The doctoral thesis addresses the prevalence and common comorbidity between mental disorders. Despite the undeniable efficacy of psychological treatments in alleviating suffering, a significant proportion of individuals fail to benefit from evidence-based approaches; research on treatments for people who need care – or several if ordered – is scarce and current evidence-based treatment approaches often leads to larger and/or be evaluated on different disorders. This raises the question of how to address a heterogeneous psychological suffering.

Acknowledging the multitude of angles and paths available for evaluating and developing psychological treatments, the overarching goal of this dissertation is to explore and evaluate novel treatment approaches in populations with heterogeneous psychological suffering. By bridging the gap between non-pharmacological designs and the emerging wave of telegraphic designs and process-based treatment approaches, this thesis also aims to explore some of the scientific darkness that still exists developing and evaluating psychological treatments in a patient-friendly psychiatric paradigm.
Shifting the lens on heterogenous psychological suffering

This doctoral thesis addresses the pervasive issue of psychological suffering, underscoring the high prevalence of and common comorbidity between mental disorders. Despite the undeniable efficacy of psychological treatments in alleviating suffering, a significant proportion of individuals fail to benefit from evidence-based approaches. Research on treatments for people who meet criteria for several disorders is scarce and current evidence-based treatment approaches still tends to target and or be evaluated on delimited disorders. This raises the question of how to address heterogeneous psychological suffering.

Acknowledging the multitude of angles and paths available for evaluating and developing psychological treatments, the overarching goal of this dissertation is to explore and evaluate novel treatment approaches in populations with heterogeneous psychological suffering. By bridging the gap between nomothetic designs, disorder-based treatments, and the emerging wave of idiographic designs and process-based treatment approaches, this thesis also aims to explore some of the scientific dilemmas that arise from developing and evaluating psychological treatments in a predominantly psychiatric paradigm.
Shifting the lens on heterogenous psychological suffering
Exploring and evaluating novel psychological treatment approaches to comorbid mental disorders

Daniel Wallsten
Shifting the lens on heterogenous psychological suffering - Exploring and evaluating novel psychological treatment approaches to comorbid mental disorders

Daniel Wallsten
Karlstad University


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Table of contents

ACKNOWLEDGEMENTS .................................................................................4
LIST OF ABBREVIATIONS .............................................................................6
ABSTRACT .........................................................................................................8
SAMMANFATTNING .........................................................................................10
PREFACE ..........................................................................................................12
PROLOGUE .........................................................................................................16

  PSYCHOLOGICAL SUFFERING IN THE CONTEXT OF MEDICINE ..................19
  WHAT IS A PSYCHIATRIC DISORDER? ............................................................19
  THE DIAGNOSTIC MANUAL OF MENTAL DISORDERS ................................20
  MEASURING PSYCHIATRIC DISORDERS .......................................................23
  PREVALENCE OF MENTAL DISORDERS .....................................................24
    Comorbid mental disorders ......................................................................25
    Sex and gender perspectives on psychological suffering .........................26
  EVIDENCE-BASED PSYCHOLOGICAL TREATMENTS ................................30
    Treatment of mental disorders in comorbid populations ..........................33
  WHAT DOES “EVIDENCE-BASED” IN THE CONTEXT OF PSYCHOLOGICAL TREATMENTS REALLY MEAN? ......................................................................................38
  RANDOMIZED CONTROLLED TRIALS ..........................................................40
  INFERENCE STATISTICS IN PSYCHOLOGICAL RESEARCH .........................42
    Statistical analysis of mean differences ....................................................42
    Ergodic systems - the relation between the structure of interindividual variation and the structure of intraindividual variation .................................43

PART 2 – A SHIFT IN CLINICAL PSYCHOLOGICAL RESEARCH TOWARDS THE UNIQUE EXPERIENCE, INDIVIDUAL TRAJECTORIES, AND PROCESSES OF CHANGE ........................................................................45
  PSYCHOLOGICAL PROCESSES OF CHANGE ..............................................46
    Behavioral processes .................................................................................49
    Cognitive processes ....................................................................................50
  PROCESS-BASED TREATMENT APPROACHES ............................................51
    Ruminating-Focused Cognitive Behavioral Therapy (RFCBT; Clinical trial II) ........................................................................................................52
    Process-Based Behavior Therapy (PBBT; Clinical trial III) .......................55
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Declaration of Generative AI and AI-assisted technologies in the writing process
During the preparation of this work the author used Chat GPT 3.5 and 4.0 from Open AI for minor language improvements. After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the publication.
List of abbreviations

AARRing  Arbitrary Applicable Relational Responding
AD     Anxiety Disorder
ALIVE  Actively Living as an Individual Vitally Engaged-in-relating in the World-scale
APAa   American Psychiatric Association
APAb   American Psychological Association
APSQ   Anxiety And Preoccupation About Sleep Questionnaire
BBQ    Brunsviken Brief Quality of Life Inventory
CBT    Cognitive Behavioral Therapy
CBT-I   Cognitive Behavioral Therapy for Insomnia disorder
CBT-S   Cognitive Behavioral Therapy for Social anxiety disorder
DSM-5   Diagnostic and Statistical Manual of mental disorders 5th Edition
EMDR   Eye Movement Desensitization and Reprocessing
GAD    Generalized Anxiety Disorder
GAD-7   Generalized Anxiety Disorder 7-item scale
ICD-6   Statistical Classification of Diseases and Related Health Problems 6th Revision
ID     Insomnia Disorder
IPA     Interpretative Phenomenological Analysis
ISI     Insomnia Severity Index
LSAS-SR Liebowitz Social Anxiety Scale - Self-Report
M.I.N.I.  Mini International Neuropsychiatric Interview
MADRS-S Montgomery-Åsberg Depression Rating Scale – Self rated
MDD    Major Depressive Disorder
NAP    Non-overlap of all pairs
NEQ-20  Negative Effects Questionnaire-20
OASIS  Overall Anxiety Severity and Impairment Scale
OCD    Obsessive-Compulsive Disorder
PBBT   Process-Based Behavior Therapy
PCL-5   Posttraumatic Stress Disorder Checklist for DSM-5
PD     Panic Disorder
PDSS   Panic Disorder Severity Scale
PHQ-9  Patient Health Questionnaire 9-item scale
PSWQ   Penn State Worry Questionnaire
PTQ    Perseverative Thinking Questionnaire
<table>
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<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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</thead>
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<tr>
<td>PTSD</td>
<td>Post-Traumatic Stress Disorder</td>
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<tr>
<td>RCT</td>
<td>Randomized Controlled Trial</td>
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<tr>
<td>RFCBT</td>
<td>Rumination Focused Cognitive Behavioral Therapy</td>
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<tr>
<td>RFT</td>
<td>Relational Frame Theory</td>
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<tr>
<td>RNT</td>
<td>Repetitive Negative Thinking</td>
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<tr>
<td>ROE</td>
<td>Relating Orienting and Evoking functions</td>
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<td>S-</td>
<td>(Verbal) stimulus with aversive functions</td>
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<tr>
<td>S+</td>
<td>(Verbal) stimulus with appetitive functions</td>
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<tr>
<td>SAD</td>
<td>Social Anxiety Disorder</td>
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<tr>
<td>SCED</td>
<td>Single Case Experimental Design</td>
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<td>SOL</td>
<td>Sleep Onset Latency</td>
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<td>SPRS</td>
<td>Social Phobia Rating Scale</td>
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<td>WASO</td>
<td>Wake After Sleep Onset</td>
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<tr>
<td>YBOCS</td>
<td>Yale-Brown Obsessive Compulsive Scale</td>
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Abstract

This doctoral thesis addresses heterogeneous psychological suffering within a predominantly psychiatric paradigm, emphasizing the high prevalence of comorbid mental disorders. While much of the published empirical research focuses on trials targeting single disorders, this thesis aims to explore and evaluate novel treatment approaches for populations experiencing diverse psychological suffering. It seeks to bridge the gap between traditional disorder-based treatments and the emerging trend of idiographic designs and processes of change.

The first clinical trial focused on treating co-morbid insomnia and social anxiety disorder using sequential cognitive behavioral therapy protocols (CBT-I and CBT-S). Findings suggest potential efficacy in reducing symptoms of both disorders, with notable improvements in insomnia symptoms. However, treatment effects still varied among participants, making it difficult to draw clear conclusions regarding efficacy.

The second trial investigated group-based Rumination-Focused Cognitive Behavior Therapy (RFCBT) for individuals with depression, anxiety, and insomnia. Results indicate significant improvements in insomnia symptoms post-treatment and at the 2-month follow-up, with potential effectiveness for depression. However, no significant effects were found for anxiety, worry, or rumination.

The third trial explored feasibility and preliminary effects of a process-based psychological treatment informed by Relational Frame Theory for individuals with comorbid mental disorders (Process-Based Behavioral Therapy; PBBT). Interpretative Phenomenological analysis revealed participants' varied experiences, emphasizing challenges in emotional engagement and the therapeutic process. Mixed findings from both the qualitative analyses and the supplementary self-rating scales underscored the complexity of treatment outcomes, highlighting the need of more research on treatment approaches based on Relational Frame Theory.
Overall, the thesis contributes to addressing and understanding the complexities of heterogeneous psychological suffering and clinical research. Further research should continue to explore idiographic designs and process-based treatments while carefully defining and tracking processes of change. This is particularly important for individuals who do not benefit from current evidence-based treatment approaches.
Sammanfattning

Denna doktorsavhandling adresserar heterogent psykologiskt lidande i ett övervägande psykiatriskt paradigm. Den höga förekomsten av komorbida psykiska störningar samtidigt som majoriteten av empirisk forskning fokuserat på enskilda störningar betonas. Avhandlingen syftar till att utforska och utvärdera nya behandlingsmetoder för grupper med heterogent psykologiskt lidande, och därigenom att överbrygga klyftan mellan behandlingar baserade på specifika störningar och den nya vågen av idiografiska metoder och förändringsprocesser.

Den första studien fokuserade på behandling av komorbid insomnia och social ångest med sekventiell kognitiv beteendeterapi (CBT-I och CBT-S). Resultaten antyder en potentiell effekt avseende symptomminskning för båda tillstånden, där förbättringar av insomnia är tydligast. Behandlingseffekterna varierande dock bland deltagarna, vilket gör det svårt att dra tydliga slutsatser avseende effekt.

Den andra studien undersökte rumineringsfokuserad kognitiv beteendeterapi I gruppfORMAT (RFCBT), fokuserad på oro och ruminering för personer med depression, ångest och insomnia. Resultaten indikerar betydande förbättringar av insomnisymptom efter behandlingen samt vid uppföljningen efter 2 månader. Signifikanta effekter på depressiva symptom syntes endast vid 2-månadersuppföljningen. Inga signifikanta effekter hittades för ångest, oro eller ruminering.

Den tredje studien utforskade genomförbarheten och preliminära effekter av en processbaserad behandling baserad på Relational Frame Theory (Process-Based Behavior Therapy; PBBT), för personer med vanliga komorbida tillstånd inom ångest och depression. Resultatet från interpretative Phenomenological Analysis (IPA) vittnar om deltagarnas varierande erfarenheter och understryker utmaningarna med den här typen av behandling. De varierade och mångfacetterade resultatet från den kvalitativa analysen samt den komplementära kvantitativa självskattningsdatan betonar
tillsammans behovet av ytterligare kunskap om behandlingsmetoder baserade på Relational Frame Theory.

Sammanfattningsvis bidrar avhandlingen till förståelse kring hantering av heterogent psykologiskt lidande samt de utmaningar och vägval som följer med klinisk forskning. Vidare forskning bör fortsätta att utforska idiografisk design och processbaserade behandlingar med en noggrann definition av, samt uppföljning av förändringsprocesser, för att förbättra psykologisk hälsa bland de som inte är tillräckligt hjälpta av nuvarande evidensbaserade behandlingar.
Preface

“I don’t like the word materialist because it implies that we know what material is”
- Sir Roger Penrose

Existence may every now and then seem as if someone or something with a wicked sense of humor put it all together for amusement. It is outside of the scope of this thesis to clarify whether a joke is on us or not, but I do not believe that it should be entirely ruled out.

From a reductionist point of view, when reducing everything that can reasonably be reduced, what seems to remain are regularities. Not in an ontological or deterministic sense, but in a local, probabilistic, and relational one. Local because there are no observations that are not local, probabilistic because at a fundamental level, things appear in a probable manner, and relational because all variables get their values relative to another system. Regularities therefore must mean something like associations within and between the distributions of perceived probabilities. However, when the observed probabilities are scaled up to the level of an organism, it seems less probable that random, yet meaningful events would randomly occur (and this is good news for anyone in the business of predicting and influencing behavior). On the other hand, predicting and influencing behavior in verbal organisms has been proven very difficult and it could also be that randomness do find its way through the upscaling just to offer a tipping point and thus some wiggle room for unpredictable actions.

The word *seems* seems particularly important since it implies a position from which things seem. This position seems quite compromised in the sense that nothing really can seem without the seer to whom things seem, the seer’s history, and the relating of arbitrary symbols through which the seer and whatever seems, seems to emerge. It seems useful to talk about language as a tool for collaboration, problem solving or predictions, or a self-defeating deathtrap. Either way, it is hard to argue that arbitrarily related
symbols could encapsulate the same ontological reality from which they supposedly stem. In fact, the concept of ontological reality itself must be questioned on the same premises.

Deeply intertwined with language, a similar argument can be made about perception. It is very difficult to imagine an ontological reality free from perception. If no one is there to measure a falling tree, does it exist? What would our world seem like to a life form that evolved elsewhere? How would you explain vision to someone who has been blind since birth? Sometimes I have come across those who argue that we cannot trust whatever seems to exist outside of our brain because it is a product of that same brain, but who is to say that a brain exists in any other sense than the world outside of it?

Mathematics then? Is that not the language of ontology? To me, mathematics appears more representative or modelling than mere reality. Even if mathematics would be the language in which ontology is written, it does not really reveal anything about the context of code, unless it just unfolded itself out of nothing. So, chasing an ontological reality for reasons other than the amusement of the chase seems awfully like chasing one’s own tail. With that said, I am certainly not claiming that amusement would be a bad reason for doing things, only that ontology does not seem to be a very fruitful concept if one strives to describe it, well, ontologically.

Out of all the peculiar properties that eventually seem to emerge from the fundamental probabilities, consciousness must be among the more peculiar ones. It could of course be more viable to think about it the opposite way, that the fundamental probabilities emerge from consciousness, and/or that consciousness permeates everything. However, that would make the definition of fundamental probabilities less fundamental and the predictability of behavior less predictable. It would also, in principle, allow for the immediate and profound insights in life, universe, and everything as reported by both recreational and professional users of psychedelics (one trip presumably equals 10 000 hours of psychotherapy and it remains unclear whether that is an insult directed at psychedelics or psychotherapy). Unfortunately, this would deprecate academic
efforts of the kind needed to complete a doctoral thesis and the
dedication mustered by life-long Buddhist monks in a way that I am
not entirely comfortable with.

The conscious position of the seer is often granted the power of
agency (sometimes liberally expanded to free will) through the story
of a non-physical yet strangely linked mind or soul. It is seldom
sufficiently explained how something non-physical can affect
something physical or even what it means for something to be non-
physical, except that it poses challenges for assimilation within the
current paradigm in physics. 'Assimilation' might be a strong term, as
it implies an incompatible theory of the non-physical, when, in fact, it
merely marks an absence of the same. We were just always implicitly
thought that a position from which we get to rule over our physical
body exist. The notion of a completely free will seems a bit absurd
since it entails an agency ultimately unaffected by everything which
renders any direction except a choice for the pure sake of choosing
impossible. Actions would therefore appear completely random and
that is hardly a probable nor predictive way of putting it. It could, of
course, be the case that an omnipotent god blessed humans with free
will, situated in a soul with an insufficient amount of moral strength
to resist the flesh, through which an evil daemon throws temptations.
However, this only circle back to the initial notion of a joke and paints
a poor outlook for predictions of human behavior.

