

Innovative Moments and the Process of Change in the Treatment of Adults with Bulimia Nervosa

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Executive Summary

Background

This thesis focuses on processes of change in psychotherapy for Bulimia Nervosa (BN) and their relationship to treatment outcome.

BN is an eating disorder characterised by recurrent binge eating, inappropriate compensatory behaviours (e.g. purging, excessive exercise), and a self-evaluation that is unduly influenced by body weight and shape (American Psychiatric Association, 2013). Research on psychological therapies for BN show limited effectiveness, as a large proportion of patients either continue having symptoms at the end of treatment or drop out of therapy (Wilson et al., 2007). In response, researchers are turning their attention to the psychotherapeutic processes that facilitate therapeutic change to enhance psychological treatment outcomes. Psychotherapy processes can be patient-related behaviours or experiences, therapist-related or particular therapist interventions, or the relationship between therapist and patient (Crits-Christoph et al., 2013). Psychotherapy outcomes are changes to the patient's presenting psychopathology or general functioning (Crits-Christoph et al., 2013). The process-outcome study design has the potential to advance our understanding of how process variables link with treatment outcome. Change process designs not only have the power to detect the associations of specific processes with outcome but also to establish their developmental trajectories throughout treatment (Elliott, 2010).

Specifically, patient-related processes have been found to have significant associations with treatment outcome (see Bohart & Wade, 2013 for a review). The patient's contribution is increasingly recognised in psychotherapy and studies have

found that the majority of variance in treatment outcome can be explained by patient-related factors (Norcross & Lambert, 2011; Wampold, 2010). Therefore, the first chapter of this thesis is a systematic review of the patient-related variables that are linked with treatment outcome in BN. The second chapter of this thesis is an empirical study examining patient change and treatment outcome longitudinally using a narrative marker, namely Innovative Moments (IMs). The final chapter of this thesis aims to integrate the previous chapters and outline some reflections on the impact of the thesis.

Systematic Review

The systematic review aimed to identify process-outcome studies of patient-related variables in the psychological treatment of BN. Previous literature in BN identified motivation to change and patient perceptions of the therapeutic alliance as most closely linked with outcome (Brauhardt et al., 2014).

In this review, three electronic databases were systematically searched (PsycInfo, Scopus, PubMed) to identify potentially relevant articles. Search terms were operationalised based on four concepts: bulimia nervosa, therapeutic process, treatment outcome, and psychological treatment. Inclusion criteria were:

Studies:

1. Reported at least one patient-related process variable
2. Reported at least one outcome variable
3. Were written in English or Greek

4. Were empirical papers, rather than reviews, theoretical essays, or commentaries, both published and unpublished

Participants:

5. Had a primary diagnosis of BN
6. Had received a form of individual or family psychological treatment

The database search identified 1767 articles. Following removal of duplicates, and the screening of titles, abstracts, and full texts, 22 studies were finally included in the study. Data extraction identified key details for each study. Studies were evaluated based on their quality using the following amalgamation of criteria from the process-outcome literature (e.g. Elliott, 1991):

1. Congruity between research aims and methodology
2. Theory-guided operationalisation of process and outcome variables
3. Congruity between methodology and data collection
4. Informant conceptualisation
5. Consideration of moderators and confounding variables
6. Consideration of reverse causation
7. Establishing a timeline
8. Methodology and statistical analysis congruity
9. Plausibility of interpretations of results

The studies included examined 18 patient-related therapy processes. These processes were early behavioural response to treatment, patient perceptions of the therapeutic alliance, patient expectations and perceptions of suitability of treatment, dysfunctional beliefs, engagement, compliance with therapy, self-efficacy, emotion

regulation changes, in-session and inter-session experience of therapy, coping style, in-session silences, changes in attachment styles, autobiographical memory, self-discrepancy, social-directed behaviour, body image concerns, bingeing and purging frequency, and dietary restraint.

Of the 22 studies, 19 found a significant association between the proposed process variable and treatment outcome. Early behavioural response was shown to associate with treatment outcome most consistently. Processes that had no associations with treatment outcome were perceptions of treatment suitability, self-discrepancy, and autobiographical memory. Even though studies in this review presented with high quality against the methodological criteria, none of the studies fully met the quality appraisal criteria rendering it difficult to operationalise the role of the process variable in the relationship. Reverse causation and accounting for the autocorrelational nature of the process-outcome data in repeated measurements were two of the criteria that most studies failed to meet, which made the understanding of the causational relationship between process and outcome variables challenging. None of the studies established a dose-effect relationship between the variables.

Future research should aim to establish the causal or mediational relationships between processes and outcomes. This study was limited by the strict operationalisation of treatment outcome and the large heterogeneity of treatment models included in the studies. However, this review summarises the current literature on patient-related process variables and their relationship to treatment outcome, provides a critical appraisal in line with the change process design literature, highlights clinical implications, and makes future research recommendations.

Empirical Paper

The empirical study examined the process of change in BN using the Innovative Moments (IMs) framework which asserts that markers of change can be identified in the patient narrative (Gonçalves et al., 2009). IMs are instances in the therapeutic dialogue where the patient is acting, thinking, feeling, or relating differently to how they usually would if they were following the problematic narrative assumptions. The different types include Action, Reflection, Protest, and Reconceptualization which is the most complex IM, highlighting a meta-reflective stance on the process of change. Action, Reflection, and Protest IMs are further categorised into subtypes of increasing complexity and reflective quality (Gonçalves et al., 2009). Subtype I IMs are moments in the patient narrative when the patient is creating distance from the problem, whereas subtype II IMs are moments when the patient is centred on change and its consequences. Previous research has identified that the developmental trajectories of IMs differ between good outcome and poor outcome cases. Additionally, previous research has identified that longitudinal change in IMs is associated with symptom change (see Montesano et al., 2017 for a review). Qualitative case studies have observed similar patterns in BN using theoretical frameworks akin to the IM framework (e.g. Bell, 2013a). However, the IM framework has never been applied to a population with eating disorders, and there has not been a quantitative study examining narrative change in BN.

Based on previous findings, it was hypothesised that:

1. IMs will be reliably identified in both good and poor outcome cases in a sample of adults with BN.

2. In good outcome cases, subtype I IMs will emerge from the early stages of treatment and remain consistently high throughout treatment, whereas subtype II and Reconceptualization IMs will emerge mid-treatment and increase as therapy progresses. In poor outcome cases, subtype I IMs will emerge from the early stages of treatment with a lower salience in comparison to the good outcome cases, and subtype II and Reconceptualization IMs will show low or no salience in comparison to good outcome cases.
3. Higher IM salience will be associated with a decrease in symptomatology throughout treatment and vice-versa.

Five good outcome cases and five poor outcome cases were selected from a sample of adults with a diagnosis of BN who received Integrative Cognitive Affective Therapy (ICAT) for BN as part of a randomised controlled trial (Wonderlich et al., 2014). ICAT is a four-phased approach delivered over 21 sessions focusing on cognitive and behavioural patterns, emotion regulation, coping strategies, and interpersonal patterns. The Innovative Moments Coding System (IMCS; Gonçalves et al., 2009) was used to identify IMs across a sample of six sessions for each participant. The IMCS identifies the salience of an IM during a session, as well as the type and subtype of the IM. A second coder coded 30% of the sample. Weekly bingeing and purging frequency was used as an outcome variable.

The hypotheses were partially supported. Inter-rater reliability analysis indicated that IM salience and type could be reliably identified in this sample. The overall IM salience was not significantly different between groups. A generalised estimating equations analysis with growth curve models showed that all IMs changed significantly over time for both good and poor outcome cases. Subtype I IMs showed

quadratic trends, whereas most subtype II and Reconceptualization IMs showed linear trends. Only Reconceptualization IMs showed a significant group effect. Additionally, Protest II, indicating a position of empowerment and assertiveness of the patient's own needs beyond the problem, was the only IM that predicted a symptom reduction in the following session. The models where symptom change predicts IMs showed a better fit than vice versa.

The low IM proportion found in this sample and the lack of differences between groups is in contrast with previous findings in the IM literature. These findings could be a function of measurement error (i.e. lack of IM elaboration during therapy, lack of group distinctiveness, and misrepresentation of the IM proportion due to the high rates of psychoeducation during ICAT leading to a less observable expression of IMs) or a true effect (i.e. high ambivalence and symptom severity in BN leading to the participants experiencing fewer IMs). Results indicated that Protest subtype II IMs may be important for symptom change in ICAT for BN, however the low salience of Protest II IMs suggests caution in interpreting these results. The fact that symptom change predicted IMs better than the reverse models may indicate the importance of early behavioural response in BN. The results should be interpreted with caution due to the limitations of this exploratory study, which include a small sample size and lack of sufficient power. Future research should aim to replicate these findings with studies addressing the methodological limitations of this study and examining the effects of other process-related variables such as ambivalence and therapist effects.

Integration, Impact, and Dissemination

This thesis combined a systematic review of the literature on patient-related processes that are important in treatment outcome in BN, with an empirical study that examined patient change in psychotherapy for BN. The results of both these studies conclude that there are observable process trends in the psychological treatment of BN which are associated with treatment outcome that could possibly reflect ingredients for successful psychotherapy in BN.

During the implementation of this project, challenges such as the use of archival data were highlighted. Despite the richness of information gained from archival data, they present with a degree of inflexibility to newly formed hypotheses. Additionally, the challenge of operationalising therapeutic process became apparent. Due to the complexity of the variables involved in producing patterns and trajectories of the therapeutic process, process variables were difficult to be established parsimoniously.

Reflecting on the completion of the thesis, the importance of the scientist-practitioner approach was highlighted both on an individual and a service level. It has been argued that psychotherapy studies do not have an effect on clinical practice (Castonguay et al., 2013), however this study aimed to adopt a scientist-practitioner approach by actively involving clinicians and practitioners in the design, implementation, and dissemination of research.

The results of this study can have an impact on clinical practice through the identification of processes and their developmental trajectories that have a relationship with treatment outcome. By increasing clinician awareness of these

variables, it is possible that treatment can be fine-tuned to enhance processes that improve treatment outcomes and recognise more effectively ones that hinder it. This study may also have implications on the research of change processes as it combined a standardised narrative change framework with complex longitudinal methodologies. Despite this study being underpowered, it is hoped that its exploratory nature will inspire future researchers to study change processes in psychotherapy and explore some of the questions that arose in this study.

In order to make this study available to the appropriate audiences, it is planned that its components will be submitted for publications in peer-reviewed journals and presented in conferences.

Chapter 1: Systematic Review

How Do Patient Processes in Psychotherapy Relate to Treatment Outcomes in Bulimia Nervosa?

Abstract

There is substantial research on treatment efficacy for psychological treatments of Bulimia Nervosa (BN) but limited understanding of the process variables that may play a role on treatment outcome. Patient-related process variables have been previously found to be significantly associated with treatment outcomes in other psychiatric disorders. The aim of this review is to examine the relationship between patient-related process variables and treatment outcome in psychological therapies for BN, and to provide a critical appraisal of the methodological quality of the literature base. A systematic literature review of PsycInfo, PubMed, and Scopus was conducted to identify studies that investigated samples with a clinical diagnosis of BN that received an individual or family psychological treatment, and that investigated a patient-related process variable and its relationship with treatment outcome. Because of a lack of a robust quality appraisal tool for process-outcome studies, a new quality appraisal tool was designed using an amalgamation of methodological considerations highlighted in the literature for process-outcome studies. Following a rigorous selection procedure, 22 studies were included in the review. Early behavioural response was the most studied patient-related variable and the one most consistently associated with treatment outcome. Other patient-related process variables that showed consistent evidence for their positive associations with

treatment outcome were emotion regulation, dysfunctional beliefs, emotion and eating self-efficacy, patient engagement, and dietary restraint. However, as most studies investigated a limited number of process variables, future research is warranted to clarify the relationships between process and outcome in BN. The results of this review have clinical implications on refining therapeutic operations for improved outcomes and a better patient experience of psychotherapy.

Introduction

Bulimia nervosa (BN) is an eating disorder characterised by recurrent binge eating, inappropriate compensatory behaviours such as purging or excessive exercise, and a self-evaluation that is unduly influenced by body weight and shape (American Psychiatric Association, 2013). BN is estimated to have a lifetime prevalence of 0.28% and a 12-month prevalence of 0.14% (Udo & Grilo, 2018). The odds are significantly greater for females than males after adjusting for other demographic variables such as age, ethnicity, and socioeconomic status (Udo & Grilo, 2018).

Despite the growing evidence base for the efficacy of psychological treatments for BN, a review of the evidence suggests that only 45% of patients reach a full recovery, 27% improve considerably, and 23% remain chronically ill (Steinhausen & Weber, 2009). Cognitive behavioural therapy (CBT), which is the first line of treatment for adults with BN (National Institute for Health and Care Excellence; NICE, 2017c), achieves symptom elimination in only 30% to 50% of patients, while many patients drop out or fail to respond (Wilson et al., 2007). It is argued that psychotherapy research has focused primarily on identifying effective treatment models and their moderators, over identifying the process by which treatments work (Doss, 2004). Conceptualizing the specifics of the psychotherapy processes can facilitate improvement of current therapy models and therefore treatment outcome (Doss, 2004; Llewelyn et al., 2016).

Unfortunately, research in the psychotherapy process in the treatment of BN has lagged behind (Wilson, 2010). In comparison to other psychiatric difficulties such as depression (Webb et al., 2012) or suicidality (Winter et al., 2013), very few studies have examined the process-outcome relations in the treatment of BN (Hartmann et al.,

2010). The identification of the process variables that impact outcome in BN may improve treatment effectiveness by enhancing the therapist's ability to match specific interventions to patients and increase the therapist's understanding of the various treatment processes. Therefore, the aim of this systematic review is to examine the relationships between patient-related processes and treatment outcome.

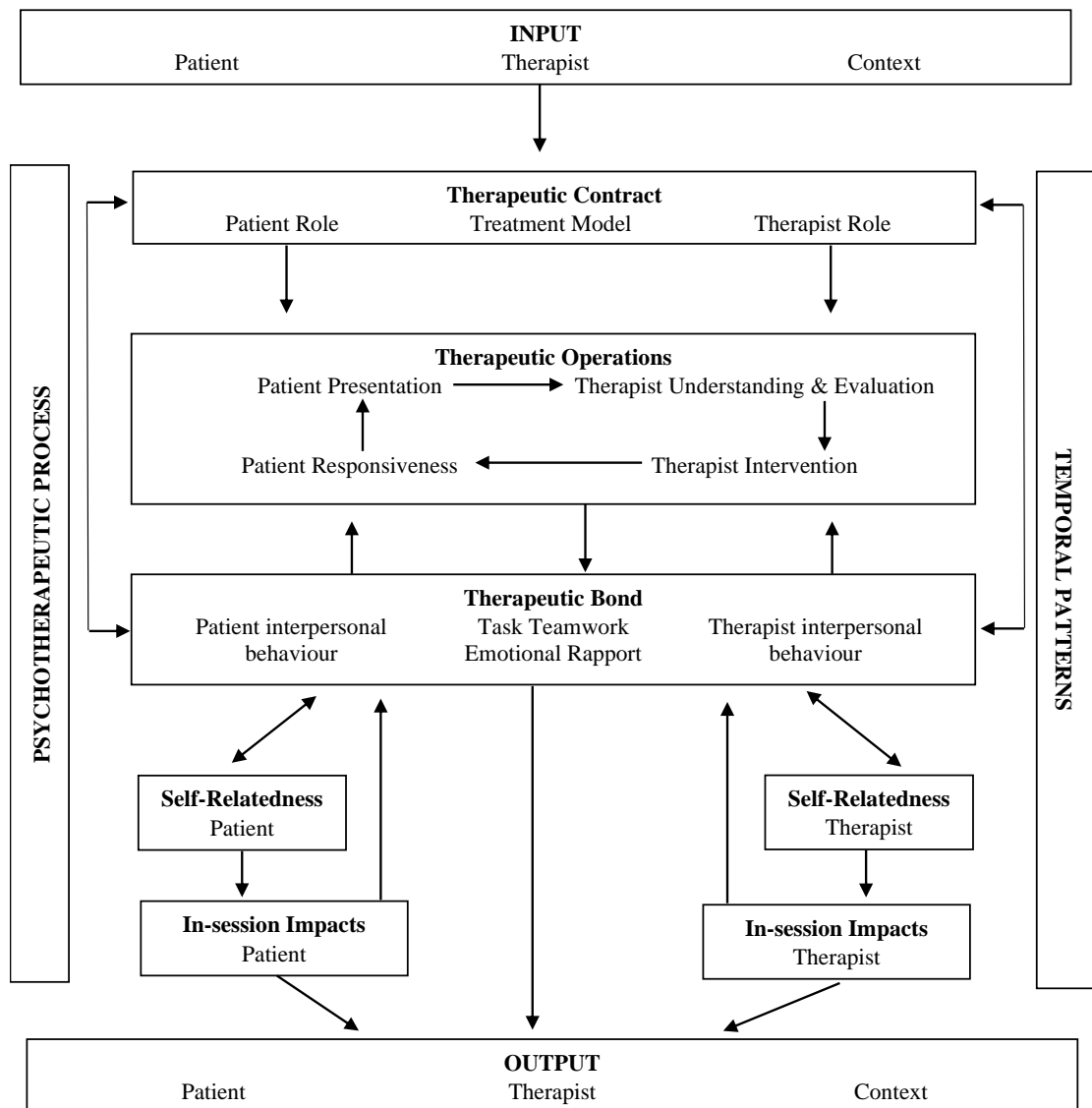
Process-Outcome Research in Psychotherapy

Process-outcome designs as a research approach can contribute to our understanding of the link between specific psychotherapy processes and outcome (Llewelyn et al., 2016). Psychotherapy processes are the actions, experiences, and relatedness of the patient and the therapist within and between sessions (Orlinsky et al., 2004). Psychotherapy outcomes are defined as any changes in the patient's presenting symptoms, psychopathology, and general functioning (Crits-Christoph et al., 2013). Process-outcome research explores "both the events in psychotherapy sessions, or the constructs thought to change during or in between therapy sessions" and their association with subsequent change in "problems, symptoms and functioning" (Crits-Christoph et al., 2013, p. 299). These events can be therapist interventions (e.g. therapeutic techniques), patient behaviours or experiences (e.g. motivation to change), but also interpersonal processes between therapist and patient (e.g. alliance; Doss, 2004). More specifically, change process research has been conceptualised to include within- and between-session processes that result in change, but also the sequence of patient change throughout psychotherapy (Elliott, 2010).

Orlinsky and Howard (1987) and subsequently Orlinsky et al. (2004) devised a framework for process-outcome research which offers a conceptual map of possible significant process variables (Figure 1). The Generic Model of Psychotherapy identifies three levels. The top level is the input, which indicates the prerequisites for psychotherapy, such as patient and therapist characteristics. The bottom level encompasses the output, indicating short-term and long-term outcomes. The mid-level outlines the six aspects of the therapy process that reflect the patient and therapist actions and experiences within and between sessions, and impact on the outcome. First, the therapeutic contract operationalises the patient and therapist role through the treatment model, but also the nature of the patient-therapist interaction. Second, the therapeutic operations encompass technical aspects such as the patient presentation, the therapist's choice of interventions, and the patient responsiveness. Third, the therapeutic bond reflects the quality of the interpersonal rapport between patient and therapist through their individual interpersonal behaviour and emotional expression. Fourth, self-relatedness conceptualises the individual experience of patient and therapist in relation to their self-awareness and self-esteem. Fifth, in-session impacts reflect the positive or negative experiences of the patient and the therapist within sessions, and between sessions as a result of the within-session impacts. Sixth, temporal patterns describe the distinctive characteristics of the sequential development of psychotherapy, ranging from in-session developments (e.g. facilitative moments) to treatment stage (e.g. early or late treatment) and course (e.g. total number of sessions).

Figure 1

The Generic Model of Psychotherapy (adapted from Orlinsky et al., 2004)



Similarly, Elliott (1991), building on previous work by Bordin (1974), Greenberg (1986), Kiesler (1973), and Russell (1988), proposed a dimensional model for investigating psychotherapy process. This model aimed to address aspects that had not been incorporated in the Generic Model of Psychotherapy (Orlinsky & Howard, 1987), but also to provide a more methodologically practical framework to the study of psychotherapy process. Elliott (1991, 2010) argued that psychotherapy process can

be conceptualised using five dimensions that can be operationalised and measured in process-outcome designs. First, the perspective of observation reflects the viewpoint from which process is observed. This is based on the argument that psychotherapy process will be conceptualised differently when observed by the patient, the therapist, or an external observer. Second, the person or the focus of the process defines whether the study investigates the patient, the therapist, or the dynamics in the dyad. Third, aspects of the process need to be conceptualised. There are four aspects that determine the processes under focus; the content of the therapeutic communication (i.e. what is said), the action (i.e. what is done or what is intended to be done), the style or state (i.e. how it is said or done), and the quality (i.e. how well it is said or done). Fourth, the unit level is operationalised by identifying the level at which the observations are taking place. Process can be measured at various levels, ranging from individual sentences and sessions to treatment stage, or at the level of treatment as a whole. Fifth, the sequential phase is conceptualised as the temporal orientation of process. This is reflected in the aspect of temporal patterns of the Generic Model of Psychotherapy (Orlinsky & Howard, 1987). For example, the aim of process observation might be to describe the process itself (i.e. what is the observable process), to identify the context in which the process occurs (i.e. whether it occurs in a specific treatment model), or to examine the impact of a process variable (i.e. whether it affects treatment outcome).

Both models distinguish between patient- and therapist-related processes and highlight important patient-related aspects. The patient's role as an active participant in psychotherapy is increasingly recognised. The patients are no longer seen as "dependent variables upon whom independent variables operate" (Bergin & Garfield,

1994, p. 826). A number of studies have identified that the majority of variance in the therapy outcome can be explained by patient-related factors (Norcross & Lambert, 2011; Wampold, 2010).

Patient-Related Processes in Psychotherapy

Patient-related processes have been linked with treatment outcomes across psychiatric disorders. One of the processes most consistently associated with treatment outcomes is the patient perceptions of the therapeutic alliance (Horvath et al., 2011). Patient perceptions of the therapeutic relationship have shown medium effect sizes in their relationship with treatment outcome (Horvath et al., 2011). The effect sizes have been replicated in meta-analyses for couple and family therapy (Friedlander et al., 2018), as well as in the investigation of parent-clinician alliance in the treatment of young people (de Greef et al., 2017). Therapeutic alliance repairs were also found to differentiate between good and poor outcome cases (Rhodes et al., 1994; Safran et al., 2011).

Additionally, early response to treatment has been associated consistently with good treatment outcomes across diagnoses and treatment models (Haas et al., 2002). However, it has also been found that there is a variability in the definition of early response across psychiatric difficulties. Various change trajectories have been observed in patients showing an early response, and therefore it is argued that the relationship between early response and treatment outcome is mediated by other variables such as patient characteristics, therapist experience, and type of treatment

(Bohart & Wade, 2013). For example, early response may reflect a higher baseline patient motivation or readiness to change (Hansen & Lambert, 2003).

Furthermore, patient characteristics have been associated with good treatment outcome. For example, patient motivation to change has been found to have a medium effect size in its relationship with outcome (Norcross et al., 2011). However, motivation to change overlaps with patient perceptions of their difficulties, concerns about stigmatization, and treatment expectations (Bohart & Wade, 2013). Additionally, matching the patient coping style with treatment approach has also shown medium effect sizes in its relationship with good treatment outcome (Beutler et al., 2011). For example, it is argued that a patient with an externalising coping style, where the patient is more action or task-oriented, is more likely to benefit from behavioural or symptom-focused approaches. On the other hand, a patient with an internalising coping style, where the patient is more reflection-oriented, insight-focused approaches are more likely to benefit them (Beutler et al., 2011). Other patient characteristics have also been associated with treatment outcome, such as attachment, psychological mindedness, access to emotion, and perfectionism (see Bohart & Wade, 2013 for a review). However, these processes have shown smaller effect sizes and inconsistent associations with treatment outcome.

Additionally, the patient's constructions of psychotherapy have been linked with outcome. For example, an alignment of patient treatment preference and treatment delivered has been consistently associated with good treatment outcome showing medium effect sizes (Swift et al., 2011; Swift et al., 2018). Other patient-related processes with less consistent associations with treatment outcome are patient treatment expectations of outcome and process of therapy (Constantino et al., 2011;

Lambert, 1992), and patient views of the problem's aetiology (Kühnlein, 1999). Inter-session learning and active agency were also positively associated with good treatment outcome in some studies (Mackrill, 2008; Rennie, 2010).

Finally, Bohart and Wade (2013) report processes that patients consider important in the therapeutic outcome, including insight into significant events in the course of treatment, reflecting on helpful and hindering processes, and the therapist allowing patients to reflect on what helped and how it can be prospectively utilised to facilitate further change.

Patient-Related Processes in Psychotherapy for Bulimia Nervosa

Reviews investigating process-outcome studies specifically in eating disorders (ED) are scarce. Brauhardt et al. (2014) conducted a review of process-outcome studies in ED based on the Generic Model of Psychotherapy developed by Orlinsky and Howard (1987). Despite some mixed results, motivation to change from the patient perspective was one of the processes that was most strongly linked with treatment outcome. Half of the studies examining interpersonal behaviour included in the aforementioned review reported positive associations between patient-rated therapeutic alliance and outcome (Constantino et al., 2005; Loeb et al., 2005). A higher patient self-efficacy, positive emotions in therapy, and fewer dysfunctional beliefs were also found to be associated with good treatment outcome. Patient perceptions of treatment suitability were not significantly associated with treatment outcome (Wilson et al., 1999, 2002; Zaitsoff et al., 2008).

