4.3, SD = 1.4$). These findings show patients with higher pre-treatment GAD-7 scores were more likely to exhibit PD traits.

Figure 4

Pre-treatment anxiety scores categorised as mild (0-9), moderate (10-14), and severe (15+)



Note. This figure demonstrates a slightly steeper gradient for the severe pre-treatment anxiety group, compared to moderate and mild pre-treatment anxiety groups. GAD-7 = General Anxiety Disorder-7, SAPAS = Standardised Assessment of Personality – Abbreviated Scale

Figure 4 visually depicts the variability for three patient groups based on mild, moderate, and severe pre-treatment anxiety. The graph demonstrates a slightly steeper best-fit line gradient for patients whose pre-treatment GAD-7 scores were severe. Pre-treatment anxiety scores for patients in the severe group increased from approximately 17 (SAPAS = 1) to 19 (SAPAS = 8). Whereas the ranges for the moderate (range = 11.8 – 12.3 approximately) and mild (range = 5 – 6.1 approximately) pre-treatment anxiety groups appeared to be somewhat smaller. As such, patient SAPAS scores appear to have more influence on the group of patients with severe pre-treatment anxiety compared to the mild and moderate groups.

Together these results suggest, of the patients with severe pre-treatment anxiety, patients with PD have higher baseline severity (indicated by an increased score of 2) in comparison to patients who are unlikely to meet criteria for PD.

Depression

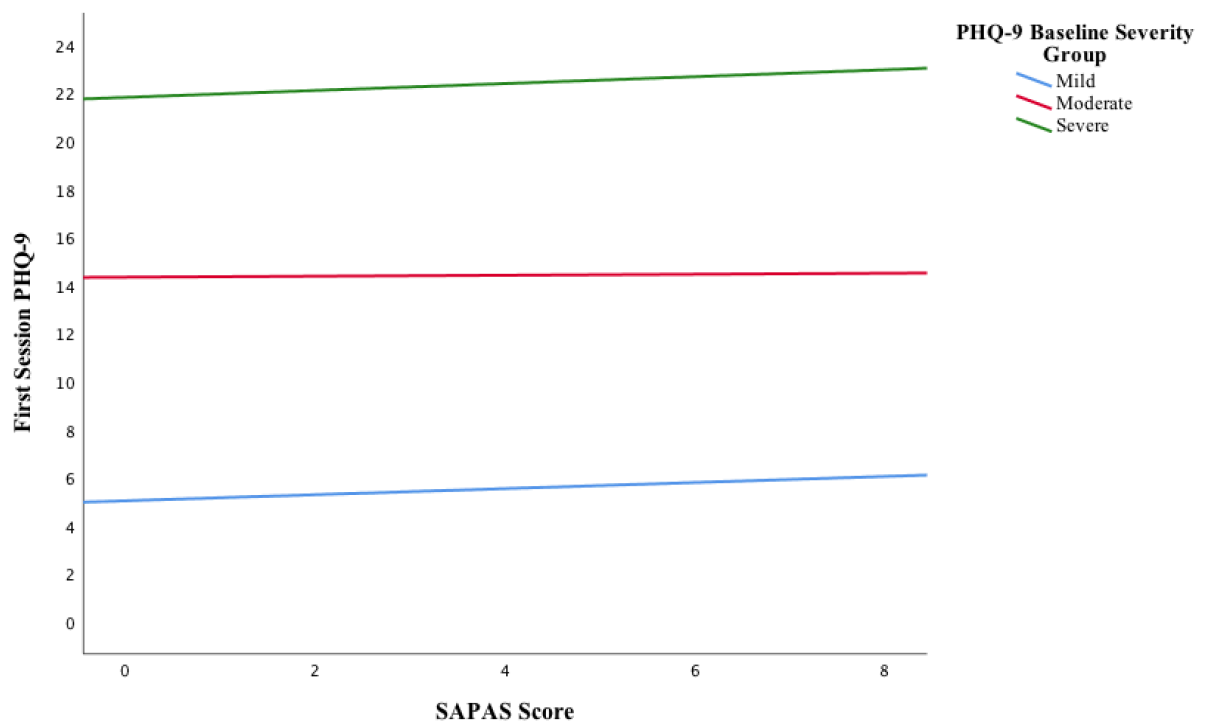
In the RIMLM for depression, where five or more patients were treated by a single therapist, an interaction between patient SAPAS scores and baseline severity for depression was not indicated. However, sensitivity analysis, where RIMLMs were produced for therapists who treated two or more patients ($n = 789$) and 10 or more patients ($n = 588$), revealed an interaction between patient SAPAS scores and baseline severity for depression (see Appendix O for Sensitivity Analyses Models). As such, exploratory analyses were also completed to examine this interaction.

In the same way as before, patient pre-treatment PHQ-9 scores were categorised into groups (mild = 0-9, $n = 214$, moderate = 10-19, $n = 341$, severe = 20+, $n = 134$) and

a one-way ANOVA was completed. The ANOVA revealed mean SAPAS scores significantly differed between PHQ-9 baseline severity groups ($F(2,686) = 14.01, p < .001$). SAPAS scores increased as baseline depression severity groups increased from mild ($M = 3.6, SD = 1.3$), to moderate ($M = 4.1, SD = 1.4$), to severe ($M = 4.4, SD = 1.5$). These findings show patients with higher pre-treatment PHQ-9 scores were more likely to exhibit PD traits.

Figure 5

Pre-treatment depression scores categorised as mild (0-9), moderate (10-19), and severe (20+)



Note. This figure demonstrates a slightly steeper gradient for the severe pre-treatment depression group, compared to moderate and mild pre-treatment depression groups.

PHQ-9 = Patient Health Questionnaire- 9, SAPAS = Standardised Assessment of Personality – Abbreviated Scale

Figure 5 visually depicts the variability amongst the three patient groups based on mild, moderate, and severe pre-treatment depression. Again, the graph shows a

slightly steeper best-fit line gradient for the group of patients whose pre-treatment scores were severe. The pre-treatment depression scores for patients in the severe group increased from approximately 21.8 (SAPAS = 1) to 23 (SAPAS = 8). Whereas, the ranges for the moderate (range = 14.3 – 14.5 approximately) and mild (range = 5 – 6 approximately) post-treatment depression groups appeared to be slightly smaller.

Similar to findings concerning anxiety, of the patients with severe pre-treatment depression, patients with likely PD have higher baseline severity (indicated by an increased score of 1.2) when compared to patients without PD.

Discussion

The primary aim of the current study was to explore whether patients' personality influenced the variability in outcomes between therapists (i.e., TEs).

Summary of Findings

Contrary to the first hypothesis, significant TEs were not detected in the current study. Models revealed TEs of 1.2% (depression model) and 0.9% (anxiety model) when specifically exploring patient PD. Furthermore, TEs of 3.9% (depression model) and 3.2% (anxiety model) were indicated when additional patient-level explanatory variables were added. However, no TEs met criteria for statistical significance.

Concerning the second hypothesis, prevalence of PD amongst patients was estimated to be 86% however, patient PD did not appear to influence variability in outcomes between therapists. Nevertheless, correlational analyses indicated significant positive relationships between patient PD and post-treatment depression and anxiety. In the current sample, models indicated patient PD was predictive of post-treatment depression and anxiety outcomes. However, when additional patient-level explanatory variables were added to models, PD was no longer a significant predictor of post-treatment scores. Finally, exploratory analyses revealed SAPAS scores were higher in

patient subgroups where pre-treatment scores for depression and anxiety were severe. Furthermore, when pre-treatment depression and anxiety scores were within a severe range, patients with higher scores on the SAPAS also scored more highly on pre-treatment measures than patients unlikely to have PD.

Existing Evidence

Therapist Effects

The absence of significant TEs in the current study contrasts from previous literature suggesting variability amongst therapists' treatment outcomes (Wampold, 2001). Research has consistently indicated an average TE of 5% for naturalistic studies and 8.2% for RCTs (Johns et al., 2019). TEs comparable to these figures have been observed in IAPT services whilst exploring a range of case-mix variables (Firth et al., 2015; Green et al., 2014; Saxon & Barkham, 2012; Saxon et al., 2017). Smaller TEs were demonstrated by Ali et al. (2014) amongst a sample of PWPs. TEs were reported as 1% for depression and 0.9% for anxiety in a three-level multilevel model where initial patient severity was not controlled for. These figures are similar to current TEs (1%) detected when patient PD was included as the only patient-level variable, albeit current findings were not significant.