Explaining agency through behaviorism reminds me of the snake that
eats its own tail. Coincidently, the tail in this ancient depiction may
also be interpreted as a phallic symbol. I shall leave any further
derivation to the reader. With that said, any adaptive organism must
per definition take history into account and perhaps a kind of
moderating feedback-loopy agency could emerge through the
combining of historical responses that renders an infinite number of
new combinations. Whether the combining of responses is unlikely
enough to count as agency and how that agency should be defined, I
am not sure, but I have a sense that the organism might not reveal the
whole story about the mind.

This thesis explores the understanding and influencing of human
behavior, within specific clinical contexts. It is not a thesis focused on philosophy, fundamental physics, theology, or mathematics. However, I hope that this preface has offered some insight into my perspectives on reductionism, ontology, and agency, and that you will find some value in this throughout the rest of the thesis. While some may argue for a “shut up and calculate” approach, my experiences over these years have convinced me that utility and complexity are not necessarily opposing forces, especially when coherence is considered. Additionally, I also hope that the following work ultimately will contribute to the specks of the linguistic fireworks that temporarily may or may not hold some borders against the inevitable disorder.

Daniel Wallsten, Borlänge 2024-02-18
Prologue

“It is no measure of health to be well adjusted to a profoundly sick society.”

-Jiddu Krishnamurti

The prevalence of suffering defined as mental illness is high (World Health Organization, 2022), and comorbidity between mental disorders is very common (Kessler, Chiu, et al., 2005). The research on the association between treatment outcome and comorbid mental disorders is scarce and inconsistent, but some studies have proposed that comorbid mental disorders predict poorer treatment outcomes and are associated with problems of delivery and compliance (Cuijpers et al., 2023; Newman et al., 1998). According to Newman et al. (1998), comorbid mental disorders are also associated with physical, educational, and economic problems. Even though currently available psychological treatments have unquestionably decreased suffering, saved many lives, and enhanced quality of life for numerous people, there are still too many who do not benefit from them, regardless of comorbidity (Hofmann et al., 2012; Springer et al., 2018).

Psychological treatments belong to different branches of disparate schools of thought with different philosophical underpinnings, scientific traditions, and basic theories. The causes of psychological suffering are described at different levels of analysis based on different theories within biological, psychological, and social frameworks. To what extent the philosophical underpinnings, basic theories, and applications are explicit and coherent also differs. This might reflect the state of a relatively young and healthy science, or a fragmented science that does not know what leg to stand on, grasping for efficient processes of change. The currently most widespread (and implemented) story of psychological suffering is that of mental disorders which is based on clusters of signs and symptoms and defined through atheoretical classification systems like the Diagnostic and Statistical Manual of mental disorders (DSM-5; American Psychiatric Association, 2013), thus seen through a psychiatric or medical lens. Therefore, to transcend the scope of psychiatry, this
thesis predominantly employs the term heterogeneous psychological suffering when comorbid disorders are not explicitly addressed.

Naturally within psychiatry, the causes of psychological suffering have mainly (but not only) been sought in the brain. While the meticulous work on for example the connection between serotonin and depression undertaken since the 1960’s has resulted in increased complexity, it also appears to be close to a conceptual impasse (Albert et al., 2012; Moncrieff et al., 2023). Despite this, 13 percent of American adults in a study conducted between 2015 and 2018 had used antidepressants during the last month (Brody & Gu, 2020), and in Europe, the use has more than doubled during the last 20 years (OECD, 2023). There have been numerous attempts to find biomedical causes for depression, but up until now these attempts have not been particularly fruitful, at least not regarding implications considering the large proportion of non-responders when controlling for placebo (Kirsch, 2015). The situation is similar concerning clinical applications derived from psychological theories on depression (Cuijpers et al., 2014; Cuijpers, van Straten, Andersson, & van Oppen, 2008). Despite variations in outcomes across treatments and other common disorders within anxiety and sleep, a considerable number of individuals who have access to evidence-based psychological treatments still do not experience substantial improvement (Hofmann et al., 2012; Springer et al., 2018).

Interventions are examined with different research designs that entail their own dilemmas and assumptions that can prove difficult to meet in practice. At the one end are results with utilities for one person (unknown or vague processes and idiographic designs) while the other side resembles product testing for an average person that does not exist (unknown or vague processes and nomothetic designs). Thus, the crucial question why a specific intervention is not working for an individual has generally remained poorly understood.

During the last decades, the cyclical motions of explanations for psychological suffering show clear signs of shifting. An increased interest in treatments that address underlying processes of change
rather than delimited disorders and a shift from a nomothetic to idiographic perspectives can be noted.

The overall aim of this dissertation is to enhance our understanding of the effectiveness of psychological treatments in populations with heterogenous psychological suffering while navigating the landscape between nomothetic designs, disorder-based treatments, and the new wave of idiographic designs and processes of change.
Part 1 – An introduction and critical review of the psychiatric paradigm: diagnoses, research, and the evidence regarding the effects of psychological treatments

“As in so many heated and controversial academic disputes, both sides were wrong”.
- unknown science reporter

Psychological suffering in the context of medicine
The known history of mental or psychological suffering and dysfunction dates far back. What traits or patterns of behavior that have been considered normal has depended on the cultural context, with a cyclical rather than linear emphasis on different explanations for psychological suffering. Throughout history, three primary branches of explanations have been identified: psychological, somatogenic, and supernatural (Farreras, 2019; Foerschner, 2010). The prevailing perspective on psychological suffering, particularly within healthcare practices, often revolves around psychiatric disorders, straddling the line between somatogenic and psychological explanations.

What is a psychiatric disorder?
A disorder means a series of co-occurring signs and symptoms without known etiology. This is similar to the definition of disease, although a disease has known etiology, and to syndrome, but with the addition that disorders also entail information on related factors such as biology, family history, and treatment response (Peterson & Keeley, 2014). Mental or psychiatric disorders are currently defined by the criteria listed in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013). While both the history and critique of the DSM have been comprehensively articulated during several decades (see for example Andersson & Ghaderi, 2006; Pickersgill, 2014; Wakefield,
1992), it remains pivotal to the prevailing paradigm and therefore warrants further discussion.

The diagnostic Manual of mental Disorders

In 1917, the American Medico–Psychological Association which would later become American Psychiatric Association (APA\(^1\)) and the National Commission on Mental Hygiene developed a strategy for collecting statistics on health from mental hospitals. Although there were some clinical utilities, it was mainly an administrative system for classification, designed for severely disordered mental health patients. APA\(^a\) developed their own version of the International Statistical Classification of Diseases and Related Health Problems, 6\(^{th}\) Revision (ICD-6) that was released in 1952. This was the first version of DSM and also the first system of classifications intended for clinical use, influenced by the strong Freudian tradition at the time (American Psychiatric American Psychiatric Association; Kawa & Giordano, 2012). The term reaction as in “reactions of the personality to psychological, social, and biological factors” was also introduced.

DSM-III included several updates such as explicit criteria and the different axes and psychiatric interviews were also co-developed. The revisions that were made for DSM-IV and DSM-5 were mainly about increasing internal and external consistency (American Psychiatric American Psychiatric Association, 2023, September 28; "DSM History"). Some dimensional solutions regarding a mixed version of depression and anxiety as well as a subdivision of personality disorders into functioning and pathological personality have been considered by APA\(^a\) but resides in the back of DSM-IV-TR and DSM-5 under “further study” and “alternative model” respectively (American Psychiatric Association, 2013).

The DSM has been developed to be shared among clinicians and researchers from disparate traditions such as medicine, psychoanalysis, and behaviorism, and does not provide any theories

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\(^1\) APA may refer to both the American Psychiatric Association\(^a\) and the American Psychological Association\(^b\).
of etiology (at least not since DSM-III), thus it is considered atheoretical. However, some theoretical or at least philosophical assumptions can be inferred from the medical framework where psychological suffering is seen as disorders. The disorders are based on a (relative) consensus of how symptoms cluster rather than on causes and laboratory measures (Wakefield, 1992). The core definition of a mental disorder according to DSM is twofold. The first part states that the disorder should cause negative consequences for the person, and the second part that the mental disorder should be caused by a harmful dysfunction in the sense that some internal mechanism is not working as it was “naturally meant” to. This is important because the harmful dysfunction argument can in theory distinguish mental disorders from normal aversive reactions such as grief at a loss or work-related stress in a demanding environment. Dysfunction is understood through statistically unexpected reactions, which poses several questions regarding what internal mechanism that is or is not functioning normally, what baseline the deviant reaction is measured against, and how the environmental factors could be equally assessed to judge whether a reaction is normal or not. In other words, how can it be distinguished what reactions in what settings are deviant enough to be considered disorders? Wakefield (1992) criticizes this definition for being both too broad and too narrow since it disregards several constructs that could meet the same definition but are not considered disorders, such as greed or illiteracy. At the same time, other constructs such as PTSD or Oppositional Defiant Disorder are regarded as disorders even though the reaction might be considered normal when taking the environment into full account. The so-called V-codes were introduced to address constructs that may deserve clinical attention or affect the diagnoses, course, prognosis, or treatment of a patient’s mental disorder. The V-codes concern relational, educational, occupational, housing, and economic problems, the social environment, crime and the legal system, other health service encounters, other psychosocial, personal, and environmental circumstances, and circumstances of personal history, abuse, and neglect. The V-codes are not considered disorders which ironically adds to the inconsistency of the classification system since they could fit the initial definition (i.e., specifying that something is not a disorder does not make DSM a
more consistent system). Also, with increased understanding of for example risk factors, reactions that were previously statistically unexpected could now be expected which renders further inconsistencies. Another closely related area of criticism proposed by Wakefield concerns what it means to label a person as disordered without any clear understanding of or statement about the process or mechanism instead of focusing closer on the interaction between the person and the environment. The label may stick for a very long time and affect both the person labelled and their environment in delimiting ways, both directly (e.g., because I/they have this disorder, I/they am/is/are/will/must etc.), and indirectly (for instance through stigma, see Ben-Zeev et al., 2010).

The DSM has also been more broadly criticized for playing an important part in the medicalization of mental health, and the development of the DSM has been subject to criticism for happening too much behind closed doors (Pickersgill, 2014). DSM-5 has received a great deal of criticism for approaching the normal to the extent that epidemics of false positives should be expected. Pickersgill also highlights the risk of focusing too much on the issues around validity, so that attention is directed from how diagnoses are being used to enable or constrain those who are diagnosed.

Concerning the validity of the diagnostic constructs, the best model from a factor analysis on DSM-III-R data from a US national survey sample revealed two distinct factors; internalizing problems (major depressive episode, dysthymia, generalized anxiety disorder, social phobia, simple phobia, agoraphobia, panic disorder) and externalizing problems (alcohol dependence, drug dependence, and antisocial personality disorder), where the first factor could be further divided into two groups: anxious-misery (major depressive episode, dysthymia, generalized anxiety disorder) and fear (social phobia, simple phobia, agoraphobia, panic disorder; Krueger, 1999). Another related problem with validity is illustrated by the human genome project that was unable to identify any specific genes or consistent patterns of genes that could validate any psychopathologies (Hayes et al., 2019). Chmielewski et al. (2015) found “poor” to “fair” test-retest
reliability when two researchers interviewed patients independently with SCID-I/P. However, self-reported symptoms were highly stable.

Changes in criteria between revisions of DSM make data incompatible between editions (Watson, 2009). For example, when DSM-IV was released, the motor tension, vigilance/scanning, and autonomic hyperactivity criteria threshold was decreased from six to three, to better distinguish Generalized Anxiety Disorder (GAD) from Panic Disorder (PD), with the unintended consequence that comorbidity between GAD and Major Depressive Disorder (MDD) increased (Brown, Di Nardo, et al., 2001; Mineka et al., 1998).

Despite these criticized aspects of DSM, the apparent communicative advantages between researchers, practitioners, and patients, as well as the logistical/integrational advantages at societal level should not be ignored.

Summary of dilemmas and limitations: Psychological suffering seen through a psychiatric lens as disorders still suffers from questionable validity (i.e., unknown etiology, overlapping constructs, unclear and inconsistent definitions incorporating normal functioning, the absence of biological markers, genetic base or satisfying factor solutions), and has been accused of contributing to medicalization and stigma.

Measuring psychiatric disorders.
The previous section outlined limitations and dilemmas surrounding psychiatric diagnoses. An important and closely related topic concerns how psychiatric constructs are measured. Although measurements play an integral part of the validity of the construct, in principle, even with a thoroughly valid construct, a malfunctioning or badly executed interview or instrument will still be misleading. Self-rating scales and clinical interviews measuring symptoms of psychiatric disorders are evaluated based on their psychometric properties. It is outside of the scope of this thesis to encapsulate the field of psychometrics, but these properties can broadly be divided between validity, reliability, sensitivity, and specificity. Validity
roughly means to what extent the scale or instrument captures the construct of interest. Reliability refers to the extent to which measures are consistent between items and measurements (Kazdin, 2017, p. 251). Sensitivity refers to the ability of a test to accurately identify positive cases, while specificity pertains to its ability to accurately identify negative cases. In other words, sensitivity and specificity refer to the capacity of the instruments to discriminate between different levels or amounts of the phenomena as well as handle very high and low ratings without ceiling or floor effects (Kazdin, 2017, p. 253).

Even when instruments with sufficient psychometric properties are employed, psychometric properties are derived from group data, and so are the constructs that are measured. Although this is hardly news, both clinical interviews and self-rating scales rooted in averages and variability are, despite decades of warnings, still widely utilized, and symptom reduction is still by far the most common outcome in clinical research (Cuijpers, 2019; Molenaar & Campbell, 2009).

Summary of dilemmas and limitations: Nomothetic self-rating scales and disorder-based interviews encounter inherent issues, notably in their reliance on group-level psychometric properties rather than individual characteristics. Furthermore, variations in psychometric properties may exist even when relevant metrics are accessible for the target population.

**Prevalence of mental disorders.**

It should first be noted that it is difficult to obtain reliable global up-to-date data on the current prevalence of mental health problems as classified by the DSM (American Psychiatric Association, 2013). Common mental health problems such as disorders within depression and anxiety increased 25% between 2000 and 2019 according to the World Health Organization (2022). However, the point prevalence for any disorder remained at about 13% which is explained by population growth. In a study with interview data from adults in six European countries, Alonso et al. (2004) found a lifetime prevalence at 14% for mood disorders and at 13.6% for any anxiety disorders. The corresponding prevalence during the last year was 6% and 4.2%
respectively. Women were twice as likely as men to suffer from mood and anxiety disorders. In a more recent study on older men and women (65–84 years) in different European countries, Andreas et al. (2017) found a lifetime prevalence of about 50% whereas about 30% had suffered from mental health problems during the last year and about 25% currently suffered from mental health problems. The most common problems were anxiety disorders and mood disorders. In another US national face-to-face survey with adults, Kessler, Berglund, et al. (2005) found that the lifetime prevalence for anxiety disorders was 28.8% and 20.8% for mood disorders. Besides mood and anxiety disorders, sleep problems such as Insomnia Disorder are among the more common. About 25–30% of the general population report at least one criterion for Insomnia Disorder, while 6–10.5% meet the diagnostic criteria (American Psychiatric Association, 2013; Mallon et al., 2014; Ohayon, 2002).

Comorbid mental disorders

Comorbidity between mental disorders is very common. In a large-scale household survey in the US, 55% met criteria for a single disorder according to DSM-IV, whereas 22% met criteria for two diagnoses, and 23% for three or more diagnoses (Kessler, Chiu, et al., 2005). In addition, 72.1% of those who had suffered from MDD during their lifetime also met criteria for another psychiatric disorder, of which the majority where anxiety disorders. Social Anxiety Disorder (SAD), in turn, correlated with agoraphobia ($r = .68$), as did PD and agoraphobia ($r = .64$), specific phobia and agoraphobia ($r = .57$), GAD and MDD ($r = .62$). Both GAD and SAD correlated with dysthymia ($r = 0.55$). Out of those who suffered from MDD during the last 12 months, 64% met criteria for other comorbid disorders during the same time, and 78.5% during their lifetime (Kessler et al., 2003). Similarly, Brown, Campbell, et al. (2001) found that the current prevalence of an additional disorder within mood and anxiety disorders among 1127 outpatients was 57% whereas the life time prevalence where 81%, In another study on a French cohort, 90.9% of those with primary insomnia also had depressive and/or anxiety symptoms whereas 37.2% reached criteria for a second diagnosis. Significantly more women than men were found in the insomnia and
depression category (Ohayon et al., 1998). A more recent analysis with data from 27 countries yields similar results concerning the prevalence of comorbid mental disorders. They also conclude that the risk of developing a second disorder is greater if the onset of the first disorder happens before the age of 20 and that the risk of comorbidity is greater for closely related disorders such as GAD, PTSD, and MDD (McGrath et al., 2020). Similarly, Forman–Hoffman et al. (2018) found that about one in three adults that suffered from one disorder within the last year also met criteria for another mental disorder.