However, insight, patient self-relatedness, patient presentation of the problem and their responsiveness, including their focus and behaviour towards the problem, have not been analysed in ED studies (Brauhardt et al., 2014). Self-discrepancy and self-efficacy have been highlighted as important change mechanisms of CBT, Interpersonal Therapy (IPT), and Integrative Cognitive Affective Therapy (ICAT) for BN (Peterson et al., 2017; Wilson et al., 2002). No systematic review published on patient processes in BN were found.

The Present Study

Despite the importance of some aspects of patient-related process in the outcome of psychotherapy in various psychiatric disorders, there remains a limited understanding of the patient-related process variables that could be associated with the treatment outcome of BN. Given the partial effectiveness of psychotherapeutic treatments in BN, it is imperative that the link between the therapeutic process and treatment outcome is understood in order to enhance helpful factors and limit hindering factors during treatment.

The focus of the present review is on patient-related process variables during treatment of BN and their link with treatment outcome. There has been one review previously published on the therapeutic process of eating disorders, however this was not focused on BN, did not explicitly examine patient-related process variables, and did not provide a critical appraisal of the quality of the studies (Brauhardt et al., 2014). Therefore, this review aims to clarify the current position of process-outcome

research into the patient-related process variables in psychotherapy for BN and to provide a critical appraisal of the quality of this research.

Method

This review was designed and conducted with reference to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). This review has been registered on the PROSPERO database (Registration Number: CRD42019152192).

Eligibility Criteria

The current systematic review sought to examine studies that employed a process-outcome design and explicitly measured and linked at least one process and at least one outcome variable. Therefore, the inclusion criteria were: (a) studies reported at least one patient-related process variable as operationalised by the Generic Model of Psychotherapy (Orlinsky et al., 2004), (b) studies reported at least one outcome variable, (c) participants had a primary diagnosis of BN according to the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980) or a later edition, or the ninth edition of the International Classification of Diseases (ICD-9; World Health Organization, 1978) or a later edition, (d) participants received a form of short-term or long-term individual or family psychological treatment of any theoretical approach, (e) studies were written in English or Greek, and (f) studies were empirical papers, rather than reviews, theoretical essays, or commentaries. Both published and unpublished literature was included.

Based on previous literature, outcome variables were further operationalised as any change in bulimic symptoms (e.g. purging or bingeing), sustained remission,

relapse after achieving recovery, and weight gain (Williams et al., 2012). Outcome variables were measured at a minimum of two time points (pre- and post-treatment) to allow an examination of the longitudinal relationship between process and outcome. Self-reports, therapist reports, patient records, or objective measurements were included.

Studies investigating both adult and adolescent samples were included. Studies including other samples as well as participants with BN were considered, so long as BN participants were individually investigated in sub-group analyses. Studies were not excluded based on their geographic location.

Search Strategy and Study Selection

Figure 2 illustrates the study selection process. Three databases were searched, PsycInfo, Scopus, and PubMed, to identify relevant studies in October 2019. The search terms used were determined using the concepts of bulimia nervosa, treatment outcome, therapeutic process, and psychological treatment. Within each concept, the Boolean operators ‘AND’ and ‘OR’ were used to combine the concepts. The search terms are outlined in Table 1. The search process was complemented by reviewing citations of the included studies and screening earlier systematic reviews on the area of interest.

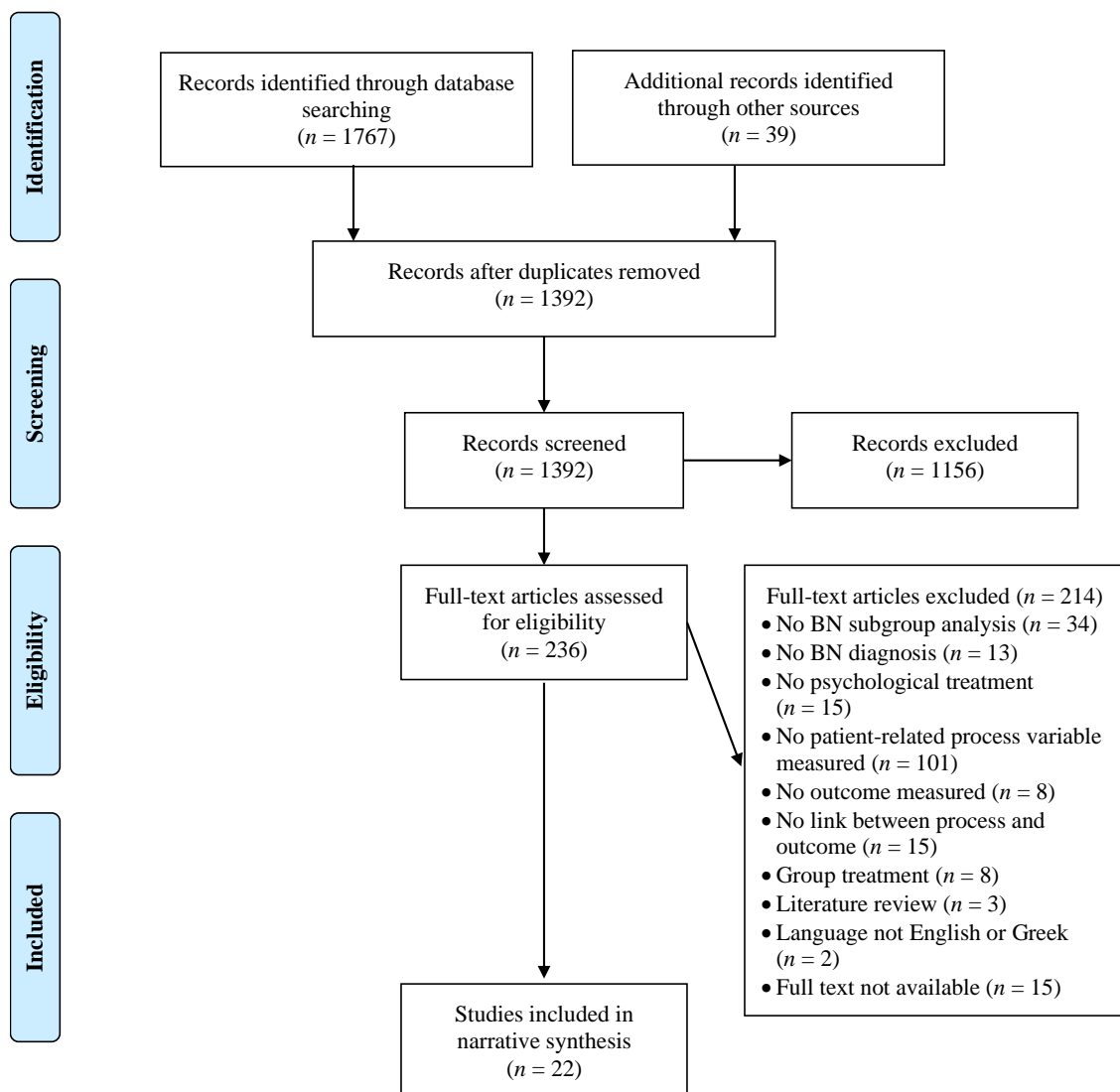
Table 1*Concepts and Search terms*

Concept	Search Terms
Bulimia Nervosa	Bulimi*
Treatment Outcome	Outcome OR improv* OR effect* OR chang* OR success*
Therapeutic Process	Process * OR "mechanism of change" OR "mechanisms of change" OR "mechanism of action" OR "mechanisms of action" OR mediat* OR predict* OR "within treatment" OR "between treatment"
Psychological Treatment	Therap* OR treat* OR psychotherap* OR psychoanaly* OR exposure OR interven* OR "behavioural activation" OR "behavioral activation" OR counsel* OR “motivational interviewing”

Once the studies were identified ($n = 1767$), they were exported into an Excel spreadsheet and duplicates were removed. The remaining studies ($n = 1392$) were screened using their title and abstract by two independent reviewers. Two independent reviewers then screened the full texts of the studies that were considered eligible by either reviewer ($n = 236$). Studies that were considered eligible by both reviewers were included, and any disagreements were discussed and resolved by a third reviewer. Studies that did not meet criteria for inclusion were removed and reasons for exclusion were noted by both reviewers ($n = 214$). As a result, a total of 22 studies were included in this review. There was an 86% agreement between the two reviewers at the first eligibility screening stage and a 98% agreement in the second inclusion screening stage.

Figure 2

PRISMA flowchart



Risk of Bias and Quality Appraisal

The studies were evaluated with respect to relevant quality characteristics using a quality appraisal tool derived from an overview of change process research. As there are no current standardised process-outcome studies appraisal tools (W. Lutz, personal communication, July 12, 2019,), a new tool was designed based on existing

quality appraisal tools and previously identified aspects of process-outcome research (Table 2).

No studies were excluded based on their quality. Crits-Christoph et al. (2013) highlighted that most process-outcome studies fail to consider the methodological limitations that have been established in the literature (e.g. Elliott, 1991), as they encompass designs that are relatively new to psychotherapy research. Elliott (1991) recommends that if a process-outcome study has considered at least two of the five dimensions of therapy process (perspective of observation, person/focus, aspects of process, unit level, sequential phase) then it is considered of fairly good quality. However, process-outcome designs have developed significantly since then, and it is unclear what would be considered of good quality in the present day.

In order to address the novelty and heterogeneity of process-outcome designs, criteria were established using existing literature on process-outcome methodologies (Crits-Christoph et al., 2013; Elliott, 1991, 1999, 2008, 2010) and existing quality appraisal tools that cover aspects relevant to all research methodologies (Hong et al., 2018; Joanna Briggs Institute, 2014). Some criteria adhere to the most stringent methodologies of mediation research as operationalised by Kazdin (2007).

Studies were examined using nine criteria that mapped onto four areas of research methodology (variable operationalisation, design, statistical analysis, and interpretation of results). The criteria were: (a) congruity between research aims and methodology, (b) theory-guided operationalisation of process and outcome variables, (c) congruity between methodology and data collection, (d) informant conceptualisation, (e) consideration of moderators and confounding variables, (f) consideration of reverse causation, (g) establishing a timeline, (h) methodology and

statistical analysis congruity, and (i) plausibility of interpretations of results. Further information about the operationalisation of each of the criteria and their source is provided in Table 2.

A total score for each criterion was calculated based on the studies' scores on the various aspects of each criterion. Studies were rated with 0 if none of the aspects of the criterion were met, and a score of 1 for each of the aspects met under each criterion. A total quality score was calculated by the sum of each criterion scores.

The included studies were appraised by two independent reviewers. The average percentage agreement between the two reviewers was 84.8% which is considered an acceptable agreement (Belur et al., 2018). Additionally, Cronbach's alpha was calculated across the total scores of the nine criteria and it reached a value of .88 which is considered reliable (Nunnally, 1978). The individual criteria reliability scores ranged from .68 to .88.

Table 2

Quality Appraisal Tool for Process-Outcome Studies

Quality Criteria	Explanation & Aspects to consider	Source
Variable Conceptualisation & Operationalisation		
1. Methodology- Research Aims Congruity	Is there a congruity between the research methodology and the research question or objectives? For instance, process-outcome studies should address a research question that explores the relationship between process and outcome.	JBICARI Critical Appraisal Checklist for Interpretive & Critical Research (Pearson, 2004)
2. Theoretically-	<ul style="list-style-type: none"> Have the measured concepts (process, 	Kazdin (2007)

Quality Criteria	Explanation & Aspects to consider	Source
guided Operationalisation of Process and Outcome	<p>outcome, and their relationship) and how they operate been adequately defined using a theoretical conceptual map (e.g. Elliott's Five Dimensions of Therapy Process)?</p> <p><i>For example: Have the process aspects been conceptually defined? E.g. content (what is said), action (what is done by what is said), style/state (how was it said or done), quality (how well was it said or done)</i></p> <ul style="list-style-type: none"> Is the process variable evaluative instead of being based on frequency counts? (to avoid it being affected by context such as patient and therapist responsiveness). If not, is there a rationale provided? 	<p>& Elliott (1991): Aspects of Process & Crits-Christoph et al. (2013): Patient and therapist responsiveness</p>
Design		
3. Methodology-Data Collection Congruity	<ul style="list-style-type: none"> Is there a congruity between the research methodology and the methods used to collect the data? For instance, have reliable and valid process measures been used for process variables? Have standardised measures been used for outcome variables? Has process been experimentally manipulated (e.g. RCT or dismantling design)? If not, is there a rationale provided? 	<p>JBICARI Critical Appraisal Checklist for Interpretive & Critical Research (Pearson, 2004) & Kazdin (2007): Experimental manipulation & Crits-Christoph et al. (2013): Correlational analyses</p>

Quality Criteria	Explanation & Aspects to consider	Source
4. Informant Conceptualisation	<ul style="list-style-type: none"> • Has the perspective of observation been conceptualised, defined, and adequately measured? (who observes the process: client, therapist, researcher) • Have the observers been blinded to the participant outcome? • Has more than one observer been used? • Is inter-rater reliability high (Cohen's kappa>0.60)? • Has the process variable been measured from all three perspectives (researcher, client, therapist)? 	Elliott (1991): Perspective of Observation
5. Consideration of Moderators & Confounding Variables	<ul style="list-style-type: none"> • Have known or putative moderators and/or confounders been measured and controlled for in the design and analysis? If not, have the researchers used appropriate methods to control for confounders (e.g. sample stratification, standardisation)? This might include the individual therapist and patient contributions, including client resources. • Have subgroup analyses been conducted (in order to account for moderators and non-linear relationships)? 	Kazdin (2007) & Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018) & Crits-Christoph et al. (2013): Dyadic relationship & Elliott (2010)

Quality Criteria	Explanation & Aspects to consider	Source
6. Consideration of Reverse Causation	Does the study account for other putative processes or mediators? (to account for reverse causation or third variable causation in correlational designs)	Kazdin (2007): Specificity & Elliott (2010)
7. Establishing a Timeline	<ul style="list-style-type: none"> • Have multiple assessments of process and outcome been conducted? • Has the outcome measure been assessed early enough to ensure that the mediator/process changed before the outcome? For instance, are there baseline measures of outcome? • If relevant, has a dose-response relationship been investigated? 	Kazdin (2007): Timeline & Elliott (2010): Documenting temporal precedence & Crits-Christoph et al. (2013): Dependability of the process measure & Kazdin (2007): Gradient
Statistical Analysis		
8. Statistical Analysis- Research Methodology Congruity	<ul style="list-style-type: none"> • Is the statistical analysis appropriate to answer the research question? For instance, correlational designs do not allow for an exploration of cause-effect relationships. If the research question addresses mediation, has a mediation/regression analysis been conducted? • Does the statistical analysis take into consideration the autocorrelational nature of the data? • Has covariation between the mediator/process and outcome been 	JBI QARI Critical Appraisal Checklist for Interpretive & Critical Research (Pearson, 2004) & Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018) & Kazdin (2007) & Elliott (2010)

Quality Criteria	Explanation & Aspects to consider	Source
	investigated?	
Interpretation of Results		
9. Result- Interpretation Congruity & Interpretation Plausibility	<ul style="list-style-type: none"> Is there a congruity between the research methodology and the interpretation of results? Are the conclusions drawn justified given the analysis and interpretation, of the data? Are the results generalisable? Have the results been replicated elsewhere? 	JBI QARI Critical Appraisal Checklist for Interpretive & Critical Research (Pearson, 2004) & Kazdin (2007): Coherence and plausibility & Consistency & Elliott (2010)

Note. JBI QARI = Joanna Briggs Institute Qualitative Assessment Review Instrument

Data Extraction and Synthesis

The following information was extracted from each study: (a) study design, (b) study location, (c) sample size, (d) treatment, (e) outcome variable and measure, (f) process variable and measure, (g) frequency of measurements, and (h) key findings.

A quantitative synthesis (meta-analysis) was deemed inappropriate due to the heterogeneity of variables reported and the limited number of studies extracted to provide a meaningful synthesis as recommended by Cooper (2003). Therefore, a narrative synthesis was conducted. The statistical analyses and relationships between outcome and process variables as studied using quantitative methods (e.g. univariate

and multivariate statistics including correlational and regression models) were examined.

Results

Study Characteristics

Participants and Study Demographics

A total of 22 studies were included in this review. Sample sizes ranged from eight to 220 participants ($M = 84.9$, $SD = 59.5$). While the majority of the studies included adult participants ($n = 19$), three studies focused on adolescents. The mean ages of the samples ranged from 16.1 years to 28.5 years ($M = 25.4$, $SD = 4.0$). All the studies were conducted in the Western world, the majority in the USA (50%), followed by Europe (41%), and Canada (9%). The studies took place between 1996 and 2018, with 46% having been published in the last ten years.

Interventions

The most prominent psychological treatments provided were CBT ($n = 7$) and Enhanced CBT (CBT-E; $n = 6$), followed by Psychoanalytic therapy ($n = 4$), IPT ($n = 3$), Family-based therapy ($n = 3$), Supportive Psychotherapy ($n = 3$), and Guided Self-help based on CBT principles ($n = 3$). Other treatments included ICAT ($n = 2$) and multimodal treatment ($n = 2$)¹. The majority of studies examined outpatient treatment with the exception of two that investigated inpatient multimodal treatment (Bloks et al., 2001; Hoffart et al., 2010).

¹ Regarding psychological treatment, studies do not add up to $n = 22$ as one study could have included more than one treatment condition.

Study Design

Seventeen of the 22 studies were based on a randomised controlled trial design, and the remaining five were cohort studies. Most studies used self-report measures to investigate patient-related process variables ($n = 16$). Some studies used observer-rated measures of process variables ($n = 4$) and interview measures ($n = 2$). Only one study used both interview and self-report measures to examine patient-related process variables (Peterson et al., 2017). The majority of studies used only an interview-based measure to examine treatment outcome, the Eating Disorder Examination (EDE; Fairburn & Beglin, 2008). Six studies used only self-reports to measure treatment outcome, with five of these using the Eating Disorder Inventory (EDI; Garner, 1991; Garner et al., 1983). Three of the 22 studies used a combination of self-report and interview measures to explore treatment outcome. One study used a self-report and an observer-based measure for treatment outcome (Hartmann et al., 2010).

Statistical Analysis

Most studies included in this review employed hierarchical regression models to investigate the relationship between process and outcome variables ($n = 16$). Three studies used group comparison tests (McFarlane et al., 2013; Thiels et al., 2001; Troop et al., 1996), one conducted a mediation analysis according to the procedure outlined by Baron and Kenny (1986) (Lock et al., 2008), one conducted a correlational analysis (Zaitsoff et al., 2008), and one employed descriptive and signal detection analyses (Agras, Crow, et al., 2000).

Process Variables

Studies in this review investigated 18 patient-related therapy processes. The most frequently studied patient-related process variable was the patient's early behavioural response to treatment ($n = 6$), and patient perceptions of the therapeutic alliance ($n = 6$), followed by patient expectations of treatment success ($n = 5$). Additionally, patient dysfunctional beliefs ($n = 3$), and patient perceptions of treatment suitability ($n = 3$) were studied. Patient engagement ($n = 2$), patient compliance with the therapy manual ($n = 2$), patient self-efficacy ($n = 2$), changes in emotion regulation ($n = 2$), and in-session and inter-session experience of affect and therapy ($n = 2$) were other process variables that were investigated. Other patient-driven processes that were examined were coping style ($n = 1$), in-session silences ($n = 1$), changes in patient attachment style during treatment ($n = 1$), autobiographical memory narratives ($n = 1$), self-discrepancy ($n = 1$), and social self-directed behaviour ($n = 1$). Some studies also investigated bulimic symptoms as process variables and their relationship to outcome. For example, concerns about body, weight, and shape during treatment were investigated ($n = 2$), as well as bingeing and purging frequency during treatment ($n = 2$), and dietary restraint ($n = 2$).

Table 3 summarises the characteristics that were included in this study.

Table 3*Summary of Study Results*

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
Accurso et al. (2015) (USA)	N = 80 27.3 years (9.6) 90% female	RCT	CBT-E ICAT	Patient perception of the therapeutic alliance	Working Alliance Inventory (WAI; Horvarth & Greenberg, 1986) <i>Sessions 2, 4, 8, 14, and post-treatment</i>	Frequency of binge eating and purging episodes	Self-report of weekly binge eating and purging episodes <i>Weekly during treatment, post-treatment, 8-month follow-up</i>	Patient perceptions of therapeutic alliance predicted reduction in BN symptoms. Reduction in BN symptoms predicted increase in patient perceptions of therapeutic alliance. The effect of patient perceptions of therapeutic alliance on BN symptoms was constant over time (no significant relationship between time and therapeutic alliance).
Agras, Crow, et al. (2000) (USA)	N = 194 28.1 years (7.9) 100% female	Cohort Study	CBT	Early behavioural response	Purging episodes frequency <i>2-week intervals during treatment</i>	Remission	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment and post-treatment</i>	Participants who reduced purging less than 70% by session 4 were more likely to be classified as non-responders by the end of treatment.

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
Bloks et al. (2001) (Netherlands)	N = 42 24.7 years (6.7) 100% female	Cohort Study	Inpatient treatment (individual psychotherapy and therapeutic groups)	Coping style	Utrecht Coping List (UCL; (Schreurs et al., 1983) <i>Pre-treatment, post-treatment, and at 6-months follow-up (Note: residual gain scores used to estimate change during treatment)</i>	Frequency of binge eating and purging episodes Body weight	Eating Disorder Evaluation Scale (EDES; Vandereycken, 1993) Eating Disorder Inventory (EDI; Garner et al., 1983) <i>Pre-treatment, post-treatment, and at 6-months follow-up (Note: residual gain scores used to estimate change during treatment)</i>	Participants with a higher change in coping style during treatment associated with a reduction in BN symptoms. Body weight did not change significantly during treatment and was not associated with change in coping style.
Cavallini (2010) (USA)	N = 53 25.2 years (9.9) 93% female	Cohort Study	CBT-E	Dysfunctional beliefs Dietary restraint In-session and homework engagement	CBT Coding Scale for Bulimia Nervosa (CCS-BN; Spangler et al., 2001) <i>Weekly during treatment</i>	Sudden reductions in frequency of binge eating and purging episodes	Change in Eating Disorder Symptoms Scale (CHEDS; Spangler, 2010) <i>Weekly during treatment</i>	Patient change in dysfunctional beliefs, patient in-session engagement, and a decrease in patient engagement with homework predicted a change in BN symptoms between the two sessions prior to the sudden symptom reduction. Patient change in dietary restraint, and change in dysfunctional beliefs, patient in-session

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
								engagement, and patient engagement with homework predicted a change in BN symptoms between the session before and the session after sudden symptom reductions were observed.
Constantino et al. (2005) (USA)	N = 220 28.1 years (7.2) 100% female	RCT	CBT IPT	Patient perception of the therapeutic alliance	Helping Alliance Questionnaire (HAQ; Alexander & Luborsky, 1986) <i>Early treatment and mid-treatment (Sessions 4 and 12)</i>	Frequency of purging episodes	Purge Frequency Form (Agras, Walsh, et al., 2000) <i>Pre-treatment, mid-treatment, and post-treatment</i>	In CBT, early alliance and middle alliance were significantly associated with post-treatment purge frequency. In IPT, middle alliance, but not early alliance was significantly associated with posttreatment purge frequency.
Daniel et al. (2018) (Denmark)	N = 70 25.8 years (4.9) 96% female	RCT	CBT-E PPT	In-session silences	Pausing Inventory Categorization System (PICS; Levitt & Frankel, 2004) <i>Early treatment, mid-treatment, late</i>	Remission	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment and post-treatment</i>	In CBT, responders had fewer pauses than non-responders. PPT responders had more pauses than non-responders. Interaction of outcome group and therapy type was not significant. Responders had significantly more

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender				<i>treatment</i>			<i>productive</i> silences in early and mid-treatment, but less in late treatment compare to non-responders. Responders had less <i>obstructive</i> silences throughout treatment.
Daniel et al. (2016) (Denmark)	N = 70 25.8 years (4.9) 96% female	RCT	CBT-E PPT	Change in client attachment	Adult Attachment Interview (AAI; Main et al., 2008) <i>Pre-treatment, 5 months, post-treatment</i>	Remission	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment, 5 months, post-treatment</i>	There was a significant interaction between treatment type and attachment security change in predicting bingeing frequency, with a stronger relationship found in PPT than in CBT.
Daniel et al. (2014) (Denmark)	N = 8 25.5 years (5.3) 100% female	RCT	CBT-E PPT	Autobiographical memory	Narrative Processes Coding System (NPCS; Angus et al., 1996) Autobiographical memory coding scales (Daniel et al., 2014) <i>First six sessions</i>	Remission	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment, 5 months, post-treatment</i>	Autobiographical memory narrative proportion did not differ between responders and non-responders. Responders and non-responders did not differ in the development of their autobiographical memory narrative over the course of therapy.

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
Fairburn et al. (2004) (USA)	N = 220 28.1 years (7.2) 100% female	RCT	CBT IPT	Early behavioural response	Purging episodes frequency <i>Weekly during treatment</i>	Remission	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment, post-treatment, and at 8-month follow-up</i>	Purging frequency mid-treatment significantly predicted remission status post-treatment, and at 8-month follow-up. Percentage change in purging frequency during the first 4 weeks of treatment significantly predicted remission status post-treatment.
Hartmann et al. (2010) (Germany)	N = 43 25.1 years (7.4) 93% female	RCT	Psychodynamic-oriented individual therapy	Early behavioural response Patient experiences and feelings in-session Patient perception of the therapeutic alliance Treatment Expectancy	Eating Disorder Inventory (EDI-2; Garner, 1991) <i>Pre-treatment, Start of treatment, monthly during treatment, Post-treatment, 3-month follow-up</i> Session Questionnaire (SQ; Grawe et al., 1990) <i>Weekly during</i>	Remission	Eating Disorder Inventory (EDI-2; Garner, 1991) Structured Inventory of Anorexic and Bulimic Syndromes (SIAB; Fichter & Quadflieg, 2001) <i>Pre-treatment, Start of treatment, monthly during treatment, Post-treatment, 3-month follow-up</i>	Early behavioural response was significantly related to remission status at follow-up. In the early treatment phase, recreating the therapeutic dialogue was negatively related to remission at 3-months follow-up. In the middle treatment phase, the interaction between recreating the therapeutic dialogue and experiencing higher negative emotions in-session were negatively associated with remission status at 3-month follow-up.