Once additional patient-level variables were included in the models, TEs increased to 3.9% for depression and 3.2% for anxiety. Although not statistically significant, these figures are closer to the 5% TEs previously reported (Baldwin & Imel, 2013; Firth et al., 2019). Absence of significant TEs were reported by Almlöv et al. (2011) who explored TEs amongst therapists providing low-intensity internet-delivered intervention for anxiety. Researchers did not find a significant TE and attributed this to an underpowered sample, a common criticism amongst TE studies (Johns et al., 2019).

Patient Variables

The relationship between patient PD and poorer treatment outcomes for depression and anxiety are supported by previous literature (Gorwood et al., 2010). Newton-Howes et al. (2006; 2014) found, irrespective of treatment modality, comorbid PD more than doubled the likelihood of poorer outcomes amongst patients with depression. Hansen et al.'s (2007) research revealed poorer treatment outcomes following CBT for obsessive-compulsive disorder when patients had comorbid Cluster A or B PDs. Alternatively, comorbid Cluster A or C PDs were associated with poorer outcomes following CBT for panic (Telch et al., 2011). Furthermore, Goddard et al. (2015) reported higher SAPAS scores independently predicted higher post-treatment depression and anxiety as well as higher functional impairment in patients attending an IAPT service.

The current study observed comparable pre-post treatment effect sizes for depression between groups of patients with likely PD and those without (PHQ-9 $d = 0.68$). This finding suggests the influence of PD is clinically trivial when comparing post-treatment outcomes for depression, even if univariate correlations with treatment outcomes were statistically significant. Additionally, it demonstrates patients with PD exhibit comparable change to patients who do not have PD despite presenting higher post-treatment depression. This conclusion is supported by Joyce et al.'s (2007) research finding PD did not negatively affect patients' response to CBT for depression. Alternatively, pre-post treatment effect sizes for anxiety appeared to be greater for patients without PD (GAD-7 $d = 0.85$) than patients with likely PD (GAD-7 $d = 0.77$). These conclusions are consistent with previous research finding patients who scored highly on a PD screening tool demonstrated poorer post-treatment outcomes for anxiety (Goddard et al., 2015). Nevertheless, these findings infer patients with likely PD are not

treatment resistant and can yield moderate pre to post-treatment effects following intervention for depression and anxiety.

Interestingly, when additional patient-level variables were added to the models, specifically baseline severity, patient personality ceased to be a significant predictor of post-treatment depression and anxiety. This finding indicates patient baseline severity is more predictive of post-treatment severity than patient personality which is consistent with previous findings. Research has demonstrated a relationship between higher baseline severity and higher post-treatment outcomes when comparing patients with mild and severe baseline depression (Bower et al., 2013) and anxiety (Kampman et al., 2008). Further research has highlighted baseline severity as the most prominent patient-level variable associated with treatment outcomes (Garfield, 1994; Kim et al., 2006; Saxon & Barkham, 2012). Okiishi et al. (2006) concluded additional patient variables did very little in the prediction of treatment outcomes once baseline severity was accounted for. Furthermore, in their recent review Banyard et al. (2021) found patients with PD demonstrated slightly poorer outcomes for depression compared to patients without PD. However, the effect of PD was not significant once studies adjusted for baseline severity. This finding is consistent with the present results.

Patient Personality & Baseline Severity

Finally, higher SAPAS scores were associated with higher baseline severity suggesting patients with PD enter therapy with greater impairment than patients without PD. Research has demonstrated people who develop PDs often experience adverse life events during early development (Klein et al., 2015; Porter et al., 2020). Adversity in early life has been linked with the development of maladaptive beliefs of self, others, and the world (Van Veen et al., 2013) which can have significant impacts on early attachments and interpersonal relationships (Davis et al., 2001). Substantive research has linked early attachment styles with internalising problems and the development of

psychopathology (Brumariu & Kerns, 2010; DeKlyen & Greenberg, 2008). As such childhood adversity, common amongst patients with PD, has been linked to early onset and recurrent episodes of depression and other Axis I disorders (Corruble et al., 1996; Hovens et al., 2010; Ramklint & Ekselius, 2003; Spinhoven et al., 2010). Therefore, it is plausible to assume patients with PD have experienced recurrent symptoms of depression and anxiety from an early age. Subsequently, by the time patients with PD commence psychotherapy their baseline severity and degree of impairment is significantly higher than patients without PD (Banyard et al., 2021). The accumulation of this literature supports current findings regarding patient PD and baseline severity.

Strengths and Limitations

The current study is the first to explore the influence of patients' personality on TEs. To do so, authors applied necessary statistical methodology whereby patients were nested within therapists (i.e., MLM) which was essential for meeting the objectives of the research. Although results relating to TEs were not consistent with previous research, the current study has contributed to the literature concerning baseline severity, patient PD, and treatment outcomes. Nevertheless, there were limitations relating to the sample, original RCT, measures, and analysis that should be considered.

Sample

A main criticism of the current study is the sample size. Following application of inclusion and exclusion criteria the sample was reduced to 689 patients and 48 therapists. This would usually be considered a large sample however, it is below the recommended threshold for studies investigating TEs that implement MLM. Schiefele et al. (2017) proposed a minimum sample of 1200 patients and a variety of different patient/therapist ratios for TE studies. Although this study was able to follow recommendations of no less than 4 patients being treated per therapist, patient/therapist ratios were not consistent (ranging between 5-34 patients per therapist). Consequently,

it is likely the current study did not have sufficient power due to the small sample size or adequate patient/therapist ratios to accurately detect TEs leading to Type II error.

The original dataset added an additional level of complexity due to the heterogenous sample. As described above, patients received either LIT, HIT, or a combination of LIT followed by HIT intervention. These interventions were delivered by psychological wellbeing practitioners (LIT) or qualified psychotherapists and counsellors (HIT) who hold different post-graduate qualifications. During initial dataset examination the varying levels of interventions were separated further reducing the sample size and preliminary multilevel models were conducted revealing no significant TE. To preserve a larger sample data analysis was completed with patients receiving both LIT, HIT, and the HIT data from patients who received LIT followed by HIT intervention. Previous research has found a TE of 6.7% in a sample of low and high-intensity therapists (Pereira et al., 2017). Furthermore, research has indicated no significant differences in TEs when comparing groups of PWPs and cognitive behavioural therapists (Delgadillo et al., 2020). However, by combining these therapists the overall TEs were calculated using a heterogenous sample which could have resulted in additional variance not being controlled for leading to overestimated standard errors, thus increasing the likelihood of Type II error.

A final sample limitation relates to the inclusion and exclusion criteria applied to the original dataset and the study-specific dataset to obtain the current sample. The application of exclusion criteria makes the sample vulnerable to selection biases, therefore current findings are not applicable to all patients or therapists who started the StratCare trial. Furthermore, findings are not generalisable to the wider clinical population, therapists who treated less than five patients, or trainee therapists. Additionally, as the original StratCare trial was conducted in two northern NHS trusts in

the UK, generalisability of findings is limited to these services and cannot be applied to other services nationally or globally.

Retrospective Dataset

The data collected for this study was restricted primarily to patient variables and outcomes. As such, information on therapist variables is lacking, therefore the influence of these variables on TEs continues to go unexplored (Johns et al., 2019). Furthermore, there were some limitations regarding the acquisition of patient demographic information and post-treatment outcomes. When asking about patient ethnicity, two options were available ‘*white British*’ versus ‘*minority ethnic group*’. These choices are reductionist as they do not sufficiently account for variability in ethnicity or culture amongst patient groups. This continues to be an area of development in research so psychotherapy services can improve responsiveness to racial and cultural diversity amongst patients (American Psychological Association, 2019). Also, all outcome measures required self-report, therefore findings are vulnerable to response biases. Finally, patients were required to meet clinically significant depression and anxiety during initial assessment. However, researchers have questioned the accuracy of the PHQ-9 in determining the presence of depression using a cut-off score of 10 (Levis, 2020). Alternatively, GAD-7 cut-off scores between 7 and 10 have been considered acceptable for identifying anxiety disorders (Plummer et al., 2016).