Summary of dilemmas and limitations: The prevalence of psychiatric diagnoses is high and comorbidity between mental disorders is very common.

*Sex and gender perspectives on psychological suffering*

In the literature, concepts related to sex (biological category) and gender (social/cultural category) are not always used consistently (Afifi, 2007). Also, sex and gender expressions does not always fit with categorical or dichotomous definitions and concepts. Afifi (2007) defines a gender approach to health as distinguishing between biological and social factors as well as exploring interactions between them and being sensitive to how gender inequality affects health. With that caveat, people categorized as women in the USA have been found to be about twice as likely to meet the criteria of the more common psychiatric disorders such as major depressive disorder, panic disorder, and social anxiety disorder. Men, on the other hand, were about five times more likely than women to meet criteria for antisocial personality disorder and twice as likely to suffer from alcohol dependence (Eaton et al., 2012; Kessler et al., 1993; Kessler et al., 1994). Alcohol dependence (and abuse) was also among the most common disorders among men with a combined lifetime prevalence at about 30%.

People categorized as LGBT+ were about twice as likely as heterosexuals to meet criteria for a psychiatric disorder sometime during their lifetime, and people within the LGBT+ transgender
subdomain consider suicide about 14 times more often than people identified as heterosexuals (American Psychiatric Association, 2017).

Numerous explanations for these patterns have been investigated, but the differences remain poorly understood (Eaton et al., 2012; Klose & Jacobi, 2004; Piccinelli & Wilkinson, 2000). Before concluding that sex or gender differences in reported prevalence of classified psychiatric disorders reflect actual prevalence, response bias must be accounted for. Some studies have investigated differences between men and women in response bias on depressive symptoms (Sigmon et al., 2005; Steer et al., 1989; Stommel et al., 1993). Although it has been proposed that men generally underreport depressive symptoms, the observed differences did not seem to account for all differences in prevalence (Piccinelli & Wilkinson, 2000). In another study, Sigmon et al. (2005) found that male college students reported similar levels of depression as female students unless they believed that the research group were going to follow up on their answers. The more intrusive the announced follow-up was, the less depressive symptoms were reported by male participants. The sample was perhaps not generalizable to people in general, nor to LGBT+ populations, and it is hardly an explanation, but the study still offers some contextual nuance to gender differences in the reporting of depressive symptoms. In another study, women reported more depressive symptoms, but when clinicians rather than patients rated symptom severity, no significant differences were found (Seeman, 1997).

In a study on vulnerability to affective disorders among Jews in Los Angeles and New Haven, the researchers found that differences between men and women concerning prevalence of depressive symptoms were absent. The authors suggested that the equal rates of depression in that population could be explained with the lower rates of alcohol dependence among Jewish men (Levav et al., 1997). However, in Egypt, the ratio between girls and boys concerning depressive symptoms were about 2:1, whereas in Oman, no significant difference between males and females was found (Afifi, 2007). At the same time, the lifetime prevalence of dependence of any substance in the general population in Egypt over the age of 15 was 1.6% whereas in Oman, the 12-month prevalence of alcohol use disorders in girls
and boys over the age of 15 was estimated to 0.0% in male, and 0.37% in females (Hamdi et al., 2013; World Health Organization, 2010). This suggests more complex pathways than gender-alcohol-depressive symptoms.

Genetic factors undoubtably play an important role for the development of psychiatric symptoms (Bailey, 2019), but no genetic factors have been linked to the difference concerning prevalence of depressive symptoms between men and women (Piccinelli & Wilkinson, 2000). However, the interplay between different genes, other biological factors, and social, cultural, and psychological factors is far from fully understood. In a twin study, Silberg et al. (1999) for example demonstrated how genetic risk factors for depression and life events may interact during adolescence in girls.

In terms of hormonal influence on psychiatric symptoms, gonadal hormones have been directly associated with depressive symptoms in adolescent girls overall, as well as specifically within a subgroup of women with a history of postpartum depression (Bloch et al., 2000). Differences in men and women concerning prevalence of mood disorders are clearly linked to adolescence, and so are variations in hormonal activity related to estrogen, progesterone, and gonadal hormones, but adolescence entails numerous physiological, cultural, and social phenomena that may play more important roles (Piccinelli & Wilkinson, 2000). However, according to the authors, personality, and response style to stress (on average women internalize and ruminate whereas men externalize and are more prone to distractions) seem to be at least partly influenced by hormonal fluctuations within the menstruation cycle. Women may also experience more anxiety when levels of circulating estrogen and progesterone are relatively low. The same mechanism has been suggested to potentially account for the greater sensitivity to non-specific stress in women (Seeman, 1997).

Concerning social/environmental risk factors and gender differences, Piccinelli and Wilkinson (2000) concluded that females are more sensitive than males to effects of adverse experiences and at greater risk of sexual abuse in their childhood family environments. The
authors also concluded that role limitation and competing social roles increased the risk of depressive illness in females. On the other hand, females did not seem to experience more adverse life events even though the quality of the experience may differ. Similarly, no differences in social support could be linked to an increased risk of depressive symptoms in females. Concerning psychological factors, Piccinelli and Wilkinson (2000) found no consistent differences in personality attributes or coping styles associated with depressive symptoms.

The predominant framework for understanding why sexual minorities are disproportionally affected by mental health problems is minority stress theory (Alonso et al., 2004). The proposed theory implies causality between environmental circumstances, internalized stigma, and mental health problems. Later, extensions concerning for example rejection sensitivity and adjustments to transgender and gender non-conforming populations have been proposed (Feinstein, 2020; Hendricks & Testa, 2012). However, minority stress theory has also been criticized for merely accounting for associations between phenomena (Bailey, 2019). Baily argues that there is no evidence to support the implied direction of causality between stigma and mental health problems. As an example, Baily highlights that a similar rate of affective disorders between sexual minorities in the highly tolerant Netherlands and the less-tolerant USA speaks for the opposite, that mental health problems may cause stigma rather than the opposite. But then, is it the yeast, the flour, the water, the temperature, or the gentle hands of the baker that cause a dough to rise?

Although two out of the three clinical trials within this thesis were small scale, it should be emphasized that 63 out of 86 participants in total were categorized as female (7 vs. 3, 54 vs. 19, and 2 vs. 1). Not much can be derived with certainty about the causes behind these skewed samples, but Liddon et al. (2018) have identified a tendency for women to rely on self-awareness of their mental health needs. Men were more likely to identify male traits as barriers to help-seeking. Similarly, Wendt and Shafer (2016) found that men were also less likely than women to ask for help with depression. In other words, this distribution is potentially problematic for two different
reasons; men do not seek help when they need it, and women are more likely to face stressors associated with psychological suffering.

Evidence-based psychological treatments

Evidence-based psychological treatments are available for a significant number of mental disorders (Hofmann et al., 2012). Different forms of CBT are often considered the first choice with respect to evidence among psychological treatments (Kendrick & Pilling, 2012) which include principles and techniques from different traditions such as psychoeducation, skills training, problem solving, behavioral activation, cognitive restructuring, emotion regulation, interoceptive and in vivo exposure, response prevention, relaxation, normalization, and validation. Sessions are typically structured with an opening agenda and home assignments (Barlow, 2014; O'Donohue et al., 2004). It is important to note that recommendations based on the grading of evidence align with the fact that the most readily available data on treatment efficacy originate from clinical trials focusing on Cognitive Behavioral Therapy (CBT) in populations with a single mental disorder. (DeRubeis & Crits-Christoph, 1998; Moriana et al., 2017)

Evidence-based CBT manuals exist for a number of specific DSM-classified disorders such as Insomnia Disorder (Edinger & Carney, 2008), Obsessive-Compulsive Disorder (OCD; Foa et al., 2012), Panic Disorder (ID; Craske & Barlow, 2007), Social Anxiety Disorder (SAD; Hope et al., 2010), Post-Traumatic Stress Disorder (PTSD; Foa et al., 2007), and Major Depressive Disorder (MDD; Martell et al., 2001).

Concerning insomnia, Hofmann et al. (2012) show that CBT is more efficacious than other treatments, with minimal to large effect sizes depending on what aspect that was measured (total sleep time = minimal, and early morning awakenings = large). Another meta-analysis found that effects decline some, but that they are still clinically significant one year after therapy (van der Zweerde et al., 2019).
Concerning anxiety disorders, Hofmann et al. (2012) demonstrate that CBT produces medium to large effects for SAD as compared to control conditions. The effects are maintained or improved at follow-up. Interoceptive exposure for panic disorder shows moderate effects but is more effective than other psychological and pharmaceutical interventions. However, for panic disorder without agoraphobia, applied relaxation seems to be equally efficacious with large effect sizes. The reported response rate was 77%. For GAD, CBT was more efficacious than waitlist and pharmaceutical placebo conditions but equally effective to a few other forms of therapy and pharmaceutical interventions. For patients with severe GAD, CBT was less efficacious than attention placebo. Öst et al. (2023) found comparable effect sizes and remission rates of CBT for anxiety disorders in effectiveness studies. Concerning PTSD, CBT is more efficacious than treatment-as-usual, waitlist and other treatments, but equally efficacious as Eye Movement Desensitization and Reprocessing (EMDR; Hofmann et al., 2012). Similarly, Cusack et al. (2016) found large effect sizes and number needed to treat <4 for CBT, exposure therapy and EMDR and a few other approaches. The reported response rate for CBT was 46 %. (Cusack et al., 2016) According to Ost et al. (2023b), data on effectiveness are comparable to the efficacy data. CBT for Obsessive-Compulsive Disorder (OCD) produces large effect-sizes but is equally efficacious as the recommended pharmaceutical interventions. A recent meta-analysis found that, although there was no universal definition of remission, the overall remission rates for anxiety disorders were 51% with higher rates for PTSD and lower for OCD and SAD (Springer et al., 2018). Concerning effectiveness of CBT, Ost et al. (2022) found similar effect sizes and higher remission rates post intervention and at follow-up, although with a significant risk of bias.

In a comprehensive and relatively contemporary systematic review of meta-analyses of the efficacy of cognitive and behavioral therapy (CBT), Hofmann et al. (2012) demonstrates that CBT was efficacious for MDD as compared to control conditions with a medium effect size but that results were mixed when CBT was compared to other psychological treatments such as psychodynamic therapy and relaxation techniques. CBT and medication were about equally efficacious on chronic symptoms with medium to large effect sizes.
Some studies also indicated that pharmacotherapy in combination with CBT could be more beneficial than each intervention separately. The response rates ranged between 51-87%. Ost et al. (2023a) found comparable effect sizes and response rates in effectiveness trials. A meta-analysis on the effects of CBT for unipolar depression over time found a negative trend between 1977 and 2014 (Johnsen & Friborg, 2015). The authors speculate that as CBT has become widespread and not provided by the founders of each protocol, adherence may be lower. They also point out that placebo may be greater for new treatments. A later study, however, refuted these findings and attributed them to a temporary decline pre 1995 (Ljotsson et al., 2017). In a meta-regression analysis, Cuijpers, Van Straten, Warmerdam and Smits (2008) show that effect sizes of behavioral activation for depression generally are smaller when participants are recruited through systematic screening, from clinical populations, and when treatment-as-usual or placebo are used as control conditions. Similarly, in an umbrella and meta-analytic review, Leichsenring et al. (2022) demonstrated that effect sizes generally decrease when publication bias and weak comparators such as waiting lists are considered. In areas where extensive data were available, when trials with weak comparators and high risk of publication bias were controlled for (such as concerning treatment for depression), the effect sizes were almost always modest.

Even in well controlled studies that are implemented under ideal circumstances with well-defined groups, depending on disorder, significant proportions of the participants are not benefitting enough from their treatment (Hofmann et al., 2012; Leichsenring et al., 2022). Also, exclusion rates in clinical studies were typically high, which makes translations to health care settings difficult. A meta-analysis of manualized psychological treatments for depression, panic disorder, and GAD showed that 32% on average were included in trials on depression, 36% in trials of panic disorder, and 35% in trials of GAD (Westen & Morrison, 2001). However, Stirman et al. (2003) who found that applicants for clinical trials were excluded more often because they did not meet criteria for the diagnoses that were studied, than because they met criteria for diagnoses that was believed to complicate the treatment.
CBT has been criticized in line with the nomothetic disease-protocol-based model, for using interventions or techniques that fail to demonstrate an added value, for failure to adapt to the individual, for lack of research support for the intended processes of change (Beidel & Turner, 1986; Gaudiano, 2008; Jiménez, 2012), and for overlooking the therapeutic relationship (Leahy, 2008; Wright & Davis, 1994). It is important to emphasize that the primary goal of this overview is to identify dilemmas and potential limitations within a paradigm, rather than aiming to balance strengths and weaknesses of specific treatment approaches.

**Treatment of mental disorders in comorbid populations**

Treatment-efficacy data including comorbid mental disorders are scarce, and the results are scattered. In a systematic review and meta-analysis, Ye et al. (2015) concluded that internet administered CBT for insomnia (ICBT-i) is effective on both mild insomnia for anxiety (Cohen’s $d = -0.35 [-0.46, -0.25]$) and depression ($d = -0.36 [-0.47, -0.26]$). Analyses on publication bias yielded no bias. A more recent systematic review investigated the effects of CBT-I on insomnia in comorbid samples and found stable medium to large effects (Hertenstein et al., 2022). In another meta-analysis, the authors investigated the influence of comorbidity on CBT for anxiety. Comorbidity was unrelated to the effect size at post-treatment and follow-up for the whole sample. Diagnostic sample by sample analyses revealed no relationship between comorbidity and outcome for specific phobia, SAD, and GAD. Positive correlations between comorbidity and outcome were found concerning panic disorder, obsessional-compulsive disorder, and PTSD. Negative correlations between comorbidity and outcome were found concerning neurotic anxiety. No risk of bias was assessed and only one database was used. In a series of recent meta-analyses on the effectiveness of CBT, Öst et al. demonstrated that CBT for OCD also produced a moderate effect size for depression, although the risk of bias was considerable. Comorbidity was (often unsystematically) reported in 63 % of the included conditions (Ost et al., 2022). CBT for anxiety disorders also produced moderate (SAD) to large (GAD and PD) effect sizes on
depression. Comorbidity was reported in 66% of the included conditions. Concerning CBT for PTSD, large effect sizes were found for depression post intervention and at follow-up. 82% of the included trials reported data on depression.

Weitz et al. (2018) concluded that, after adjusting for publication bias, psychological treatment for depression may also yield moderate effects on symptoms of anxiety ($g = 0.52; [0.44–0.60]$) with a small lasting effect observed at long-term follow-up ($g = 0.27$). In an up-to-date comprehensive systematic review and meta-analysis, Cuijpers et al. (2023) investigated the effects of psychotherapies on depression across the three major comorbid disorders, insomnia, anxiety, and substance use. The authors concluded, when controlling for publication bias and excluding high risk studies, that no effect was significant except for the combination of depression and substance use in both directions, with small effect sizes. The authors also point out that only 35 out of 400 identified randomized trials including depression involved comorbidity. In combination with the epidemiological studies on mental disorders, this finding highlights the deviation between the prevalence and the randomized clinical trials being conducted. It should also be noted that although analyses of sub-groups distinguish between a focus on depression, on both depression and comorbid disorders, and on comorbid disorders alone (with no significant differences), they do not distinguish between different treatment approaches (neither did Weitz et al.). Newman et al. (1998) also found that comorbid mental disorders predict complications that challenge treatment planning, compliance, and coordination. They also found that comorbidity predicts physical, educational, and financial problems.