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
				Patient recollection of the therapy and the therapist	<i>treatment</i> Helping Alliance Questionnaire (HAQ; Luborsky et al., 1990) Intersession Experience Questionnaire (ISF; Hartmann et al., 2003) <i>Session 3 and every 8th session thereafter</i>			up. However, patients who thought more often about the therapist and therapy between sessions had a lower risk of non-remission at follow-up. In the final phase of treatment, patient expectations of a good therapeutic outcome were more likely to be in the remission group at follow-up. Patients who experienced challenge to their core beliefs were at a higher risk of non-remission at follow-up. Patient perceptions of therapeutic alliance did not relate to treatment outcome.
Hoffart et al. (2010) (Norway)	N = 39 29.0 years (7.4) 100% female	Cohort Study	Inpatient multimodal treatment programme (CBT, group dynamic sessions, art	Self-efficacy Dysfunctional beliefs Negative affect	Process Outcome Measure for Bulimia (POMB; Hoffart et al., 2010) Clinical Outcomes in Routine	Frequency of binge eating and purging episodes Concerns	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) Eating Disorder Inventory (EDI-2; Garner, 1991)	Increased self-efficacy a week predicted less concern about body shape and weight the subsequent week. Decreased dysfunctional beliefs a week predicted less purging and

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
			therapy)	Positive affect	Evaluation – Outcome Measure (CORE-OM; Evans et al., 2002) <i>Weekly during treatment</i>	about body shape and weight	<i>Pre-treatment and post-treatment</i> Process Outcome Measure for Bulimia (POMB; Hoffart et al., 2010) <i>Weekly during treatment</i>	bingeing episodes 2 weeks later (but not the subsequent week). Decreased negative affect predicted less concern about body shape and weight the subsequent week. Increased positive affect a week predicted less concern about bodily shape and weight in the subsequent week. These relationships were not observed vice versa.
le Grange et al. (2008) (USA)	N = 80 16.1 (1.6) 98% female	RCT	FBT-BN SPT	Early behavioural response	Self-report of weekly binge eating and purging episodes <i>Weekly during treatment</i>	Remission	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment, post-treatment, and 6-month follow-up</i>	Early behavioural change at session 6 of treatment was the strongest predictor of remission post-treatment, both in FBT-BN and in SPT. Early behavioural change at session 6 also predicted outcome at 6-month follow-up, for FBT-BN but not for SPT.

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
Lock et al. (2008) (USA)	N = 80 16.1 (1.6) 98% female	RCT	FBT-BN SPT	Weight and Shape Concern Eating Concern Patient perception of the therapeutic alliance Treatment Expectancy Treatment Suitability	Eating Disorder Examination – Questionnaire (EDE-Q; Fairburn & Beglin, 1994) Help Relationship Questionnaire (HRQ; Luborsky, 1984) <i>Pre-treatment and mid-treatment</i> Therapeutic relationship (TR; Lock et al., 2008) <i>Sessions 1, 2, 10 (mid-treatment), and 20 (end of treatment)</i>	Remission	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment, post-treatment, and 6-month follow-up</i>	Weight, Shape, and Eating concerns, except for frequency of bingeing and purging episodes, were significant mediators of treatment outcome at both end of treatment and follow-up. Weight concern was the only significant mediator of remission status at end of treatment and follow-up in a stepwise log regression. Behavioural changes in bingeing and purging at mid-treatment did not mediate treatment outcome at end of treatment or follow-up. Patient perceptions of the therapeutic alliance at mid-treatment did not mediate treatment outcome at end of treatment or follow-up.

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
MacDonald et al. (2017) (Canada)	N = 104 28.8 years (9.0) 93% female	Cohort Study	CBT	Early behavioural response Emotion regulation	Self-report of weekly binge eating and purging episodes <i>Daily during the first 4 weeks of treatment</i> Difficulties with Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) <i>Pre-treatment, mid-treatment, and post-treatment</i>	Remission BN symptoms	Self-report of weekly binge eating and purging episodes <i>Daily during the first 4 weeks of treatment</i> Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) Eating Disorder Examination – Questionnaire (EDE-Q; Fairburn & Beglin, 1994) <i>Pre-treatment, mid-treatment, and post-treatment</i>	The odds of remission were significantly higher for those with an early behavioural response compared to the patients who did not. The odds increased with improvements in emotion regulation strategies. Changes in emotion regulation strategies during the first 4 weeks of treatment was a significant predictor of post-treatment BN symptoms. Early behavioural response did not predict a reduction in BN symptoms post-treatment.
McFarlane et al. (2005) (Canada)	N = 76 26.1 years (6.0)	RCT	CBT Antidepressant	Treatment expectancy	Client Attitudes and Expectations Questionnaire (CAEQ; McFarlane et al., 2005)	Frequency of binge eating and purging episodes	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment, and 4-weeks follow-up</i>	Expectations of helpfulness of treatment and outcome were not associated with bingeing and purging abstinence at the end of treatment.

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
	100% female				<i>Pre-treatment, and 4-weeks follow-up</i>			
Peterson et al. (2017) (USA)	N = 80 27.3 years (9.6) 90% female	RCT	CBT-E ICAT	Emotion regulation Self-discrepancy Social self-directed behaviour	Difficulties with Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) Structural Analysis of Social Behaviour Intrex (SASB; Benjamin, 2000) <i>Pre-treatment, mid-treatment, and post-treatment</i> Selves Interview (Higgins et al., 1986) <i>Pre-treatment and post-treatment</i>	BN symptoms Frequency of binge eating and purging episodes	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment, post-treatment, and 4-month follow-up</i>	Improvement in emotion regulation from pre-treatment to mid-treatment was associated with improvements in BN symptoms post-treatment, but not with frequency of bingeing and purging post-treatment and at follow-up. Improvement in emotion regulation from pre-treatment to post-treatment was associated with reductions in binge eating at follow-up. Improvement in social self-directed behaviour from pre-treatment to mid-treatment was associated with improvements in BN symptoms but not with frequency of bingeing and purging post-treatment and at follow-up. Improvement in social self-directed behaviour from pre-treatment to post-treatment was associated with reductions in

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
								purging at follow-up.
								No significant associations with self-discrepancy or treatment type.
Spangler et al. (2004) (USA)	N = 56 28.5 years (7.3) 100% female	RCT	CBT	Dysfunctional beliefs Patient engagement	CBT Coding Scale for Bulimia Nervosa (CCS-BN; Spangler, 1998) <i>Sessions 4, 10, 14, and 16</i>	Frequency of binge eating and purging episodes BN symptoms	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Bi-weekly during treatment</i>	Patient engagement predicted a reduction in purging, but not weight or shape concerns during treatment. Changes in dysfunctional beliefs predicted a reduction in weight concerns during treatment, but not purging or shape concerns.
Thiels et al. (2001) (UK)	N = 23 27.5 years (6.9) 100% female	RCT	Guided self-help using CBT principles	Manual compliance	Self-report of amount of manual accessed, amount of manual shared with social network, amount of manual exercises completed <i>Mid-treatment and post-treatment recall</i>	Frequency of binge eating and purging episodes	Eating Disorder Inventory (EDI-2; Garner, 1991) <i>Pre-treatment, post-treatment, and 6-month follow-up</i>	At both the end of treatment and 6-month follow-up, manual compliance did not predict abstinence from bingeing or purging. Manual exercise adherence in the form of a food diary decreased the likelihood of bingeing abstinence at the end of treatment. However, at 6-month follow-up, patients who

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							completed two or more exercises were more likely to become abstinent from bingeing.
Troop et al. (1996) (UK)	N = 55 25.7 years (5.8) 100% female	RCT	Guided self-help using CBT principles	Manual compliance	Self-report of amount of manual accessed, amount of manual shared with social network, amount of manual exercises completed <i>Mid-treatment and post-treatment recall</i>	Frequency of binge eating and purging episodes Remission	Eating Disorder Inventory (EDI-2; Garner, 1991) <i>Pre-treatment, post-treatment, and 6-month follow-up</i>	Overall compliance was the best predictor of full remission and no other individual measure of compliance added significantly. Amount of manual accessed was associated with greater rates of purging abstinence and full remission. Adherence to manual exercises increased the likelihood of bingeing and purging abstinence, and full remission. Sharing of the manual with the social network was not significantly associated with abstinence or remission.

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
Vaz et al. (2014) (Portugal)	N = 42 26.3 years (7.0) 100% female	RCT	Guided self-help using CBT principles	Early behavioural response	Self-report of weekly binge eating and purging episodes <i>Weekly during treatment</i>	Remission Interpersonal functioning Social role performance	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) Eating Disorder Examination – Questionnaire (EDE-Q; Fairburn & Beglin, 1994) Outcome Questionnaire (OQ; Lambert et al., 1996) <i>Pre-treatment, post-treatment, and 6-month follow-up</i>	Early behavioural response was a significant predictor of remission post-treatment and at 6-month follow-up.
Wilson et al. (2002) (USA)	N = 154 28.1 (7.2) 100% female	RCT	CBT IPT	Dietary restraint Weight and Shape Concern Self-efficacy in eating behaviours	Eating Disorder Examination – Questionnaire (EDE-Q; Fairburn & Beglin, 1994) Self-efficacy scale (SE; Wilson et al., 2002)	Remission Recovery Frequency of binge eating and purging episodes	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment, post-treatment, 8-month follow-up</i>	Dietary restraint at mid-treatment mediated binge eating frequency at post-treatment and follow-up and purging frequency post-treatment. Self-efficacy in eating behaviours mid-treatment mediated binge eating frequency and purging frequency post-treatment. Self-efficacy in negative affect mid-treatment mediated purging

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
				Self-efficacy in negative affect	<i>Pre-treatment and mid-treatment</i>			frequency post-treatment.
				Self-efficacy in weight cues	Help Relationship Questionnaire (HRQ; Luborsky, 1984)			No mediators of remission or recovery were found at post-treatment or follow-up.
				Self-efficacy in interpersonal conflict	<i>Session 4 and mid-treatment</i>			
				Patient perception of the therapeutic alliance	Visual analogue scale for treatment suitability and treatment expectations			
				Treatment Expectancy	<i>Pre-treatment</i>			
				Treatment Suitability	Self-report of weekly binge eating and purging episodes			
					<i>Bi-weekly during treatment</i>			

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
Zaitsoff et al. (2008) (USA)	N = 80 16.1 years (1.6) 97.5% female	RCT	FBT-BN SPT	Patient perception of the therapeutic alliance Treatment Expectancy Treatment Suitability Improvement estimates	Help Relationship Questionnaire (HRQ; Luborsky, 1984) <i>Mid-treatment and post-treatment</i> Self-report of treatment expectancy <i>Start of treatment and mid-treatment</i> Self-report of treatment suitability <i>Session 2 and mid-treatment</i> Self-report of improvement estimates	BN symptoms	Eating Disorder Examination (EDE; Fairburn & Cooper, 1993) <i>Pre-treatment, Session 2, Mid-treatment, and post-treatment</i>	Therapeutic alliance, treatment expectancy, and treatment suitability was not significantly associated with symptom reduction post-treatment in FBT. Therapeutic alliance mid-treatment in SPT was significantly correlated to reduction in binge eating and purging episodes through treatment. No other significant correlations found.

Authors & Origin	Sample Size	Design	Treatment	Process Variable	Process Variable Measure	Outcome Variable	Outcome Variable Measure	Key Finding(s)
	Mean Age (SD)				<i>Frequency of measurement</i>		<i>Frequency of measurement</i>	
	Gender							
					<i>Mid-treatment and post-treatment</i>			

Note. BN = Bulimia Nervosa; CBT = Cognitive Behavioural Therapy; CBT-E = Enhanced Cognitive Behavioural Therapy; FBT-BN = Family-Based Treatment for Bulimia Nervosa; ICAT = Integrative Cognitive Affective Therapy; IPT = Interpersonal Therapy; PPT = Psychoanalytic Psychotherapy; RCT = Randomised Controlled Trial; SD = Standard Deviation; SPT = Supportive Psychotherapy; UK = United Kingdom; USA = United States of America

Methodological Quality Appraisal

The scores for each criterion in the appraisal of the methodologies used in the process-outcome studies included are summarised in Table 4.

Variable Conceptualisation and Operationalisation

All the studies ($n = 22$) employed methodologies that were congruent with the outlined research aims (criterion 1: Methodology-research aims congruity) and had operationally defined the measured variables using theory based on process-outcome research (criterion 2: Theoretically-guided operationalisation of process and outcome). Half of the studies ($n = 11$; Accurso et al., 2015; Constantino et al., 2005; Daniel et al., 2016; Hoffart et al., 2010; Lock et al., 2008; MacDonald et al., 2017; McFarlane et al., 2005; Peterson et al., 2017; Spangler et al., 2004; Wilson et al., 2002; Zaitsoff et al., 2008) used process variables that were evaluative rather than based on frequency counts. These studies were therefore less susceptible to being affected by the context or timing of the measurement, such as patient-therapist responsiveness or treatment phase.

Design

All studies used data collection strategies that were congruent with the overall methodology (criterion 3: Methodology-data collection congruity). Only five studies did not use standardised measures for the process and outcome variables (Hoffart et

al., 2010; McFarlane et al., 2005; Thiels et al., 2001; Troop et al., 1996; Zaitsoff et al., 2008). None of the studies used experimental manipulation designs.

All the studies defined the perspective of observation (criterion 4: Informant conceptualisation). However, only five studies (Cavallini, 2010; Daniel et al., 2018, 2016, 2014; Spangler et al., 2004) used observers that were blind to the participant outcome, primarily because the majority of the studies used self-reports to assess process and outcome variables. The same five studies, including an additional one (Agras, Crow, et al., 2000), used more than one observer, therefore increasing the reliability of the measures. However, only four of the six studies that used multiple observers (Agras, Crow, et al., 2000; Cavallini, 2010; Daniel et al., 2018, 2016) achieved an inter-rater reliability level higher than 0.60, which is the acceptable reliability threshold recommended by McHugh (2012). Finally, none of the studies measured the process or outcome variables from all three perspectives (therapist, patient, and observer perspectives).

Twelve of the studies measured and controlled for known moderators of confounding variables in their design and analysis (criterion 5: Consideration of moderators and confounding variables; Accurso et al., 2015; Agras, Crow, et al., 2000; Constantino et al., 2005; Daniel et al., 2016, 2014; Fairburn et al., 2004; Hartmann et al., 2010; MacDonald et al., 2017; Peterson et al., 2017; Vaz et al., 2014; Wilson et al., 2002; Zaitsoff et al., 2008). Of these studies, only two (Accurso et al., 2015; Daniel et al., 2016) conducted sub-group analyses to account for moderators. Seven studies accounted for reverse causation or third variable causation by examining these variables separately or by controlling for them in the analyses (criterion 6: Consideration of reverse causation; Accurso et al., 2015; Daniel et al.,

2018, 2014; Hoffart et al., 2010; Peterson et al., 2017; Vaz et al., 2014; Wilson et al., 2002).

Regarding the criterion of establishing a timeline (criterion 7: Establishing a timeline), only two studies did not conduct multiple assessments of process and outcome (Blocs et al., 2001; McFarlane et al., 2005). All the studies assessed the outcome variable early enough to be able to ensure that the change in the process variable occurred prior to the change in the outcome variable. This was achieved by measuring outcome and process variables at baseline and at multiple points in time throughout the study. None of the studies investigated the dose-response relationship between process and outcome variables.

Statistical Analysis

Only two studies did not use appropriate methods to investigate the process-outcome relationship in question (criterion 8: Statistical analysis-research methodology congruity; McFarlane et al., 2005; Zaitsoff et al., 2008). Of the other 20 studies, nine studies (Accurso et al., 2015; Daniel et al., 2018, 2016, 2014; Hartmann et al., 2010; Hoffart et al., 2010; Lock et al., 2008; Peterson et al., 2017; Spangler et al., 2004) used appropriate statistical methods that took into account the autocorrelational nature of the longitudinal data. Additionally, eight studies (Accurso et al., 2015; Daniel et al., 2014, 2016; Hoffart et al., 2010; Lock et al., 2008; Spangler et al., 2004; Vaz et al., 2014; Wilson et al., 2002) investigated the covariation between process and outcome using appropriate statistical tools.

Interpretation of Results

All the studies drew justified conclusions based on their analysis and data collected (criterion 9: Result-interpretation congruity and interpretation plausibility). However, six studies did not produce results that had been replicated in other studies (Blocs et al., 2001; Cavallini, 2010; Daniel et al., 2018, 2016, 2014; Zaitsoff et al., 2008) and four produced results that were not generalisable to the population under study (Blocs et al., 2001; Cavallini, 2010; Daniel et al., 2014; Thiels et al., 2001). Generalisability was judged based on the representativeness of the sample as observed by the clear description of inclusion and exclusion criteria and any further attempts to characterise the sample according to the target population (Hong et al., 2018).

Table 5 shows the percentage of studies that met each of the aspects under each criterion.

Table 4*Methodological Quality Appraisal*

Study	Variable Conceptualisation & Operationalisation		Design					Statistical Analysis	Interpretation of Results	TOTAL SCORE
	Methodology-Research Aims Congruity	Theoretically-guided Operationalisation of Process and Outcome	Methodology-Data Collection Congruity	Informant Conceptualisation	Consideration of Moderators & Confounding Variables	Consideration of Reverse Causation	Establishing a Timeline	Statistical Analysis-Research Methodology Congruity	Result-Interpretation Congruity & Interpretation Plausibility	
<i>Maximum Possible Score</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>5</i>	<i>2</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>23</i>
Accurso et al. (2015)	1	2	2	1	2	1	2	3	3	17
Agras, Crow, et al. (2000)	1	1	2	3	1	0	2	1	3	14
Bloks et al. (2001)	1	1	2	1	0	0	1	1	1	8
Cavallini (2010)	1	1	2	4	0	0	2	1	1	12
Constantino et al. (2005)	1	2	2	1	1	1	2	1	3	14
Daniel et al. (2018)	1	1	2	3	0	1	2	2	2	14
Daniel et al. (2016)	1	2	2	4	2	0	2	3	2	18
Daniel et al. (2014)	1	1	2	4	1	1	2	3	1	16
Fairburn et al. (2004)	1	1	2	1	1	0	2	1	3	12
Hartmann et al. (2010)	1	1	2	1	1	0	2	2	3	13
Hoffart et al. (2010)	1	2	1	1	0	1	2	3	3	14

Study	Variable Conceptualisation & Operationalisation		Methodology-Data Collection Congruity	Informant Conceptualisation	Design		Establishing a Timeline	Statistical Analysis	Interpretation of Results	TOTAL SCORE
	Methodology-Research Aims Congruity	Theoretically-guided Operationalisation of Process and Outcome			Consideration of Moderators & Confounding Variables	Consideration of Reverse Causation				
<i>Maximum Possible Score</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>5</i>	<i>2</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>23</i>
Le Grange et al. (2008)	1	1	2	1	0	0	2	1	3	11
Lock et al. (2008)	1	2	2	1	0	0	2	3	3	14
MacDonald et al. (2017)	1	2	2	1	1	0	2	1	3	13
McFarlane et al. (2005)	1	2	1	1	0	0	1	0	3	9
Peterson et al. (2017)	1	2	2	1	1	1	2	2	3	15
Spangler et al. (2004)	1	2	2	3	0	0	2	3	3	16
Thiels et al. (2001)	1	1	1	1	0	0	2	1	2	9
Troop et al. (1996)	1	1	1	1	0	0	2	1	3	10
Vaz et al. (2014)	1	1	2	1	1	1	2	2	3	14
Wilson et al. (2002)	1	2	2	1	1	1	2	2	3	15
Zaitsoff et al. (2008)	1	2	1	1	1	0	2	0	2	10

Table 5*Percentage of studies meeting quality criteria*

Criterion & Aspect	N (%)
Methodology – Research Aims Congruity	
<i>Congruity between methods and aims</i>	22 (100)
Theoretically-guided Operationalisation of Process and Outcome	
<i>Theory-driven operationalisation</i>	22 (100)
<i>Evaluative process variable</i>	11 (50)
Methodology – Data Collection Congruity	
<i>Congruity between methods and data collection</i>	22 (100)
<i>Standardised measures</i>	17 (77)
<i>Experimental manipulation</i>	0 (0)
Informant Conceptualisation	
<i>Observation perspective defined</i>	22 (100)
<i>Blind observers</i>	5 (23)
<i>More than one observer</i>	6 (27)
<i>High inter-rater reliability</i>	4 (18)
<i>All perspectives measured</i>	0 (0)
Consideration of Moderators & Confounding Variables	
<i>Controlling for putative moderators</i>	12 (55)
<i>Subgroup analyses</i>	2 (9)
Reverse Causation	
<i>Accounting for putative mediators or third variable</i>	7 (32)
Establishing a Timeline	
<i>Multiple assessments</i>	20 (91)
<i>Early assessment of variables</i>	22 (100)
<i>Dose-response relationship</i>	0 (0)
Statistical Analysis – Research Methodology Congruity	
<i>Appropriate statistical analyses</i>	20 (91)
<i>Accounting for autocorrelation</i>	9 (41)
<i>Covariation between process and outcome</i>	8 (36)
Result – Interpretation Congruity & Interpretation Plausibility	
<i>Justified conclusions</i>	22 (100)
<i>Replication</i>	16 (73)
<i>Generalisability</i>	18 (82)

Data Synthesis and Findings

Eighteen patient-related process variables were investigated in the included process-outcome studies. Nineteen studies found at least one significant association between the patient-related process variables and the measured outcome.

Early Behavioural Response to Treatment

Early behavioural response to treatment is the patient's behavioural change at the initial stages of therapy. All six studies that examined early behavioural response found a significant association with treatment outcome (Agras, Crow, et al., 2000; Fairburn et al., 2004; Hartmann et al., 2010; Le Grange et al., 2008; MacDonald et al., 2017; Vaz et al., 2014). This association was found across treatments, including CBT and IPT (Agras, Crow, et al., 2000; Fairburn et al., 2004; MacDonald et al., 2017), multimodal treatment (Hartmann et al., 2010), guided self-help (Vaz et al., 2014), and in Family-Based Treatment (FBT-BN) and Supportive Psychotherapy (SPT) in adolescents (Le Grange et al., 2008). Early behavioural response was significant in studies that examined a dichotomous outcome variable of remission, but also studies that examined a reduction in symptoms at the end of treatment. One exception was the study by MacDonald et al. (2017), who found that even though early behavioural response predicted remission status at the end of treatment, it did not predict reduction of symptoms as a continuous variable.

Patient Perceptions of the Therapeutic Alliance

Patient perceptions of the therapeutic alliance involve the measurement of how the patient experiences the therapeutic relationship during treatment (Horvarth et al., 2011). The findings for the relationship between patient perceptions of the therapeutic alliance and treatment outcome were mixed in the studies included in this review. While, three studies found significant associations between patient perceptions of therapeutic alliance and treatment outcome (Accurso et al., 2015; Constantino et al., 2005; Zaitsoff et al., 2008), the remaining three studies did not find an association between therapeutic alliance and treatment outcome (Hartmann et al., 2010; Lock et al., 2008; Wilson et al., 2002). In one study, therapeutic alliance predicted a reduction in frequency of purging and bingeing episodes, but the reverse model was also significant, indicating that perhaps more positive perceptions of therapeutic alliance are influenced by treatment outcome (Accurso et al., 2015). Additionally, studies found significant associations in some therapeutic modalities but not others (Constantino et al., 2005; Zaitsoff et al., 2008).

Treatment Expectations and Treatment Suitability

Five studies examined patient expectations of treatment. Four studies found no association between patient expectations of treatment and symptom reduction at the end of treatment or at follow-up (Lock et al., 2008; McFarlane et al., 2005; Wilson et al., 2002; Zaitsoff et al., 2008). In the only study where significant associations emerged, Hartmann et al. (2010) found that more positive expectations of treatment at the final stages of therapy were associated with an increased likelihood for the

participants to be in the remission group at follow-up. However, this was not the case in the early or middle stages of therapy. Of these five studies, three also investigated patient perceptions of the suitability of treatment in FBT, SPT, and CBT (Lock et al., 2008; Wilson et al., 2002; Zaitsoff et al., 2008). None of the studies found significant associations between treatment suitability and remission status at the end of treatment or at follow-up.

Dysfunctional Beliefs

Dysfunctional beliefs in relation to eating disorder symptomatology was defined in these studies as unrealistic expectations of body weight and shape and an undue association of body weight or shape with self-worth (Spangler et al., 2004). Three studies found a negative relationship between dysfunctional beliefs and good treatment outcome (Cavallini, 2010; Hoffart et al., 2010; Spangler et al., 2004). Two of these studies found a delayed effect of dysfunctional beliefs on symptom reduction (Cavallini, 2010; Hoffart et al., 2010).

Self-efficacy

Self-efficacy in these studies was defined as the patient's confidence to resist binge eating in response to eating and weight cues, negative affect, and interpersonal conflicts (Wilson et al., 2002). Two studies examined self-efficacy and they both found associations with a reduction in bulimic symptoms (Hoffart et al., 2010; Wilson et al., 2002). In particular, self-efficacy in relation to responding to eating cues and

negative affect were found to be significantly associated with symptom reduction post-treatment, but not self-efficacy in relation to weight cues and interpersonal conflict (Wilson et al., 2002).