Measuring Personality Disorder

The use of a self-report PD measure can be critiqued. Firstly, self-report measures are generally vulnerable to social desirability and participants responding to demand characteristics. Secondly, self-report PD measures require people to have insight into maladaptive behavioural patterns which they may consider adaptive. Furthermore, research indicates self-report PD measures, like the SAPAS, can be confounded by stress responses consistent with current circumstances and impaired

functioning associated with other psychopathology (e.g., depression and anxiety; Hesse & Moran, 2010; Zimmermann et al., 2020). Therefore, self-report measures of PD can overestimate the presence of PD compared to independent assessments such as the Structured Clinical Interview for DSM-IV PDs (SCID-II; First et al., 1994). This could explain the high proportion of patients (86%) meeting criteria for PD in the current sample using the SAPAS.

Although the SAPAS has performed acceptably when examining patients with PD, the predictive power of the SAPAS diminishes when assessing primary care patients (Moran et al., 2003; Fok et al., 2015). Furthermore, the SAPAS is recommended as a screening tool and does not provide a formal PD diagnosis. Finally, the SAPAS responses are binary (yes/no) as such, the ability to capture the complexity of personality dysfunction or cluster present PDs is ambiguous (Moran et al., 2003). More rigorous measures of personality and PD may be beneficial to future research.

Therapy Process Variables

As the current research was interested in patient-level variables, specifically PD, no therapy process variables (e.g., number of sessions, treatment completion) were included in case-mix analysis. Research has described an association between the number of attended sessions and patient outcomes, and this has been variable between therapists. TEs were seen to increase from 2% when patients attended two therapy sessions to 40% when they attended 20 or more (Saxon et al., 2017). As such, a greater number of sessions and completion of therapy have been linked to larger TEs. Although the relationship between PD diagnosis and treatment dropout has not been confirmed (Banyard et al., 2021), a link between patient PD and treatment dropout has been suggested (Goddard et al., 2015; Jinks et al., 2012). Therefore, the selected sample could be unrepresentative of patients with PD who continued therapy beyond initial assessment. This may have contributed to the acceptance of null hypotheses.

Future Research

The current study did not yield significant TEs typically observed in routine datasets therefore, the research should be replicated with a larger sample whilst addressing the other limitations highlighted above. Future research should concentrate on designing research/datasets specifically for the exploration of TEs. This will address issues around sample size, patient and therapist ratios, and ensure sufficient data regarding patient and therapist-level variables are collected (Johns et al., 2019).

The StratCare dataset lacked therapist-level variables that could explain TEs. Research has found a number of therapist-level variables (e.g., self-doubt, interpersonal skill, and deliberate practice) to be associated with TEs (Anderson et al., 2009; Chow et al., 2015; Nissen-Lie et al., 2017). Therefore, data for therapist-level variables should be gathered in future to allow for further exploration of TEs.

In order to understand the influence of patient personality on TEs researchers might consider conducting research on the influence of patient personality more generally (e.g., Five-Factor Model; Costa & McCrae, 1992) on TEs. Patient personality data are not typically gathered in routine datasets however, researchers have found patient personality can influence treatment outcomes (Ogrodniczuk et al., 2003). Furthermore, research has suggested an interaction between patient and therapist personality traits which could be influential to treatment outcomes (Coleman, 2006; Delgadillo et al., 2020; Rieck & Callahan, 2013). As such, the influence of therapist personality on TEs could be another influential therapist-level variable requiring further exploration.

Finally, it would be beneficial to gather data from sites nationally to increase generalisability but also to facilitate three-level modelling whereby patients are nested within therapists, and therapists are nested within clinics. Furthermore, as the StratCare

trial data was gathered over a short period of time (18 months) it may be advantageous to extend the duration of data collection so TEs can be examined over time.

Clinical Implications

Lack of significant TEs observed in the current study are not aligned with findings from previous research. Nevertheless, current conclusions relating to TEs could be accurate rather than anticipated Type II error. Baldwin and Imel's (2013) literature review found TEs to be smaller in RCTs suggesting in this context factors contributing to variability are suppressed. Furthermore, variability may be lower in IAPT settings due to the implementation of highly structure treatment protocols which inevitably reduces inconsistencies in therapy delivery thus decreasing TEs. This could justify the need for adherence checks, structured treatment protocols, and close supervision to reduce variability and TEs (Johns et al., 2019).

The current study revealed a high proportion of patients within primary care settings (i.e., IAPT) are likely to meet criteria for PD or at least exhibit PD traits. Pre-post treatment effect sizes were quite large for patients with likely PD and were comparable to patients without PD, especially on measures of depression. This finding challenges the inherited clinical wisdom (i.e., prejudice) around patient PD and response to treatment (Newton-Howes et al., 2014; Telch et al., 2011). However, more research exploring the influence of patient PD on pre-post treatment anxiety would be beneficial as little is known about this interaction (Schneider et al., 2014). Nevertheless, current results indicate patients with likely PD respond positively to evidence-based treatment in primary care settings therefore they should not be excluded from receiving care in these services.

The completion of a screening tool for PD during initial assessment may offer additional clinical information about patients' presentation that could inform the treatment trajectory. Current findings indicated patients with likely PD can benefit

comparably to patients without PD from interventions for depression. However, baseline severity and treatment outcomes remain poorer for patients with likely PD. This raises questions concerning how interventions can be adjusted for patients with likely PD commencing psychotherapy with higher baseline severity. For example, patients with PD could be offered more intense interventions (Bienfeld, 2007; Beck et al., 2015) or receive treatment for a longer duration (Banyard et al., 2021). Additionally, model adherence and close supervision may be more relevant for the delivery of interventions to patients with likely PD to ensure therapy effectiveness (Banyard et al., 2021).

Finally, with the high proportion of patients presenting to IAPT services with likely PD it is important for therapists to remain aware of their thoughts and feelings towards their patients. Patients with PD are likely to present interpersonal challenges which can impede the development of therapeutic alliance but also lead to therapist burnout (Linehan et al., 2000; Spinhoven et al., 2007). These processes may inadvertently impact treatment outcomes (Horvath et al., 2011; McCarthy & Frieze, 1999). As such, support for therapists (e.g., supervision, reflective spaces) is necessary for provision of effective intervention to patients with PD in IAPT services.

Conclusion

The current study aimed to explore whether patients' personality influenced TEs. Current findings did not support the influence of patient PD on TEs. Patient PD appeared to predict poorer post-treatment outcomes, however baseline severity was more predictive of poorer treatment outcomes than patient personality. Interestingly, patients with PD showed higher baseline severity compared to patients without likely PD. Future studies should continue to explore patient personality but also consider investigating the role of therapist personality on TEs.

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Appendix

Appendix	Title	Page
Appendix A	StratCare Trial Registration	136
Appendix B	Patient Health Questionnaire- 9 (PHQ-9)	140
Appendix C	General Anxiety Disorder-7 (GAD-7)	141
Appendix D	Work and Social Adjustment Scale (WSAS)	142
Appendix E	Standardised Assessment of Personality – Abbreviated Scale (SAPAS)	143
Appendix F	Ethical Approval	144
Appendix G	StratCare Trial – Ethical Approval	145
Appendix H	StratCare Trial – Health Research Authority and Health and Care Research Wales (HCRW) Approval	149
Appendix I	StratCare Trial Patient Information Form	155
Appendix J	StratCare Trial Therapist Information Form	157
Appendix K	Therapist Consent Form	159
Appendix L	Random Intercept Multi-Level Models - Patient Personality	160
Appendix M	Case-Mix Adjusted Random Intercept Multi-Level Models	161
Appendix N	Unconditional (empty) Multi-Level Models	162
Appendix O	RIMLM Sensitivity Analyses	163

Appendix A - StratCare Trial Registration

ISRCTN registry



ISRCTN11106183 <https://doi.org/10.1186/ISRCTN11106183>

StratCare Trial

Condition category: Mental and Behavioural Disorders

Date applied: 25/07/2018

Date assigned: 27/07/2018

Last edited: 26/07/2018

Prospective/Retrospective: Prospectively registered

Overall trial status: Ongoing

Recruitment status: No longer recruiting

Plain English Summary

Background and study aims:

Patients with depression and anxiety problems accessing the English National Health Service are commonly referred for psychological treatment in IAPT services (Improving Access to Psychological Therapies). IAPT services organise treatment in a stepped care model, where most patients tend to initially receive brief and low intensity interventions before accessing more intensive psychological therapies if required. Recent studies have shown that some patients with more complex clinical presentations tend to drop out and have poor outcomes in low intensity treatments, but they respond better to high intensity treatments. These studies have suggested that referring 'complex cases' directly to high intensity treatments (stratified care) could considerably improve their likelihood of improvement in depression symptoms. The aim of this study is to compare the effectiveness of a stratified care model (where complex cases are matched to high intensity treatments) versus usual stepped-care.