Summary of dilemmas and limitations: Although evidence-based psychological treatment protocols exist for most common disorders, and symptoms of comorbid mental disorders typically are affected by these treatments, it is inherent to disorder-based treatment protocols that they do not fully address the heterogeneity of problems encapsulated by comorbid mental disorders. Treatment outcome data with clear implications for people that meet criteria for several disorders are scattered. Depending on the disorder(s) and complexity,
the efficacy of evidence-based CBT protocols differs and leaves room for improvement, not least for people that meet criteria for comorbid mental disorders.

In the following section, CBT for Insomnia disorder (CBT-I) and CBT for SAD (CBT-S), as they were offered sequentially during the first clinical trial within this doctoral thesis, are presented.

_Treating comorbid social anxiety disorder and insomnia disorder with sequential evidence-based CBT protocol: CBT-S and CBT-I (Clinical trial I)._ 

Even though it may seem as the first logical step to investigate the outcome of multiple evidence-based treatment protocols stacked onto each other in the presence of comorbid disorders, no previous trial that investigated this approach for SAD and Insomnia disorder was identified. The first clinical trial within this doctoral thesis evaluated this approach. The protocol for SAD was a modified version of a cognitive-behavioral treatment that was originally administered online (Furmark et al., 1999; Tillfors et al., 2008). To make the treatment feasible within the time frame of the project, a selection based on the efficacy demonstrated in previous research (Heimberg et al., 1998) was made from the nine original modules, and a treatment of six sessions was composed. The six sessions included psychoeducation, cognitive restructuring, and the tracking and self-registration of negative automatic thoughts during sessions 1-3. Session 3 involved behavioral experiments of exposure, some of which were conducted with safety behaviors and others without. Sessions 4-6 involved exposure therapy, and session 6 focused on relapse prevention. Participants were assigned related tasks to be completed at home between sessions for both treatment groups. Between each session, participants were able to read through parts of the internet-based treatment modules themselves, thus having the opportunity to review the content of the session at their own pace. An overview of the content of CBT-S is presented in **Table 1**.
Table 1
Content of CBT-S.

<table>
<thead>
<tr>
<th>Session</th>
<th>Theme</th>
<th>Psychoeducation</th>
<th>Exercises</th>
<th>Homework</th>
</tr>
</thead>
</table>
| 1       | Cognitive components | 1 - CBT  
- Social anxiety  
- Negative automatic thoughts | - Registration of negative automatic thoughts  
- Anxiety hierarchy | - Corresponding reading material  
- Complete anxiety hierarchy  
- Register negative automatic thoughts |
| 2       | Cognitive components | 2 - Clark & Wells cognitive model  
- Maintenance: anticipatory anxiety, post-mortem, avoidance behaviors  
- Thoughts status  
- Cognitive distortions | - Registration of negative automatic thoughts, estimation of their credibility and of the strength of the corresponding feeling | - Corresponding reading material  
- Register negative automatic thoughts, estimate their credibility and the strength of the corresponding feeling |
| 3       | Cognitive components | 3 - Safety behaviors  
Exposure with and without safety behaviors | - Cognitive strategies, e.g., evidence and counter evidence  
- Behavioral experiment: Exposure with and without safety behaviors | - Corresponding reading material  
- Work with cognitive strategies  
- Exposure with and without safety behaviors |
| 4       | Exposure | - Rationale for exposure | - Exposure based on the anxiety hierarchy | - Corresponding reading material  
- Exposure |
| 5       | Exposure | | - Exposure based on the anxiety hierarchy | - Reading material on managing the worst fear  
- Exposure |
| 6       | Exposure | | - Exposure based on the anxiety hierarchy | - Exposure |

The treatment for Insomnia disorder was a modified version of the Edinger and Carney (2008) cognitive-behavioral protocol (CBT-I), which was translated into Swedish by A. Norell-Clarke (unpublished) and has since been used in other CBT-I studies (Norell-Clarke et al., 2015). The CBT-I protocol comprises two blocks delivered over the course of four sessions. The first block focuses on behavioral aspects,
such as sleep restriction and stimulus control, while the second block targets cognitive aspects, such as constructive worry, thought registration, and cognitive distortions. To avoid redundancy between the different protocols, the tracking and self-registration of negative automatic thoughts, which was a component of the original protocol, was omitted from the second block of CBT-I. Sleep efficiency, calculated by dividing the effective sleep time by the total time spent in bed, was used as a threshold during sleep restriction, with a range of 80-85% suggested by Edinger and Carney (2008).

Table 2
Content of CBT-I.

<table>
<thead>
<tr>
<th>Session</th>
<th>Theme</th>
<th>Content</th>
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<tr>
<td></td>
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<td>Psychoeducation</td>
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<tr>
<td>1</td>
<td>Behavioral components 1</td>
<td>- Emergence and maintenance of insomnia</td>
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<td>- Sleep need</td>
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<td>- Circadian rhythm</td>
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<td>- Sleep deprivation</td>
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<td>- Stimulus control/Sleep rules</td>
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<tr>
<td>2</td>
<td>Behavioral components 2</td>
<td>- Repetition from prev. session</td>
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<td></td>
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<td>- Sleep and age</td>
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<td>- Sleep hygiene</td>
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<td>3</td>
<td>Cognitive components 1</td>
<td>- The importance of thoughts for the maintenance of insomnia</td>
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<tr>
<td>4</td>
<td>Cognitive components 2</td>
<td>- Repetition from prev. session</td>
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<tr>
<td></td>
<td></td>
<td>- Cognitive distortions</td>
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What does “evidence-based” in the context of psychological treatments really mean?

The Cambridge Dictionary defines evidence-based (medicine or practice) as supported by a large amount of scientific research (Cambridge-Dictionary). According to Kazdin (2017, p. 17), common criteria when establishing treatments as evidence-based are: (1) random assignment to treatment and control, (2) well specified sample, (3) a treatment manual that specifies the treatment procedure, (4) multiple outcome measures, and, those who rate them should not be aware of conditions, (5) statistically significant differences between conditions, (6) two or more randomized controlled trials that show similar effects, and (7) replication should be done by another researcher or research team than the original team or originator of the treatment.

“Evidence-based” is often used as analogous to “empirically supported” to highlight that a treatment is underpinned by a certain scientific standard (Drisko & Friedman, 2019). Several systems for the grading of evidence have been proposed, such as the Scottish Intercollegiate Guidelines Network (SIGN), the Grading of Recommendations Assessment, Development and Evaluation (GRADE), and the National Service Framework for Long Term Conditions grading system (NSF-LTC) (Baker et al., 2010). Baker et al. conclude that grading systems for evidence-based guidelines tend to favor randomized controlled trial (RCT) designs. SIGN and GRADE give their highest rewards to meta-analyses and systematic reviews with high quality RCT designs whereas NSF-LTC that was developed to handle longer term conditions proposes different criteria based on the likeliness that new research will change the confidence in the currently estimated effects.

“Evidence based” or “empirically supported” should be distinguished from the broader concept of Evidence-Based Practice. The American Psychological Association (APA) Presidential Task Force on Evidence-Based Practice (2006) have proposed a definition of and guidelines for evidence-based practice: the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences. APA\(^b\) places the best
research evidence in a clinical setting along with the psychologist’s clinical expertise and the patients’ characteristics, values, and context. First, according to APA\textsuperscript{b}, best research evidence encompasses relevant results in basic research in psychology and related fields as well as relevant systematic reviews of RCTs, but the practitioner should also be able to fill the methodological gap and evaluate the validity of conclusions from a range of different methods. Second, clinical expertise refers to competencies within assessment and formulations, monitoring, and decision-making, forming alliance, and self-reflection. APA\textsuperscript{b} further specifies that a psychologist should be able to seek resources when needed (such as consultation) and have a cogent rationale for his or her clinical strategies, but also be able to evaluate basic and applied research evidence, without offering much further guidance in or explanations of how a psychologist should be able to keep track of, understand, and utilize the growing body of basic and applied research evidence. It should be noted that earning a psychologist license in the USA requires a doctoral degree, although the undergraduate subjects may vary. Finally, patients’ characteristics, values, and context refer to the patient characteristics that are related to outcome.

APA\textsuperscript{b} relies quite heavily on Psychotherapy relationships that work: Therapist contributions and responsiveness to patients (Norcross, 2002) when concluding that “psychological services are most likely to be effective when they are responsive to the patient’s specific problems, strengths, personality, sociocultural context, and preferences” and “Available data indicate that a variety of patient-related variables influence outcomes, many of which are cross-diagnostic characteristics such as functional status, readiness to change, and level of social support”. Other patient variables that are covered within patients’ characteristics, values and context are variations in behavior, age/phase/state, sociocultural and family factors, environmental context, and personal preferences. APA\textsuperscript{b} emphasizes the role of personal preferences and argues that psychotherapy is a collaborative enterprise, and that Evidence-Based Practice in Psychology is about maximizing patients’ choice among effective alternative interventions.
Tolin et al. (2015) recognize that the clinical division of APA does not require that a process of change is linked to the therapeutic model. A non-defined process renders principle-based interventions impossible. So, if evidence-based in the first stage means relying heavily on cumulative outcomes from high quality RCTs, which per definition would encompass well defined populations and thorough protocols, and in practice would mean adjusting practice in accordance with clinical expertise and patient variables, then the practice defies the criteria promoted in the first step and the guidelines become a bit paradoxical. It is indeed most relevant, but outside of the scope of this introduction, to further dissect different grading systems and the overarching concept of evidence-based. This introductory overview rather aims to make a point about the heterogeneous nature of the evidence-based concept and about the general tendency of the grading system to favor RCT designs (i.e., outcome-based studies with highly protocolized treatments).

Summary of dilemmas and limitations: There is no uniform concept of “evidence-based” and the grading of evidence relies heavily on outcome-based RCTs used on homogenous populations with non-mandatory linking to processes of change.

**Randomized Controlled Trials**

The Randomized Controlled Trial (RCT) design has often been referred to as the golden standard for evaluating the efficacy of psychological interventions, and is therefore central to the current way of addressing common psychological suffering (Akobeng, 2005; Kazdin, 2017; Sanson-Fisher et al., 2007; Woolfolk, 2015, pp. vi-x). Although RCTs are subject to more or less precise definitions, features that address different threats to internal validity are common: a clearly defined population, a random sample, the randomization of participants into different conditions, blinding, equal conditions except for the manipulation of some variable of one or more of the conditions, the intention-to-treat principle, and analysis through comparisons of within and between group differences of outcome (Akobeng, 2005; Krauss, 2018; Sibbald & Roland, 1998; Stolberg et al., 2004).
The criticism of the RCT design can be broadly summarized as (1) the sampling procedure cause too small and/or non-representative samples, (2) failure to evenly distribute and track relevant background traits between groups when randomizing, (3) issues with blinding which for obvious reasons can be difficult when evaluating psychological treatments, (4) issues with implementation such as failure to obtain informed consent and systematic dropouts, (5) a more or less implicit assumption that everyone should react similarly to the intervention (Krauss, 2018), (6) psychological interventions usually consist of myriads of variations of which many have not been subject to proper evaluations in themselves, and (7) the careful control of conditions makes generalization difficult (Kazdin, 2017, p. 18). (8) Sanson-Fisher et al. (2007) also highlight the resource-intensive nature of RCTs.

Woolfolk (2015) argues that the dominating position of RCTs in the context of psychiatry and clinical psychology alongside absent reductions in morbidity and mortality among people with mental health problems highlights the need for other methods. Woolfolk suggests that RCTs can be an impeccable tool of inductive logic under the right circumstances, but that psychiatry and clinical psychology face challenges that often make RCTs a poor choice of design, such as: (1) poor understanding of treatment mechanisms, (2) poor understanding of etiology, (3) classification of disorders based on clusters of symptoms and with questionable validity, (4) absent biomarkers making objective assessment difficult, and (5) interests outside of science that might influence results.

Summary of dilemmas and limitations: Meeting the assumptions behind an RCT presents significant challenges, including obtaining a sufficiently large sample size with an even distribution of relevant variables and ensuring appropriate blinding procedures. Additionally, RCTs are often resource-intensive endeavors and the analyses conducted in RCTs typically do not lend themselves to predicting individual treatment trajectories.
Inference statistics in psychological research

Statistical analysis of mean differences

Intervention research in psychology usually employs different statistical methods within the model of null hypothesis significance testing (Kazdin, 2017, p. 325). The question posed goes something like; what are the chances that something similarly or more extreme would be observed given that the null hypothesis is true? Applied statisticians have been accused of mixing up contradictory approaches resting on incompatible philosophical assumptions attributed to R. A. Fisher, Jerzy Neyman, and Egon Pearson, specifically concerning alpha levels and p-values. This controversy is covered in detail elsewhere and will just be mentioned to reflect that layers of uncertainty exist even when data fit common assumptions about normality or symmetry, homogeneity of variances, linearity or curvature, dependence or independence, and sphericity (Hubbard & Bayarri, 2003). Another closely related topic concerns if or under what circumstances Bayesian statistics are preferred to classical approaches when inferring causality from intervention research within the social sciences (Christensen, 2005). This brief overview does not aim to provide a desired position in philosophical or even practical debates within the field of statistics, but rather to acknowledge that such debates do exist and therefore affect applied statisticians as well as psychologists who use statistics for estimating parameters within populations. However, some key practical utilities to which most seem to agree include the principle that confidence intervals and raw effect sizes should routinely be presented (Cumming, 2014; Savalei & Dunn, 2015).

Common methods for inferring causal relationships from mean differences range from simple t-tests to different analyses of variances such as ANOVAS for one or more independent variables, MANOVAS for multiple dependent variables, and ANCOVAs for comparing means adjusted for predictors or multiple regression (Field, 2013; Salkind, 2010). These methods share a common obstacle in the handling of missing data. Several methods between excluding non-complete cases (which of course gives rise to other biases of estimates) and the imputation of missing data have been suggested
(Austin et al., 2021; Little et al., 2012; Sterne et al., 2009), and different dilemmas emerge depending on the chosen solution. However, more progressive statistical methods such as Growth models address some of the limitations in cruder methods – they can model both random and fixed effects (allow for data to vary both within and between subjects), handle covariance patterns between measurements within and between subjects (e.g., data may for example covary between measures within a subject as it is more likely that measurements close in time are closer in value), and estimate means based on all available datapoints which renders imputation redundant (Hesser, 2015).

**Ergodic systems - the relation between the structure of interindividual variation and the structure of intraindividual variation.**

While it may not come as a shock to many researchers and practitioners, Deaton and Cartwright (2018) point out that even if all requirements for an RCT are met, you may still deviate from the average and you are probably interested in knowing whether the treatment is likely to work for you. Consider that all psychological research studies that are based on the postulate that individual trajectories can be predicted with averages and variability suffer from the same weaknesses: they do not consider multiple pathways, context dependency, nor non-linearity of behavior (small changes in one factor can entail large changes in behavior), which result in dynamic changes over time (Fisher et al., 2018; Magnusson, 2003; Molenaar, 2004; Molenaar & Campbell, 2009).

The Birkhoff ergodic theorem asserts that, for dynamical systems that satisfy the necessary conditions of homogeneity (i.e., the systems are interchangeable) and stationarity (i.e., the average of the system does not change over time), the time average of the states of a single system will converge to the ensemble average (Birkhoff, 1931; Fisher et al., 2018). The ergodic fallacy in this context means ignoring that most psychological systems such as learning processes, adaptive processes, and developmental processes do not satisfy the criteria for ergodic systems (Molenaar, 2004; Speelman & McGann, 2020). Just as we
cannot predict with certainty from group data whether an individual will respond to a treatment or not, this must also entail that psychological concepts that are abstracted from group level data cannot simply be applied to an individual. In other words, concepts like personality, intelligence, and psychiatric diagnoses may have been constructed on illegitimate mathematical premises.