In-Session and Inter-Session Affect and Therapy Experience

In-session and inter-session affect and experiences are any conscious thoughts, feelings, and memories that are directly linked to the therapeutic process and the therapist that occur within or in-between sessions accordingly (Hartmann et al., 2010). Two studies investigated this process variable with mixed results (Hartmann et al., 2010; Hoffart et al., 2010). Aspects of inter-session experiences such as recreating the therapeutic dialogue between sessions, its interaction with experiencing negative affect in the sessions, and a challenging of core beliefs towards the end of treatment were found to be negatively associated with remission status at the end of treatment and follow-up (Hartmann et al., 2010). On the other hand, inter-session experiences such as recalling the therapist and therapy, as well as an increased experience of positive affect and a decreased experience of negative affect were associated with a reduction in symptoms at the end of treatment (Hartmann et al., 2010; Hoffart et al., 2010).

Emotion Regulation

Two studies examined changes in emotion regulation ability during treatment as a patient-related process variable in relation to treatment outcome (MacDonald et

al., 2017; Peterson et al., 2017). Both studies found that early improvements in emotion regulation ability was associated with a reduction of bulimic symptoms at the end of treatment. Both studies used the same measure, which examined the patient's difficulties with emotion regulation, including a lack of emotional awareness, difficulty with impulse control, difficulty engaging in goal-oriented behaviour when distressed, and availability of emotion regulation strategies (Gratz & Roemer, 2004).

Engagement and Compliance

Patient engagement relates to process aspects of patient motivation, willingness, and participation in therapy activities (Spangler et al., 2004). Compliance was conceptualised as adherence to the therapeutic manual in studies that examined guided self-help based on CBT principles (Thiels et al., 2001; Troop et al., 1996). Two studies found positive associations with patient engagement and reduction in bulimic symptoms (Cavallini, 2010; Spangler et al., 2004). In addition, two studies examined patient compliance with a guided self-help manual and found contradicting results (Thiels et al., 2001; Troop et al., 1996). Thiels et al. (2001) found that compliance with the manual during treatment did not predict bingeing and purging abstinence at the end of treatment, but an increased engagement with the manual exercises was marginally predictive of bingeing abstinence at follow-up. On the other hand, Troop et al. (1996) found that overall compliance was the best predictor of remission status at the end of treatment in a model with compliance aspects such as adherence to exercises, amount of manual accessed, and manual sharing with the patient social network.

Dietary Restraint and Body Image Concerns

Three studies examined bulimic symptoms such as dietary restraint, as well as weight, shape, and eating concern as process variables to predict treatment outcome (Cavallini, 2010; Lock et al., 2008; Wilson et al., 2002). Two studies found that dietary restraint was a significant mediator of change in bingeing and purging frequency during treatment (Cavallini, 2010) and at the end of treatment (Wilson et al., 2002). Lock et al. (2008) found that weight, shape, and eating concerns during treatment were significant mediators of symptoms at the end of treatment and at follow-up, however only weight and shape concern was a significant mediator of remission status. On the contrary, Wilson et al. (2002) found that weight and shape concerns during treatment were not significant mediators of remission or recovery status or of bingeing and purging frequency at the end of treatment.

Other Variables

There was a range of other patient-related process variables that were examined in this review. Peterson et al. (2017) examined self-discrepancy (the distance between the ideal self and the actual self) and self-directed behaviour (coping strategies directed toward the self, including positive strategies such as self-acceptance, and negative, such as self-neglect). They found no associations between self-discrepancy and outcome. In terms of self-directed behaviours, they found that the change between early and mid-treatment was associated with a decrease in bulimic symptoms at the end of treatment and at follow-up. In addition, changes in coping style were investigated by Bloks et al. (2001) and found that a change in

coping style was associated with reduced bulimic symptoms at the end of treatment but not with a change in body weight.

Daniel et al. (2018) investigated in-session silences as a patient-related process variable. They categorised silences as productive, neutral, and obstructive as assessed by an observer-based measure. They found that in CBT responders had fewer pauses than non-responders but the reverse pattern was observed in Psychoanalytic Psychotherapy (PPT). In addition, responders had more productive silences in early to mid-treatment and fewer in late treatment in comparison to non-responders. They also had fewer obstructive silences throughout treatment.

Change in attachment security has also been investigated by Daniel et al. (2016) and found that there was a significant interaction between treatment type and attachment security change in predicting bingeing frequency at the end of treatment. Daniel et al. (2014) also examined the emergence of autobiographical memory during therapy as a process variable linked to outcome. They found no significant differences in autobiographical memory between responders and non-responders as classified by their bulimic symptoms at the end of treatment.

Discussion

This review aimed to examine the research on the relationship between patient-related processes and treatment outcome across psychotherapy treatments for BN. It sought to identify different patient-related processes in the literature and examine the methodological quality of the process-outcome studies using a novel quality appraisal tool that amalgamates previous research on the methodology of process-outcome designs. Twenty-two studies were identified in a systematic literature search. These studies examined a total of 18 different patient-related process variables across nine different therapeutic approaches. For the majority of the patient-related process variables there was an association with the treatment outcome across studies, however the specific conclusions drawn from each study differed due to the variability in methodologies and analytic strategies.

Patient-Related Process Variables

The patient-related process variable most consistently associated with a positive treatment outcome was early behavioural response across studies. Early behavioural response can be conceptualised as patient responsiveness to the therapist interventions. This is consistent with findings of other literature reviews on treatment mediators in eating disorders (Linardon et al., 2016; Vall & Wade, 2015). Early behavioural response accounts for symptom reduction beyond what would be expected when accounting for baseline symptom severity and treatment duration in studies of eating disorders (Brauhardt et al., 2014). However, early behavioural response may constitute a manifestation of increased motivation or readiness to

change or it may be impacted by other patient characteristics (Hansen & Lambert, 2003).

On the contrary, findings on patient perceptions of the therapeutic alliance were inconclusive as half the examined studies did not find associations with treatment outcome. This is consistent with the findings of the ED review by Brauhardt et al. (2014), who argue that it is possible that symptomatic improvement may act a prerequisite to positive therapeutic alliance in ED, which may account for the similarly inconclusive findings. However, this is inconsistent with findings in other psychiatric disorders (Arnow et al., 2013; Bohart & Wade, 2013; Webb et al., 2011). Hartmann et al. (2010) argue that this inconsistency in findings may reflect the fact that the therapeutic alliance needs to be internalised as part of other therapeutic experiences and generalised in the patient's life outside of the therapeutic room in order to have a significant effect on treatment outcome. Therefore, it is crucial to investigate therapeutic alliance in relation to other aspects of the therapy, but also in relation to patient characteristics such as their personality structure (Zeeck et al., 2006). It is also important to note that most of the studies that did not find an association between patient perceptions of the therapeutic alliance and treatment outcome used a dichotomised outcome variable based on the patient remission status (Hartmann et al., 2016; Lock et al., 2008; Wilson et al., 2002). It is therefore possible that the dichotomy of the sample in half (remitted and non-remitted patients) reduced the ability of the corresponding models to detect a significant association due to reduced power given the already small sample sizes.

The patient treatment expectations and perceptions of treatment suitability were not found to be associated with treatment outcome in most of the studies in this

review. However, some studies on group treatments of BN have identified positive associations between treatment expectations and outcome (Mussell et al., 2000). Similar results were found in previous reviews in eating disorders (Brauhardt et al., 2014). However, these findings are in contrast with findings in other psychiatric disorders (Bohart & Wade, 2013; Mondloch et al., 2001).

Patient dysfunctional beliefs were mainly found to be associated with treatment outcome. This is consistent with findings across eating disorders (Brauhardt et al., 2014). However, Cavallini (2010) did not examine the overall time course of dysfunctional beliefs through therapy but only in relation to the sudden symptom reduction sessions. Because the sample was divided between participants who experienced sudden symptomatic reductions and those who did not, inferences cannot be drawn about mechanisms of action that could be found in participants who improved but did not experience sudden symptom reductions. Additionally, in the study by Hoffart et al. (2010) the sample was drawn from an inpatient unit where purging is controlled by the environment and therefore the outcome measure of purge frequency may have not been accurate.

Self-efficacy in relation to eating cues and experience of affect was consistently found to be positively associated with treatment outcome in the two studies in this review (Hoffart et al., 2010; Wilson et al., 2002). Self-efficacy can be conceptualised as self-relatedness according to the Generic Model of Psychotherapy (Orlinsky & Howard, 1987). Despite the limited number of studies in this review, self-efficacy has been consistently associated with positive outcomes in other studies in BN (e.g. Brauhardt et al., 2014; Wilson et al., 2000) and in substance abuse disorders (Adamson et al., 2009). The overlapping construct of emotion regulation

was also found consistently associated with treatment outcomes in the two studies included in this review (MacDonald et al., 2017; Peterson et al., 2017). However, both studies presented small sample sizes, and both studies used a self-report to measure emotion regulation, which may have impacted the reliability of the measurement. Similarly, experiences of in-session and inter-session affect was also found consistently associated with treatment outcome (Hartmann et al., 2016; Hoffart et al., 2010).

Most of the studies investigating patient engagement and compliance found positive associations with treatment outcome. However, it is important to note the variability of treatments in these studies. For example, Troop et al. (1996) examined guided self-help with minimal contact with the therapist and therefore their compliance may be a more accurate reflection of their personal motivation in comparison to the sample from the Thiels et al. (2001) study who had weekly contact with a therapist and may have been impacted by interpersonal process factors depending on their relationship with the therapist.

Dietary constraint during treatment was consistently found associated with negative treatment outcomes, whereas results on weight and shape concerns were contrasting. This may indicate that addressing behavioural aspects such as dietary restraint can have an effect on treatment outcome. However, it is important to consider that across studies, the treatment outcome is measured primarily based on bulimic behaviours, therefore by definition dietary restraint is more likely to be associated with treatment outcome than body image concerns.

Other processes identified in this review were changes in attachment style, self-discrepancy, coping style, autobiographical memory, and in-session silences.

Each of these were investigated by only one study and therefore conclusions cannot be drawn for their relationships with treatment outcome. However, given that there are studies that have found an association, further examination is warranted in larger studies with more frequent measurements of these process variables.

Methodological Quality of Studies

Studies included in this review had mostly good methodological quality, as more than half of the studies included scored high on most criteria. All of the studies in this review had considered at least two of the five domains of Elliott's (1991) psychotherapy process dimensions and could therefore be considered of fairly good quality (Elliott, 1991). Most of the studies had good internal validity by using standardised and reliable measures and establishing a reasonable timeline between the process and the outcome variables. Nevertheless, none of the studies met all the criteria for process-outcome designs. This indicates the need for improved process-outcome designs and an increased focus in conducting process research, while taking into account the idiosyncrasies of the time-consuming nature of this approach.

Several criteria included in the quality appraisal tool derived from mediation research and may have therefore been too strict for process-outcome studies. For example, none of the studies used experimental designs to investigate the relationship between patient-related processes and treatment outcome, rendering it difficult to draw directional inferences about the relationship between the variables. Similarly, none of the studies explored the dose-response relationship between the two variables. However, Orlinsky et al. (2004) argued that experimental designs are not applicable to

process-outcome designs as it would be unethical to manipulate process aspects such as patient perceptions of the therapeutic alliance. It is also argued that there is an underlying medical model thinking in process-outcome research, whereby it is assumed that higher dosage of a positive process variable will link with better outcome. In reality, an effective therapist is likely to continuously modify the dosage of an intervention in response to the patient, and therefore the causal relationship between process and outcome may be too complex to examine using current methodological tools (Stiles & Shapiro, 1994). On the other hand, Elliott (2010) maintains that some therapist-related process variables can be manipulated, such as therapist self-disclosure (e.g. Barrett & Berman, 2001). However, manipulating process variables arbitrarily may reduce therapy effectiveness as it reduces the spontaneous responsiveness between patient and therapist. Other studies have attempted to experimentally manipulate patient motivation by providing motivational enhancement programmes prior to treatment (Dean et al., 2008; Katzman et al., 2010). Haynes & O'Brien (2000) claim that causal inference can be made if four assumptions have been met, including (a) the two variables covary, (b) the process variable precedes the outcome variable, (c) other explanations for the relationship between the variables have been reasonably excluded, and (d) there is a plausible explanation for the hypothesised causal relationship. The quality appraisal tool used in this review assessed the studies on all of these aspects, and therefore it could be argued that strict experimental manipulation may not be necessary to infer causal relationships between the process and outcome variables examined in the studies that met the above criteria. However, less than half of the studies examined the first criterion of covariation between the process and the outcome variable, and not all studies were able to establish a precedence of the process to the outcome by examining a timeline. More

research is needed to ensure that the associations observed are sustained in different samples and designs.

Additionally, none of the studies measured the process variables from all possible perspectives (therapist, patient, external observer). Examining different perspectives can enable a richness of information as they complement each other. However, the majority of the studies assess the patient-related process variables from the perspective of the patient using self-reports, and some used interview-based measures or observer-based measures. The patient's interpretation of a process aspect may differ from that of an external observer or the therapist (Elliott & James, 1989; Orlinsky et al., 2004). Even though the patient perspective may be a more accurate reflection of the patient-related process variables that this review has focused on, it is important to consider that patients may not always accurately remember aspects of therapy or may consciously or unconsciously distort data given to the researchers. Their responses may also be affected by their cognitive abilities, use of vocabulary, pre-existing beliefs, and demand characteristics (Elliott & James, 1989).

All the studies were carried out in the Western world which reflects the setting where most treatment efficacy research is conducted. However, it is important to note the possibility that intrapersonal and interpersonal processes will be affected by cultural context. Additionally, the majority of the studies used data from randomised controlled trials (RCT), potentially limiting the generalisability of the findings due to the strict inclusion criteria. Most studies suffered from small sample sizes, with some dividing the sample based on remission status, further reducing the power of their designs.

Strengths and Limitations

When interpreting the findings of this review, it is important to consider its strengths and limitations. This review provided an overview of the process-outcome studies investigating patient-related process variables in clinical BN. Using a second independent rater across all stages of the review ensured a high level of internal validity. By including grey literature, studies with little visibility were captured. Also, even though previous reviews suffered from a large heterogeneity of treatment outcome definitions (Vall & Wade, 2015), this review included studies with a fairly uniform definition of treatment outcome that was assessed by the same measure (EDE) in 15 out of the 22 studies. By operationalising strict inclusion criteria, the studies included were mostly of high methodological quality, although no studies were excluded based on their quality.

However, a number of studies that investigated process variables in subclinical BN were excluded. It has been argued that clinical and subclinical eating disorders do not differ significantly in some aspects such as interpersonal difficulties which would impact the therapeutic process (Patterson et al., 2012). However, the inclusion of subclinical BN could have resulted in an unhelpfully diverse sample, as subclinical bulimic symptoms vary considerably between individuals (Sherwood et al., 2000; Stice et al., 1996). Also, this review did not take into consideration outcome measures outside of bulimic symptoms, such as other psychopathology or general functioning and quality of life. This may have impacted the reported associations between process variables and outcomes. Finally, the heterogeneity of treatments in the studies included in this review may limit the interpretability of the findings as process

variables may have been affected by the treatment model as suggested in the Generic Model of Psychotherapy (Orlinsky & Howard, 1987).

Recommendations for Future Research

While this review identified several patient-related process variables that are linked with treatment outcome, it became apparent that there are significant gaps in the literature that limit the extent to which robust conclusions can be drawn, even when strict inclusion criteria are applied. Replication of the strongest associations found in this review would strengthen the argument of the importance of these variables. Several patient-related variables were identified in single studies, such as attachment or coping style, and replication of these findings will clarify whether these associations are significant. Process-outcome studies can be incorporated in large efficacy studies that benefit from repeated measurements and use of experimental designs. Using observer-based measures can also minimise the additional impact of the process-outcome studies on the participants of the efficacy studies.

Future research should aim to explore various aspects not covered in this review such as group therapy and adopting a more lenient approach on the operationalisation of treatment outcome. Qualitative approaches may also facilitate a further understanding of the patient-related process variables.

In this review, less than half of the studies accounted for the autocorrelational nature of the process and outcome variables. This is surprising given that autocorrelation and covariation are crucial factors in process-outcome designs. This may be because statistical models that allow the control of autocorrelation are not

widely used. Future research would benefit from developing more appropriate and rigorous statistical methods for the study of process-outcome relationships. For example, sophisticated designs such as time-series analyses or growth curve modelling could be more widely used and disseminated in order to facilitate the study of patient-related processes across time (Jebb et al., 2015).

Finally, it is equally important to understand patient-related process variables that hinder positive treatment outcomes in order to ensure that they are managed during treatment. By understanding the unhelpful process variables, studies could be better able to define the measures of patient-related process variables as evaluative. If both known helpful and unhelpful variables are found to be linked with good treatment outcome then perhaps the evaluative process has not been correctly identified (Doss, 2004). Therefore, the investigation of unhelpful processes in psychotherapy can have implications both in clinical practice and research.

Clinical Practice Implications

One of the most important contributions of this review is that it can help to sensitise clinicians to patient-related processes that may be important for a positive treatment outcome. Clinicians may focus on these aspects in order to facilitate recovery, but also to provide patients with a good experience of therapy. Since early behavioural response emerged as one of the strongest associations with treatment outcome in this review and in previous studies, it may be important to focus on reducing the behavioural components of BN at the start of treatment. Also, a failure to achieve an early behavioural response may be a risk factor for poor treatment

outcomes and therefore clinicians may be better able to identify early on which individuals would need a more intensive intervention and follow-up (Vall & Wade, 2015). This approach may then link with the patient ability to regulate their emotions better as found by this review. It is well established that negative emotions are often antecedents of bingeing and purging episodes in BN as bingeing and purging often acts as a maladaptive strategy for managing these emotions (Haedt-Matt & Keel, 2011). Therefore, a combination of emotion regulation strategies with a behavioural component aimed at reducing the behavioural symptoms of BN may prove to be a useful approach. CBT and other evidence-based treatments for BN incorporate these components and their efficacy in comparison to other treatments has been shown in the literature (Fairburn, 2008; Wilson et al., 2007). Even though further replication is warranted, this review highlights a set of directions for process-outcome research of patient-related variables.

Conclusion

This review attempted to examine the relationship between patient-related process variables with treatment outcome in the literature. Early behavioural response was most studied in the literature and most consistently associated with treatment outcome. Even though therapeutic alliance has been previously identified as an important contributor to treatment outcome, the evidence from this review was inconclusive. Emotion regulation, dysfunctional beliefs, self-efficacy, patient engagement, and dietary restraint were less studied but showed consistently good associations with treatment outcome.

The empirical literature in the investigation of patient-related process variables and treatment outcome is growing, however it is important for future studies to address methodological limitations of process-outcome designs by refining experimental designs and using more robust statistical tools. Improving understanding of patient-related process variables and their impact on treatment outcome can guide therapeutic interventions to aspects that are useful towards recovery but also manage aspects that may be hindering. By exploring therapeutic process, we may be able to refine psychotherapy for BN and improve patient outcomes.

Chapter 2: Empirical Study

Innovative Moments and the Process of Change in the Treatment of Adults With Bulimia Nervosa

Abstract

Psychotherapy researchers have been increasingly interested in identifying change processes in the patient narrative in order to improve treatment outcomes. Innovative Moments (IMs) are markers in the patient narrative that oppose the assumptions of the problem. IMs can be Action, Reflection, or Protest across two subtypes (I and II), and Reconceptualization, where each IM reflects a different level of narrative change. Change processes in psychotherapy for bulimia nervosa (BN) have not been studied systematically in the literature. Qualitative case studies in BN have identified patterns in patient discourse linked to recovery, akin to the ones found in the IM literature, however the IM framework has not been previously applied in BN. This exploratory study aims to investigate the development of IMs throughout treatment and examine their associations with binge and purge frequency change. IMs were coded in sixty sessions across ten participants (five good outcome and five poor outcome cases) in different stages of treatment. Binge and purge frequency was also monitored in the examined sessions. The proportion of IMs in this sample was low in comparison to previous studies. Multi-level analyses indicated that most IMs changed significantly over time. Results also showed that only Protest subtype II, describing a position of assertiveness and empowerment, in one session predicted symptom changes in the following session. Models where binge and purge frequency predicted

IMs showed a better fit than vice versa. It is possible that Protest II plays a role in the process of change in BN, however the results should be interpreted with caution due to the study's lack of power. Nevertheless, the study provides a novel clinical understanding of important processes in psychotherapy for BN and their association with treatment outcome.

Introduction

In the field of psychotherapy, there has been an increased interest in the therapeutic process to identify key ingredients that facilitate change and recovery. There is a growing body of research on how patients themselves construct the process of change, with a focus on the patient narrative as a representation of the development of new meanings that enable change (Montesano et al., 2017). The relevance of narrative transformation has been highlighted in research on adaptive functioning (e.g. Pennebaker & Seagal, 1999) and in psychotherapy (e.g. Angus & Greenberg, 2011; Gonçalves & Stiles, 2011). However, despite substantial research on language processes in psychotherapy, research on narrative change as a transtheoretical factor has lagged behind (Montesano et al., 2017). Qualitative case studies in eating disorders (ED), and in particular Bulimia Nervosa (BN), have identified narrative changes reflecting recovery, but also narrative markers associated with ambivalence, often halting positive change (Bell, 2013a, 2013b). Narrative change has not been studied systematically in BN. The present study aims to explore the process of change during psychotherapy for BN by investigating narrative events using the transtheoretical Innovative Moments (IM) framework (Gonçalves et al., 2011).

Narrative Construction and Change

Frank and Frank (1991) argued that humans develop a system of assumptions, or meanings, to make sense of the world forming a self-narrative. The self-narrative is a composition of cognitive, affective, and behavioural assumptions that organise daily experiences into a broader story reflecting our understanding and perceptions of

ourselves and the world, and that also guides our social behaviour (Neimeyer, 2004). However, this assumption system can become maladaptive when a self-narrative becomes so inflexible that does not allow the elaboration of experiences or the construction of meaning that would challenge it (Bohart & Wade, 2013). Problematic self-narratives, characterised as identities that are saturated by the problem and its effects, can hinder the meaning-making process and maintain the problem's effect on the person's well-being (Montesano et al., 2017). Therefore, psychopathology is conceptualised as a result of the tension between conflicting assumptions, meanings, and self-narratives.

Psychotherapy aims to transform pathogenic assumptions to ones that enhance a narrative that is aligned with a more adaptive view of the self (Gonçalves & Angus, 2017). This is consistent with concepts from various therapeutic models, such as cognitive schemas in cognitive therapy (Beck, 1995), affective problem markers in Emotion-Focused therapy (EFT; Elliott & Greenberg, 2007), or the core conflictual relationship theme in psychodynamic psychotherapy (Luborsky, 1998). Even though these constructs are not the same, they all reflect a repeating pattern that manifests itself in all areas of the patient's life. Therefore, the aim of psychotherapy is to disrupt this pattern by creating alternative ways of thinking, feeling, acting, and relating (Frank & Frank, 1991). This is achieved with the elaboration of the meanings patients attribute to experiences through the narratives (or stories) they tell their therapists in the therapeutic encounter (Gonçalves & Angus, 2017). These meaning-making processes are often observable as moments of innovation in the patient discourse, highlighting the contrast between the problematic self-narrative and a narrative that is constructed beyond the maladaptive assumptions (Montesano et al., 2017).

The Innovative Moments Framework

A number of research methodologies have been developed to examine the process of change, with the IM framework being one of the most reliable ones (Crits-Christoph et al., 2013). Inspired by White and Epston's (1990) use of the term 'unique outcomes', IMs are described as moments in the therapeutic dialogue that form exceptions to the patient's problematic narrative that constitute transtheoretical and idiographic markers of meaning transformation and change (Gonçalves, Ribeiro, et al., 2016). IMs are different ways of acting, feeling, thinking, and relating that oppose the previously held narrative, akin to the framework proposed by Frank & Frank (1991). The elaboration of these new meanings facilitates the revision of the problematic framework and increase the flexibility of meaning making across all life experiences.

IMs are categorised into Action, Reflection, Protest, and Reconceptualization (Table 1). Action, Reflection, and Protest IMs are further categorised into two subtypes. Subtypes I IMs entail patients distancing themselves from the problematic self-narrative. Subtype II IMs involve moments that are centred on change, where the patients highlight emerging changes in the form of contrasting the maladaptive and more adaptive self-narratives or reflecting on the change process (Fernández-Navarro et al., 2019).

Action IMs are any actions or behaviours that are incongruent with the problematic self-narrative. Action I IMs include any actions that are performed with the intention to overcome the problem. Action II IMs reflect a generalisation of good outcomes or achievements into other life domains and into the future. They reflect the performance of change or new skills that have emerged as a result of the new self-

narrative (Gonçalves et al., 2011). Reflection IMs are new understandings or thoughts about the problem that contradict the problematic self-narrative. Reflection I IMs highlight moments where the problematic self-narrative is challenged and thought about in a way that is outside of the rigid rules and assumptions of the problem. Reflection II IMs centre around the change process. They reflect moments where the patient describes a contrast between the problematic and the more adaptive self-narratives, or moments where the patient reflects on the processes that facilitated the transformation of meaning (Gonçalves et al., 2011). Protest IMs are thoughts, actions, or feelings of defiance of the problematic self-narrative, involving an attitude of rejection towards the problem. This active refusal distinguishes Protest IMs from Reflection and Action IMs. Protest I IMs represent a critique of the problem or others that support the problem. Protest II IMs highlight the needs of the self that result from rejecting the problem, corresponding to a position of assertiveness and empowerment that builds a sense of personal agency and entitlement of one's own needs and rights (Mendes et al., 2011). Reconceptualization IMs represent the most complex type of IM, involving the patient's ability to narrate the contrast between the problem (self in the past) and the more adaptive self-narrative (self in the present) from a meta-reflective stance, and also reflect on their own process of change (Gonçalves et al., 2011). In Reconceptualization, patients are not only describing the change process but are becoming enactors of the change by assuming a position of reflexivity by identifying the meaning assigned to the process of change in the present moment (Gonçalves et al., 2017; Montesano et al., 2017). These IM types and subtypes emerged from early studies of narrative change (Matos et al., 2009; Mendes et al., 2010; Santos et al., 2009).