Who can participate?

Therapists and their patients who are eligible for treatment in IAPT

What does the study involve?

Therapists (and patients they assess) are randomly allocated to the StratCare group or the usual care control group. Therapists in the StratCare group are trained to use a computer programme that helps them to identify complex cases and to adequately refer these to high intensity treatments. Control group therapists assess patients and make referrals for treatment in the usual way (based on their clinical judgment and following stepped care principles). Participants' depression and anxiety are measured before and after treatment.

What are the possible benefits and risks of participating?

The StratCare treatment selection method may result in improved depression symptoms for patients classified as having a complex clinical profile. It is not expected that taking part in the study will lead to any disadvantages or risks to therapists or to any patients.

Where is the study run from?

1. Lancashire Care NHS Foundation Trust (UK)
2. Rotherham, Doncaster and South Humber NHS Foundation Trust (UK)

When is the study starting and how long is it expected to run for?

August 2018 to December 2019

Who is funding the study?

MindLife UK

Who is the main contact?

Dr Jaime Delgadillo

jaime.delgadillo@nhs.net

Trial website: <https://www.stratcare.co.uk/>

Contact information

Type: Scientific

Primary contact: Dr Jaime Delgadillo

ORCID ID: <http://orcid.org/0000-0001-5349-230X>

Contact details: Clinical Psychology Unit, University of Sheffield, Cathedral Court, Floor F, 1 Vicar Lane, Sheffield, S1 2LT, United Kingdom, +44 (0)114 222 6614, jaime.delgadillo@nhs.net

Study information

Scientific title

Pragmatic randomised controlled trial of a stratified care model for depression and anxiety

Acronym: StratCare

Study hypothesis

Patients in the StratCare group will have significantly greater improvement in depression symptoms after psychological treatment, compared to those in the usual care control group. It is expected that this effect will be found specifically in the subsample of patients classified as complex cases at the time of initial assessment.

Ethics approval: West of Scotland Research Ethics Service, 18/07/18, ref: 18/WS/0114

Study design: Pragmatic cluster randomised controlled trial

Primary study design: Interventional

Secondary study design: Cluster randomised trial

Trial setting: Community

Trial type: Treatment

Patient information sheet: <https://www.stratcare.co.uk/information/>

Condition: Common mental health problems (depression, anxiety)

Additional identifiers

Protocol/serial number: 152958

Intervention

Psychological therapists who carry out mental health assessments in routine primary care services will be randomly assigned to an experimental group (StratCare) or a usual care control group. Therapists in the experimental group will have access to a computerized artificial intelligence programme called the StratCare App. The programme prompts therapists to enter (fully anonymized) data for patients who they assess, and uses a machine learning algorithm to recommend a specific type of psychological treatment, based on each patient's characteristics.

Control group therapists will assess patients and make referrals for treatment in the usual way (based on their clinical judgment and following stepped care principles).

Intervention type: Device

Primary outcome measure

Depression measured using PHQ-9 pre (initial assessment) and post-treatment (final therapy session)

Secondary outcome measures

1. Anxiety measured using GAD-7 pre (initial assessment) and post-treatment (final therapy session)
2. Treatment dropout rates, as recorded in routine clinical records
3. Therapists' adherence to the StratCare treatment recommendations, as measured by statistical reliability indices (hit rates, and treatment-matching precision scores)
4. Cost-effectiveness of the StratCare model by comparison to usual care, determined using a cost-effectiveness acceptability curve (CEAC)

Overall trial start date: 06/08/2018

Overall trial end date: 20/12/2019

Eligibility***Participant inclusion criteria***

1. Consenting psychological wellbeing practitioners and psychotherapists that carry out routine assessments in an IAPT service (Improving Access to Psychological Therapies programme in England)
2. Therapists who are employed by a participating IAPT service on a permanent contract, or temporary staff who have a contract that is at least as long as the expected timescale for the project (1 year)
3. All consenting patients who are assessed by participating therapists, who are deemed eligible for treatment in IAPT, and who attend at least one post-assessment therapy session

Participant type: Health professional

Age group: Adult

Gender: Both

Target number of participants: 760 cases need to be assessed to identify 226 complex cases (target subsample for primary analysis)

Participant exclusion criteria

1. Therapists whose contract is shorter than the expected timescale for the study (1 year)
2. Therapists currently in training, since they are not yet fully qualified to carry out routine assessments
3. Patients who are assessed as ineligible for treatment in IAPT (e.g., those who are signposted to other services), or eligible patients who never attend any therapy sessions after an initial assessment contact

Recruitment start date: 13/08/2018

Recruitment end date: 01/05/2019

Locations

Countries of recruitment: United Kingdom

Trial participating centre: Lancashire Care NHS Foundation Trust, Preston, PR1 8UY, United Kingdom

Trial participating centre: Rotherham, Doncaster and South Humber NHS Foundation Trust, Doncaster, DN8 5HU, United Kingdom

Sponsor information

Organisation: University of Sheffield

Sponsor details: Department of Psychology, University of Sheffield, Cathedral Court, 1 Vicar Lane, Sheffield, S1 2LT, United Kingdom

+44 (0)114 222 6517

psychology@sheffield.ac.uk

Sponsor type: University/education

Website: <https://www.sheffield.ac.uk/psychology/index>

Funders

Funder type: Industry

Funder name: MindLife UK

Results and Publications***Publication and dissemination plan***

Additional documents, including a full study protocol, statistical analysis plan and copies of relevant assessment measures are available upon request from the Chief Investigator. These documents have been pre-registered and independently reviewed via the UK Integrated Research Approval System (IRAS). A full description of the StratCare algorithm has been published in a scientific journal and is publicly available at: <https://doi.org/10.1037/ccp0000231>

Results of the trial will be published in scientific journals. Results will also be shared with the participating services at local team meetings and through a research newsletter.

IPD sharing statement: The data sharing plans for the current study are unknown and will be made available at a later date.

Intention to publish date: 20/02/2020

Participant level data: To be made available at a later date

Appendix B - Patient Health Questionnaire- 9 (PHQ-9)

Removed to ensure conformance with copyright legislation.

Appendix C - General Anxiety Disorder-7 (GAD-7)

Removed to ensure conformance with copyright legislation.

Appendix D - Work and Social Adjustment Scale (WSAS)

Removed to ensure conformance with copyright legislation.

**Appendix E - Standardised Assessment of Personality – Abbreviated Scale
(SAPAS)**

Removed to ensure conformance with copyright legislation.

Appendix F – Ethical Approval



Downloaded: 24/11/2020
Approved: 20/12/2019

Ashleigh Fletcher
Registration number: 180156896
Psychology
Programme: DiClinPsy - Doctorate in Clinical Psychology

Dear Ashleigh

PROJECT TITLE: Therapist Effects: The Relevance of Patients Personality
APPLICATION: Reference Number 031220

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 20/12/2019 the above-named project was **approved** on ethics grounds, on the basis that you will adhere to the following documentation that you submitted for ethics review:

- University research ethics application form 031220 (form submission date: 21/11/2019); (expected project end date: 30/09/2021).
- Participant information sheet 1071396 version 1 (14/10/2019).
- Participant information sheet 1071395 version 1 (14/10/2019).
- Participant consent form 1071397 version 1 (14/10/2019).

The following optional amendments were suggested:

The Lead Reviewer notes that: Ashleigh is advised to seek an opinion from IRAS about the best course of action in terms of secondary analysis - I am concerned that one reviewer has spelt this action out clearly, and not to do that would look odd. However, I (the Chair) note that participants have provided consent for their data to be used in subsequent research and IRAS have provided approval for this. If this is indeed the case, then I don't think it is necessary to return to IRAS to seek further permission to use the data in this way.

If during the course of the project you need to [deviate significantly from the above-approved documentation](#) please inform me since written approval will be required.