Summary of dilemmas and limitations: Statistical analyses of mean differences entail assumptions about the collected data (often from self-rated instruments) that may be difficult to meet in practice. Depending on the method of analysis, biases of estimates following missing data may blur the results. It may also be very difficult for non-statisticians to keep track of relevant information in the field of applied statistics, and to choose and apply appropriate methods for the clinical trial at hand. In addition to this, it has been questioned whether it is mathematically legitimate at all to infer individual trajectories from ensemble averages in systems that do not satisfy the criteria of ergodic systems.
Part 2 – A shift in clinical psychological research towards the unique experience, individual trajectories, and processes of change

“It is a mistake to think you can solve any major problems just with potatoes.”
- Douglas Adams

As reflected by the critique in the previous sections, the assumption that comparing outcomes of multifaceted and overlapping psychological treatment protocols for specific DSM-classified disorders or syndromes would generate more effective interventions is openly questioned (see for example Hayes et al., 2019; Hofmann & Hayes, 2019; Woolfolk, 2015). Apart from not having produced desirable scientific or clinical outcomes, the disorder model tends to direct attention to signs, symptoms, biological dysfunctions, and brain abnormalities within the individual rather than considering the individual’s response within a given context, taking their history and environment into full account (Hayes et al., 2019).

This critique of course prompts the question of what to do instead. A shift back from nomothetic to idiographic designs such as single case experimental designs, and from outcome to processes of change can be noted (Andersson & Ghaderi, 2006; Hayes, 2021, mars 15; Hayes et al., 2019; Hofmann & Hayes, 2019; Holmes et al., 2018). Krauss (2018) suggests that single case studies in and outside of the laboratory could lay the ground for more comprehensive experiments later, and Kazdin (2011, pp. vi-x) highlights the importance of recognizing how clinical science can benefit from the combination of single case experimental design-based research and group-based research, each approach with its own strengths and weaknesses.

Palinkas (2014) points out that even though qualitative interview data may have little value when the result from an RCT is analyzed, it has enormous potential for the field of mental health services at large since it may allow the investigator to gain deeper understanding of
process and context, and to develop better instruments for measuring process and outcome, target participants, enhance external validity, and account for unexplained findings in the analysis of quantitative data. Similarly Elliott (2011) points out that process research traditionally has been quantitative, reflecting an era of positivism and a desire among scientists to test for causality. According to Elliott, this has tended to result in either restating the obvious, such as saying that a helping relationship predicts outcome in therapy, or in contradictory results.

In the following sections, key aspects of the ongoing shift in clinical research will be discussed. This mainly involves idiographic designs, mixed designs, and different processes of change.

**Psychological processes of change**

In the psychological literature, processes and mechanisms are used more or less interchangeably. *Cambridge-Dictionary* defines process as "a series of actions that you take in order to achieve a result" and *Merriam-Webster* as "a series of actions or operations conducing to an end," whereas a mechanism are defined as "a set of parts that work together" (*Cambridge-Dictionary*) or "a process, technique, or system for achieving a result" (*Merriam-Webster*).

Based on the latter definitions, some level of hierarchy could be inferred since processes involve actions or operations whereas mechanisms only refer to some pattern leading to a result.

Hofmann and Hayes (2019) define a therapeutic process “as a set of theory-based, dynamic, progressive, and multi-level changes that occur in predictable empirically established sequences oriented toward the desirable outcomes”. In other words, an underlying change mechanism, in the context of therapy, reflects dynamic rather than linear progress towards a goal in falsifiable sequences as predicted by empirical findings, and at multiple levels (some processes supersede others). Tamayo (2011) similarly suggests that “A psychological process is a series of steps or mechanisms that occur in a regular way not necessarily a deterministic one- to attain changes in behaviour, emotion, or thought”, but without the seemingly
nomothetic baggage from “Empirically established sequences”. On the other hand, Tamayo also suggests that psychological processes should include biological substrates, the adaptive function they fulfil, and a formalized description of the changes in the states of the organism and the environment.

Catania (2017, p. 8) offers an indirect definition that encapsulates how to infer a psychological (or behavioral) process: "We study the relation between environmental events and the organism’s behavior by changing the environment and observing how this affects what the organism does. In the analysis of behavior, procedures or operations are what the experimenter or the environment does or arranges, and outcomes or processes are the resulting changes in behaviour”. In other words, reinforcement or punishment is inferred from the change in frequency, intensity, or duration of behavior, caused by the operation or procedure.

Processes or mechanisms are often associated with experiments and/or the statistical concepts of mediation and moderation. Moderation implies that a third variable moderates the relationship between an independent and dependent variable (e.g., it is plausible that the relationship between exposures and symptom levels could be moderated by the frequency, intensity, and duration of safety behaviors ["I can confront X, but only in the presence of Y"] during the exposure). Mediation explains the relationship between the independent and dependent variable (Baron & Kenny, 1986); for instance, it is plausible that the relationship between therapy and symptom levels could be mediated by exposure in the absence of safety behaviors. Hofmann et al. (2020) have emphasized the limitations of mediation and moderation because of a priori theorized simple linear causal relationships. Instead, they propose an individual dynamic network approach. We should remember though, that no statistical approach can be more precise or coherent than the validity and the measurements of the concepts involved.

Elliott (2011) points out that “In the absence of careful prior qualitative research, tightly focused process-outcome research is analogous to poking a long stick into a deep hole: If you do it enough
times, eventually you will hit something, but you may still not be sure what it is!”. According to Elliott, thus far, mainly variations of Grounded Theory and Interpretative Phenomenological Analysis have been utilized, and narrative, conversation, and discourse analysis approaches to change process research on mental health treatments have so far been under-utilized.

Although some elementary overlap between definitions seems to exist (that is, how a sequence leads to some outcome), in an upcoming era of process-based therapy models, clinical science and practice would most likely benefit from a common and clear working definition of a psychological process of change, or at least a few clear distinctions. Otherwise, the risk is evident that we will see a plethora of different methods and treatment approaches that are labelled “process-based” without much merit to the “process” in “process-based”.

Several major psychological processes at different levels with relevance for psychological treatments have been proposed, and some of them are addressed in the current dissertation. Some processes are basic and technical whereas others are more practically defined. The following overview concerns psychological processes of change that are explicitly utilized in the treatments that are investigated within this thesis.

No one psychological process can fairly be described as all-encompassing, and pragmatically speaking, the description does not have more value than the extent to which it helps to produce a desired outcome, however basic, technical, coherent, and scientifically convincing it may be. If it is not clinically useful, it is not clinically useful. It should also be stressed that if descriptions of processes at different levels of analysis are not ontological reflections of “true” psychological processes, they may also overlap and/or interact between and within levels of analysis.


**Behavioral processes**

**Respondent processes**

Respondent, classical, or Pavlovian conditioning entails presenting an unconditioned stimulus (e.g., bell) right before (or after, it is debatable - backward conditioning) an unconditioned stimulus that naturally evokes an unconditioned response (e.g., bell → food → salivation) which results in a conditioned response (e.g., bell → salivation). Respondent conditioning may both precede and follow operant conditioning. Mowrer (1960) proposed a two-stage model of learning in which a conditioned stimuli acquire safety or danger signals and therefore cues operant avoidance which in its turn prevents extinction. This is because the conditioned stimuli never get to occur without the unconditioned stimuli (e.g., squares never get to occur without fainting and humiliation since squares are avoided). This entails a process that involves both classical and operant concepts. Similarly, conditioned stimuli can be utilized as reinforcers and punishers (e.g., applied relaxation, token economy etc.).

Habituation refers to the decrease of an unconditioned response to an unconditioned stimulus due to repetition. Sensitization refers to the opposite, an increased response. Consider the everyday example of ambient noise as you prepare to sleep. In one scenario, you become aware of the hum of your fan, only for that awareness to fade away over time due to habituation. In another scenario, you become increasingly agitated as you realize that your neighbor is playing music, even though the volume remains constant (sensitization).

**Operant processes**

Habituation, sensitization, discrimination, negative and positive reinforcement and punishment, extinction, and generalization in operant (or instrumental) conditioning are found in the interventions or techniques labelled as stimulus control, behavior activation, shaping, chaining, and exposure (Hayes & Hofmann, 2018, pp. 101-112; embedded in clinical trial I and II).

A more practically defined and proposed process in the family of operant types of conditioning is repetitive negative thinking.
Repetitive negative thinking encompasses worry and rumination as behavioral patterns and is technically defined through operant conditioning (mainly negative reinforcement although positive reinforcement could also be involved as ruminating may be perceived as constructive (Ehring & Watkins, 2008; Harvey et al., 2004; embedded in clinical trial II).

Arbitrarily Applicable Relational Responding (AARRing or Derived Relational Responding) is an operant process defined by Relational Frame Theory (RFT). The process of AARRing explains the development of language and cognition (Hayes & Hofmann, 2018, pp. 112-114). RFT builds on Marty Sidman’s equivalence findings (Sidman, 1971) and implies that the behavior of relating stimuli (including the transfer and transformation of stimulus functions accordingly), once the pattern of relating is established through multi-exemplar training, does not rely on external reinforcement (as relating becomes a so called generalized operant). It also clearly marks a distinction between operant processes in verbal and non-verbal organisms, as verbally able humans can relate stimuli based on informal properties and derive relations based on other relations (embedded in clinical trial III).

Observational learning
Another form of basic learning is that of observing context and patterns of behavior in others and behaving, or imitating, accordingly (Catania, 2017, pp. 200-201). Observational learning is mainly emphasized in psychological group treatments or behavioral tasks and experiments that allow the participant to watch other people interact.

Cognitive processes
Information processing
Cognitive processes, just like behavioral ones, are described in the literature at different levels of analysis. On the more basic and technical end, we find a process that involves the chain from sensory input to behavior output through different memory levels and processing (Neisser, 2014). On the more practical end, the process of
cognitive reappraisal or restructuring is used in cognitive interventions and further divided into identifying cognitive distortions, evaluating maladaptive thinking, and modifying core beliefs with different techniques such as behavioral experiments, registering and disputing thoughts, and identifying cognitive distortions (Beck, 1963; Beck, 1979; Hayes & Hofmann, 2018, pp. 325-351; Leahy, 2017; embedded in clinical trial I). Brewin (1989) highlighted that the cognitive processes underlying change in Cognitive Behavioral Therapy (CBT) lack a foundation in basic science. Additionally, he introduced a model suggesting three mechanisms by which CBT is thought to operate: modifying verbally accessible knowledge, enhancing the accessibility of nonconscious situational memories, and employing self-regulatory strategies.

**Process-based treatment approaches**

Several treatment approaches that explicitly address psychological processes of change, at different levels of analysis, have been proposed during the last decades. Apart from Meta-Cognitive Therapy that addresses meta-cognitive beliefs (Wells, 2019), the approaches that up and until now have gained most attention concern processes that mainly rely on operant learning theory. Unified Protocol (UP; Allen et al., 2008) addresses emotional avoidance and ruminating-focused cognitive behavioral therapy (RF-CBT; Watkins et al., 2007) addresses repetitive negative thinking (worry and rumination). Both build on negative reinforcement (Allen et al., 2008; Hofmann & Hayes, 2019; Watkins et al., 2007). Acceptance and commitment therapy (ACT; Hayes, 2004; Hayes & Wilson, 1994) addresses psychological (in)flexibility and ultimately relies on the operant process of arbitrary applicable relational responding (AARRing) as proposed within Relational Frame Theory (RFT).

Recently, two particular and different approaches to psychological suffering have come, or at least partly so, out of the contextual sciences umbrella. Hofmann and Hayes (2019) have presented a pragmatic route as they focus on workable processes within the wider CBT umbrella. Representing different schools of thought with different philosophical underpinnings, Hofmann and Hayes seek out
their common ground. They debate the DSM, the nomothetic approach, and linear mediation, and provide a framework that allows for mixing any psychological processes of change based on their workability rather than their theoretical residence. This has resulted in a treatment approach referred to as Process-Based Therapy or PBT (Hayes & Hofmann, 2018, 2020; Hayes et al., 2019; Hofmann et al., 2020; Hofmann & Hayes, 2019; Hofmann et al., 2021; Ong et al., 2022).

Another treatment approach that builds on recently proposed amendments to RFT aims to erase the gap between so called pragmatical mid-level terms and technical processes as they maintain technical language throughout their proposed application. This approach is referred to as Process-Based Behavior Therapy (PBBT; D. Barnes-Holmes et al., 2020; Y. Barnes-Holmes et al., 2018; Yvonne Barnes-Holmes et al., 2018; Y. Barnes-Holmes, C. McEnteggart, & D. Barnes-Holmes, 2020; https://www.perspectivesireland.com/pbbt/).

A systematic review and meta-analysis of transdiagnostic psychological treatments for anxiety and depression concluded that the overall quality of RCTs was generally poor and that heterogeneity was high. With that said, the authors also concluded that transdiagnostic treatment approaches for anxiety and depression may be as effective as other treatment approaches concerning anxiety and more effective concerning depression (Newby et al., 2015).

In the following sections, Ruminating-Focused Cognitive Behavioral Therapy and Process-Based Behavior Therapy, as they were offered in clinical trial 2 and 3 respectively, are presented.

**Ruminating-Focused Cognitive Behavioral Therapy (RFCBT; Clinical trial II)**

Ruminating-Focused Cognitive Behavioral Therapy (RFCBT) was originally developed for, and has been mostly evaluated for, depressive rumination (Jacobs et al., 2016; Moeller et al., 2020; Watkins et al., 2007; Watkins, 2018; Watkins et al., 2011). However, later studies have also addressed anxiety in adolescence (Feldhaus et
Ruminationsfokuseret Kognitiv Adfærdsterapi for Depression” (Møller et al., 2017). The materials were translated to Swedish and adapted to fit eight group sessions (with 8-9 participants), each lasting two hours including 15-minute breaks. Besides the focus for each session (Table 3), all sessions incorporated fundamental therapeutic techniques, including normalization and validation, as well as cognitive-behavioral therapy principles, such as presenting an agenda, psychoeducation, within-session practice, and homework assignments. Functional analysis and "if-then plans" were used throughout the treatment. "If-then plans" correspond with the functional analysis of repetitive negative thinking (RNT), involving the identifying of triggers and warning signs for RNT, and developing alternative constructive approaches to implement instead of RNT, in response to those triggers (e.g., trigger = feeling anxious, prior response = abstract rumination about "What if I’m not good enough? Why is this hard?", alternative strategy = concrete thinking "What steps can I take to prepare?").

RFCBT differs from regular CBT in the sense that it involves mindfulness, self-compassion, values, and imagery, and that its main focus is on unconstructive and constructive rumination styles, seen through the lens of operant learning theory (Watkins et al., 2011). Worry and rumination have previously been defined as “thoughts and behaviors that repetitively focus an individual’s attention on his or her negative feelings, and the nature and implications of these feelings” (Nolen-Hoeksema & Morrow, 1991). Nonetheless, not all forms of repetitive thinking about problems are maladaptive and lead to
adverse outcomes. In contemporary literature, two distinct categories of repetitive negative thinking have been identified: an abstract analytical maladaptive processing style and a concrete solution-oriented adaptive style. It is crucial to note that it is the abstract processing style of both rumination (brooding rumination) and worry (unconstructive worry) that has been found to be unhelpful, and linked to fewer practical recommendations for problem-solving and to mental health issues (Watkins & Roberts, 2020). The first category tends to point towards abstract negative self-judgement and overgeneralization whereas the second points outwards and encourages viable problem-solving. This distinction was addressed both practically and through psychoeducation, within and between sessions. Initially, examples of both styles were offered which was followed by an imaginary exercise in which participants reflected upon different questions following a hypothetical situation with a friend being late for a meeting. Examples connected to each thinking style are presented in Table 4.