IMs are a common change marker across psychotherapy modalities, despite the different therapeutic strategies used to elicit them. Whether the patient is conducting behavioural experiments in Cognitive-Behavioural Therapy (CBT) or the therapist is making interpretations of the patient's experiences in psychodynamic psychotherapy, they both lead to new insights and meanings for the thoughts, feelings, and behaviours surrounding the problematic self-narrative. Therefore, IMs represent a transtheoretical marker of change through meaning transformation regardless of the means through which meaning transformation is achieved (Gonçalves, Silva, et al., 2016).

Table 1

Innovative Moments (table adapted from Gonçalves et al., 2016)

<i>IM Types</i>	<i>Definition</i>	<i>Contents</i>	<i>Example</i>
Creating distance from the problem			
Action I	Performed and intended actions to overcome the problem	<ul style="list-style-type: none"> • New behavioural strategies to overcome the problem(s) • Active exploration of solutions • Searching for information about the problem(s) 	"Yesterday, I went to the gym for the first time in months!"
Reflection I	New understandings of the problem	<ul style="list-style-type: none"> • Reconsidering the problem(s)' causes • Awareness of the problem(s)' effects • New problem(s) formulations • Adaptive self- 	"I realise that the more I isolate myself, the more depression gets overwhelming."

<i>IM Types</i>	<i>Definition</i>	<i>Contents</i>	<i>Example</i>
		instructions and thoughts • Intention to fight the problem(s)' demands • General references of self-worth and/or feelings of well-being	
Protest I	Objecting the problem and its assumptions	• Rejecting or objecting the problem(s) • Position of critique towards others who support it • Position of critique towards problematic facets of oneself	“What am I becoming after all? Is this where I’ll be getting to? Am I going to stagnate here?”
Centred on change			
Action II	Generalisation of good outcomes (performed or projected actions) into the future and other life dimensions	• Investment in new projects as a result of the process of change • Investment in new relationships as a result of the process of change • New skills unrelated to the problem • Problematic experience as a resource for new situations	“I want to do all the things that were impossible for me to do while I was dominated by fear. I want to work again and to have the time to enjoy my life with my children. I want to have friends again.”
Reflection II	Elaborations upon change and its consequences	• What is changing (Contrasting Self) • Meaning making on how/why changes are occurring (Self-Transformation)	“I believe that our talks, our sessions, have proven fruitful, I felt like going back a bit to old times, it was good, I felt good, I felt it was worth it.”

<i>IM Types</i>	<i>Definition</i>	<i>Contents</i>	<i>Example</i>
		Process) <ul style="list-style-type: none"> References of self-worth and/or feelings of well-being (as a consequence of change) 	
Protest II	Assertiveness and empowerment	<ul style="list-style-type: none"> Centring on the self Affirming rights and needs 	“I’m feeling stronger now, and won’t let depression rule my life anymore! I want to experience life, I want to grow and it feels good to be in charge of my own life again.”
Meta-reflective stance			
Reconceptualization	Meta-cognitive process description. It requires a shift between two self-positions and some access to the process underlying this transformation.	<ul style="list-style-type: none"> Contrasting Self (what changed) AND <ul style="list-style-type: none"> Self-Transformation Process (how/why change occurred) 	<p>“Patient: When I was there at the museum, I was thinking to myself: ‘you are really a different person. A year ago you wouldn’t even be able to go to the supermarket!’ [Contrast]</p> <p>Therapist: How do you think you were able to change this?</p> <p>Patient: I think the first important step was starting to go out and also not expecting that things would be just wonderful and without any difficulties. Now I know how to tolerate my life difficulties without feeling overwhelmed.</p> <p>[Process]”</p>

Note. IM = Innovative Moments

The Development of Innovative Moments in Psychotherapy and Their Associations with Symptom Change

IMs have been reliably identified in a variety of different therapeutic approaches including narrative therapy for depression and domestic violence (Fernández-Navarro et al., 2018; Gonçalves, Ribeiro, et al., 2016; Matos et al., 2009); CBT (Gonçalves, Silva, et al., 2016), client-centred therapy (CCT) (Gonçalves et al., 2012) and EFT for depression (Mendes et al., 2010; Mendes et al., 2011); grief therapy (Alves et al., 2014); and brief integrative psychotherapy from a psychodynamic perspective (Nasim et al., 2019).

A substantial amount of research on IMs has focused on the association between IMs, symptomatic change, and treatment outcome. IM research has been typically based on process-outcome designs contrasting good and poor outcome cases (Montesano et al., 2017). The most consistent finding of IM studies is that the proportion of IMs is significantly higher in good outcome cases in comparison to poor outcome cases (Gonçalves et al., 2011). Additionally, the types of IMs follow a different pattern in good outcome cases in comparison to poor outcome cases. Overall, in good outcome cases, the proportion of IMs increases over the course of treatment across therapeutic modalities. All Action, Reflection, and Protest subtype I IMs are present from the start of treatment, showing a consistently high proportion until the end of treatment, whereas Action, Reflection, Protest subtype II and Reconceptualization IMs appear in the middle stages of treatment and show a linear increase until the end (Batista et al., 2020; Montesano et al., 2017).

On the other hand, poor outcome cases show a different pattern, where subtype I IMs are present throughout treatment without a clear progressive tendency,

subtype II IMs have a very low proportion, and Reconceptualization IMs are almost absent. Most studies found that Reconceptualization and Action II IMs were significantly different between good outcome and poor outcome cases (Batista et al., 2020; Montesano et al., 2017). Therefore, empirical findings suggest that Action II, Reflection II, Protest II and Reconceptualization IMs are the main distinctive feature between good and poor outcome cases in terms of their IMs (Batista et al., 2020). However, research on what is preventing the poor outcome cases from progressing from subtype I IMs to subtype II IMs is still in its formative stages. One suggestion has been the role of ambivalence as a block in the integration of self-narratives (Braga et al., 2019).

Specific therapeutic modalities have shown certain specificities that distinguish them between each other. In CBT, Reconceptualization and Action II IMs were not significantly different between good and poor outcome groups (Gonçalves, Silva, et al., 2016). The authors argue that it is possible that the non-constructivist nature of treatment did not elicit observable meaning transformations in the patient narrative. However, this was the first study to apply the IM framework on CBT, it was based on a small sample, and therefore more research is needed to ascertain these claims. Additionally, the patterns of IM development show some differences between constructivist therapeutic modalities, arguably due to the idiosyncrasies of each model (e.g. Goncalves et al., 2012; Alves et al., 2012; Mendes et al., 2011). For example, Reconceptualization IMs in grief therapy showed a reduction towards the end of treatment, possibly being replaced by Action II (Alves et al., 2012). The authors hypothesise that it could be because of the future-oriented nature of narrative and grief therapy, especially towards the end, so it is possible that patients had more

opportunity to portray the generalisation of good outcomes into other areas of their lives. On the other hand, in EFT Action II IMs were absent, and it was hypothesised that EFT may provide less of an opportunity for Action II IMs to show due to the present-moment focus of this therapeutic modality. Protest IMs showed high proportion in EFT in comparison to other therapeutic modalities (Mendes et al., 2010; Mendes et al., 2011). Therefore, it is evident that despite the transtheoretical nature of IMs, it is possible that therapeutic modalities have some distinct characteristics in terms of the emergence and development of IMs.

A prominent question is whether IMs measure the construct of change itself or whether they measure factors in the therapeutic process that precede or even facilitate change. Grounded on the theoretical background of the IM framework, it is argued that the emergence of IMs would stimulate the emergence of new narratives and symptomatology would reduce, and in turn, a symptom reduction would allow the space for more narrative novelties, thereby creating a virtuous cycle (Gonçalves, Ribeiro, et al., 2016). Studies have attempted to examine this by looking at the temporal relationship between IMs and symptomatic change (Gonçalves et al., 2017). Studies on narrative therapy (Fernández-Navarro et al., 2018; Gonçalves, Ribeiro, et al., 2016) and CBT (Gonçalves, Silva, et al., 2016) found that an increase in IMs in one session predicted a decrease in symptoms in the following session. Even though the reverse models were also significant, where symptom reduction in one session predicted an increase in IMs in the following session, the variance explained by the second model was lower than the variance explained by the first model. These findings across different therapeutic models support the hypothesis that IMs are not just by-products of change but necessary elements for its facilitation. Even though

research on narrative change using the IM framework is still in early stages, it highlights the possibility of gaining a better understanding of the markers of change in the patient narrative that could have an impact on the therapeutic strategies employed to facilitate recovery (Bohart & Wade, 2013).

Narrative Change in Eating Disorders

Treatment studies in ED have shown limited effectiveness (Wilson et al., 2007). Novel therapies such as the Integrative Cognitive Affective Therapy (ICAT) for BN have been developed to account for this limited effectiveness, aiming to target novel change processes, such as the reduction of the distance between the different parts of the self (Wonderlich et al., 2008). Wonderlich et al. (2015) argue that in BN there is a specific type of negative self-narrative that maintains the problem, that is, the discrepancy between the patient's perceptions of their actual self in comparison to their evaluative standards. However, research in ED recovery has been dominated by a rigid definition of symptom reduction, despite the highlighted importance of meaning transformation in psychotherapy outcomes (Gonçalves & Stiles, 2011). Some studies have attempted to shift the focus towards a more dynamic view of recovery from ED over time where the development of the self-narrative is a central marker of change (Garrett, 1997; Weaver et al., 2005). Research has shown that patients with ED have difficulties constructing a personal narrative over time, especially in relation to their disorder (Lang et al., 2014). Women with ED were found to have more negative self-narratives in comparison to women without ED (Stein & Corte, 2007).

Bell (2013a) conducted a single-case study that applied a conceptual model of self-transformation (Freeman & Robinson, 1990), similar to the IM framework, in patient perceptions of their therapeutic journey towards recovery from ED. Initially, the patient showed a recognition of the problem and distancing from the problematic self-narrative allowing the more adaptive self-narrative to emerge. Then the patient identified the distinction between the problematic self-narrative and a more adaptive version of it, and finally incorporated new articulated meanings into the self-narrative and therefore generalised them in other areas of their life. At this final stage, the patient assumed agency of their recovery and moved from talking more about recovery rather than the struggle to recover (Bell, 2013a). The development of these changes are akin to the development of IMs in good outcome cases (Fernández-Navarro et al., 2018).

Another case study examined the patterns of self-narratives that emerged in the treatment of BN (Salvini et al., 2012). In earlier sessions, a strong, rigid BN narrative was dominant, leaving limited capacity for dialogue between the BN narrative and the adaptive narrative. The non-dominant recovery narrative and the potential for distancing oneself from BN were constantly eliminated by the dominant BN narrative. However, in later sessions, a recovery narrative emerged that was strong enough to contrast the BN position, leading to a more coherent self-narrative, and an increased ability to negotiate meaning. Over time this recovery narrative became intrinsic to the self-narrative.

A few case studies in narrative therapy for BN have shown that identifying moments in therapy where the patient digresses from the problematic narrative helps with moving towards recovery and identifying the ED position (Epston et al., 1995;

Pedersen, 2016). However, narrative changes in BN have not been studied using a reliable narrative framework nor have they been linked with symptomatology changes in group studies.

The Present Study

Research in change processes in psychotherapy for BN has been conceptualised from a nomothetic perspective in the literature, often focusing on symptom change as a marker of recovery. However, as with other conditions, meaning making is a fundamental part of therapeutic change and case studies in BN have identified that narrative transformation may be linked with recovery. Therefore, the overarching aim of this exploratory process-outcome study is to examine change processes in BN using a reliable transtheoretical tool to identify narrative markers of change. Concomitantly, the current study will enable the wider application of the IM framework to establish its reliability across various therapeutic modalities and mental health difficulties. More specifically, the present study aims to (a) identify the applicability of the IM framework in BN, (b) identify patterns of development of IMs in a sample of good and poor outcome cases of BN, and (c) examine the longitudinal relationship between symptomatology change and change in IMs in BN. It is hypothesised that:

1. IMs will be reliably identified in both good and poor outcome cases in a sample of adults with BN.
2. In good outcome cases, Action, Reflection, and Protest subtype I IMs will emerge from the early stages of treatment and remain consistently high

throughout treatment, whereas Action, Reflection, and Protest subtype II and Reconceptualization IMs will emerge mid-treatment and increase as therapy progresses. In poor outcome cases, subtype I IMs will emerge from the early stages of treatment with a lower proportion in comparison to the good outcome cases and show little change, and subtype II and Reconceptualization IMs will show low proportion in comparison to good outcome cases.

3. Higher proportion of IMs in one session will be associated with a decrease in symptomatology in the following session, and increased symptomatology in one session will be associated with a lower proportion of IMs in the following session.

Method

Participants

Five good outcome and five poor outcome participants ($N = 10$) were selected using purposive sampling based on their recovery from bulimic symptoms. Participants were selected from a sample of 40 adults with BN that participated in a randomised controlled trial (RCT) that examined the efficacy of ICAT in treating BN in comparison to CBT (Wonderlich et al., 2014). The sample consisted of nine females and one male aged between 18 and 40 years old.

Using previous research (Bardone-Cone et al., 2010), good treatment outcome was defined as (a) no engagement in bingeing, purging, or compensatory behaviours in the past three months as measured at 4-month follow-up after the end of treatment, (b) no longer meeting diagnostic criteria for BN, and (c) having reliably recovered using the reliable change index (Jacobson & Truax, 1991) as calculated from the pre-treatment and post-treatment scores on the Eating Disorder Examination (EDE; Fairburn & Beglin, 2008). This aimed to capture both the behavioural and the psychological aspects of the disorder.

Inclusion criteria in the original RCT included adults who met criteria for BN as defined by the Diagnostic and Statistical Manual of Mental Disorders revised 4th edition or later (DSM; American Psychiatric Association, 2000, 2013), but also individuals who reported compensatory behaviours accompanied by subjective binges¹ at least once a week for three months prior to enrolment in the RCT. The diagnosis was established with the use of the EDE (Fairburn & Beglin, 2008).

¹ Subjective binge eating episodes refer to eating a small or moderate amount of food (that is perceived as large) and are associated with loss of control (Palavras et al., 2013).

Exclusion criteria included pregnancy or lactation, a body mass index below 18, a diagnosis of bipolar or psychotic disorder, a current diagnosis of substance abuse disorder, acute suicidal risk, and individuals who were receiving psychotherapy.

Treatment

Treatment consisted of twenty-one 50-minute individual sessions of ICAT (Wonderlich et al., 2014). ICAT is a psychotherapeutic approach that focuses on emotion regulation, adaptive coping strategies, cognitive and behavioural patterns, such as self-discrepancy and dietary habits, and interpersonal relationships (Wonderlich et al., 2010). ICAT includes four treatment phases. The first phase (sessions 1-3) utilises strategies to facilitate treatment engagement and to address possible ambivalence using motivational interviewing techniques (Miller & Rollnick, 1991). The patient is also introduced in the identification and monitoring of emotions, eating patterns, and behaviours that may be maintaining the problem. In the second phase of treatment (sessions 4-8) nutritional rehabilitation is established through meal planning, and with the use of adaptive coping strategies to manage bulimic behaviours. In the third phase of treatment (sessions 9-19), the therapist and the patient aim to modify behaviours that occur in response to stimulus situations and emotions as antecedents of bulimic symptoms. These include interpersonal patterns, such as submissiveness, withdrawal, or blaming (Benjamin, 1993), self-directed behavioural styles, such as excessive self-control and self-neglect (Benjamin, 1993), and self-discrepancy and evaluative standards (Higgins et al., 1986). The final phase of treatment (sessions 20-21) focuses on relapse prevention and strategies for a

healthy lifestyle. The treatment was delivered by two highly trained doctoral-level psychologists.

Measures

Process Measures

Innovative Moments Coding System (IMCS; Gonçalves et al., 2009). The IMCS was employed to identify narrative transformations across sessions (see Appendix II). It is a transtheoretical tool that allows researchers to detect in-session changes from the use of transcript or audio/video recordings. The IMCS considers contributions from both patient and therapist, acknowledging that novelties occur in the therapeutic dialogue. These can range from a therapist interpretation accepted by the patient to a spontaneous novelty formulated by the patients themselves. The outputs of the IMCS are the proportion of IMs in relation to the overall duration of a session (IM proportion), and IM type. The IMCS identifies seven types of IMs (see Table 1). The IMCS has shown consistent inter-judge reliability with Cohen's κ values ranging from 0.86 to 0.97 in different therapeutic modalities (Gonçalves et al., 2011; Gonçalves, Silva, et al., 2016). In addition, the IMCS presents with good criterion validity, as various IMs have been observed regardless of symptomatic change, but also specific IMs (e.g. Reconceptualization and Action II) have been consistently found in good outcome cases and rarely in poor outcome cases (Gonçalves et al., 2011). The IMCS also presents with good convergent validity as compared with the Assimilation of Problematic Experiences Scale (APES; Stiles et al., 1990) and the Generic Change Indicators (Krause et al., 2007). Finally, the IMCS

is negatively associated with episodes of alliance ruptures, indicating good divergent validity (Martinez et al., 2009).

Outcome Measures

Symptom Recall. Written self-reports of bulimic behaviours throughout the week, such as purging or bingeing were collected from participants on a weekly basis at the start of their treatment session, at the end of treatment, and at 4-month follow-up. This forms part of the treatment self-monitoring component, but also serves as a longitudinal measure of bulimic symptom change. The scores are frequency counts of the behaviours of interest. A total of both binge and purge incidents reported in the past week was used in the analyses.

Procedure

IMCS Coding Training

Coders were trained on the IMCS using a rigorous five-step training protocol developed by the authors of the IMCS manual (see Appendix III; Gonçalves et al., 2009). Firstly, the coders familiarise themselves with the coding manual and selected IM literature. Secondly, the coders are asked to identify the types of IMs in 47 IM excerpts. Thirdly, the coders are introduced to a specific case where the IMs have been identified and the coders are asked to identify the problematic self-narrative from the first two sessions of the case. These two training steps were followed by a discussion with an expert judge. Fourthly, coders identify the types of pre-identified

IMs from the third and the fourth session of the same clinical case. Finally, coders are asked to identify the presence and duration of an IM, as well as the type, in the fifth and sixth session of the same case. In these final steps, coders needed to achieve a Cohen's kappa value of 0.75 or more in relation to the rating of expert judges in order to progress to the next step. At the end of the training period, the reliability of the coders was evaluated and found to exceed a Cohen's kappa value of 0.75 deeming their coding reliable.

IMCS Coding

Six sessions from each participant were randomly selected resulting in a total of 60 sessions. The number of sessions selected from each treatment phase corresponded proportionately to the phase length. Missing sessions that were randomly selected were replaced with the closest available session. The recordings for one participant's phase four sessions were unavailable and were therefore replaced by one additional session from phase three.

The IMCS was used for all coded sessions (see Appendix II). The IMCS coding process involved: (1) a definition of the patient's problematic narrative, (2) an identification of the presence of an IM and its duration in seconds, and (3) a categorisation of the IM type. The problematic self-narrative was based on the first few sessions, but if other problematic narratives emerged later, they were added at that stage and IMs relating to these new problems were coded from that moment onwards. The proportion of IMs in each session (as calculated by the duration of IMs in seconds divided by the total duration of the session in seconds) was used for the

analysis. This measure of IMs has been the most frequently used in previous studies employing the IMCS as it is considered a better indicator of IM elaboration and significance compared to the frequency of IM occurrence (Gonçalves, Silva, et al., 2016). Recordings of the therapeutic sessions were audio-analysed using NVIVO (QSR International, 2012).

A second independent coder rated 30% of the sample. Coders were blind to the treatment outcome of the participant at the point of coding. Disagreements in IM emergence, type, and problematic self-narrative were discussed between the coders every two sessions and resolved through consensus. Through this interactive and dynamic double coding procedure, the strengths of each other's approaches were integrated and consensus was facilitated (Gonçalves et al., 2011). When agreement was not reached, the IMs were eliminated in order to privilege false-negative results (Gonçalves et al., 2011).

Ethical Approval

The study was approved by the Royal Holloway Research Ethics Committee (see Appendix I). Ethical approval had also been granted as part of the larger clinical trial in the United States (Wonderlich et al., 2014). The trial was approved by institution boards at the participant recruitment sites, as well as the University of North Dakota Research Ethics Committee. Participants had provided written informed consent for their participation as well as for the use of their data in archival research.

Statistical Analysis

To address the first aim of the study, the inter-rater reliability was calculated using Cohen's kappa to establish reliability of the categorisation of IM type, and percentage agreement to establish the reliability of the identification of the duration of the identified IM.

The data set is hierarchically nested, with IMs nested in sessions that are nested in participants. Therefore, coding of IM types for different sessions within the same participant can be expected to be correlated. The data set is also longitudinal in that sessions within participants are ordered in time. Also, the number of IMs differ between participants, but also between sessions within-participants. Therefore, because of the hierarchically nested, longitudinal, and unbalanced structure of the data set, multi-level modelling was used. This method accounts for the autocorrelation between the data points and therefore produces more accurate models for nested observations (Tschacher & Ramseyer, 2009). It is also more sensitive than pre-post designs as it includes all available measurement points, and it avoids the inflation of Type I error associated with repeated measures analysis of variance (Beauchaine et al., 2005). Therefore, to address the second aim of the study, generalised estimating equations (GEE) with growth curve analyses were employed to investigate each of the IM types trajectories in good and poor outcome cases across coded sessions. Growth parameters included time (linear slope), and time quadratic (quadratic slope). Growth models were examined using a stepped approach where time polynomials were added one by one to examine their contribution, as recommended by Field (2013). The goodness of fit of each model was assessed using the Quasi-likelihood under Independence Model Criterion (QIC; Pan, 2001). According to this criterion, the

model that obtains a smaller value shows a better fit (IBM Corp., 2018). The model with the best fit was kept. A cubic trend was also examined but it was removed from the models as it had the least good fit. This is in line with the recommendation that polynomials higher than quadratic are less representative of real data in psychological research (Field, 2013). Therefore, the final equations used to plot the prediction curves for the models were:

$$IMt_i = \beta_{int} + \beta_{GROUP} + \beta_{lin}(time) + \beta_{GROUP \times lin}(time) \text{ for linear polynomials and,}$$

$$IMt_i = \beta_{int} + \beta_{GROUP} + \beta_{lin}(time) + \beta_{qua}(time)^2 + \beta_{GROUP \times lin}(time) + \beta_{GROUP \times qua}(time)^2 \text{ for quadratic polynomials,}$$

Where IMt_i is the proportion of each IM type at each session; int is the intercept value; $GROUP$ is distinction between good or poor outcome participants; lin is the linear slope parameter; and qua is the quadratic slope parameter.

To address the third aim of the study, GEE were also employed to examine the associations between the longitudinal changes of the IMs and the longitudinal changes of bulimic symptoms across the whole sample. Since binge and purge frequency at the end of treatment was used to group cases into good and poor outcome, it was decided that for these analyses the sample would be grouped together to avoid an inflation of the group effects. In the first set of models, IMs in one session were entered as predictors of binge and purge frequency in the next session (lag+1). In the second set of models, binge and purge frequency in one session was entered as a predictor of the different IM types in the next session (lag+1). Seven separate models in each set were tested, one for each IM. To compare the goodness of fit of each model, the QIC was used. Statistical analysis was conducted using SPSS Version 23 (IBM Corp., 2013).

Power Analysis

Being guided by previous studies that used multi-level modelling that detected a medium effect of IMs on symptom change using samples ranging from six to ten participants (e.g. Gonçalves, Ribeiro, et al., 2016; Gonçalves, Silva, et al., 2016), the maximum possible number of sessions that was feasible to code within the time frame was achieved (10 participants, 60 sessions). Therefore, a post-hoc power analysis was conducted using SAS (SAS Institute Inc., 2018). Zhang and Wang (2009) recommend a simulation-based likelihood ratio test approach for the calculation of power in growth curve models for longitudinal data. A power analysis using this method was applied to one of the hypothesised models (Reconceptualization) and revealed that a sample of 10 participants with six measurement occasions and a mean slope of -0.39 achieved a power level of less than 0.20. The power graph revealed that in order to achieve a power of 0.80, more than 100 participants would be needed. However, this was not feasible given the timescale of the project and the time-consuming nature of the analysis of the coding process. It is important to note that power calculations for multi-level modelling analyses should be treated with caution due to the multitude of factors involved in that analysis (Field, 2013; Kreft & De Leeuw, 1998).

Results

Demographic Characteristics

Demographic information for the 10 participants included in the study are presented in Table 2. Fisher's Exact tests and an independent sample t-test for age were used to identify differences between the two groups. The groups did not differ significantly in any of the demographic variables.

Table 2

Demographics for Good and Poor Outcome Groups

		Good Outcome <i>n</i> = 5	Poor Outcome <i>n</i> = 5	Total <i>N</i> = 10	<i>p</i>
		<i>N</i>			
Gender	Female	4	5	9	1.000
	Male	1	0	1	
Ethnicity	White Caucasian	5	5	10	-
Religious Affiliation	Protestant	3	2	5	.683
	Catholic	1	1	2	
	None	1	2	3	
Marital Status	Single	1	4	5	.206
	In a relationship	1	0	1	
	Co-habiting	1	0	1	
	Married	1	0	1	
	Divorced or widowed and remarried	1	0	1	
	Divorced or widowed and single	0	1	1	

		Good Outcome <i>n</i> = 5	Poor Outcome <i>n</i> = 5	Total <i>N</i> = 10	<i>p</i>
Education Level	University degree	2	1	3	1.000
	No university degree	3	4	7	
Primary Household Role	Income earner full- time	2	2	4	1.000
	Student full-time	2	2	4	
	Student part-time	0	1	1	
	Homemaker	1	0	1	
<i>Mean (SD)</i>					
Age		27.2 (5.9)	24.2 (9.4)	25.7 (7.6)	.565

Note. SD = standard deviation

Data Screening

Prior to statistical analysis, data were screened for input errors and missing values. There were no variables with missing values. Data were also screened for the normality of their distributions across the two groups. Given the sample size ($n = 10$) variable distributions with z -scores higher than 2.58 ($p < .01$) were considered non-normal (Field, 2013). The IM longitudinal data and longitudinal binge and purge frequency were positively skewed across types. To address this for multi-level modelling, longitudinal variables were transformed by adding a 0.1 value in order to apply the gamma log link distribution, where the model is based on logarithmic transformations of the raw data. All other analyses used the total process and outcome variables, which were normally distributed, and therefore parametric tests were used.