Your responsibilities in delivering this research project are set out at the end of this letter.

Yours sincerely

Thomas Webb
Ethics Administrator
Psychology

Please note the following responsibilities of the researcher in delivering the research project:

- The project must abide by the University's Research Ethics Policy: <https://www.sheffield.ac.uk/rs/ethicsandintegrity/ethicspolicy/approval-procedure>
- The project must abide by the University's Good Research & Innovation Practices Policy: https://www.sheffield.ac.uk/polopoly_fs/1.6710661/file/GRIPPolicy.pdf
- The researcher must inform their supervisor (in the case of a student) or Ethics Administrator (in the case of a member of staff) of any significant changes to the project or the approved documentation.
- The researcher must comply with the requirements of the law and relevant guidelines relating to security and confidentiality of personal data.
- The researcher is responsible for effectively managing the data collected both during and after the end of the project in line with best practice, and any relevant legislative, regulatory or contractual requirements.

Appendix G - StratCare Trial - Ethical Approval

WoSRES
West of Scotland Research Ethics Service



Dr Jaime Delgadillo
Lecturer in Clinical Psychology
University of Sheffield
Clinical Psychology Unit
University of Sheffield
Cathedral Court, Floor F
1 Vicar Lane, Sheffield
S1 1HD

West of Scotland REC 5
West of Scotland Research Ethics Service
West Glasgow Ambulatory Care Hospital
Dalnair Street
Glasgow
G3 8SJ

Date 18 July 2018
Direct line 0141 232 1809
E-mail WoSREC5@ggc.scot.nhs.uk

Please note: This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

Dear Dr Delgadillo

Study title: Pragmatic randomised controlled trial of a stratified care model for depression and anxiety
REC reference: 18/WS/0114
Protocol number: 152958
IRAS project ID: 247945

Thank you for your letter of 11 July 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

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 HRA and HCRW Approval (England and Wales)/ NHS permission for research is available in the Integrated Research Application System, at 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).

Approved documents

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

<i>Document</i>	<i>Version</i>	<i>Date</i>
Covering letter on headed paper [Cover letter]		25 May 2018
Covering letter on headed paper [Cover letter]		08 June 2018
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [StratCare Insurance Certificate]		25 May 2018
Instructions for use of medical device [StratCare App: Instructions for use of non-medical device (Simply stated as MAY18)]	1	01 May 2018
IRAS Application Form [IRAS_Form_01062018]		01 June 2018
Letter from funder [Funding letter]		27 May 2018
Letter from sponsor [Sponsorship confirmation letter]		23 May 2018
Letter from statistician [Statistical review]		19 May 2018
Other [HRA definition of NON-MEDICAL device]		
Other [StratCare_Patients_Consent_process_v1]	1	04 July 2018
Other [StratCare_Patients_Info_Sheet_v1]	1	04 July 2018
Other [StratCare_Therapists_Consent_form_v3]	3	04 July 2018
Other [StratCare_Trial_Protocol_v2]	2	11 July 2018
Other [Cover letter 11.07.18]		11 July 2018
Participant information sheet (PIS) [Participant Information Sheet]	2	08 June 2018
Summary CV for Chief Investigator (CI) [CV]		
Summary of any applicable exclusions to sponsor insurance (non-NHS sponsors only) [Public Liability Insurance Certificate]		05 September 2017
Validated questionnaire [Validated questionnaires]		

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/>

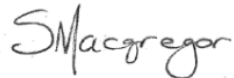
HRA Training

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/WS/0114	Please quote this number on all correspondence
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With the Committee's best wishes for the success of this project.

Yours sincerely



for

Dr Stewart Campbell
Chair

Enclosures: "After ethical review – guidance for researchers"

Copy to: Dr Thomas Webb, University of Sheffield
Ms Beverley Lowe, Lancashire Care NHS Foundation Trust

Appendix H – StratCare Trial Health Research Authority and Health and Care Research Wales (HCRW) Approval



Dr Jaime Delgadillo
Lecturer in Clinical Psychology
Clinical Psychology Unit,
University of Sheffield
Cathedral Court, Floor F
1 Vicar Lane, Sheffield
S1 1HD

Email: hra.approval@nhs.net
Research-permissions@wales.nhs.uk

26 July 2018

Dear Dr Delgadillo

**HRA and Health and Care
Research Wales (HCRW)
Approval Letter**

Study title:	Pragmatic randomised controlled trial of a stratified care model for depression and anxiety
IRAS project ID:	247945
Protocol number:	152958
REC reference:	18/LO/1116
Sponsor	Sheffield University

I am pleased to confirm that HRA and Health and Care Research Wales (HCRW) 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 relating to this application.

How should I continue to work with participating NHS organisations in England and Wales?

You should now provide a copy of this letter to all participating NHS organisations in England and Wales, 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 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.).

IRAS project ID	247945
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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 and Scotland?

HRA and HCRW Approval does not apply to NHS/HSC organisations within the devolved administrations of Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) has been sent 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 NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?

HRA and HCRW 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 or Wales. 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: Dr Thomas Webb

Email: T.Webb@sheffield.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 **247945**. Please quote this on all correspondence.

IRAS project ID	247945
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Yours sincerely

Thomas Fairman
HRA Assessor

Email: hra.approval@nhs.net

*Copy to: Dr Thomas Webb, Sheffield University, (Sponsor Contact)
Ms Beverley Lowe, Lancashire Care NHS Foundation Trust,
(Lead NHS R&D Contact)*

IRAS project ID	247945
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List of Documents

The final document set assessed and approved by HRA and HCRW Approval is listed below.

<i>Document</i>	<i>Version</i>	<i>Date</i>
Covering letter on headed paper [Cover letter]		25 May 2018
Covering letter on headed paper [Cover letter]		08 June 2018
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [StratCare Insurance Certificate]		25 May 2018
HRA Schedule of Events [Schedule of events]	1.0	08 June 2018
HRA Statement of Activities [Statement of activities]	1.0	08 June 2018
Instructions for use of medical device [StratCare App: Instructions for use of non-medical device (Simply stated as MAY18)]	1	01 May 2018
IRAS Application Form [IRAS_Form_01062018]		01 June 2018
Letter from funder [Funding letter]		27 May 2018
Letter from sponsor [Sponsorship confirmation letter]		23 May 2018
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Other [StratCare_Patients_Consent_process_v1]	1	04 July 2018
Other [StratCare_Patients_Info_Sheet_v1]	1	04 July 2018
Other [StratCare_Therapists_Consent_form_v3]	3	04 July 2018
Other [StratCare_Trial_Protocol_v2]	2	11 July 2018
Other [Cover letter 11.07.18]		11 July 2018
Participant information sheet (PIS) [Participant Information Sheet]	2	08 June 2018
Summary CV for Chief Investigator (CI) [CV]		
Summary of any applicable exclusions to sponsor insurance (non-NHS sponsors only) [Public Liability Insurance Certificate]		05 September 2017
Validated questionnaire [Validated questionnaires]		

Summary of assessment

The following information provides assurance to you, the sponsor and the NHS in England and Wales that the study, as assessed for HRA and HCRW Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England and Wales to assist in assessing, arranging and confirming capacity and capability.

Assessment criteria

Section	Assessment Criteria	Compliant with Standards	Comments
1.1	IRAS application completed correctly	Yes	The sponsor has confirmed that they do not consider that this is a study of a medical device requiring notification to the MHRA.
2.1	Participant information/consent documents and consent process	Yes	No comments
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	<p>The sponsor has submitted the HRA Statement of Activities and intends for this to form the agreement between the sponsor and study sites.</p> <p>The sponsor is not requesting, and does not require any additional contracts with study sites.</p>
4.2	Insurance/indemnity arrangements assessed	Yes	Where applicable, independent contractors (e.g. General Practitioners) should ensure that the professional indemnity provided by their medical defence organisation covers the activities expected of them for this research study
4.3	Financial arrangements assessed	Yes	External study funding has been secured from MindLife UK Ltd. Study funding will be provided to sites, as detailed at Schedule 1 of the Statement of Activities.