**Table 3**

**Treatment modules.**

<table>
<thead>
<tr>
<th>Session</th>
<th>Content</th>
<th>Home assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Emotions, worry and rumination</td>
<td>Practical information, introducing emotions, worry and rumination, functional analysis, worry diary and treatment goal formulation</td>
<td>Complete form for treatment goal formulation and a worry diary</td>
</tr>
<tr>
<td>2: Avoidance</td>
<td>Explaining unhelpful avoidance with operant behavior analysis and if-then plans</td>
<td>Track avoidance with functional analysis and complete forms for If-then plans</td>
</tr>
<tr>
<td>3: Relaxation</td>
<td>Functional analysis of worry and rumination (RNT) and introducing relaxation.</td>
<td>Practice relaxation and if-then plans.</td>
</tr>
<tr>
<td>4: Changing process style</td>
<td>Introducing abstract thinking versus concrete and specific thinking</td>
<td>Practice concrete thinking and if-then plans</td>
</tr>
<tr>
<td>5: Being present in activities</td>
<td>Introducing mindfulness, flow, and visualizing</td>
<td>Practice visualizing, being mentally present in activities (“flow”) and if-then plans</td>
</tr>
<tr>
<td>6: Self-compassion</td>
<td>Introducing self-compassion</td>
<td>Practice self-compassion and if-then plans</td>
</tr>
<tr>
<td>7: What are your values? Learning from experience</td>
<td>Introducing values, relapse prevention and maintenance plan</td>
<td>Complete plan for maintenance and relapse prevention</td>
</tr>
<tr>
<td>8: Ending and evaluation of treatment goals</td>
<td>Follow-up treatment goals, evaluating treatment</td>
<td></td>
</tr>
</tbody>
</table>
Table 4

Thinking styles and examples.

<table>
<thead>
<tr>
<th>Unconstructive, abstract, and unhelpful thinking</th>
<th>Constructive concrete, and helpful thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why is this happening to me?</td>
<td>What do you notice about what is happening around you? What do you see and hear?</td>
</tr>
<tr>
<td>What does this say about me?</td>
<td>What details do I notice when I focus on my experience at the cafe?</td>
</tr>
<tr>
<td>How is this like other times I’ve been dumped or disappointed?</td>
<td>What was the sequence of events that led to us deciding to meet?</td>
</tr>
<tr>
<td>What would be the consequences of this situation?</td>
<td>How did we agree to meet? What were the steps leading up to this meeting?</td>
</tr>
<tr>
<td>Why does this always happen to me? Why me?</td>
<td>How is this situation different from other times when I’ve met people as planned?</td>
</tr>
</tbody>
</table>

Process-Based Behavior Therapy (PBBT; Clinical trial III)

The foundational principles and theoretical framework of the intervention have been delineated across several publications by its developers rather than consolidated into a singular seminal work (D. Barnes-Holmes et al., 2020; Barnes-Holmes & Harte, 2022; Y. Barnes-Holmes et al., 2018; Y. Barnes-Holmes, D. Barnes-Holmes, et al., 2020; Yvonne Barnes-Holmes et al., 2018; Y. Barnes-Holmes, C. McEnteggart, & D. Barnes-Holmes, 2020). It is crucial to recognize that these principles still undergo continuous refinement through an iterative process involving clinical application, fundamental research, and conceptual evolution. This study primarily reflects the advancements proposed within Relational Frame Theory (RFT) and its clinical applications up to late 2021. It's also worth noting that supervision and clinical insights may have further influenced the implementation of these principles beyond what's explicitly outlined in the published literature. Therefore, while this research offers a
snapshot of the current comprehension and utilization of this RFT-based treatment approach, it exists within a dynamic realm of ongoing growth and enhancement.

The sessions occurred weekly, each lasting 60 minutes, with occasional homework assignments provided based on assessments by the therapist and supervisors regarding their functional relevance within the ongoing treatment process. Instead of adhering to fixed session agendas, the focus consistently revolved around the core treatment objectives, particularly deictic (me-me and me-others) relating. Participants were actively encouraged to seek clarification and express any uncertainties they had about their treatment, fostering a collaborative and transparent therapeutic atmosphere. The treatment adopts a non-linear approach to conceptualization and intervention. While it doesn't follow a strict protocol, certain core principles guide its implementation, tailored to each participant's unique circumstances. Central to the treatment is the functional analysis of verbal behavior, identifying key relating with relevance to the participant's suffering. Initially, the therapist closely observes the participant's me-me and me-others relating. As topographical patterns emerge, functional relationships relevant to the participant's distress are identified.

Although the basic process in RFT is Arbitrary Applicable Relational Responding (AARRing), the proposed unit of analysis, Relating, Orienting, and Evoking functions (ROE) serve as the cornerstone of the treatment principles in PBBT (Barnes-Holmes et al., 2020). Four dimensions of relating (coherence, derivation, flexibility, and complexity), along with orienting functions (attending to a stimulus or not) and evoking functions (approaching or avoiding a stimulus, S+ or S-), are utilized to elucidate the dynamics of ongoing verbal behavior. However, distinguishing between these relational dimensions may have limited practical utility in a clinical context. Coherence refers to functional overlap, while derivation pertains to the novelty of certain relating. Complexity denotes the size and type of relations within a verbal network, and relational flexibility reflects the propensity for new relating as new or altered contextual cues are presented.
Depending on the context, interventions may aim to influence the dynamics between these dimensions in specific ways. For instance, if a participant predominantly engages in me-me relating around hopelessness, efforts may be made to decrease coherence, increase flexibility, and complexity (e.g., “where there times when things seemed less hopeless?”) and to further help them to connect the dots between their relating, established functions, and social consequences. Similarly, the treatment aims to assess and address the participant's me-others relating, examining how they relate to themselves in relation to others, such as through comparative relating. It is worth pointing out that this framework does not in itself suggest therapeutic moves; it rather helps the therapist to see verbal behavior through a functional lens.

The treatment also endeavors to help participants identify and differentiate their appetitive (S+) and aversive (S-) relating. It's important to note that appetitive does not necessarily imply appeal, but rather relative to aversive. Participants may engage in non-adaptive S+ relating, such as constant comparing, controlling, diverting, or rationalizing, as a means of avoiding S- relating. By establishing causal relationships between S+ relating and negative outcomes, the treatment aims to facilitate a shift in these patterns. Throughout the treatment, the therapist and participant engage in relational modeling and coordination. It's crucial for the therapist to establish a collaborative and equal relationship with the participant, allowing for new derivation and the approaching of previously aversive content (e.g., “I am ultimately unovable”). Through ongoing dialogue, the therapist identifies key relating patterns that contribute to the participant’s distress and fosters coordination over comparison.

In summary, the treatment involves a continuous dialogue between therapist and participant to discern key relating patterns and foster mutual understanding. As the treatment progresses, participants may gain insights into their relational patterns and experience a shift in their perspective, enabling them to consciously pursue meaningful behaviors.
Scientific methods in the new era of idiographic design and processes of change

What are Single Case Experimental Designs and how can they contribute to the evaluation and development of psychological treatments?

Single Case Experimental Designs (SCED) are hardly a new phenomenon even if some development concerning statistical methods of analyzing data and reporting standards has been proposed during the last decades (Tate et al., 2016; Todman & Dugard, 2001).

The history of psychology is full of important contributions from researchers conducting research on a few subjects, such as Pavlov, Thorndike, Watson, and Rayner. “Single case” refers to a number of different approaches with one or few subjects that are studied more or less extensively (George & Bennett, 2005). In this overview, so called Single-Case Experimental Designs (SCED) will be covered. SCED is often associated with applied behavior analysis and B.F. Skinner in particular made some crucial contributions which also play an integrated part in his experimental analysis of behavior (Kazdin, 2011, pp. 10-13). SCEDs have mainly been utilized by researchers in areas such as behavioral medicine, clinical psychology, and educational psychology, in order to inform and develop theory, examine psychological processes, study behavior, and assess effectiveness of interventions, because of their suitability for examining psychological processes and outcome of interventions (Smith, 2012). A movement from laboratory experiments to more ecologically valid naturalistic settings can be noted between Skinner's experimental analysis of behavior to the expanded contemporary use of SCED.

According to Kazdin (2011, pp. vi-x), there are two persistent myths following single case research; the first is about true experiments not being possible with only one participant and the other is about findings not being generalizable. According to Smith (2012), SCED offers a methodologically rigorous alternative to group designs that is overlooked as a methodology for making causal inferences. As compared to group-based designs, SCED also exhibits feasibility in
contexts where group-based designs are not appropriate, such as in small samples or when evaluating new interventions (Kazdin, 2011, pp. vi-x). Through the study of individuals, key behavior that disappears in the averages of group designs can be revealed. Another benefit of SCEDs (and a core feature) as compared to group-based research is that findings along the way can inform in real time whether the current intervention has the desired impact, but also suggest how to improve effects and thereby accumulate ongoing causal knowledge (Kazdin, 2017, p. 193)

Single case experimental designs exist in several varieties with different costs and rewards, but some features are general. Just as with experimental group designs, SCEDs are designed to handle threats against internal validity (Kazdin, 2011, pp. 11-12). Repeated measurements over time are treated similarly to subjects in a group design. Specific baseline measurements of the participants’ performance without the intervention are assessed and compared to the measurements of an intervention phase. The concept of stability encapsulates to what extent the baseline performance fluctuates and whether any trend (or slope) is present. Ongoing assessment, baseline assessment, and stability of performance constitute the key requirements of the SCED (Kazdin, 2011, pp. 124-127). The simplest design (AB) is composed of a baseline phase (A) and an intervention phase (B). In ABAB designs, the intervention is revoked and reintroduced which increases certainty but also raises both practical and ethical concerns, depending on the nature of the study. Besides the different combinations of introducing, revoking, and reintroducing an intervention, there are three main design considerations: multiple-baseline design, changing criterion design, and alternating treatment design.

In multiple baseline designs, multiple baselines across individuals, behaviors, situations, settings, and time periods are typically utilized (For a more detailed account, see Kazdin, 2011, 2017; Morley, 2017), which is (along with simple repeated designs) somewhat comparable to replication of a group experiment. In multiple baseline designs across individuals, one of the most published designs, two (bare minimum) or more individuals are assessed. Ideally, when stability is
reached during baseline measurements for all participants, the first participant receives the intervention while the others remain on baseline measurements. When stability is reached again, the next participant receives the intervention and so on (Kazdin, 2011, p. 149). The use of statistical randomization tests, however, also requires a window of probability through randomization of the timepoints for the phase shifts (Dugard et al., 2012). Multiple baseline designs do not require withdrawal of an intervention as with ABAB designs, which can be both ethically and practically preferable to the latter (Kazdin, 2011, p. 164). Ideally, only one behavior is targeted at a time, which allows for instant corrections of the intervention before the next participant receives the same intervention. Also, the method is quite flexible in relation to practical considerations such as when and how to introduce an intervention.

Some general weaknesses with multiple baseline designs should also be noted. Both trends and variability (both within and between subjects in a multiple baseline) can cause problems when it comes to deciding the duration of the baseline, but also in the final analysis. There is no other agreed upon principle that governs the alternation of phases except the stability. This can of course cause practical problems such as how to decide what stable enough means, but also be constrained by practical boundaries such as limitations in time or other resources (Kazdin, 2011, pp. 353-361). The evaluation of treatment packages as opposed to some well demarcated and simple intervention in accordance with a well-defined process is also related to the question of generalizability. The process of reinforcement inferred from animal studies is clear. By changing the conditions, changes in performance are generally easy to detect (Kazdin, 2011, p. 14). If a process is clearly defined and broadly applicable (such as operant conditioning on normal and healthy pigeons or rats) and effects are consistent and clear, generalization should not be a problem. However, it is reasonable to argue that poorly defined concepts and processes, or processes that for some theoretical reasons are not generally applicable to the population of interest, in combination with poor execution, poor measurements, and irregular effects render generalization more difficult. In other words, if a treatment that consists of myriads of more or less vague principles,
techniques, and interventions affects different participants differently, under different circumstances, and these variables are not properly traced due to poor definitions, execution, and or instruments, generalizing findings simply becomes more difficult. However, just as with outcome-based group experiments with poorly defined processes of change, causality can of course still be demonstrated, although limited to the participant in that specific context (Kazdin, 2011, p. 372).

Measures that target the ideographically relevant problems are an important feature of SCED (Morley, 2017, p. 41) and highlight personal questionnaires as a potential method for collecting ideographic relevant data (Morley, 2017, pp. 55-56). Self-rating scales may suffer from limited evaluations or poor psychometric properties and are generally inherently nomothetic. Observations often pose both practical and theoretical problems (i.e., how do you observe verbal behavior such as rumination unless it is vocalized?). Also in session, unlike field-based research, you generally do not have access to the environment in which most of the overt behaviors of interest takes place.

**Interpretative Phenomenological Analysis - what can we learn from idiographic qualitative approaches to the evaluation of psychological interventions?**

Interpretative Phenomenological Analysis (IPA) is a qualitative methodology that builds on phenomenology, hermeneutics, and ideography, and that is used to explore how people make sense of their experiences. It also emphasizes the dynamic process of researchers playing an active role making sense of their subjects’ sense-making, thus “interpretative”. This inherently idiographic approach is concerned with coming as close as possible to the particular, what it is like for someone. This is in line with questioning hermeneutics, asking for instance what participants are trying to achieve, what was not intended to leak out?, and what the participants themselves are not aware of (Smith & Shinebourne, 2012). IPA has been described in terms of a theoretical alliance with the cognitive sciences in their mutual “rejection of the behaviorist paradigm that
had dominated the discipline”, yet diverging in their view of how cognition can best be studied (i.e., quantitative/experimental vs. in-depth qualitative analysis). The swift transition within the cognitive discipline from meaning and meaning-making to information processing is also emphasized and regretted. Although clearly deviating from the overtly concerned stimuli-response paradigm as proposed by Watson (Watson, 1913), ironically, the case-by-case idiographic nature and the interpretative aspects of what the participant intended (and was not aware of), as well as the emphasis on meaning-making, seem to align well with, and plausibly contribute to, modern behaviorism within the contextual sciences and the functional analysis of verbal behavior (I.e., what is the client really saying?; Y. Barnes-Holmes, C. McEnteggyart, & D. Barnes-Holmes, 2020; Kohlenberg et al., 1993).

**Mixed methods - a possible synthesis between quantitative and qualitative data**

Mixed method designs refer to the use of quantitative and qualitative data to answer research questions within one single study, which leaves space for numerous combinations with more or less emphasis on the qualitative or quantitative methods in a way that corresponds to the aim and research questions. (Mertens & McLaughlin, 2011). According to Creswell (2013), mixed designs can be used to form different or multiple perspectives, or attain a more complete understanding. They can also be used to confirm quantitative measures with qualitative experiences, to explain quantitative results, to achieve better contextualized instruments, measures, or interventions to reach certain populations, to enhance experiments, to gather trend data and individual perspectives, and to evaluate the success of a program by using a needs assessment together with a test of the success of the program. According to Tashakkori and Creswell (2007), mixed approaches can be applied to address both quantitative and qualitative research questions. The way the research questions are developed may be participatory or pre-planned. The sampling procedure may be based on probability or be purposive, and there may be two types of data collection procedures such as self-rating...
scales and interviews and thus two kinds of data, analysis, and conclusions.

**Dilemmas, limitation, alternatives paths**

It has been argued that the science of and behind psychological treatments has not progressed in a desired manner, and that too many people still do not benefit enough from the psychological treatments that are currently available. This is particularly true for those afflicted by heterogenous psychological suffering. In this doctoral thesis, the identified scientific dilemmas and potential limitations are addressed through samples from populations with comorbid problems, process-based treatment approaches, idiographic designs (single case experimental design, interpretative phenomenological analysis) and mixed designs, as well as with progressive statistical methods (See **Table 5** for an overview). Under ideal circumstances, all the mentioned dilemmas would be simultaneously addressed and properly traced. However, practical, logistical, and administrative constraints and conventions influence most studies. A great paradox that is probably shared with most doctoral students, is that the insights accumulated over more than five years would have needed to be there when the doctoral project took form, rather than being retrospectively derived from the pile on the table at the end of the final study. Despite this, this doctoral project does contribute to the field, both in terms of the findings and through the conceptual work.

This dissertation comprises three clinical trials (clinical trial I, II, and III) that in different ways address the dilemmas and limitations discussed in relation to the evaluation of each treatment approach.