Descriptive Data

Outcome Variables

Descriptive data for binge and purge frequency are presented in Table 3. Independent sample t-tests revealed that the groups did not differ significantly in binge and purge frequency across baseline, end of treatment, and 4-month follow-up. Homogeneity of variance was examined using Levene's test of equality of variance. Binge and purge frequency at the end of treatment ($F = 22.83, p = .001$), and at 4-month follow-up ($F = 9.86, p = .014$) were found to have unequal variances. For these variables, the degrees of freedom were adjusted accordingly.

Table 3

Binge and Purge Frequency in Good and Poor Outcome Cases

	Good Outcome	Poor Outcome	Total	<i>t</i>	<i>p</i>
	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Mean (SD)</i>		
Binge & Purge Frequency					
<i>BL</i>	6.00 (5.15)	15.60 (8.79)	10.80 (8.47)	-2.11	.068
<i>EOT</i>	0 (0)	3.60 (3.78)	1.80 (3.16)	-2.13	.100
<i>4mFU</i>	0 (0)	2.00 (2.12)	1.00 (1.76)	-2.11	.103

Note. 4mFU = 4-month follow-up, BL = Baseline, EOT = End of Treatment, SD = standard deviation

Process Variables

Table 4 shows the means of each IM type proportion between good outcome and poor outcome cases across sessions. Independent sample t-tests were performed to examine differences between good and poor outcome cases in terms of their total IM proportion across sessions. According to Levene's test of homogeneity of variances, Protest II IMs showed unequal variances between the groups ($F = 14.07$, $p = .006$), therefore the degrees of freedom were adjusted accordingly. Differences in the total IM proportion between groups were not significant for any of the IM types.

Table 4

Descriptive Data and Group Comparisons for Process Measures

IM Type	Good Outcome	Poor outcome	Total (Group)	<i>t</i>	<i>p</i>
	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Mean (SD)</i>		
Action I	1.60 (1.13)	1.88 (1.52)	1.74 (1.27)	-.33	.748
Reflection I	4.71 (1.69)	5.61 (2.56)	5.16 (2.10)	-.66	.530
Protest I	0.27 (0.21)	0.99 (1.54)	0.63 (1.10)	-1.04	.331
Action II	0.27 (0.27)	0.19 (0.25)	0.23 (0.25)	.47	.654
Reflection II	4.13 (1.89)	4.16 (2.37)	4.15 (2.02)	-.02	.984
Protest II	0.79 (0.70)	0.08 (0.08)	0.44 (1.18)	2.27	.085
Reconceptualization	1.45 (1.72)	0.92 (0.98)	1.18 (1.35)	.60	.565
Total (IMs)	11.77 (3.12)	12.91 (4.61)	14.13 (9.95)	-.46	.657

Note. IM = Innovative Moment, SD = standard deviation

Aim 1: Inter-Rater Reliability in IMs

In order to address the first aim of the study, inter-rater agreement on the proportion of IMs was calculated based on the overlapping duration identified as an IM by both coders divided by the total duration identified as an IM by either coder. Across all double-coded sessions, the average percentage agreement was 92%. This means that 92% of the excerpts that were identified as an IM by one coder, the other coder had also identified it as an IM, independently of the IM type. For the good outcome cases, inter-rater agreement reached 95% and for the poor outcome cases the average percentage agreement reached 90%.

To examine the inter-rater agreement on the identification of IM type, Cohen's kappa was used. In the double-coded sample, coders achieved a 0.84 kappa, indicating a strong agreement (Hill & Lambert, 2004). In the good outcome cases, the kappa was 0.88, whereas the average kappa for the poor outcome cases was 0.82.

Aim 2: IM Trajectories in Good and Poor Outcome Cases

The trajectories of each IM type were examined between the two outcome groups. All IM types, except for Reflection I IMs showed a significant change over time. Only the Reconceptualization IM showed a significant group effect, suggesting that the good outcome group had a higher proportion compared to the poor outcome group. Table 5 shows the parameter estimates for each best-fitting model. Linear time models showed a better goodness-of-fit for Reflection II, Protest II, and Reconceptualization IMs. For these IMs, time quadratic predictor was not significant and was deleted from the final model. Quadratic time models showed a better

goodness-of-fit for the remaining IM types (Action I, Reflection I, Protest I, and Action II).

Table 5

Growth Curve Analysis Parameters for IM Type Trajectories Across Groups

Predictor	B	SE	95% CI	Wald's χ^2	p
Action I					
Group	2.02	1.06	-.06, 4.11	3.61	.057
Time	.59	.19	.22, .96	9.68	.002*
Time ²	-.03	.01	-.04, -.01	11.17	.001*
Group x Time	-.49	.22	-.93, -.06	4.91	.027*
Group x Time ²	.02	.01	.002, .04	4.67	.031*
Reflection I					
Group	-.55	.60	-1.73, .63	.85	.358
Time	.02	.08	-.15, .19	.05	.820
Time ²	-.002	.004	-.01, .007	.18	.675
Group x Time	.13	.10	-.07, .33	1.71	.191
Group x Time ²	-.007	.01	-.02, .002	2.23	.135
Protest I					
Group	-.70	.67	-2.01, .62	1.08	.300
Time	-.08	.07	-.21, .05	1.53	.217
Time ²	.007	.004	0, .01	3.96	.047*
Group x Time	.22	.14	-.06, .50	2.29	.130
Group x Time ²	-.02	.01	-.03, -.001	4.38	.036*
Action II					
Group	-.31	.33	-.94, .35	.85	.355
Time	-.17	.04	-.24, -.09	19.58	<.001**
Time ²	.01	.003	.007, .02	18.64	<.001**
Group x Time	.12	.13	-.15, .38	.75	.386
Group x Time ²	-.004	.01	-.02, .01	.29	.588
Reflection II					
Group	.03	.75	-1.44, 1.49	.001	.971
Time	.14	.04	.06, .21	12.41	<.001**
Group x Time	.01	.04	-.07, .09	.06	.800

Predictor	B	SE	95% CI	Wald's χ^2	p
Protest II					
Group	-.16	.22	-.60, .28	.51	.473
Time	.05	.01	.02, .07	12.49	<.001**
Group x Time	.13	.02	.08, .18	31.14	<.001**
Reconceptualization					
Group	3.07	1.09	.93, 5.21	7.92	.005*
Time	.20	.03	.15, .25	63.64	<.001**
Group x Time	-.18	.07	-.31, -.04	6.52	.011*

Note. CI = Confidence interval, SE = Standard error

*p<.005

**p<.001

For Action I IMs, both linear and quadratic time trends were significant, suggesting that Action IMs changed significantly over time. The interactions of group with time linear and time quadratic were also significant, suggesting that Action IM trajectories developed differently between groups. The good outcome group showed a stable trajectory across treatment, whereas the poor outcome group showed an increase mid-treatment and a decrease thereafter (Figure 1). Regarding Protest I IMs, there was a significant effect of the quadratic time trend, and a significant effect of its interaction with the group. The poor outcome group showed an increase in Protest IMs over time with a significant increase towards the end of treatment (Figure 2). For Reflection I IMs, none of the parameters were found to be significant.

Figure 1

Action I Developmental Trajectory

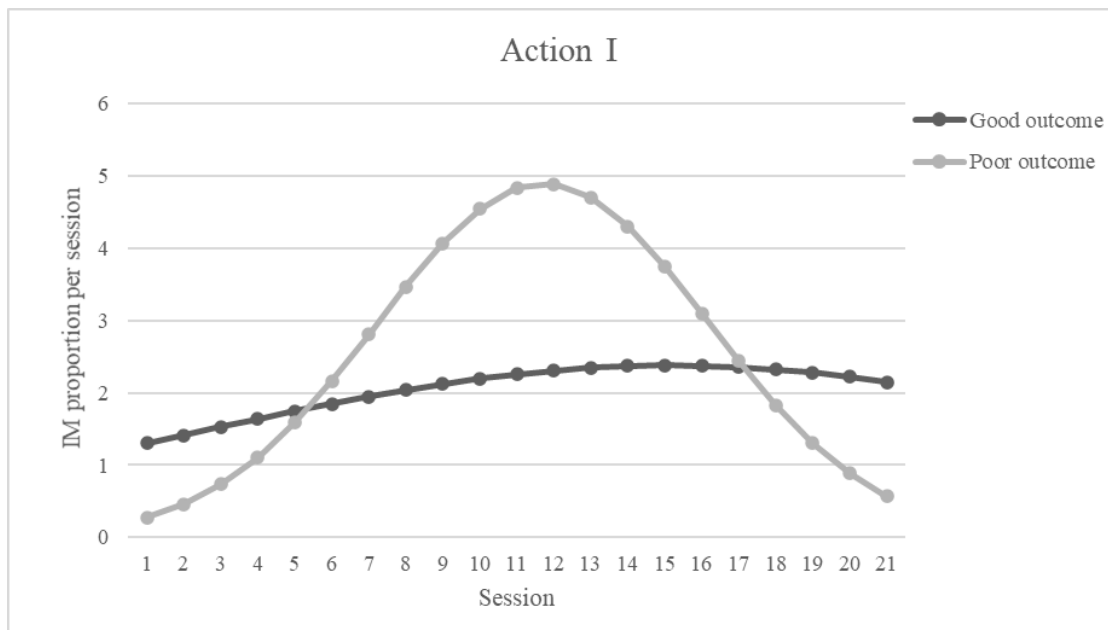
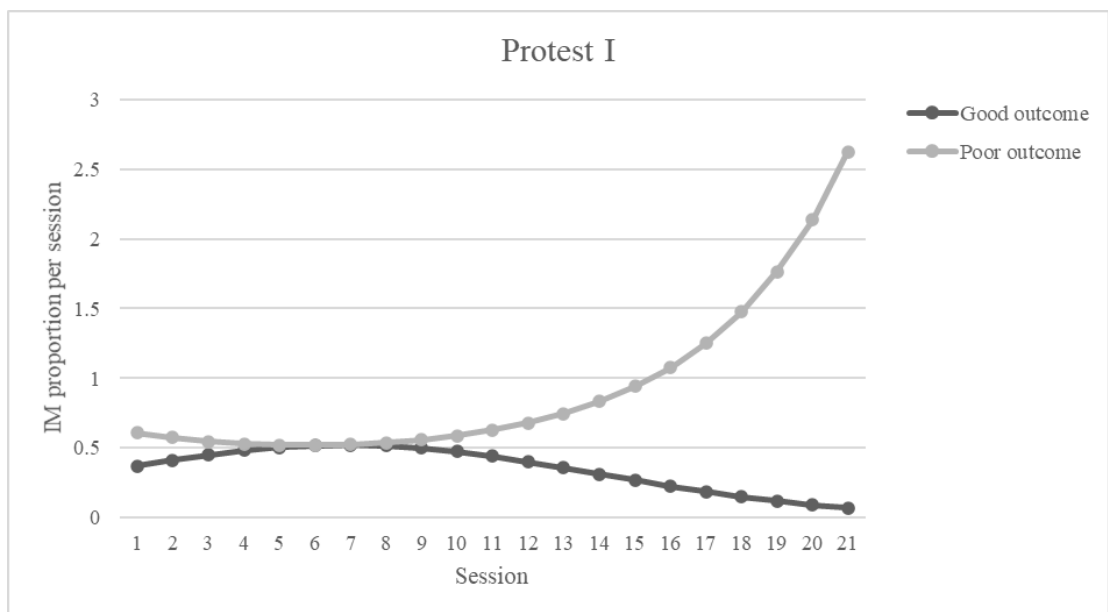


Figure 2

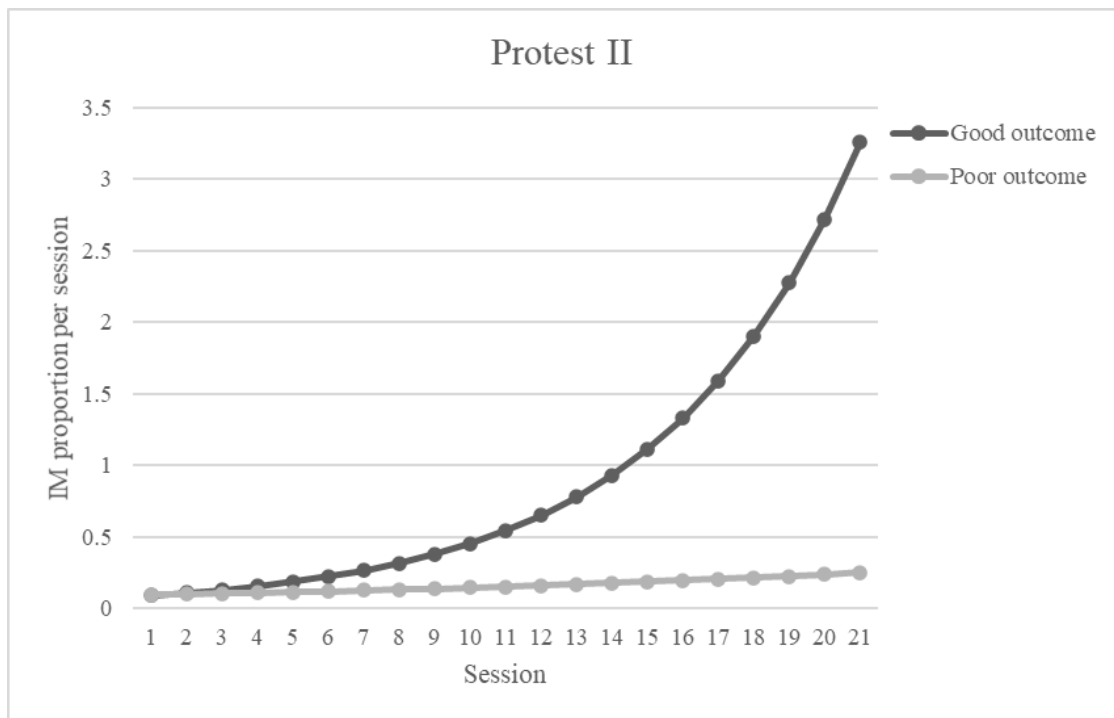
Protest I Developmental Trajectory



All subtype II IMs showed significant changes over time in both outcome groups. Only in Protest II IMs, there was a significant interaction between group and time, indicating an increase of Protest II IMs at the end of treatment for the good outcome group, and a stable trajectory since the beginning of therapy in the poor outcome cases (Figure 3).

Figure 3

Protest II Developmental Trajectory

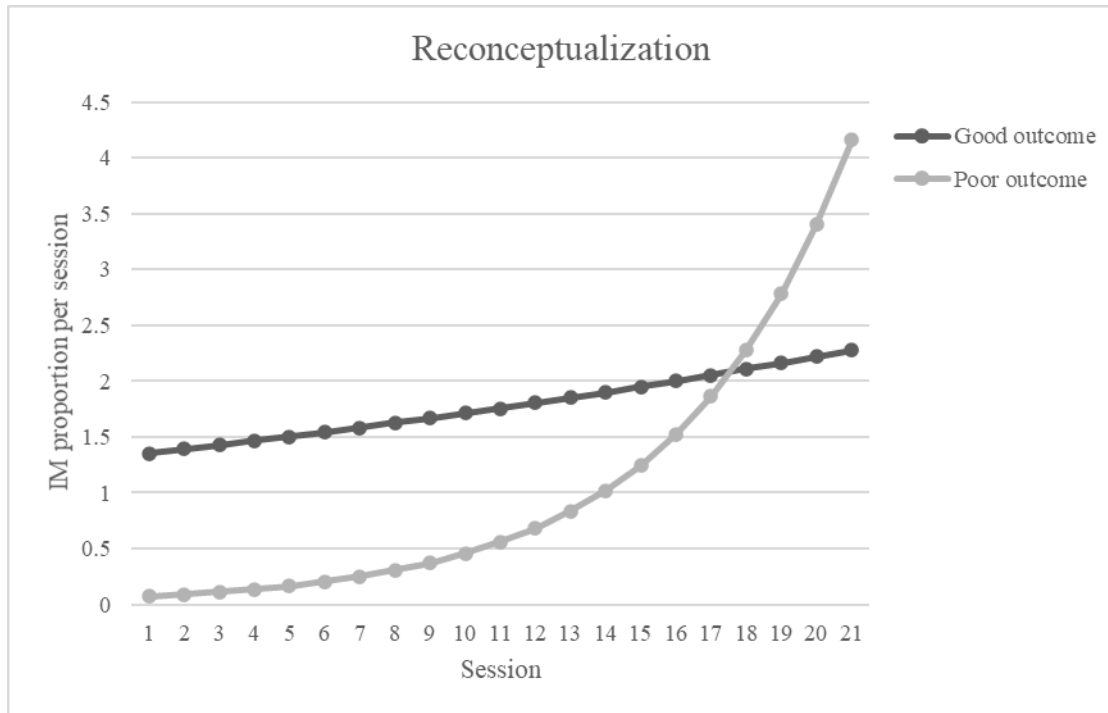


Finally, Reconceptualization IMs showed significant effects of group indicating different trajectories between the two groups. There was a significant effect of time, as well as an interaction between group and time, indicating a significant change over time between the two groups. The good outcome group showed a higher proportion of Reconceptualization until the final sessions, when the poor outcome

group showed a sharp increase, surpassing the proportion of the good outcome group (Figure 4). Group effects were not found in any other IMs.

Figure 4

Reconceptualization Developmental Trajectory



Aim 3: Investigating IMs as a Predictor of Symptom Change and Vice Versa

First, the model with IMs as predictors of symptom change (binge and purge frequency) in the following session was tested. Most of the IMs in one session did not have a significant effect on binge and purge frequency in the following session, except for Protest II (Table 6). This indicates that an increased presence of Protest II IMs in one session was associated with a reduction in binge and purge frequency reported in the following session.

Table 6*Parameters of Separate Models Predicting Binge and Purge Frequency*

Model	B	SE	95% CI	Wald's χ^2	<i>p</i>	Goodness-of-fit (QIC)
Action I	-.10	.06	-.22, .02	2.52	.112	136.63
Reflection I	.03	.05	-.06, .12	.45	.505	140.00
Protest I	-.05	.05	-.15, .04	1.33	.249	138.72
Action II	-.56	.30	-1.12, .03	3.45	.063	137.44
Reflection II	-.04	.04	-.11, .04	.84	.359	139.82
Protest II	-.39	.18	-.75, -.04	4.74	.029*	133.99
Reconceptualization	-.02	.02	-.05, .02	.64	.425	139.10

Note. QIC = Quasi-likelihood under Independence Model Criterion**p* < .05

Then, the reversed model with symptomatology as a predictor of IMs in the following session was tested. The analyses of this model (Table 7) show that binge and purge frequency had a significant effect on the presence of Action II IMs and Reflection II IMs in the following session, and a marginally significant effect on Protest II IMs. This indicates that the amount of binge and purge frequency was negatively associated with the presence of Action II, Reflection II, and Protest II IMs in the following session.

Table 7*Parameters of Separate Models Predicting IMs*

Models & Fixed effects	B	SE	95% CI	Wald's χ^2	<i>p</i>	Goodness-of-fit (QIC)
BP predicting Action I	.01	.02	-.03, .05	.25	.620	122.79
BP predicting Reflection I	.01	.02	-.02, .05	.70	.404	45.36

Models & Fixed effects	B	SE	95% CI	<i>Wald's</i> χ^2	<i>p</i>	Goodness- of-fit (QIC)
BP predicting Protest I	-.01	.03	-.07, .05	.15	.701	139.54
BP predicting Action II	-.06	.03	-.12, -.001	3.92	.047*	81.76
BP predicting Reflection II	-.04	.02	-.07, -.001	3.99	.046*	94.89
BP predicting Protest II	-.07	.04	-.139, .0001	3.83	.050	103.31
BP predicting Reconceptualization	.01	.04	-.06, .08	.06	.804	224.84

Note. BP = binge and purge frequency; QIC = Quasi-likelihood under Independence Model Criterion

* $p < .05$

Examining the goodness-of-fit criteria between the models, it is evident that for most cases, binge and purge frequency in one session predicting IMs in the following session was a better fitting model than the reverse, as the QIC goodness-of-fit values for these models was smaller than for the reverse models. However, this was not the case for Protest I IMs and Reconceptualization IMs. These IMs predicting binge and purge frequency in the following session showed a better fit than the reverse model.

Discussion

To our knowledge, this is the first process-outcome study to examine narrative change using a standardised process measure and a quantitative design in BN. The main findings indicated that IMs were reliably identified in this BN sample, most IMs other than Reflection subtype I showed a significant change over time, but there was a lack of group effects, and only Protest II predicted symptom change in the following session.

Addressing the first aim of the study, it was found that the inter-rater reliability was exceptionally high in this sample. An 80% agreement is considered sufficient in the IM literature (Batista et al., 2020) and in other fields (Lombard et al., 2002). This finding supports the applicability of the IM framework transdiagnostically and across various therapeutic approaches.

To address the second aim of the study, the IM proportion across sessions was compared between good and poor outcome cases. There were no significant differences between the groups. Additionally, there were no group effects on the longitudinal models for most IMs, except for Reconceptualization. In previous studies, Reconceptualization has been found to be the distinctive IM between good and poor outcome cases (Fernández-Navarro et al., 2018). Even though the proportion of Reconceptualization IMs seems to be consistently higher in good outcome cases throughout most of the treatment in this sample, poor outcome cases show a sharp increase at the end of treatment, which is inconsistent with previous findings (e.g. Gonçalves, Silva, et al., 2016). This steep increase of Reconceptualization IMs in poor outcomes cases in the final sessions of treatment may have been prompted as a response to the therapist attempts for a creation of a relapse prevention plan, which is

a distinct part of the ICAT model. Relapse prevention questions (e.g. “is there a way to take with you what has been helpful to keep helpful things going?”) may have instigated the patient to reflect on what is different now and how the change has occurred, which are the two distinctive elements of Reconceptualization IMs. This therapeutic intervention was present in both outcome groups, however, this may have led to a more noticeable effect in the poor outcome group as this was the only phase where patients engaged in these meaning-making processes. On the other hand, in good outcome cases, they seem to occur more spontaneously throughout the treatment. This difference may explain why the model predicts a sudden increase in Reconceptualization IMs in poor outcome cases at the end of treatment. However, these observations would warrant further study to assert their validity. Additionally, the proportion of the IMs, and particularly Reconceptualization, in this study are strikingly low compared to the proportion found in other studies (e.g. Alves et al., 2012; Gonçalves, Silva, et al., 2016; Mendes et al., 2010). Considering the low IM proportion, it could be hypothesised that these group differences in Reconceptualization were a result of random fluctuations between the groups. Also, group differences in other IMs would be difficult to identify given the low proportion of these IMs in the treatment. Gonçalves, Silva, et al., (2016) found a similarly low proportion of IMs in CBT for depression. However, the lack of group differences is inconsistent with most previous IM findings (Gonçalves et al., 2011). This can be explained in various ways.

Firstly, in order to find differences between groups they need to be significantly distinctive. The examination of the poor outcome group showed that three out of five participants showed considerable symptomatic improvement but did

not meet the recovery criteria at the end of treatment, which included a complete lack of bingeing and purging, a lack of diagnosis, and a reliable recovery as indicated by the EDE (Bardone-Cone et al., 2010). It is also important to note that the binge and purge frequency at the end of treatment was not statistically significant between groups. This may have impacted the distinctiveness of the two groups. Perhaps sampling participants who showed less improvement in symptoms would have allowed a better distinction between the groups, although this was not possible with the current RCT as most participants showed some improvement but not enough to meet the recovery criteria in full.

Secondly, it is possible that the low IM proportion and lack of group differences can be explained by the idiosyncrasies of the treatment model with a focus on behavioural modifications as a primary indicator of recovery. In a previous study of IMs in CBT (Gonçalves, Silva, et al., 2016), the authors argued that it is possible that CBT produced change that was not observable using IMs due to the highly directive nature of the approach. It is likely that this is also the case with ICAT, as it is a model based on cognitive behavioural principles. It has been argued that the recovery narrative can be harder to articulate in patients with ED, as recovery is a more ambiguous construct due to the high variability in recovery definitions (Bell, 2013b). Research in psychotherapy change has identified a distinction between capitalisation and compensation approaches, where the former indicates treatment models that focus on the patient strengths and elaboration of meaning making, and the latter focuses on the patient deficits and dysfunctional patterns (Cheavens et al., 2012). In a meta-analysis, Munder et al. (2019) argue that capitalisation approaches produce superior results to compensation approaches. Clarification of meaning is

established as a key element of capitalisation of the patient resources and therefore recovery (Grawe, 1997). These findings contradict the low proportion of IMs found in patients with BN who showed improvements. However, it is possible that these processes occurred covertly and were not observable to the researcher, due to a lack of focus on the elaboration on meaning making in more behavioural-oriented approaches. Therefore, it could be hypothesised that narrative change reflecting meaning making captured by the IM framework was not aligned with behavioural modifications as the primary outcome in ICAT for BN.

Thirdly, one of the relevant features of treatment models underpinned by CBT is the amount of time in the session taken by the therapist to explain psychoeducational material and the treatment process. In the IM literature and in this study the IM proportion was calculated as the time the patient spent elaborating IMs in relation to the total duration of the session. However, in this study, the total duration of the session also includes a considerable amount of time of the session dedicated to the therapist. Therefore, it is possible that the way the proportion of IMs was calculated was not an accurate representation of the amount of time dedicated to the patient's meaning-making processes as it includes the therapist speech time. This is also reflected in the low proportion of IMs in CBT in comparison to other treatments (Gonçalves, Silva, et al., 2016).