IRAS project ID	247945
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Section	Assessment Criteria	Compliant with Standards	Comments
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	No comments
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	No comments
5.3	Compliance with any applicable laws or regulations	Yes	No comments
6.1	NHS Research Ethics Committee favourable opinion received for applicable studies	Yes	No comments
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter received	Not Applicable	No comments
6.3	Devices – MHRA notice of no objection received	Not Applicable	No comments
6.4	Other regulatory approvals and authorisations received	Not Applicable	No comments

Participating NHS Organisations in England and Wales

This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.

All participating NHS organisations will undertake the same study activities. There is therefore only one study site 'type' involved in the research.

The Chief Investigator or sponsor should share relevant study documents with participating NHS organisations in England and Wales in order to put arrangements in place to deliver the study. The documents should be sent to both the local study team, where applicable, and the office providing the research management function at the participating organisation. Where applicable, the local LCRN contact should also be copied into this correspondence.

If chief investigators, sponsors or principal investigators are asked to complete site level forms for participating NHS organisations in England and Wales which are not provided in IRAS or on the HRA or HCRW websites, the chief investigator, sponsor or principal investigator should notify the HRA immediately at hra.approval@nhs.net, or HCRW at Research-permissions@wales.nhs.uk. We will work with these organisations to achieve a consistent approach to information provision.

Appendix I – StratCare Trial Patient Information Form

StratCare information sheet for patients (v1. 04.07.18); IRAS ID: 247945



StratCare Trial: information sheet

The IAPT Psychological therapy service is taking part in a study called **StratCare**. This information sheet explains what this study is about, how IAPT patients' information will be used, and how you can opt-out of the study if you wish to.

What is the study about?

People with depression and anxiety problems can access psychological therapies in the NHS. These treatments are organised in a "stepped care" model, usually starting with brief (up to 8 weeks) low intensity treatments, followed by high intensity treatments (up to 20 weeks) for patients who need ongoing help. Recent studies suggest that using "stratified care" could be a good way to offer therapies, by matching patients to specific treatments. StratCare is a model that involves recommending either low or high intensity treatments, on the basis of each patient's unique problems and life circumstances.

In this clinical trial, some therapists are using the usual "stepped care" method of recommending treatments, and other therapists are using the StratCare method. We have set up this study to find out if there are any differences in the effectiveness of treatment between the stepped care and StratCare method. This means that the treatment that was recommended by your therapist might be guided by current best practice guidelines (stepped care) or the new StratCare method. Either way, you will have been offered an appropriate treatment option available in the IAPT service, and your therapist will have discussed the options with you before recommending a treatment.

Why have I been chosen?

The IAPT therapist that assessed you is participating in the StratCare study. All patients going through routine assessments are included in the research, because the study investigates different ways to offer available treatments to new patients.

Do I have to take part?

You will be asked to provide verbal consent to be included in the study when you first contact the IAPT service. You can also refuse to take part without any consequences to your treatment in the service. You can withdraw from the study at any time without any negative consequences, and you do not have to give a reason. If you wish to withdraw from the research, please use the contact details at the end of this form.

What will happen if I take part? What do I have to do?

After you provide verbal consent, there is nothing else that you need to do. The research team will collect fully anonymous information about your treatment from an NHS database to see how you get on with your treatment.

What are the possible advantages, disadvantages and risks of taking part?

Your participation will help us to learn if using the StratCare method helps us to make better treatment recommendations for patients accessing IAPT services. We do not expect that taking part in the study will lead to any disadvantages or risks to therapists or to any patients. The only difference between usual "stepped care" and StratCare is that the StratCare method uses a computer programme to work out which treatment might be helpful for each patient. The computer programme requires therapists to enter some information about diagnosis and symptoms, and this does not use any personally identifiable information (like name, address, date of birth).

Will information collected in the study be kept confidential?

All the information that we collect about IAPT patients will be entirely anonymised, making it impossible to personally identify anyone. Information will be kept strictly confidential and will only be accessible to members of the research team.

What will happen to the data and the results of the research project?

The researchers will apply statistical analyses to compare clinical outcomes (e.g. depression symptoms) between two groups of patients; those assessed by therapists who follow standard "stepped care" guidelines and those who use the

StratCare method. Our results will be communicated to the IAPT Service in a summary newsletter. We will also communicate our results through publications in scientific journals and presentations at conferences.

The research team will store the study data for 10 years. We may share fully anonymised data with other researchers, which is considered good practice according to new trends in open and transparent scientific research. This data sharing policy ensures that other independent researchers can verify the authenticity and quality of new research, and also ensures that new scientific findings can be made through the re-analysis of data.

Who is organising and funding the research?

The study is led by the University of Sheffield and partly funded by a technology company called MindLife UK. The University of Sheffield is responsible for collecting all study data and for ensuring that it is used properly.

Does the study have ethical approval?

This study was independently reviewed and approved by an NHS Research Ethics Committee (Ref: 18/WS/0114).

What if something goes wrong and I wish to complain about the research?

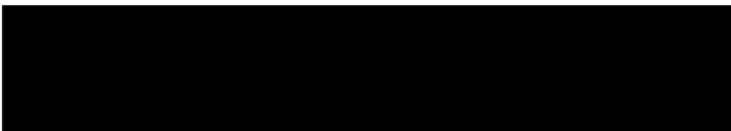
If you wish to discuss the study or make a complaint you can contact the Principal Investigator.

Legal statement under the General Data Protection Regulation (GDPR)

The University of Sheffield is the sponsor for this study based in England. We will be using anonymised information from you and from your service's clinical records in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. We will not keep identifiable information; but anonymised information about you will be kept for 10 years after the study has finished until 2028. Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will not gather or keep any identifiable information.

Information obtained from you or obtained from clinical records will not identify any individuals and will not be combined with other information in a way that could identify individuals. The information will only be used for the purpose of health and care research, and cannot be used to contact or to affect the care of any individuals. It will not be used to make decisions about future services available to you, such as insurance.

If you want to find out more about how we use your information, or if you wish to withdraw your information from the StratCare study, please contact the Chief Investigator.

Contact details

Thank you for taking time to consider participating in this study.

Appendix J – StratCare Trial Therapist Information Form

StratCare information sheet (v2. 08.06.18); IRAS ID: 247945



StratCare Trial:

Pragmatic randomised controlled trial of a stratified care model for depression and anxiety

You are invited to take part in a research project. Before you decide whether or not to participate, it is important for you to understand why the research is being done and what it will involve. Please read the following information carefully and ask us if anything is unclear or if you would like more information.

What is the study about?

People with depression and anxiety problems can access stepped care psychological interventions in the NHS, which usually start with low intensity treatments, followed by high intensity treatments for patients who need ongoing help. One major problem with stepped care is that patients with more complex clinical presentations are less likely to benefit from low intensity treatment and they tend to drop out early, or deteriorate by the time they access high intensity treatments. Recent studies suggest that using “stratified care” could improve treatment outcomes, by matching patients to specific treatments. StratCare is a model that involves recommending either low or high intensity treatments, on the basis of the complexity of the patient’s clinical presentation. Complexity is assessed using an evidence-based model that combines demographic, personality and diagnostic information.

In this clinical trial, we will randomly assign some psychological therapists to an experimental group, and others to a control group. All participating therapists will use an online tool called the StratCare App, in which they will input some information about the patients that they screen in routine care. The StratCare App will provide a personalised treatment-matching recommendation to therapists in the experimental group, but no recommendation will be provided to therapists in the control group. In this way, we will be able to assess if the StratCare treatment recommendations are any different to the recommendations made in routine care, and if they help to improve treatment outcomes.

Why have I been chosen?

All qualified psychological therapists who carry out routine screening contacts in the IAPT service are invited to take part. We are aiming to recruit at least twelve therapists.

Do I have to take part?

Participation is voluntary. If you do decide to take part after reading this information sheet, please complete and sign the attached consent form. You can withdraw from the study at any time without any negative consequences, and you do not have to give a reason. If you wish to withdraw from the research, please use the contact details at the end of this form.

What will happen if I take part? What do I have to do?

You will be invited to attend a training day where you will learn how to use the StratCare App. After the training day, you will enter some fully anonymised information into the App every time you screen a new patient, which only takes about 3 minutes. If you are in the experimental group, the App will provide a treatment recommendation which you will discuss with your patients. If you are in the control group, all you have to do is enter and store data into the App every time you screen a patient. It’s all very simple and quick. You will be doing this for one year, and we will also ask you to complete a brief online survey once during the study to gather some basic (fully anonymised) information about your role and how you make treatment recommendations in routine care.