**Summary of scientific dilemmas, limitations, and alternative paths**

(1) Psychological suffering seen through a psychiatric lens as disorders still suffers from questionable validity (i.e., unknown etiology, overlapping constructs, unclear and inconsistent definitions incorporating normal functioning, the absence of biological markers,
genetic base or satisfying factor solutions), and has been accused of contributing to medicalization and stigma.

Alternative paths: Although all psychological treatments ultimately rely on some psychological process(es) of change, the treatments in clinical trial II and III explicitly address the maintenance of comorbid mental disorders through processes independent of the included disorders (RNT through negative reinforcement in trial II and AARRing in trial III). The treatment in trial I, in contrast, is comprised of two different protocols that are meant to address SAD and Insomnia disorder, respectively. With that said, the use of multiple protocols is reasonably the first logical step to take, especially given that no previous study that investigated sequential evidence-based protocols for SAD and Insomnia disorder was identified. Overlapping techniques between interventions was omitted and maintenance was addressed through operant learning (negative reinforcement through exposure, stimulus control, and education) and information processing (cognitive distortions through behavioral experiments and education).

(2) Nomothetic self-rating scales and disorder-based interviews encounter inherent issues, notably in their reliance on group-level psychometric properties rather than individual characteristics. Furthermore, variations in psychometric properties may exist even when relevant metrics are accessible for the target population.

Alternative paths: In clinical trial III, data from self-rating scales was combined with data from semi-structured interviews analyzed with IPA. In trials I and III, although an idiographic design was used (SCED and Mixed), the repeated measures still rely on instruments (one of which was modified) with psychometric properties based on group data. However, sleep onset latency (SOL; minutes between going to bed and first sleep onset), and wake after sleep onset (WASO; minutes awake after first sleep onset) were measured and combined to an ideographical measure of undesired time awake during the night.
The prevalence of psychiatric diagnoses is high and comorbidity between mental disorders is very common.

Alternative paths: All included trials included populations with common comorbid mental disorders, also see (1).

Although evidence-based psychological treatment protocols exist for most common disorders, and symptoms of comorbid mental disorders typically are affected by these treatments, it is inherent to disorder-based treatment protocols that they do not fully address the heterogeneity of problems encapsulated by comorbid mental disorders. Treatment outcome data with clear implications for people that meet criteria for several disorders are scattered. Depending on the disorder(s) and complexity, the efficacy of evidence-based CBT protocols differs and leaves room for improvement, not least for people that meet criteria for comorbid mental disorders.

Alternative paths: Trial I utilizes sequential treatment protocols in a comorbid sample. Clinical trials II-III explicitly address processes of change (also see (1)) rather than one delimited disorder, and clinical trial III explicitly addresses therapeutic alliance functionally as the therapist is seen as a contextual cue for the participant in the on-going functional analysis of verbal behavior.

There is no uniform concept of “evidence-based” and the grading of evidence relies heavily on outcome-based RCTs used on homogenous populations with non-mandatory linking to processes of change.

Alternative paths: Clinical trials II and III explicitly aimed to address processes of change rather than delimited disorders and trials I and III utilized idiographic rather than nomothetic designs.

Meeting the assumptions behind an RCT presents significant challenges, including obtaining a sufficiently large sample size with an even distribution of relevant variables and ensuring appropriate blinding procedures. Additionally, RCTs are often resource-intensive.
endeavors and the analyses conducted in RCTs typically do not lend themselves to predicting individual treatment trajectories.

Alternative paths: Clinical trials I and III employed idiographic resource-friendly designs. Trials II and III addressed processes of change rather than delimited disorders. Both studies subtly explored the process as well as the outcome (Clinical trial III, with the synthesis of qualitative and individual self-rating data, and clinical trial II, by contrasting statistical significance between process and outcome measures). Although clinical trial II addressed and measured the process of RNT, the mediation and moderation analyses were kept for a later article.

(7) Statistical analyses of mean differences entail assumptions about the collected data (often from self-rated instruments) that may be difficult to meet in practice. Depending on the method of analysis, biases of estimates following missing data may blur the results. It may also be very difficult for non-statisticians to keep track of relevant information in the field of applied statistics, and to choose and apply appropriate methods for the clinical trial at hand. In addition to this, it has been questioned whether it is mathematically legitimate at all to infer individual trajectories from ensemble averages in systems that do not satisfy the criteria of ergodic systems.

Alternative paths. The designs of trials I (SCED) and III (mixed design with emphasis on IPA) do not rely on parametric nor ergodic assumptions in terms of outcome. However, the processes and diagnostic constructs still do. Idiographic measures should have been utilized (and they were in a following trial that built on the experiences from trial III). In clinical trial II, an expert on progressive methods for estimating population estimates was consulted. Linear mixed models (covariance pattern models) fitted with restricted maximum likelihood according to Hedeker and Gibbons (2006) were used to provide unbiased estimates (under lenient missing data assumptions).
Table 5
Overview of clinical trials – emphasis on the forks of dilemmas, limitations, and alternative paths

<table>
<thead>
<tr>
<th>Population/sample</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population/sample</td>
<td>10 adults, Comorbid (SAD, ID)</td>
<td>73 adults, Comorbid (clinical levels of ≥ 2 within AD, OCD, MDD, ID)</td>
<td>3 adults, Comorbid (2 ≥ among AD, OCD, PTSD, MDD)</td>
</tr>
<tr>
<td>Aim</td>
<td>Exploration of treatment effectiveness</td>
<td>Treatment effectiveness</td>
<td>Exploration of treatment feasibility, acceptability, effectiveness, and process</td>
</tr>
<tr>
<td>Design</td>
<td>SCED (repeated crossover AB design)</td>
<td>RCT (wait-list control)</td>
<td>Mixed (qualitative with semi-structured interviews and self-rating scale data)</td>
</tr>
<tr>
<td>Idiographic vs. nomothetic</td>
<td>Idiographic</td>
<td>Nomothetic</td>
<td>Idiographic</td>
</tr>
<tr>
<td>Treatment approach</td>
<td>Sequential individual CBT-S and CBT-I</td>
<td>Group RFCBT</td>
<td>Individual applied Verbal Functional Analysis informed by RFT</td>
</tr>
<tr>
<td>Treatment addresses</td>
<td>SAD through information processing and operant learning (negative reinforcement and extinction) ID through information processing (disputing thoughts through the identifying of cognitive distortions and behavioral experiments, and operant learning (breaking negative reinforcement through exposure and response prevention, stimulus control)</td>
<td>RNT (Worry and rumination)</td>
<td>Maladaptive relating (emphasis on deictic relating ME-ME, ME – OTHERS)</td>
</tr>
<tr>
<td>Maintenance process</td>
<td>Negative reinforcement and faulty information processing</td>
<td>Negative reinforcement</td>
<td>Arbitrarily Applicable Relational Responding</td>
</tr>
<tr>
<td>Main analysis</td>
<td>Visual, NAP</td>
<td>linear mixed models</td>
<td>IPA and descriptive correspondence with data from self-rating scales</td>
</tr>
</tbody>
</table>
**Aims and hypotheses**

As argued in previous sections, the general aim of this doctoral thesis is to build on the current knowledge of psychological treatments for people with heterogenous psychological suffering (symptoms within MDD, anxiety disorders, OCD, PTSD, and Insomnia disorder). This is done through the investigation of three different treatment approaches, with different scientific methods that in their different ways address the methodological dilemmas and limitations that emerge from the endeavor of developing and evaluating psychological treatments in a predominately biomedical paradigm. Besides evaluating treatment approaches, this thesis also aims to highlight the challenges that come with process-based treatment approaches and idiographic designs, and finally to point out some future directions for the research on the development of psychological treatments for people with heterogenous suffering.

The following aims and hypotheses were formulated for each clinical trial:

**Clinical trial I** (Wallsten et al., 2021) was designed to explore the effects of Cognitive-Behavioral Therapy for Insomnia disorder you have previously capitalized “Insomnia” – be consistent (CBT-I) and Social Anxiety Disorder (SAD; CBT-S) on SAD and Insomnia disorder (primary), and on depressive symptoms (secondary) in a sample with comorbid SAD and Insomnia disorder. No hypotheses were formulated.
Clinical trial II (Wallsten et al., 2023) was designed to investigate the effectiveness of group-delivered Rumination-Focused Cognitive Behavioral Therapy (RFCBT) on participants with clinical symptom levels of trait worry and at least two disorders among anxiety disorders, MDD, and Insomnia disorder. It was hypothesized that participants randomized to RFCBT would report greater reductions in anxiety, insomnia, depression, and Repetitive Negative Thinking (RNT) and greater increases in perceived quality of life than those randomized to a waiting list control group. The trial also explored negative side effects and events.

Clinical trial III (Manuscript submitted to The Psychological Record) was designed to investigate the feasibility of Process-Based Behavior Therapy (PBBT), but also preliminary effectiveness regarding symptoms of comorbid mental disorders (anxiety disorders, MDD, OCD and PTSD). No hypotheses were formulated.
Part 3

Clinical trial I

Background
Insomnia disorder and Social Anxiety Disorder (SAD) are prevalent psychiatric conditions. At a given time point, about 6–10.5% of the general population meet criteria for insomnia disorders, whereas the lifetime prevalence for SAD is approximately 13%. SAD and Insomnia disorder often co-exist, albeit less commonly than Insomnia with other anxiety disorders, with research indicating a complex, two-way link. Major Depressive Disorder (MDD) may act as a mediator in the relationship between Insomnia and SAD. Cognitive Behavioral Therapy for SAD (CBT-S) and Insomnia (CBT-I) has proven effective in treating each disorder individually, even with comorbidities. However, no studies have been found examining the combined CBT approach for treating both Insomnia and SAD simultaneously. The current study aimed to explore the outcomes of sequential CBT-I and CBT-S on patients with co-occurring Insomnia and SAD. A secondary aim was to assess changes in depressive symptoms, given the connection to both Insomnia and SAD.

Method
A single-case repeated crossover AB design was used. Ten participants aged 18 to 59 with comorbid Insomnia disorder and SAD were recruited and randomized to one out of two sequences, CBT-I, CBT-S (1) or CBT-S, CBT-I (2). Each participant is numbered X:Y where X refers to sequence 1 or 2 and Y refers to each participant’s assigned number in that sequence. Ten participants underwent weekly
individual treatment sessions, and seven participants completed the treatment course. The primary outcomes were symptoms of Insomnia disorder and SAD. Insomnia symptoms were measured weekly with the Insomnia Severity Index (Bastien et al., 2001) and daily with a sleep diary including undesired time awake defined as Sleep Onset Latency (SOL) + Wakeup After Sleep Onset (WASO). Symptoms of SAD were measured daily with the Social Phobia Rating Scale (SPRS; Wells & Leahy, 1998) and weekly with the Liebowitz Social Anxiety Scale-Self Report (LSAS-SR; Baker et al., 2002). The Montgomery–Åsberg Depression Rating Scale (MADRS-S; Svanborg & Asberg, 1994) was used as a secondary measure to evaluate depressive symptoms. The data from the daily measures was analyzed visually. Non-overlap of all pairs (NAP; Parker & Vannest, 2009) was used to calculate effect sizes for phase-differences of the daily measures (<.32 = weak effects, .32-.84 = medium effects, >.84 = strong effects).

**Main results**

Visual inspection of SPRS showed a decrease in reported symptoms between the baseline phase and treatment phase for participants 1:1, 1:2, 1:3, 2:1, and 2:2. Weekly measures with LSAS-SR also showed symptom reductions, although for some participants, the reductions did not reach non-clinical levels. For participants 1:2, 1:4, and 2:3, there was an increase in reported symptoms between the baseline and treatment phases, but for participant 1:4, symptoms improved from post-treatment to the 4-month follow-up. The NAP scores between baseline and post corroborated the visual analysis (1:1=.73, 1:2=-.69, 1:3=.59, 1:4=-.53, 2:1=.84, 2:2=.96, 2:3=missing), and the weekly social anxiety measures showed slight improvements for participants 1:2 and 1:4, but increased reported symptoms for participant 2:3. Follow-up data were not obtained for participant 2:2 and post-treatment data were not obtained for participant 2:3.

Regarding insomnia measures, visual analyses of daily insomnia measures (Sleep Onset Latency; SOL, And Wake After Sleep Onset; WASO) showed a reduction in undesired time spent awake between baseline and treatment phase for participants 1:1, 1:2, 1:3, 1:4, 2:1, and 2:3. Follow-up data were not obtained for participants 2:2 and 2:3.
Participant 2:2 showed improvement on ISI but a deterioration in daily measures at post-treatment. A deviation in the opposite direction was noted for participants 1:3 and 1:4, whose ISI scores deteriorated between post-treatment and follow-up, whereas the NAP scores of daily measures improved. Post-treatment data from daily measures were missing for participant 1:3. A comparison was therefore made between baseline and the daily measures from the intervention phase. The following NAP-scores were obtained between baseline and post (1:1=.71, 1:2=.19, 1:3=missing, 1:4=.74, 2:1=1, 2:2=-.49, 2:3=missing)

The results indicated a reduction in self-reported depressive symptoms according to the weekly measurements with the Montgomery-Åsberg Depression Rating Scale (MADRS-S) between baseline (A) and post-treatment for participants 1:1, 1:2, 1:3, 2:1, and 2:2. However, follow-up data for participants 2:2 and 2:3 were not obtained. Participants 1:1, 1:2, and 2:1 remained stable or improved between post-treatment and the 4-month follow-up. On the other hand, participants 1:2 and 1:4 showed increased MADRS-S scores between post-treatment and the 4-month follow-up. Post-treatment and follow-up data were not obtained for participant 2:3, but a decrease in MADRS-S scores was observed between baseline (A) and the last sequence.

**Discussion**

The sequential CBT treatments potentially decreased symptoms of social anxiety and insomnia disorder, and symptoms of depression decreased along with the primary symptoms. However, treatment effects varied between participants and the variation in data within phases made analyses challenging and firm conclusions difficult to draw. The study concluded that CBT-I was effective at reducing symptoms of Insomnia disorder in people with co-morbid SAD. Although the results concerning the treatment effects on social anxiety were more difficult to interpret, the study suggests that sequential CBT treatments may be more effective for severe social anxiety than for mild or moderate social anxiety. The treatment effects on depressive symptomology were too inconsistent with
respect to the design for any clear interpretations to be made. Future research should address the methodological shortcomings and strive to better understand the relationship between insomnia disorder and SAD.
Clinical trial II


Background
A link between Repetitive Negative Thinking (RNT), which includes worry and rumination, and the onset and maintenance of psychiatric disorders such as depression, SAD, GAD, PTSD, and insomnia, has been proposed. Previous research suggests that rumination-focused cognitive-behavior therapy (RFCBT) may be more effective than other approaches in addressing RNT, particularly in treating depression. However, limited research has been conducted on the effects of RFCBT on disorders other than depression. The current study aimed to investigate the effectiveness of group-delivered RFCBT in a sample of participants with clinical symptom levels of trait worry, among anxiety disorders, MDD, and Insomnia disorder. The study hypothesized that participants randomized to RFCBT would report greater reductions in anxiety, insomnia, depression, and RNT and greater increases in perceived quality of life than those randomized to a waiting list control group. The study further aimed to fill the gap in research on the effects of RFCBT on disorders beyond depression and to evaluate the effectiveness of a transdiagnostic approach to treating multiple disorders. The results of the study could contribute to the development of evidence-based treatments for individuals with multiple psychiatric disorders.