On the other hand, it could be hypothesised that the low proportion of IMs and the lack of group differences indicate a true effect, where participants experienced fewer IMs than samples in other studies. Even though this is unlikely given importance of meaning-making in psychotherapy change (Gonçalves & Angus, 2017; Grawe, 1997), previous studies have found that ambivalence is a significant block to

the elaboration of IMs (Braga et al., 2019; Ribeiro et al., 2016). Therefore, it may also be speculated that increased ambivalence often observed in BN (Wade, 2019), as well as the increased difficulties with self-discrepancy in BN as a result of high evaluative standards (Wonderlich et al., 2015) prevented participants from progressing meaningfully towards an integration of the contrasting narratives in the context of ICAT. Because ED tend to have lower recovery rates than other major psychological difficulties such as depression (e.g. Richards, 2011), it is also possible that the emergence of IMs is less significant than in other samples.

Regarding the developmental trajectories of IMs, in both groups Action I and Protest I IMs decreased through mid-therapy. This is not surprising given that subtype I IMs form the scaffolding for higher order IMs to emerge as they represent the beginning of thinking about change (Batista et al., 2020). On the other hand, Reflection II, Protest II IMs, but also Reconceptualization IMs showed a linear increase during therapy in both groups. This is in line with findings from other studies in good outcome cases (e.g. Gonçalves et al., 2010; Gonçalves, Ribeiro, et al., 2016) and with the hypothesis. These findings also reflect the patterns of change observed in case studies in BN, where an integration of the adaptive self-narrative becomes increasingly visible in the patient narrative as therapy progresses (e.g. Bell, 2013a).

To address the third aim of the study, the relationship between IMs and symptom decrease in the following session was assessed through two sets of models. One model where IMs were the predictor of change in symptoms in the following session, and a second model with symptoms being the predictor of IMs in the following session. The results indicated that only Protest II significantly predicted a decrease in binge and purge frequency in the following session of Protest II

occurrence. The reverse model, where binge and purge frequency in one session predicted Protest II IMs in the following session, trended towards significance. It may be possible that Protest II IMs showed an important effect on the bulimic symptoms due to the nature of BN. BN and ED in general are characterised by an egosyntonic approach, where the sufferer is often in agreement with the problem, recognising its benefits and showing high ambivalence to change (Serpell & Treasure, 2002). Protest II IMs assume the presence of an alternative position of assertiveness and empowerment of the self (Mendes et al., 2011). This self-empowered position allows the patient to reposition themselves in relation to the problem by focusing on their own needs and their rights rather than the needs of the problem (e.g. “[I want] just a little help! A little support! [...] A little more understanding.”). It is possible that the defiance of the problem and the assertion of one’s own needs play a role in reducing the ambivalence and consequently the symptoms. However, this hypothesis requires further investigation, especially since Protest II IMs showed a low proportion in this study.

Additionally, binge and purge frequency in one session predicted a decrease in Action II and Reflection II IMs in the following session. This pattern was also found with depressive symptoms in narrative therapy (Gonçalves, Ribeiro, et al., 2016). Overall, the models where bulimic symptoms predicted IMs in the following session showed a better fit than the reverse models. This is inconsistent with previous findings, where IMs seem to have a higher predictive power over symptoms (Gonçalves, Ribeiro, et al., 2016; Gonçalves, Silva, et al., 2016). Perhaps this highlights the importance of early behavioural changes in facilitating psychological change in BN that previous studies have found (Vall & Wade, 2015). Additionally, it

is possible that when bingeing and purging reduction was observed by the therapists, they tended to elaborate more on this change and therefore facilitating the emergence of IMs.

Limitations

This study presents with some limitations that warrant caution in interpreting its results. Firstly, one of the most important limitations was the use of a small sample size and the low power, therefore increasing the probability for a Type II error. Despite other studies having found substantial results using small sample sizes, it is possible that the application of the IM framework in this novel population and treatment required a larger sample as the effect sizes might be too small to be detected by this design. Additionally, splitting the sample into good and poor outcome cases further reduced the power of the study. It is also important to note that the analysis of multiple individual models increases the risk of a Type I error in this study, rendering some results possibly spurious. Also, the limitations of post-hoc power analyses are recognised however the exploratory nature of the study is highlighted as the study aimed to provide some initial directions for future studies.

Additionally, this study did not consider the effect of the therapists on the elaboration of IMs. Given that the treatment was delivered by two different therapists, it might have been helpful to examine whether any differences in their interventions impacted the emergence of IMs. The sample size did not allow for controlling over the effects of these variables.

Finally, the impact of the researcher on the detection of IMs is an important consideration. The IM framework and other process coding schemes rely on what the therapist and the researcher consider important in producing therapeutic change and not necessarily on what the patient might consider important (Elliott & James, 1989). Nevertheless, this study aimed to address this limitation by establishing reliability ratings and by using independent coding after a rigorous training procedure on the IMCS tool. It is also argued that using independent observers allows for an objective exploration of facilitative process variables.

Clinical Implications

This study presents with some implications for clinical practice. Firstly, the study results highlight the importance of mapping the longitudinal change of patients as it has the potential to show facilitating or hindering processes that can impact treatment outcome. Psychotherapy is a process of change and has an important temporal dimension which is often disregarded in clinical practice and research, especially in outcome-focused approaches (Tschacher & Ramseyer, 2009). Therapists can be attuned and monitor these trajectories to better facilitate change. It is important to note that the developmental trajectories are not necessarily the change mechanisms in play, but are important models of how the change mechanisms can impact treatment outcome (Tschacher & Ramseyer, 2009). Therefore, understanding the patterns in different cases can improve therapist responsiveness and adaptability in emerging therapeutic contexts (Bohart & Wade, 2013).

Additionally, this study highlighted the possible importance of processes in psychotherapy for BN, such as Protest II. Even though the results are exploratory at this point, it may be possible that these processes represent a deeper transformation facilitating good treatment outcome. If this is the case, it may be important for therapists to facilitate moments of assertiveness against the problematic narrative and to strengthen the voice of the patient in asserting their needs. Therefore, therapists can track the process of narrative change, highlight contrasting narratives, and scaffold the intervention in a way to facilitate the production of more complex IMs that seem to be linked with good treatment outcome. This is particularly relevant in BN, where contrasting narratives around the self-evaluative standards are highly disruptive (Wonderlich et al., 2015). Montesano et al. (2017) argue that interventions should focus on meaning reconstruction rather than symptom reduction, as these conversations allow the patients to elaborate change and lay the foundations for a strong alternative narrative. The identification, incorporation, and reflection on these contrasting narratives may be key to facilitating positive change in BN. This can be achieved with the use of tools that increase self-reflexivity such as self-monitoring, therapeutic writing, collaboration, and reflexive questions (Montesano et al., 2017).

Future Research

This exploratory study provides a starting point for the investigation of change processes in BN. Future research should aim to establish further the reliability and usefulness of the IM framework in the wider spectrum of ED with larger samples. It would be beneficial to gain a deeper understanding of how the narrative

reconstruction of the self is co-constructed in psychotherapy using the IM framework (Cunha et al., 2017).

Additionally, given the importance of ambivalence in BN (e.g. Wade, 2019; Zeeck et al., 2019) it may be interesting for future studies to integrate measures of ambivalence, as other IM studies have done (e.g. Alves et al., 2016; Braga et al., 2019). Previous studies have hypothesised that a cyclical pattern between narrative novelties and return to the problematic narrative may partially explain poor outcomes in psychotherapy (Gonçalves & Stiles, 2011). Therefore it would be pertinent for future research to examine the impact of ambivalence on therapeutic outcome in BN.

Another important variable is the impact of the therapist on the process. Previous studies on IMs have found an important effect of the interviewer questions on the patient narrative (Baldwin & Imel, 2013; Johns et al., 2019). Therapeutic process is a dynamic concept and therefore therapist characteristics and contributions should be considered (Montesano et al., 2017). Future research should aim to establish the relational factors that impact the co-construction of the narratives, but also how the patient's narrative novelties may be impacted by specific therapist interventions. This preliminary exploration is hoped to inform a methodical investigation of IMs in ED as it produced questions that future studies should aim to address.

Conclusion

This study examined the development and importance of IMs in bulimic symptoms. Most IMs showed a significant change over time, but only Protest II was

consistent with the hypothesised pattern of an increase in the good outcome group and predicting bingeing and purging in the following session, whereas bingeing and purging in one session predicted Action II and Reflection II IMs. These findings can have implications on therapist responsiveness to ameliorate clinical practice, however results should be interpreted with caution due to the limitations of the study. Future research should aim to replicate the results of this exploratory study in larger samples with higher-powered designs and incorporate other measures, such as ambivalence, to explain variability in IM trajectories.

Chapter 3: Integration, Impact, and Dissemination Plan

Integration

In recent years, there has been a shift in psychological research towards the investigation of mechanisms and processes that contribute to treatment outcome. Change process research has been acknowledged as an essential complement to randomised controlled trials (RCTs) (Elliott, 2010). RCTs and single case experimental designs address the question of ‘what works’ by establishing the existence of a causal relationship between psychotherapy and treatment outcome. On the other hand, change process research aims to answer the question of ‘how it works’ by examining the nature of this relationship. The process-outcome paradigm provides a theoretically and methodologically sound design for examining these relationships (Elliott, 2010). More specifically, the examination of patient-related variables of psychotherapy is crucial to the advancement of an understanding of the processes that are contributing to change. It has the potential to develop the therapist skillset to understand and intervene appropriately by encouraging process variables that are helpful and reducing variables that are hindering to change (Elliott, 2008). In reality, the relationship is more complex than the described dose-response, however the accumulation of process-outcome studies can shed light on the nature of these complex relationships. Various methodological tools have been developed to examine the therapeutic process, and specifically patient-related process variables. The Innovative Moments (IM) framework (Gonçalves et al., 2009) has been established as a reliable tool that focuses on therapeutic change as a representation of various patient-related therapeutic processes observable in the patient narrative (Crits-Christoph et al., 2013).

Across eating disorders (ED), bulimia nervosa (BN) has been extensively researched in terms of ‘what works’ and there is substantial evidence supporting treatments such as cognitive-behavioural therapy (CBT) for BN (Wilson et al., 2007). However, it is also found that only half of the patients recover from BN following CBT, pointing researchers to the direction of how can treatment be improved to increase the recovery rates by investigating processes and mediators of change (Wilson et al., 2007). Studies have begun to establish certain factors, such as patient characteristics, including self-esteem or perfectionist traits, that make the treatment outcome more or less likely to be successful (e.g. Fairburn et al., 2009). Some process-outcome studies have established therapeutic factors such as early behavioural response as an important predictor of treatment outcome (e.g. Agras, Crow et al., 2000). However, there is limited research on how these mechanisms work throughout therapy and how they inform the change process.

The overarching aim of this project was to develop an understanding of the therapeutic process during psychotherapy for BN. More specifically, the project investigated therapeutic patient-related processes underpinning therapeutic change. By examining the existing literature on patient-related therapeutic process variables (Chapter 1: Systematic Review), the focus was then drawn to how a change in patient narrative may relate to treatment outcome (Chapter 2: Empirical Paper).

How This Was Achieved

In order to develop an understanding of the patient-related process variables in psychotherapy for BN, a systematic review was conducted examining process-

outcome literature on patient-related processes that were linked with treatment outcome in BN. Even though the initial search of the literature resulted in many studies that investigated process in ED, only a small minority focused on patient-related process variables that were measured throughout treatment in BN. The findings of the review informed the interpretation of the results of the empirical study. For example, it is possible that the reason why the models where change in bulimic symptoms predicting IMs showed a better fit than the reverse ones in the empirical study, is because of the importance of early behavioural response as a catalyst for psychological change in BN, as identified in the systematic review. It could be speculated that the IM framework does not capture behavioural response but rather a psychological narrative change that is more focused on meaning construction rather than behavioural change. Narrative change as conceptualised in the IM framework focuses on meaning reconstruction, and therefore it is possible that the behavioural-oriented definition of outcome and recovery in the investigated treatment model was not captured by the IM framework.

Although there is substantial literature investigating criteria for methodologically sound process studies (e.g. Elliott & James, 1989; Kazdin, 2007), there was not an operationalised tool to bring the literature together. Examining these quality criteria for the purposes of the systematic review informed the design and method of the empirical paper. For example, aspects such as establishing a timeline and considering reverse causation between process and outcome variables were specifically examined in the empirical paper, through the longitudinal analysis of the IM change and the examination of whether symptoms predicted IM change and vice versa. The quality appraisal tool that was developed also highlighted some important

limitations of the empirical paper such as the consideration of important confounding variables (e.g. therapist effects). During the development of the quality appraisal tool, it became apparent that quality aspects that would be crucial for other types of experimental studies, would not only be inappropriate for process-outcome studies but may also hinder an accurate representation of the relationship between process and outcome. For example, the dose-response relationship is extremely difficult, if not impossible, to investigate in relation to process variables such as early behavioural response or patient perceptions of the therapeutic alliance. An artificial manipulation of these variables may alter the natural process and dynamic of the patient-therapist relationship and as a result treatment outcome. It would also raise the question of ethical practice if the treatment effectiveness was purposefully manipulated.

The empirical paper was based on the literature review which established narrative change and reconstruction as key aspects of recovery. Since narration of human experience is a crucial aspect of psychotherapy, it is argued that patient-related processes are captured through the investigation of narrative change (Angus & McLeod, 2004). Using the IM framework to examine narrative novelties that diverged from the problematic self-narrative, the study results showed that narrative change is observable over time in both good and poor outcome cases. Particular types of narrative change such as Protest II IMs, highlighting a position of empowerment and assertiveness of patient needs in the narrative, were linked with treatment outcome. Despite the exploratory nature of this study, Protest II may be a potential marker of change that warrants further investigation.

In summary, this project combined a systematic analysis of the existing literature to establish patient-related process variables that were prevalent and

important in BN, with an empirical study that explicitly examined patient change throughout psychotherapy sessions for BN using a theoretical and methodological framework that has not been used in BN previously as highlighted by the results of the systematic review. The combination of the results of these studies led to the conclusion that there are observable trends in BN of factors that are associated with treatment outcome, such as early behavioural response and Protest II IMs, which may reflect essential ingredients for successful psychotherapy in BN.

Challenges

During the completion of the project, one of the key challenges was sample selection. The use of archival data presents with various aspects that need to be considered carefully. The process of designing the study using archival data centres more on matching the existing data to the hypothesis of interest rather than having the freedom to develop a procedure that is fine-tuned to the specificities of the hypotheses (Jones, 2010). In this study, in the parent RCT, the symptom that was monitored throughout therapy was primarily behavioural (binge and purge frequency). However, IMs are more oriented towards measuring meaning-making processes reflected in the patient narrative, and therefore including sessional measures of psychological changes would have been beneficial. Given that the data had already been collected, this was impossible to achieve. Other measures that arguably capture a more psychological change as a treatment outcome in BN were used, such as the Eating Disorder Examination (EDE; Fairburn & Beglin, 2008), however this measure was not

available on a session-by-session basis and therefore the longitudinal impact of IMs on the EDE could not be investigated.

Another challenge with the use of archival data is identifying appropriate routes for service-user involvement. The involvement of the public in research is defined as conducting research ‘with’ or ‘by’ members of the public rather than ‘for’ or ‘about’ them (INVOLVE, 2012). The importance of including patient perspectives in the study of psychotherapy has been underlined in previous research (Macran et al., 1999). However, the use of archival data limited our ability to obtain the perspectives of the patients who took part in the parent RCT. Psychotherapy researchers often consider the patient perspective in their designs, but rarely involve them actively in various stages of the study, despite the numerous political, societal, and conceptual reasons for actively involving patients (Macran et al., 1999). Nevertheless, steps were taken to ensure that clinicians were involved in certain stages of the project such as dissemination and interpretation of findings through presentations.

The use of archival data also presents with advantages, such as an invaluable access to rich information from psychotherapy sessions for a large sample of patients. In reality, a small-scale process-outcome study would be unlikely to receive adequate resources to collect this amount of data. However, this is a reflection of a larger systemic problem within research, that places emphasis on treatment efficacy studies (Doss, 2004). This is also connected with the challenge of balancing the feasibility of a change process study with having a powerful design and sufficiently large sample. Because of the time-consuming nature of the analysis of the therapeutic process, change process studies often suffer from small samples and underpowered designs, and this project was no exception.

Additionally, during the completion of the project, the difficulty in defining change processes became apparent. Despite the importance of understanding the concept of change in psychotherapy, there is little consensus as to what constitutes change (Doss, 2004). Upon examination of the literature for the systematic review, change processes were operationalised through the use of a variety of theories, rendering the development of a unified understanding of what constitutes change processes particularly challenging. When a variable under investigation is difficult to operationalise, it is more open to the subjective perspective of the researcher. For example, in the empirical paper, narrative change using the IM framework is used as a proxy measure of true change. However, the extent to which narrative change is an accurate measure of true change may be dependent on the theoretical orientation of the therapist and the researcher. For example, narrative theorists would argue that narrative change is the ultimate reflection of recovery, as the problem is the maladaptive narrative itself (Morgan, 2000). On the other hand, psychoanalysts might argue that observable narrative change is not an accurate measure of the change sought after in psychoanalysis. Instead, change in psychoanalytic terms could be defined as an intrapsychic shift that is often difficult to observe and measure (Edelson, 1984). Cognitive theorists might argue that narrative change is a close enough proxy of the actual change that is sought after, namely a change in cognitions that could be expressed in the patient's use of language (Beck, 1995). However, because the IM framework is applied on an ideographically defined problem, it is adjustable to the theoretical assumptions of each model, although the extent to which this change is considered observable in the patient narrative may be model-dependent. It is crucial to take this variability of models into consideration when examining change processes in the context of particular treatments.

On a related point, studying change processes highlighted the complexity of the relationships between the process and outcome variables, but also between the process variables themselves. For example, processes such as therapeutic alliance might be related to patient contentment with treatment and dropout rates (Zaitsoff et al., 2015). Therefore, it is argued that the measured processes are not independent of each other, and that often undermines the reliability of the study of these variables. It is often said that psychotherapy is both an art and a science (O'Donohue et al., 2006). Studying psychotherapy process is arguably attempting to study the art behind psychotherapy, which may not often be accurately captured with the use of rigid scientific tools. The need for an updated, research-based, operational model of psychotherapy process was highlighted.

Reflections

The process of learning and analysing change processes highlighted the importance of the role of the scientist-practitioner. From the inception of the project, which emerged from clinical practice, to the analysis of the session recordings, I was aware of the impact research had on my work as a clinician. For example, noticing and elaborating on narrative change became integrated in my clinical practice with patients, and studying it in an operationalised and scientific way, increased my confidence in using it more flexibly in clinical practice. This aided me in calibrating the therapeutic encounter to make the most of these moments of change to facilitate therapeutic progress further.

On a similar note, the importance of patient-defined problematic narratives was highlighted. Even though all the participants were selected to be part of the study because of their diagnosis of BN, it became apparent that each participant had a distinct, idiographic problem that was unique to their life histories, personalities, and experiences. This further underlines the importance of tailoring evidence-based treatments to individuals, and the importance of using individualised formulations that consider the problem from the patient's perspective (Johnstone, 2018). These reflections also emphasised that treatment outcome variables are operationalised in a nomothetic way, based on the researcher's understanding of the problem. The operationalisation of treatment outcomes based on the patient's understanding of what successful treatment looks like can elicit a richer understanding of the directions that psychotherapy should take to facilitate a personalised path to recovery (Macran et al., 1999). It is argued that a combination of idiographic and nomothetic outcome measures provide an increased sensitivity to change and are also comparable to other outcomes (Ogles, 2013). One example of such a flexible measure is the Goal-Based Measure (GBM) that allows a collaborative establishment of patient and therapist goals and operationalises a systematic way of monitoring these throughout treatment. The effectiveness of the GBM in detecting change and enhancing a collaborative relationship between patient and therapist has been shown in the literature (see Lloyd et al., 2019 for a review).

In addition, despite rigorous training on the identification and coding of IMs, it is important to underline the impact of the coder's own assumptions and experiences that might be impacting the excerpts that they would be classifying as a narrative novelty. The procedures of inter-rater reliability, and particularly the frequent

discussions between coders, were especially important to create a deep understanding of the patient's difficulties and what would constitute a narrative novelty in their case. Researchers in future studies employing similar methodologies could benefit from liaising with the therapists and the patients themselves to gain an understanding of whether observable narrative novelties are reflective of potential shifts in the therapeutic process (Castonguay et al., 2013).

Impact

The project has the potential to have a significant impact at multiple levels. Impact is defined as “the demonstrable contribution that excellent research makes to society and the economy” (Economic and Social Research Council, 2020). Academic impact is the contribution of research in advancing understanding of a topic and progressing the scientific method and theory. Economic and society impact is the contribution of research in benefiting individuals, organisations, and the wider population (Economic and Social Research Council, 2020). The Strategic Plan of the American Psychological Association highlights the mission to “promote the advancement, communication, and application of psychological science and knowledge to benefit society and improve lives”, and part of the strategic goals include the utilisation of psychology to make “a positive impact on critical societal issues” (American Psychological Association, 2019, p. 5, 8).

Clinical Practice

It has been argued that clinicians are not substantially influenced by empirical findings when constructing formulations or care plans, because the majority of the existing avenues of dissemination rely on a top-down approach, where researchers are informing clinicians about findings and their implications, otherwise termed as “empirical imperialism” (Castonguay et al., 2013, p. 85). One way to avoid or reduce the effects of this approach is to actively involve clinicians and practitioners in the design, implementation, and dissemination of research. This approach has been termed as “practice-oriented research” (Castonguay et al., 2013, p. 86). One of the main tools to achieve this approach and reduce the scientist-practitioner gap, is to conduct patient-focused research. By tracking individual patterns of change in patients, it is possible to provide empirical feedback to the clinicians about the specificities of how change takes place (Castonguay et al., 2013). Rather than focusing on particular treatment models, patient-focused research examines real-time changes as treatment is being implemented and is able to pinpoint particular tools that achieve this change (Lutz, 2002). For example, programmes using systematic examinations of the therapy process have been shown to be effective in increasing favourable treatment outcomes and reducing deterioration in treatment (Lambert & Shimokawa, 2011). This project observed patient-related processes, both in the literature, but also in clinical cases in psychotherapy, by observing real-time change. Also, the team behind the project was composed of practitioner-researchers, who were able to offer clinical practice insights, as well as research knowledge. In this practice-orientated study, the longitudinal tracking of real-time patient progress during therapy highlighted some processes that were associated with outcome. Therefore, it is hoped

that through the application of patient-focused research conducted by clinician-researchers, the results are directly relevant to clinical practice in the treatment of adults with BN.

It is important to note that process research aims to support, but not replace, clinical decision-making. Empirical findings based on process research can guide and support the decision-making process, but the actual decisions regarding treatment remain with the patient and the clinician (Castonguay et al., 2013). During the analysis of the therapeutic sessions, it became apparent that patients portrayed some distinct idiographic patterns in the therapeutic process, despite the overall trends. Therefore, the clinicians made a judgment to direct therapy towards particular avenues of interest within the therapeutic model. Similarly, in clinical practice, other individual factors may influence process (e.g. culture, setting, service etc.) that cannot possibly be considered in every research study, but are crucially formulated by the clinician. This study can influence but not overshadow the invaluable contributions of clinical knowledge and experience.

Identifying positive and negative developments in the early stages of treatment through process research allows the therapists to be mindful of these factors within treatment and address them early on (Castonguay et al., 2013). In the context of the limited effectiveness of ED treatments (Wilson et al., 2007), the identification of helpful and hindering processes is crucial in order to enhance treatment outcomes. Previous studies have demonstrated how empirical findings can be applied to clinical settings (e.g. Persons et al., 1999). It is hoped that the results of this study can contribute to similar clinical practice simulations to facilitate the identification of helpful and unhelpful processes within psychotherapy for BN. For example, the

importance of Protest II IMs was underlined in this study. An increase of Protest II IMs throughout treatment, reflecting an increase in empowerment and assertiveness of the patient, was associated with a reduction in bulimic symptoms. Therefore, clinicians may wish to pay attention to the rate of increase of these narrative changes reflecting behavioural change throughout therapy.

Research

Translating the multitude of process-outcome findings into systematic take-home messages requires extensive work, with an important focus being the implementation of empirical findings onto clinical practice (Llewelyn et al., 2016). As mentioned earlier, the multitude of variables and bidirectionality of the interactions between the variables that compose the therapeutic process hinders the development of a coherent framework that unifies all process research. However, it is hoped that this study, by applying a reliable measure that has been used substantially in previous research, adds to the empirical understanding of therapeutic process and encourages its use in future studies. The replication of the IM model in a different sample in this study provides support for the IM framework as a transtheoretical tool that facilitates understanding of the therapeutic process. Therefore, it is argued that the IM framework highlights a different way of understanding and conceptualising change in BN.

The results of the empirical paper highlighted that there are patterns that are observed in good and poor outcome cases in BN in terms of their narrative change. These results add to our understanding of how narrative change evolves in

psychotherapy for BN and it is hoped that through replication, reliable trends can be established that can have a stronger impact on clinical practice and research.

This study adopted a process-outcome design that has been highlighted as a necessary complement to the ‘gold standard’ of RCTs (Elliott, 2010). Despite the increased likelihood that individual characteristics and therapy progression of each patient would have an effect on the reliability and generalisability of the study, it is hoped that with the use of robust statistical techniques and careful monitoring of inter-rater reliability, these effects were taken into consideration. It is important to portray that these idiographic differences in problem definition or narrative change were not considered as error or noise to the data, but as rich sources of information. This was achieved through the flexibility of the IM framework that operationalised the use of individual differences in a meaningful way. Tschacher and Ramseyer (2009) argue that psychotherapy is a process of continuous change and therefore a complete picture of it is only achieved with adopting a longitudinal perspective. This temporal dimension of psychotherapy, inherent to the meanings of process and change, is often disregarded in cross-sectional studies. Through the combination of elaborate longitudinal information about therapy process and the use of refined statistical procedures, it is hoped that this study portrays the important contributions process studies can make and encourages researchers to pursue studies in the psychotherapy process field.