What are the possible advantages, disadvantages and risks of taking part?

Whilst there are no direct benefits for therapists participating in the study, your participation will help us to learn if using stratified care improves clinical outcomes for patients accessing IAPT services. We do not expect that taking part in the study will lead to any disadvantages or risks to therapists or to any patients.

Will information collected in the study be kept confidential?

All the information that we collect about you and your patients will be entirely anonymised, making it impossible to personally identify anyone. Information will be kept strictly confidential and will only be accessible to members of the research team. If you agree to us sharing the anonymised information you provide with other researchers (e.g. as a data archive), no personal details will be included.

What will happen to the data and the results of the research project?

The researchers will link the screening data stored in the StratCare App with fully anonymised clinical care records for patients accessing the IAPT Service. We will apply statistical analyses to compare clinical outcomes (e.g. depression symptoms, dropout rates) between two groups of patients; those assessed by therapists in the experimental and control groups. Our results will be communicated to the IAPT Service in a summary newsletter. We will also communicate our results through publications in scientific journals and presentations at conferences.

The research team will store the study data for 10 years. If you consent to this, we may share fully anonymised data with other researchers, which is considered good practice according to new trends in open and transparent scientific research. This data sharing policy ensures that other independent researchers can verify the authenticity and quality of new research (e.g. through systematic reviews of clinical trials), and also ensures that new scientific findings can be made through the re-analysis of data.

Who is organising and funding the research?

The study is led by the University of Sheffield and partly funded by a technology company called MindLife UK. The University of Sheffield is responsible for collecting all study data and for ensuring that it is used properly.

Does the study have ethical approval?

This study was independently reviewed and approved by an NHS Research Ethics Committee (Ref: 18/WS/0114).

What if something goes wrong and I wish to complain about the research?

If you wish to discuss the study or make a complaint you can contact the Principal Investigator.

Legal statement under the General Data Protection Regulation (GDPR)

The University of Sheffield is the sponsor for this study based in England. We will be using anonymized information from you and from your service's clinical records in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. We will not keep identifiable information; but anonymized information about you and patients that you assess during the study will be kept for 10 years after the study has finished until 2028. Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will not gather or keep any identifiable information.

Information obtained from you or obtained from clinical records will not identify any individuals and will not be combined with other information in a way that could identify individuals. The information will only be used for the purpose of health and care research, and cannot be used to contact or to affect the care of any individuals. It will not be used to make decisions about future services available to you, such as insurance.

You can find out more about how we use your information by contacting the Chief Investigator.

Contact details

Thank you for taking time to consider participating in this study.

Appendix K - Therapist Consent Form

StratCare consent form (v3. 04.07.18); IRAS ID: 247945



StratCare Trial:

Pragmatic randomised controlled trial of a stratified care model for depression and anxiety

Consent Form

<i>Please write your initials next to each of the below statements to confirm your agreement</i>	Initials
Taking Part in the Study	
I have read and understood the study information sheet dated 08.06.18 or the study has been fully explained to me.	
I have been given the opportunity to ask questions about the study.	
I agree to take part in the study. I understand that taking part will involve (1) entering anonymised information into an online tool every time I do a screening with a patient and (2) completing an online questionnaire to provide some details about my role and practice.	
I understand that my taking part is voluntary and that I can withdraw from the study at any time; I do not have to give any reasons for why I no longer want to take part and there will be no adverse consequences if I choose to withdraw.	
How my information will be used during and after the study	
I understand that personal details such as name, phone number, address and email address etc. will not be collected or stored as part of this study.	
I understand and agree that anonymised information that I provide will be used to produce research outputs such as reports and presentation slides. I understand that I will not be named in these outputs.	
I understand and agree that other authorised researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.	
I understand and agree that other authorised researchers may produce publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.	
I give permission for data that I provide to be deposited in an archive at The University of Sheffield so it can be used for future research and learning	
So that the information you provide can be used legally by the researchers	
I agree to assign the copyright I hold in any materials generated as part of this project to The University of Sheffield.	
I understand that this consent form, which includes my name, will be destroyed at the end of the study (July 2019). This will ensure that no personal details will be stored with the study data.	

Name of participant [printed]

Signature

Name of Researcher [printed]

Signature

Please retain the original consent form for your records and email a signed copy to:



Appendix L - Patient Personality, Random Intercept Multi-Level Models

Figure 6

Depression multi-level model exploring patient personality

$$\text{PHQ9_last_TE}_{ij} = \beta_{0j} + 0.804(0.175)(\text{SAPAS_score-gm})_{ij} + e_{ij}$$

$$\beta_{0j} = 8.801(0.272) + u_{0j}$$

$$u_{0j} \sim N(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 0.508(0.665)$$

$$e_{ij} \sim N(0, \sigma_e^2) \quad \sigma_e^2 = 41.544(2.304)$$

-2*loglikelihood = 4530.628(689 of 689 cases in use)

UNITS:

TE_ID: 48 (of 48) in use

Note. Standard errors for each coefficient are shown in subsequent brackets. PHQ-9 = Patient Health Questionnaire-9, SAPAS = Standardised Assessment of Personality – Abbreviated Scale, gm = grand mean of the variable, i = patient level, j = therapist level,

Figure 7

Anxiety multi-level model exploring patient personality

$$\text{GAD7_last_TE}_{ij} = \beta_{0j} + 0.715(0.159)(\text{SAPAS_score-gm})_{ij} + e_{ij}$$

$$\beta_{0j} = 8.117(0.242) + u_{0j}$$

$$u_{0j} \sim N(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 0.323(0.526)$$

$$e_{ij} \sim N(0, \sigma_e^2) \quad \sigma_e^2 = 34.482(1.912)$$

-2*loglikelihood = 4400.609(689 of 689 cases in use)

UNITS:

TE_ID: 48 (of 48) in use

Note. Standard errors for each coefficient are shown in subsequent brackets. GAD-7 = General Anxiety Disorder-7, SAPAS = Standardised Assessment of Personality – Abbreviated Scale, gm = grand mean of the variable, i = patient level, j = therapist level

Appendix M - Case-Mix Adjusted Random Intercept Multi-Level Models

Figure 8

Depression multi-level model adjusted for case-mix

$$\text{PHQ9_last_TE}_{ij} = \beta_{0j} + 0.565(0.034)(\text{PHQ9_first_TE-gm})_{ij} + \\ -0.031(0.014)(\text{Age-gm})_{ij} + \\ 1.567(0.523)\text{Unemployed (2,4,6)}_{ij} + \\ 0.088(0.024)(\text{WSAS_first-gm})_{ij} + e_{ij}$$

$$\beta_{0j} = 8.507(0.271) + u_{0j}$$

$$u_{0j} \sim N(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 1.015(0.585)$$

$$e_{ij} \sim N(0, \sigma_e^2) \quad \sigma_e^2 = 24.513(1.397)$$

$$-2 * \log \text{likelihood} = 3992.974 (658 \text{ of } 689 \text{ cases in use})$$

UNITS:

TE_ID: 48 (of 48) in use

Note. Standard errors for each coefficient are shown in subsequent brackets. PHQ-9 = Patient Health Questionnaire-9, WSAS = Work and Social Adjustment Scale gm = grand mean of the variable, i = patient level, j = therapist level

Figure 9

Anxiety multi-level model adjusted for case-mix

$$\text{GAD7_last_TE}_{ij} = \beta_{0j} + 0.215(0.107)(\text{GAD7_first_TE-gm})_{ij} + \\ 0.146(0.044)(\text{PHQ9_first_TE-gm})_{ij} + \\ -0.039(0.013)(\text{Age-gm})_{ij} + \\ 0.856(0.495)\text{Unemployed (2,4,6)}_{ij} + \\ 0.080(0.023)(\text{WSAS_first-gm})_{ij} + \\ 0.052(0.023)\text{SAPAS_score.}(\text{GAD7_first_TE-gm})_{ij} \\ + e_{ij}$$

$$\beta_{0j} = 7.841(0.251) + u_{0j}$$

$$u_{0j} \sim N(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 0.749(0.487)$$

$$e_{ij} \sim N(0, \sigma_e^2) \quad \sigma_e^2 = 22.075(1.257)$$

$$-2 * \log \text{likelihood} = 3921.032 (658 \text{ of } 689 \text{ cases in use})$$