Service Delivery and Training

This study can also have an impact on the models of service delivery. In a recent survey, it was found that over 90% of people with eating disorders feel that the illness has a significant or a very significant impact on their well-being, quality of life, and financial situation (BEAT, 2015). The National Institute for Health and Care Excellence (NICE; 2017b) highlights the need for the improvement of service delivery in eating disorders, particularly in adults, with a focus on providing effective treatment. A recent economic analysis of interventions in BN in the United Kingdom using statistical modelling highlighted that the most economic option for BN was self-help with support, despite it having a lower probability of remission at the end of treatment in comparison to individual psychotherapy (CBT; NICE, 2017a). Identifying helpful and unhelpful therapeutic processes may increase the efficiency of individual psychotherapies and improve their cost-effectiveness to levels comparable with self-help, therefore justifying their continuous provision within services. For example, identifying that narrative change reflecting a consistent rate of increase of assertiveness and establishment of the patient needs outside the problematic narrative (Protest II) is associated with good treatment outcome, may allow clinicians to focus on elaborating these processes to make treatments more efficient.

Additionally, training professionals in eating disorders has been highlighted as a crucial pathway to improved recognition of eating disorders through better sharing of information and better communication with families, but also to enhance the provision of high quality interventions (NICE, 2017b). It is also argued that psychotherapy training programmes should involve trainees in conducting research related to clinical practice in order to promote generations of psychotherapists that

understand, evaluate, and produce practice-oriented research (Castonguay et al., 2013). Training future psychotherapists involves the challenging task of teaching them to facilitate processes shown to be effective (Llewelyn et al., 2016). The results of this study highlighted that processes reflecting narrative change are linked with successful treatment outcome. Therapists could receive training on how to identify and enhance these narrative processes to promote a quicker and more sustainable recovery.

Dissemination

Dissemination is a key pathway to establishing the impact of the current research. It is planned that the systematic review, the empirical study, and the development of the quality appraisal tool for process-outcome studies will be submitted for publication. Part of the empirical study has already been published as an academic poster in the annual conference of the Faculty of Eating Disorders at the Royal College of Psychiatrists in collaboration with the Academy of Eating Disorders. Potential journals for publication have been identified, including the *International Journal of Eating Disorders* and *Psychotherapy Research*. It is hoped that both the empirical study and the systematic review will be presented at various relevant conferences such as the Eating Disorder Research Society Annual Meeting in October 2020, the Eating Disorders International Conference organised by Beat in collaboration with the Faculty of Eating Disorders of the Royal College of Psychiatrists in January 2021, and the International Conference for Eating Disorders organised by the Academy of Eating Disorders in June 2021. Finally, through an

existing collaboration with the Society for Psychotherapy Research, it is planned that the empirical study will be presented in a webinar. These publications will aim to capture the wider audiences of practitioners and researchers within eating disorders and process research across the globe.

On a more service-specific level, it is also planned that the results will be presented to the team that conducted the parent RCT (Wonderlich et al., 2014) at the University of North Dakota, USA and the Innovative Moments team at the University of Minho, Portugal. This is intended also to assist in planning for future studies using this methodology and replicating the study using a larger sample. Finally, it is hoped that the results will be presented at eating disorders specialist teams that the trainee and supervisors have established relationships with, in order to reflect on and promote the clinical impact of the studies, and to guide future research.

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Appendices

Appendix I: Royal Holloway University of London Ethics Approval

Result of your application to the Research Ethics Committee (application ID 1495)

Ethics Application System

Wed 11/09/2019 09:37

To: Koutoufa, Iakovina (2017); Mendes, Ines

PI: Dr Ines Mendes / Dr Michael Evangeli

Project title: Innovative moments and the process of change in adults with Bulimia Nervosa

REC ProjectID: 1495

Your application has been approved by the Research Ethics Committee.

Please report any subsequent changes that affect the ethics of the project to the University Research Ethics Committee ethics@rhul.ac.uk

Appendix II: Innovative Moments Coding System (IMCS) Coding Manual

INNOVATIVE MOMENTS CODING SYSTEM

INNOVATIVE MOMENTS CODING SYSTEM

**Miguel M. Gonçalves, Marlene Matos, Anita Santos, António P. Ribeiro, Inês
Mendes, Joana Silva, João Batista, Catarina Rosa &
Pablo Fernández-Navarro**

**University of Minho, January 2016
Version 8**

Innovative Moments Coding System (IMCS) is a procedure of qualitative analysis. The use of this tool implies the qualitative nature of data and the analysis procedure obeys the inferential principle of categories inclusion. Therefore, content analysis of data is oriented by Innovative Moments (IMs) categories. The System is open ended, allowing the integration of new results from research.

I. INNOVATIVE MOMENTS DEFINITION

An Innovative Moment (IM) refers to the emergence in the therapeutic dialogue of clients' actions, thoughts or feelings that clearly contrast with the problem-saturated story, i.e. something that completely differs from what is usually narrated by the client (White & Epston, 1990). This can be a past episode or even a project not predicted by the problem-saturated story. Consequently, an IM is, necessarily, a narrative novelty.

1.1 Principles

Innovative Moments notion emerges from the re-authoring model proposed by White and Epston (1990), and refers to what these authors assigned as "unique outcome". According to narrative therapy (White & Epston, 1990), the constructions of new and alternative narratives are the result of the elaboration of unique outcomes; these are considered openings to new narratives, or opportunities so that therapeutic change can happen. They emerge during therapeutic conversation, although being trivialized or unacknowledged when problem saturated stories are dominant.

The denomination of "unique" does not refer to a judgmental frequency (e.g., in the sense that appears only once), but to the contrast with the problem ("unique" from the point of view of the problem). The term outcome also does not refer to a therapeutic outcome, but to an instance of narrative exception that occurs within the process of change. Innovative Moments entail a dynamic, process and a multiple nature. They enable small but significant changes that constitute markers of narrative development of novelty (Gonçalves, Ribeiro, Mendes, Matos & Santos, 2011). Thus, in our coding system, we choose to refer to unique outcomes as innovative moments.

1.2 Applicability

IMCS aims to allow the understanding of change processes beneath different life situations that are under study (therapeutic change, non therapeutic change, life transitions, new health situation adaptation...). IMCS applies to qualitative data,

namely discourse or conversation as therapeutic sessions, qualitative/in depth interviews, biographies, predominantly in video systems or transcripts.

1.3 Dimensions of analysis, types of IMs

There are different types of IMs, namely, Action 1 (A1) and 2 (A2, was also termed performing change), Reflection 1 (R1) and 2 (R2), Protest 1 (P1) and 2 (P2), and Reconceptualization (RC). These 7 types of IMs may be organized in two levels: low-level IMs, representing client's ways to create distance from a problematic meaning framework (A1, R1 and P1), and high-level IMs (A2, R2, P2 and RC), centered on ongoing changes. See Table 1 for a detail description of IMs types.

1.4 Differentiating IMs

Action IMs subtype 1 (A1) – Actions or specific behaviors against the problematic story. They should not be the result or a direct consequence of the problem, but they should lead to the potential creation of new meanings. Thus, for instance, to protect myself instinctively from an aggression is not an IM. But, to protect myself in a more intentional way, is considered an IM (e.g., leaving home or asking for help).

Clinical vignette¹

T (therapist): Was it difficult for you to take this step (not accepting the rules of "fear" and going out)?

C (client): Yes, it was a huge step. For the last several months I barely got out. Even coming to therapy was a major challenge. I felt really powerless going out. I have to prepare myself really well to be able to do this.

Action IM subtype 2 or Performing Change – they refer to the anticipation or planning of new experiences, projects or activities at personal, professional and relational levels. They also can reflect the performance of change or new skills that are akin to the emergent narrative (e.g., new projects that derive from a new self version). They describe the consequences of the change process, for instance acquiring new understandings that are useful for the future or assuming him/herself as an experiential expert, referring which new skills emerge after overcoming the problematic experience.

¹ The clinical vignettes were published in Gonçalves, Matos & Santos (2009) and Gonçalves, Ribeiro, Silva, Mendes & Sousa (in press)

Table 1*Description of Innovative Moments types*

Types of IM	Subtypes	Definition	Contents
Creating distance from the problem (IMDP) Moments of critique, thoughts, intentions, interrogations, doubts, desires, strategies and/or behaviors focus on dealing with the problems brought to therapy	Action 1	Performed and intended actions to overcome the problem	<ul style="list-style-type: none"> - New behavioral strategies to overcome the problem(s) - Active exploration of solutions - Searching for information about the problem(s)
	Reflection 1	New understandings of the problem	<ul style="list-style-type: none"> - Reconsidering problem(s)' causes - Awareness of the problem(s)' effects - New problem(s) formulations - Adaptive self instructions and thoughts - Intention to fight problem(s)' demands - General references of self-worth and/or feelings of well-being
	Protest 1	Objecting the problem and its assumptions	<ul style="list-style-type: none"> - Rejecting or objecting the problem(s) - Position of critique towards others who support it - Position of critique towards problematic facets of oneself
Centered on change (IMCC) New aims, experiences, activities, or projects, anticipated or in action, as consequence of change (not directly related with the problematic experience)	Action 2 (Performing change)	Generalization of good outcomes (performed or projected actions) into the future and other life dimensions	<ul style="list-style-type: none"> - Investment in new projects as a result of the process of change - Investment in new relationships as a result of the process of change - New skills unrelated to the problem - Problematic experience as a resource for new situations
	Reflection 2	Elaborations upon change and its consequences	<ul style="list-style-type: none"> - What is changing [Contrasting Self] - Meaning making on how/why changes are occurring [Self-Transformation Process] - References of self-worth and/or feelings of well-being (as consequences of change)
	Protest 2	Assertiveness and empowerment	<ul style="list-style-type: none"> - Centering on the self - Affirming right and needs
	Reconceptualization	Meta-cognitive process description. Requires a shift between two self-positions and some access to the process underlying this transformation	Contrasting Self (what changed?) AND Self-Transformation process (how/why change occurred?)

The codification of new experiences implies the presence of an implicit or explicit marker of change, i.e., the client narrates the perception of some transformation.

Clinical vignette

T: You seem to have so many projects for the future now!

C: Yes, you're right. I want to do all the things that were impossible for me to do while I was dominated by fear [marker of change]. I want to work again and to have the time to enjoy my life with my children. I want to have friends again. The loss of all the friendships of the past is something that still hurts me really deeply. I want to have friends again, to have people to talk to, to share experiences and to feel the complicity in my life again.

Reflection IM – Emergence of new understandings or thoughts that do not legitimate the problem or are not congruent with the dominant plot. According to Bruner (1986), a good story implies the landscape of action and consciousness. IM Reflection relates to the landscape of consciousness, to the way a person feels, knows and thinks. On the other hand, the landscape of action includes the setting, the actors and the actions (usually present in action and protest IMs). Reflection IMs do not imply defiance by the individual towards someone or to the community/society, which represents/entails a position that supports the problem, like it happens in the protest IM.

Note 1: Whenever possible, Action and Reflection IMs should be coded separately (e.g. "I left home for the first time [Action IM] and I felt good. [Reflection IM]"). When the client/interviewee is reflecting about specific actions, we should code Reflection (e.g. "Leaving home for the first time made me feel great!")

Note 2: To differentiate Performing Change from Reflection: If the client narrates a vague desire to change (e.g., "there is so much thing that I still I want to change in my life!") one should code it as a reflection, even if we are able to recognize that this goal is a clear consequence of the change process.

Reflection IM subtype 1 (R1) – Thoughts, intentions, interrogations, doubts, desires, etc. that create distance from the problem. Also comprehensions or insights focused on new problem formulation, its causes or effects are considered here.

Clinical vignette

C: I'm starting to wonder about what my life will be like if I keep feeding my depression.

T: It's becoming clear that depression had a hidden agenda for your life?

C: Yes, sure.

T: What is it that depression wants from you?

C: It wants to rule my whole life and in the end it wants to steal my life from me.

Reflection IM subtype 2 (R2) – Reflections and learnings related to the therapeutic process, as well as understandings or elaborations centered on change and its consequences.

Note: When Reconceptualization IM components do not appear joined in the same client utterance, these should be coded as R2. Therefore, new emergent self-versions (Contrasting-Self) and new meanings about how/why changes are occurring (Self-Transformation Process) can also be identified as R2 (more detailed information can be found in Reconceptualization IM section)

Clinical vignette

C: these barriers I mean they are still there to a certain extent but it just seems to be much easier all of a sudden... oh, this is just too good to be true, I let these barriers down and I'm more open to things and I know how it feels and it's not always going to work out but just by being willing to take the no, uhm I don't take away from other possibilities.

Protest IM – moments of protest, defiance or attitudinal divergence, which can involve actions, thoughts and feelings, projected or accomplished.

Assumes the presence of two positions: one that legitimates or supports the problem (entailed by a person or by a given society or culture), and another one that defies or confronts the first one. It involves proactivity and personal agency by the client.

IMs of reflection and protest differentiate themselves by the internal positioning of the first ones, of considering alternatives (e.g., *"I believe I found a solution"*), of questioning (e.g., *"I'm wondering if something can justify that ...?"*). However, protest IM can also involve thoughts or feelings, but it is a way of repositioning the self through a proactive, categorical, affirmative or assertive process (e.g., *"I think that nothing can justify this; I decided that I won't allow fear to interfere in my life any more"*). They involve a repositioning towards the problem and

its effects, as well as to the others that eventually legitimate the problem (e.g., *"I told my mother that I won't accept her ideas about my marriage!"*).

Protest IM subtype 1 (P1) - Objecting the problem and its assumptions by criticizing the problem(s) or/ and the others who support it.

Clinical vignette

C: What am I becoming after all? Is this where I'll be getting to? Am I going to stagnate here!?

Protest IM subtype 2 (P2) – Emergence of assertive or empowered positions in order to affirm rights and needs

Clinical vignette

C: I am an adult and I am responsible for my life, and I want to acknowledge these feelings and I'm going to let them out! I want to experience life, I want to grow, and it feels good to be in charge of my own life.

Reconceptualization IM (RC) – implies a kind of meta-reflection level, from where the person not only understands what is different in her/him, but also is able to describe the processes involved in the transformation.

This meta-position enables to access the self in the past (problematic narrative), the emerging self, as well as the description of the processes that allowed the transformation from the past to the present. While reflection IMs are related to novelty in terms of a thinking *episode* or *moment* (related to the past, present or future) that is outside the prescription of the dominant story, reconceptualization IMs are associated with the narration of a meta-reflection *process* involved in change. The perception of some transformation is narrated, making clear (1) the process involved in its emergence and (2) the distinction between that moment and the former condition. These two elements must be distinct, therefore, the element associated to the process of change cannot be exactly the same as the transformation (e.g., "more patient" and I've learned to be more patient). Nevertheless, this contrast between past self and emerging/changing self can appear implicitly [e.g. "I am more mature now (than in the past)"], as long as this is clearly distinct from the transformation process.

Note: In case of doubt between a Reconceptualization IM and a Reflection II IM, we should be more conservative and code Reflection II.

RC can thus be described as a narrative structure with two different components: a Contrasting-Self (CS) and a Self Transformation Process (STP). In narrative terms, CS refers to clients' access of *what* is changing or different in them. CS can express a contrast between a problematic characteristic of the self in the past (e.g. *I was...*) towards a more adaptive emerging present self, according to the client's expectations or wishes (e.g. *I am...*). STP describes an understanding of the process of *how* and/or *why* this shift was possible to achieve. For more examples see table 2.

Clinical vignette

C: You know . . . when I was there at the museum, I was thinking to myself: "you are really a different person... more relax. A year ago you wouldn't even be able to go to the supermarket"! [CS]

T: How do you think you were able to change this?

C: I think the first important step was starting going out and also not expecting that things would be just wonderful and without any difficulties. Now I know how to tolerate my life difficulties without feeling overwhelmed. Life is life, not a paradise, but also not the hell I thought it was. [STP]

Table 2

Reconceptualization components: Contrasting Self and Self-Transformation Process

	Form	Content
Reconceptualization (RC) Meta-cognitive process description. Requires a shift between two self-positions and some access to the process underlying this transformation	Contrasting Self (what changed?) E.g.: - I was... I am - For the first time in years I...	- Effective (or ongoing) resolution of past, unsolved problem(s) - New self-positions: new/emergent self-versions - Re-emergence of neglected or forgotten self-versions - Positions of acceptance or forgiveness (past position is implicit) - Embodied felt shift (" <i>I feel lighter than before</i> ") - Emotional shifts (" <i>C: the sadness has gone away / T: what's-what's there? / C: Forgiveness, like it's okay now</i> ")
	Self-Transformation Process (how/why change occurred?)	- Reframing: new/different understandings of oneself, significant others or the world (not centered on the problematic experience) - Process of linking different concepts, ideas, sensations or feelings that previously were disconnected - Better understanding of previous or new feelings

	E.g.: -I realized... -I feel... + because -I've learned that...	- Awareness about what things were/are been helpful through the psychotherapeutic process - New learnings - "Moral of the story": metaphors about psychotherapeutic gains
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II. CODING SYSTEM

General considerations

2.1. Coders are recommended to read the entire data (e.g., one entire session) to get acquainted with the material. In following readings coders should start coding the material, spending as much time as they think necessary. The initially coded IM could be revised in subsequent readings.

2.2. IMS can be coded whether in past, present and/or future time.

2.3. After an initial analysis of the sessions/interviews, raters must discuss about their comprehension of client's/ interviewee's problems. Thus, IMs are identified based on this consensual definition of the problem(s). Subsequently, each rater identifies, throughout the sessions/interviews, all the problems mentioned by the client/participant. The definition of the problem(s) must be linked with the verbal material, i.e., close to client's/ interviewee's narrative, allowing the identification of the IMs in relation to it. Hence, the IMs are coded with reference to a previous problem. For instance, the act of "*running away from the problem*" can be codified as an action IM if the problem is intimate abuse, even though an equivalent act can be part of the problem if we are talking about an anxiety disorder.

2.4 Proportion (formerly called salience): percentage of time consumed by each IM in the session, related to total amount of time of the session (with transcripts the proportion could be measured by the quantity of text occupied by each IM, in reference to the full text).

2.5 Emergence: indicates if the IM is brought to the conversation by therapist/interviewer or the client/interviewed. Basically, there are three possibilities: (1) the IM is produced by the therapist and accepted by the client; (2) the IM results from a therapist's question which clearly facilitates its emergence (e.g., T: What can you learn from this experience?; C: I learned that...[a specific IM]); (3) The IM is

spontaneously produced by the client, not being triggered by any question made by the therapist. This topic should be coded after the codification of the IMs.

IMs emerge within a sequence that can be interrupted by the therapist. It is coded as the same IM, if within the same theme. Example: multiple actions of personal protection (changing locks, coping documents) are Action IM in cases of partner abuse.

T: You've done well. What about our arrangement about your safety?

C: I've changed the locks, I've the phone numbers of...

T: Emergency institutions

C: Emergency institutions. I have it all. Documents... that doesn't worry me because I've my parents with me now, fortunately.

T: As you can see, you've had the system on your side, what doesn't always happen, but you had. You couldn't even return home today...

C: I know

T: As it happens in most cases. So documents would have been [...] it wasn't important because [...]

C: I have them in the car. In that same day I have done copies at school because... school always has copies of all personal documents

T: Besides changing locks, having your original documents, have you applied any other strategies? Another strategy was not returning home alone...

C: That's right!

T: You've done well.

C: Even because I couldn't do it. I've called a neighbour to ask if she had seen anything and she told me that she hadn't seen anything. [A1]

IMs are defined as the emergence of something that is somehow new, even if the person states this novelty as a personal stable trait.

Example: "I'm not the kind of person that is influenced by fear" – the client has been influenced by fear many times before.

Special considerations for proportion measures

2.6. Beginning of an IM: IMs should be coded from the beginning of the grammatical sentence where the innovation content is appearing explicitly. (e.g. "Yesterday I went to the beach with my boyfriend and, / **for the first time in a long time I didn't feel depressed.** [Reflection IM]" – the slash signals a different thought.)

2.7. When an IM is questioned by the therapist, this question is not included when measuring proportion; however, the therapist interventions are taken into account during the elaboration of an IM.

Example:

T: How did you feel this week?

C: I looked like someone else... everybody noticed that I was happier...

T: And your happiness was reflected in what?

C: Well... in everything... at work, at home...

T: What, in your opinion, helped you feel that way?

C: I think the most important thing was the conversation I had with my husband. [Reflection IM]

2.8. Likewise, when an IM is elaborated by the client, the first utterance of the therapist should be excluded, while the in-between turn-takings are included.

Example:

T: Susan, you look very different! It's shown in your posture... you look much more relaxed.

C: Yeah, absolutely.

T: You're also much more at ease.

C: Yes, I feel that also. [Reflection IM]

2.9. Length/Duration of an IM: If the client, while elaborating an IM, drifts away and changes the theme (e.g. making some commentaries about other things), this part of his speech is not included in the IM.

Example:

C: This week went very well... I went to the gym, also the theatre [A1]... since it has been restored, they have been having different shows every week... I already knew that the director is not the same anymore. He's an old friend of my mother. My mother was born in X [place] and went to Y school, they were colleagues at school... I mean, then they drift away because of some quarrel – you know how that is like... friends are friends, but business apart. Anyway, I had a great time, I could keep my mind away from the usual problems...[R1] [Do not code the underlined part]

Special cases for coding procedures in therapy

2.10. Regarding the empty chair task in psychotherapeutic processes:

- i) IMs are only coded when client is talking in his/her own position, and not in someone else's position (father, mother...);
- ii) IMs are coded when they refer to the critical self and experiential positions.

2.11. Changes in relationships can be coded as R2 or Contrasting-Self (e.g., "now we are getting closer"; "I'm giving more value to friendship", etc.).

2.12. Negative changes are not identified as IMs.

2.13. Validity

- a) Convergent validity (Gonçalves, Ribeiro, Mendes, Matos & Santos, 2011)
 - with the Assimilation of Problematic Experiences (APES)
 - with the Generic Change Indicators
- b) Divergent validity (Gonçalves, et al., 2011)
 - with episodes of alliance rupture

2.14. Reliability

The coding requires a skilled rater, appropriately trained (who is expected to code the entire sample). Besides this, a second independent rater should be also called upon to code at least 30% of the sample, on the basis of which the percentage of agreement and the kappa of Cohen. Throughout this process, the pair of judges will meet regularly to conduct the reliability procedures specified before and to note differences in their perspectives of the problem and in their IMs coding (e.g. every 2 or 3 sessions coded). If these are detected, they are resolved through consensual discussion/coding.

If Cohen's Kappa is lower than 0.75, the sample needs to be reviewed by an external and more experienced auditor. This auditor will look at disagreements that appeared in the material rated by the first pair of judges and review their differences, arriving at a final coding.

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Appendix III: Innovative Moments Coding System (IMCS) Training Guidelines

IMCS Training Guidelines

Step 1

Introduction to the coding system that basically consists on reading the Innovative Moments Coding System (IMCS) Manual and a central paper published on IMCS:

- Gonçalves, M. M., Ribeiro, A., Mendes, I., Matos, M., & Santos, A. (2011). Tracking novelties in psychotherapy process research: The Innovative Moments Coding System. *Psychotherapy Research*, 21, 497-509.

Step 2

Initiating coding through Workbook 1. Please consider that this is an oversimplified version of the IMs coding process which main goal is to allow the trainee to start identifying and distinguishing the different types of IMs. These IMs examples were taken out of the context and your task is only to decide which type of IM is present in a given text excerpt. You should take note of all of your doubts and questions while scoring as to be able to discuss them with your training supervisor later on. When you end up scoring Workbook 1 please notify your training supervisor and send him/her your scorings in order to compute the Cohen's Kappa and guide you throughout the next phase of your training.

Step 3

Introducing D.'s case: Identifying the client's problems list. This is your first approach to D.'s case that will be the main tool for the rest of your training process. At this stage you will have access to the first two sessions of this therapeutic process. The IMs have been coded and are marked and identified throughout the text. Your task is to list the client's problematic issues: What is this client's problem list? This is actually a very important step in the coding process since this defines the ground from which to score an IM. You should also pay attention to the IMs identified in the text as you reflect upon them and take notes of your doubts and questions. When you end up this task

please notify your training supervisor and send him/her D.'s problem list so he/she can compare it with the one develop by the original coders and guide you throughout the next phase of your training.

This is a real case, so please do not copy this material or make it available by any means. The case is changed in order to avoid identification of the client.

Step 4

Identifying types of IMs in D.'s case. You will have access to sessions 3 and 4 from D.'s case. IMs will be identified in bold case and your task is to select the type of IM present in each marked text quotation. Please make sure that your reasoning is guided by the problems list discussed in the previous task. Furthermore, you should pay attention to the beginning and end delimitations of each IM as to facilitate your next training task. When you end up this task please notify your training supervisor and send him/her your coding sheet in order to compute the Cohen's Kappa and guide you throughout the next phase of your training.

Step 5

Identifying IMs in D.'s case: full process. You will have access to sessions 5 and 6 from D.'s case. Your task is to identify the presence of IMs throughout the session transcript, decide its beginning and end delimitations and select the type of IM described in that quotation. This is the most complete (and thus more complex) training stage. After completing the scoring of each session please send your scoring work to your training supervisor so he can compute the Cohen's Kappa, check for your major doubts and discuss them with him/her after you move on to score the next session. Thus, it is extremely important that you take notes of your comments and questions so you can discuss them in each of these intermediate meetings with your training supervisor.