UNITS:

TE_ID: 48 (of 48) in use

Note. Standard errors for each coefficient are shown in subsequent brackets. GAD-7 = General Anxiety Disorder-7, PHQ-9 = Patient Health Questionnaire-9, WSAS = Work and Social Adjustment Scale, SAPAS = Standardised Assessment of Personality – Abbreviated Scale, gm = grand mean of the variable, i = patient level, j = therapist level

Appendix N – Unconditional (empty) Multi-Level Models

Figure 10

Unconditional depression multi-level model

$$\text{PHQ9_last_TE}_{ij} = \beta_{0j} + e_{ij}$$

$$\beta_{0j} = 8.836(0.291) + u_{0j}$$

$$u_{0j} \sim N(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 0.882(0.773)$$

$$e_{ij} \sim N(0, \sigma_e^2) \quad \sigma_e^2 = 42.525(2.361)$$

-2*loglikelihood = 4551.234(689 of 689 cases in use)

UNITS:
TE_ID: 48 (of 48) in use

Note. Standard errors for each coefficient are shown in subsequent brackets. PHQ-9 = Patient Health Questionnaire-9, gm = grand mean of the variable, i = patient level, j = therapist level

Figure 11

Unconditional anxiety multi-level model

$$\text{GAD7_last_TE}_{ij} = \beta_{0j} + e_{ij}$$

$$\beta_{0j} = 8.154(0.260) + u_{0j}$$

$$u_{0j} \sim N(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 0.638(0.618)$$

$$e_{ij} \sim N(0, \sigma_e^2) \quad \sigma_e^2 = 35.231(1.956)$$

-2*loglikelihood = 4420.229(689 of 689 cases in use)

UNITS:
TE_ID: 48 (of 48) in use

Note. Standard errors for each coefficient are shown in subsequent brackets. GAD-7 = General Anxiety Disorder-7, gm = grand mean of the variable, i = patient level, j = therapist level

Appendix O – RIMLM Sensitivity Analyses

Figure 12

Depression multi-level model adjusted for sensitivity analysis

$$\begin{aligned} \text{PHQ9_last_TE}_{ij} = & \beta_{0j} + 0.417(0.082)(\text{PHQ9_first_TE-gm})_{ij} + \\ & 1.643(0.484)\text{Unemployed (2,4,6)}_{ij} + \\ & 0.091(0.023)(\text{WSAS_first-gm})_{ij} + \\ & 0.039(0.019)\text{SAPAS_score} \cdot (\text{PHQ9_first_TE-gm})_{ij} + e_{ij} \\ \beta_{0j} = & 8.567(0.249) + u_{0j} \\ u_{0j} \sim & \text{N}(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 0.976(0.568) \\ e_{ij} \sim & \text{N}(0, \sigma_e^2) \quad \sigma_e^2 = 24.869(1.332) \\ -2 * \text{loglikelihood} = & 4604.409(757 \text{ of } 789 \text{ cases in use}) \\ \text{UNITS:} \\ & \text{TE_ID: 88 (of 88) in use} \end{aligned}$$

Note. This model includes data where two or more patients ($n = 789$) were treated by a single therapist. Standard errors for each coefficient are shown in subsequent brackets. PHQ-9 = Patient Health Questionnaire-9, WSAS = Work and Social Adjustment Scale, SAPAS = Standardised Assessment of Personality – Abbreviated Scale, gm = grand mean of the variable, i = patient level, j = therapist level

Figure 13

Anxiety multi-level model adjusted for sensitivity analysis

$$\begin{aligned} \text{GAD7_last_TE}_{ij} = & \beta_{0j} + 0.408(0.046)(\text{GAD7_first_TE-gm})_{ij} + \\ & 0.154(0.042)(\text{PHQ9_first_TE-gm})_{ij} + \\ & -0.036(0.012)(\text{Age-gm})_{ij} + \\ & 1.243(0.456)\text{Unemployed (2,4,6)}_{ij} + \\ & 0.080(0.021)(\text{WSAS_first-gm})_{ij} + \\ & 0.049(0.022)(\text{SAPAS_score-gm}) \cdot (\text{GAD7_first_TE-gm})_{ij} \\ & + e_{ij} \\ \beta_{0j} = & 7.966(0.232) + u_{0j} \\ u_{0j} \sim & \text{N}(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 0.778(0.486) \\ e_{ij} \sim & \text{N}(0, \sigma_e^2) \quad \sigma_e^2 = 22.198(1.188) \\ -2 * \text{loglikelihood} = & 4516.324(757 \text{ of } 789 \text{ cases in use}) \\ \text{UNITS:} \\ & \text{TE_ID: 88 (of 88) in use} \end{aligned}$$

Note. This model includes data where two or more patients ($n = 789$) were treated by a single therapist. Standard errors for each coefficient are shown in subsequent brackets. GAD-7 = General Anxiety Disorder-7, PHQ-9 = Patient Health Questionnaire-9, WSAS = Work and Social Adjustment Scale, SAPAS = Standardised Assessment of Personality – Abbreviated Scale, gm = grand mean of the variable, i = patient level, j = therapist level

Figure 14

Depression multi-level model adjusted for sensitivity analysis

$$\begin{aligned} \text{PHQ9_last_TE}_{ij} = & \beta_{0j} + 0.351(0.101)(\text{PHQ9_first_TE-gm})_{ij} + \\ & 0.105(0.057)(\text{GAD7_first_TE-gm})_{ij} + \\ & 1.335(0.568)\text{Unemployed (2,4,6)}_{ij} + \\ & 0.072(0.027)(\text{WSAS_first-gm})_{ij} + \\ & 0.047(0.022)\text{SAPAS_score.}(\text{PHQ9_first_TE-gm})_{ij} \\ & + e_{ij} \\ \beta_{0j} = & 8.467(0.308) + u_{0j} \\ u_{0j} \sim & \text{N}(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 1.094(0.636) \\ e_{ij} \sim & \text{N}(0, \sigma_e^2) \quad \sigma_e^2 = 24.361(1.499) \\ -2*\text{loglikelihood} = & 3389.271(559 \text{ of } 588 \text{ cases in use}) \\ \text{UNITS:} \\ & \text{TE_ID: 32 (of 32) in use} \end{aligned}$$

Note. This model includes data where 10 or more patients ($n = 588$) were treated by a single therapist. Standard errors for each coefficient are shown in subsequent brackets. PHQ-9 = Patient Health Questionnaire-9, GAD-7 = General Anxiety Disorder-7, WSAS = Work and Social Adjustment Scale, SAPAS = Standardised Assessment of Personality – Abbreviated Scale, gm = grand mean of the variable, i = patient level, j = therapist level

Figure 15

Anxiety multi-level model adjusted for sensitivity analysis

$$\begin{aligned} \text{GAD7_last_TE}_{ij} = & \beta_{0j} + 0.187(0.114)(\text{GAD7_first_TE-gm})_{ij} + \\ & 0.171(0.049)(\text{PHQ9_first_TE-gm})_{ij} + \\ & -0.033(0.014)(\text{Age-gm})_{ij} + \\ & 0.059(0.026)(\text{WSAS_first-gm})_{ij} + \\ & 0.064(0.025)\text{SAPAS_score.}(\text{GAD7_first_TE-gm})_{ij} \\ & + e_{ij} \\ \beta_{0j} = & 7.973(0.261) + u_{0j} \\ u_{0j} \sim & \text{N}(0, \sigma_{u0}^2) \quad \sigma_{u0}^2 = 0.792(0.524) \\ e_{ij} \sim & \text{N}(0, \sigma_e^2) \quad \sigma_e^2 = 22.183(1.364) \\ -2*\text{loglikelihood} = & 3334.005(559 \text{ of } 588 \text{ cases in use}) \\ \text{UNITS:} \\ & \text{TE_ID: 32 (of 32) in use} \end{aligned}$$

Note. This model includes data where 10 or more patients ($n = 588$) were treated by a single therapist. Standard errors for each coefficient are shown in subsequent brackets. GAD-7 = General Anxiety Disorder-7, PHQ-9 = Patient Health Questionnaire-9, WSAS = Work and Social Adjustment Scale, SAPAS = Standardised Assessment of Personality – Abbreviated Scale, gm = grand mean of the variable, i = patient level, j = therapist level