Methods
A randomized controlled superiority parallel arm trial with 73 participants who were randomly assigned to either a group treatment condition (n = 36) or a waiting list control group condition (n = 37) was recruited. All participants had elevated levels of worry and clinical levels on at least two disorders among depression, insomnia,
and anxiety. The participants in the treatment condition received group-administered RFCBT weekly for eight consecutive weeks, 2 hours at a time. Self-rating data on symptoms of trait worry, insomnia, depression, anxiety (primary), and RNT and quality of life (secondary) were collected at pre, post, 2- and 6-month follow-up. The severity of trait worry was assessed using the Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990). The Insomnia Severity Index (ISI; Bastien et al., 2001) was used to evaluate Insomnia disorder symptoms. Depressive symptoms were assessed using the Montgomery-Åsberg Depression Rating Scale (MADRS-S; Svanborg & Asberg, 1994). Anxiety symptoms were assessed using the Overall Anxiety Severity and Impairment Scale (OASIS; Norman et al., 2006). The severity of RNT was assessed using the Perseverative Thinking Questionnaire (PTQ; Ehring et al., 2011). Quality of life was assessed using the Brunsviken Brief Quality of Life scale (BBQ; Lindner et al., 2016). Linear mixed models were used to analyze continuous variables collected at three assessment points (baseline, post-treatment, and 2-month follow-up) and all individuals with at least one observation on the dependent variable were included in the models. Effect sizes in the form of standardized mean difference (Cohen’s d) with associated confidence intervals were computed based on parameter estimates from linear mixed models following Feingold’s formulas. Additionally, the total number of participants within each arm moving across the clinical cut-off levels was analyzed to assess clinical significance.

**Main results**

All observed changes in RFCBT were in the expected direction with improvements from baseline to follow-up assessments. Model-implied within-group effects in RFCBT between baseline and 2-month follow-up were in the range of $d = .70$ to $d = 1.02$ for all primary outcomes, and $.64-.65$ for the secondary outcomes. Significant time by group interaction effects were observed for insomnia symptoms (ISI) between the baseline and post-measurements, with a model-implied between-group effect size of large strength ($d = .84$), and between baseline and 2-month follow-up measurements, with a model-implied between-group effect size of moderate strength($d = .56$), in favor of RFCBT. Regarding symptoms of
depression (MADRS-S), a significant time by group interaction effect with a model-implied between-group medium effect size was found between the baseline and 2-month follow-up measurements, in favor of RG-CBT, but no statistically significant time by group interaction between the baseline and post-measurements was detected. No significant time by group interaction effects were found regarding anxiety symptoms (OASIS). Concerning secondary outcomes, no significant time by group interaction effects were found for worry (PSWQ), RNT (PTQ), or quality of life (BBQ).

**Discussion**

The results suggest that the RFCBT group intervention is effective for insomnia with large and medium effect sizes at post-treatment and at the 2-month follow-up, respectively, and potentially effective for depression with medium effect size at 2-month follow-up. It is noteworthy that insomnia severity was significantly lower for those who received RFCBT, even though insomnia was not explicitly addressed in the treatment protocol (i.e., clinical examples did not specifically address scenarios typical to insomnia) and as neither RNT (PTQ) nor trait worry (PSWQ) were significantly affected. There were moderate effect sizes for the effect of RFCBT on anxiety (OASIS) and RNT (PTQ), but there were no statistically significant differences. The current results add some uncertainty to the theoretical link between RNT and insomnia. Limitations of the study included potential alternative explanations such as insufficient statistical power, significant attrition at follow-up assessments, and lower intervention dose than in a comparable study. Future research should strive to clarify the link between RNT and psychological disorders as well as clarify for whom, how, and when RFCBT should be the choice of treatment.
Clinical trial III

Wallsten, D., Gustafsson, H., Tillfors, M., Norell, A., Parling, T. Exploring feasibility and preliminary effects of a process-based treatment informed by Relational Frame Theory – A mixed method study in a sample with comorbid mental disorders. Manuscript submitted to The Psychological Record.

Background

Recently proposed amendments to Relational Frame Theory (RFT) have implications for the analysis and treatment of psychological suffering. Based on the proposed amendments, a new treatment called Process-Based Behavior Therapy (PBBT) has been developed. Unlike Acceptance and Commitment Therapy (ACT) that rests on similar philosophical and theoretical foundations, the proposed treatment principles share technical language with the basic science and does therefore not utilize so-called pragmatic mid-level terms. The amendments to RFT involve analyzing the unit of Relating, Orienting, and Evoking functions (ROE). Apart from theoretical coherence, any proposed treatments should be carefully explored in terms of feasibility, negative side-effects, and preliminary effectiveness. This study aimed to explore feasibility and effectiveness of a process-based psychological treatment for people with comorbid mental disorders informed by RFT with a mixed ideographic design between IPA and longitudinal quantitative measurements.

Methods

This study used an exploratory mixed-method design with an emphasis on the qualitative data. Three participants who met criteria for at least two comorbid mental disorders within anxiety disorders, PTSD, OCD, and MDD were included. Each of the three participants (fictitious names Karen, Lisa, and Carl) received 20 weekly hour-long sessions. Qualitative data was collected through semi-structured interviews conducted when the treatment had ended. Relevant self-rating scales chosen to capture symptoms of disorders for each participant were used to measure the severity of each participant’s symptoms before and after the treatment, as well as during follow-up periods at 2 and 6 months after the treatment. The Generalized
Anxiety Disorder 7-item Scale (Spitzer et al., 2006) was used to evaluate general anxiety symptoms. The Patient Health Questionnaire was used to assess depressive symptoms (Kroenke et al., 2001). The Brunnsviken Brief Quality of Life scale (Lindner et al., 2016) was used to measure quality of life. The following individual outcome measures based on diagnostic criteria were used: The Liebowitz Social Anxiety Scale-Self Report (Baker et al., 2002) was used to evaluate symptoms of social anxiety. The Panic Disorder Severity Scale (Shear et al., 1997) was employed to measure symptoms of panic disorder. The Posttraumatic Checklist for DSM-5 (PCL-5) was used to measure symptoms of PTSD (Blevins et al., 2015). The Yale-Brown Obsessive-Compulsive Scale (Goodman et al., 1989) was utilized to assess symptoms of obsessive-compulsive disorder (OCD). The qualitative data was analyzed with interpretative phenomenological analysis (IPA). Personal Experiential Themes and Group Experiential Themes were identified for each participant to preserve the idiographic nature of the analysis, before moving on to identifying differences and similarities between participants. Finally, Group Experiential Themes were identified across participants and Personal Experiential Themes were distinguished.

**Results**

The qualitative analysis of interview data yielded three overarching Group Experiential Themes, providing a structured narrative of participants' experiences: (1) "What's what? - form, conditions, and confusion": This theme encapsulates participants' efforts to make sense of the context of therapy, including the structure and potential confusion surrounding the treatment. (2) "To feel or not to feel - challenges around emotional presence": This theme captures the emotional challenges participants faced in understanding and engaging with the therapy. (3) "War, truce, or peace": This theme reflects on the perceived outcomes and resolutions of the therapeutic process. These themes comprised multiple Personal Experiential Themes, detailed by at least two participants, providing a rich narrative on individual experiences. Participants' narratives under these themes ranged from appreciating the content and process of therapy to expressing concerns about the treatment duration and external support. Emotional engagement emerged as a critical factor,
with participants struggling with their vulnerability and trust in the therapeutic process. The personal responsibility for change was also emphasized, especially where traditional homework was absent, prompting active self-management.

Karen, Lisa, and Carl's self-reported clinical scales presented a mixed picture: Karen's data showed variable symptom severity, with some worsening at follow-ups (e.g., PCL-5). Lisa experienced improvements in anxiety (GAD-7) but increased depressive symptoms later (PHQ-9). Carl's quality of life improved significantly (BBQ), with reductions in social avoidance behaviors (LSAS-SR).

**Discussion**

The inconsistencies across different clinical scales and time points indicate a complex interplay of treatment effects. The qualitative insights shed light on the subjective experiences of therapy, highlighting the importance of the therapeutic relationship, personal agency, and emotional processing in treatment efficacy. The quantitative data, while illustrating some positive changes, also show a non-linear progression of mental health recovery. Both sets of findings point to the conclusion that while PBBT can be beneficial, individual outcomes can vary due to personal factors and the inherent complexities of mental health disorders. These outcomes underscore the need of more research on treatments based on RFT and potential importance of a tailored approach (not least concerning treatment duration) considering both the emotional and symptomatic dimensions of recovery. They also underscore the crucial aspect of facilitating trust. Future research should continue to explore idiographic clinical applications of RFT. Regarding PBBT, researchers should identify characteristics of participants likely to benefit and carefully consider rationale, treatment duration, as well as track process and outcomes.
Part 4 - General discussion, considerations, and contributions to the field

The clinical trials that constitute the empirical body of this doctoral thesis each contributed to bridging the scientific gap on psychological treatment approaches to heterogenous psychological suffering. They addressed different aspects of the identified scientific dilemmas and potential limitations while exploring alternative paths.

In clinical trial I, mainly two aspects were addressed. First, instead of picking a sample from a population with one delimited disorder, a comorbid sample that met criteria for both SAD and Insomnia disorder was recruited. This enabled the assessment of efficacy of the sequential evidence-based treatment protocols CBT-I and CBT-S. Second, rather than a nomothetic design, a partly idiographic approach with a Single Case Experimental Design and repeated baselines was used to allow for in-depth understanding of how the treatment worked for each participant concerning symptoms of SAD and Insomnia disorder. The treatment approach was not process-based in the sense that each protocol was designed to address a specific mental disorder. However, maintenance processes such as negative reinforcement were included (but not directly measured) through the techniques of sleep restriction, stimulus control, and exposure. Similarly, concerning cognitive processes, faulty information processing such as cognitive distortions was addressed (but not directly measured) through cognitive restructuring with techniques such as registration and disputation of thoughts, and behavioral experiments. As previously stated, the results indicated that CBT-I decreased insomnia symptoms for people who also meet criteria for SAD. Though it was harder to make clear conclusions about how the treatment affected social anxiety, the study hints that using CBT treatments, one after the other, might work better for severe social anxiety compared to mild or moderate levels. The results concerning depressive symptoms were inconsistent. Although idiographic methods like SCED theoretically could be central to solving the identified dilemmas, they do not handle variance between participants, at least not until a process of change is so well defined,
all-encompassing, and measurable that each individual trajectory can be explained by it.

As previously discussed, the study also suffered from several methodological limitations or inconsistencies, such as the use of self-rating scales that were psychometrically evaluated for group level research, modified self-rating scales, heterogeneous treatment packages, a complicated repeated crossover design with simultaneous phase shifts, and limited trace of adherence. The high variability in the data within phases and the relatively low variability between phases in combination with absent tracking of the addressed processes made it difficult to fully utilize the chosen method. In other words, there were not sufficient means to predict each individual trajectory. The noisy data made inferences about treatment efficacy difficult.

Apart from the methodological limitations, what may explain these results? Previous research offers few specific clues. The outcome measures co-vary to some extent, but not consistently enough for any simple theoretical assumptions to be valid. Events outside of the treatment were tracked and assessed but could not explain the variation. Previous research indicates a complex relationship between Insomnia disorder, SAD, and MDD (Alvaro et al., 2013; Belanger et al., 2016; Buckner et al., 2008; Manber et al., 2008), which is in line with the current findings. However, the results do not align with the findings from Buckner et al. (2008), that depressive symptoms would mediate the relationship between SAD and Insomnia disorder.

Despite its limitations, the study contributed with both scientific and clinical insights to an area that have remained unexplored at large. With a degree of caution, the findings may be interpreted as if addressing insomnia in this population with CBT-I is likely to be more efficacious than treating SAD with CBT-S. Concerning future research, a more basic SCED design and strengthened coherence between adherence, process, and outcome should be considered. This could make it easier to understand and generalize the results as well as provide better means for tailoring the intervention to fit individuals.
The second trial was a nomothetic RCT design but placed clear emphasis on a theoretical process—repetitive negative thinking (RNT)—addressed through Rumination-focused CBT (RFCBT). RNT was conceptualized within an operant conditioning framework. The inclusion of a broader sample with clinical levels of comorbid symptoms within the domains of depression, anxiety, and insomnia enhanced ecological validity. The study design addressed some of the problems associated with nomothetic self-rating scales in idiographic designs, and the collaboration with a primary healthcare center which provided therapists and facilities also bolstered ecological validity. Furthermore, the assessment of adverse side effects and events added an important dimension to this clinical trial.

The results suggested that the RFCBT group intervention was effective in alleviating insomnia, exhibiting large immediate and sustained medium effect sizes, in accordance with the initial hypotheses. It also potentially decreased depressive symptoms at the 2-month follow-up, with improvements sustained at the 6-month follow-up, partly contradicting our expectations of significant effects immediately after treatment. Contrary to the hypothesized outcomes, there were no significant improvements in anxiety, RNT, trait worry, or quality of life. Even though problems associated with insomnia were not a direct focus of the treatment protocol, their severity was significantly reduced in the RFCBT condition compared to the wait-list control group. This was consistent with the hypothesis that elements within RFCBT aimed at reducing RNT and avoidance could indirectly alleviate symptoms of insomnia. However, the lack of a significant reduction in RNT and trait worry compared to the control group raises questions about the hypothesized mechanism of change and the theoretical link between RNT and insomnia, and highlights the need for further exploration.

As mentioned, depressive symptoms did not exhibit a significant difference immediately post-treatment but did so during the 2-month follow-up, contrasting with prior studies demonstrating the clear effects of RFCBT on depressive symptoms. Given the established role of insomnia as a precursor to depression, the reduction in depressive
symptoms at follow-up suggested a potential decrease in depression risk in the treated group after addressing a potential maintaining factor—insomnia. These findings raised considerations about the specific processes through which RFCBT impacted insomnia and depression and underscore the importance of deeper investigation into the relationship between insomnia, RNT, and depressive symptoms, and potential alternative explanations.

Some explanations for the results at odds with previous research may be found among the limitations which weakened the possibility to observe significant outcomes. First, the study was underpowered to detect weak and moderate effects and suffered from both systematic and random attrition and dropouts. It should be stressed however, that the power calculations were based on a study in which large effect sizes were obtained (Topper et al., 2017). While a process was operationalized (but not analyzed, as mediation analyses were intended for a later publication), diagnostic constructs were still employed during screening. Additionally, the group format, without any individual sessions, made it more difficult to address participants on an individual basis. Also, the absence of specific assessments regarding treatment comprehension and engagement made it challenging to discern how everyone engaged with their treatment. The treatment package, although focusing on RNT, consisted of multiple techniques and strategies, incorporating elements from mindfulness, compassion-focused therapy, operant behavior analysis, and relaxation. Unfortunately, the study design did not permit dismantling analyses. As the impact of RFCBT on symptoms of insomnia was apparent, the effects on the proposed process will be further explored in a forthcoming article specifically dedicated to insomnia.

Apart from symptoms of insomnia and depression at the two-month follow-up, the absence of significant effects once again underscores the challenging nature of evaluating psychological interventions. It is tempting to speculate that insomnia could have been maintaining depressive symptoms which could explain the delayed effect. This would also be in line with previous research that has suggested a bi-directional relationship between MDD and Insomnia disorder (Alvaro
et al., 2013; Baglioni et al., 2011; Manber & Chambers, 2009). Symptoms of insomnia disorder could have been affected through sleep-specific worry, while instruments for trait worry and RNT may not have been sensitive enough in relation to statistical power in this study. To help clarify these results, future studies on RNT interventions may, on top of addressing the methodological shortcomings of this study, benefit from returning to specific interventions designed to address RNT. They should also investigate different comorbid populations with RNT or scales that capture specific worry and rumination rather than trait worry. Also, with enough power, more sophisticated analyses concerning the process could be made. For group level research involving comorbid samples, it may be worth considering individual or even idiographic self-rating scales to avoid floor effects. Instead of having all participants complete all self-rating scales irrespective of their idiographic characteristics, which obviously may dilute the averages, employing self-rating scales that correspond to each participant’s clinical profile, and having the total scores standardized, could potentially offer valuable insights for comparison. Additionally, a design that allows for dismantling could provide insights into the relative importance of each element within the RFCBT treatment package. The main contributions to the field comprised the effects of RFCBT on Insomnia Disorder, and the uncertainty raised concerning the process(es) of change.

The third trial mixed idiographic qualitative data analyzed with Interpretative Phenomenological Analysis (IPA) and longitudinal clinically relevant quantitative measures. The diagnostic constructs were assessed as a part of the secondary research questions to allow for mapping with the qualitative outcomes. The design was idiographic with three participants, a technically defined (although not directly measured) process of change (Arbitrary Applicable Relational Responding; AARRing), and a process-based treatment approach (Process-Based Behavior Therapy; PBBT). The combined results suggested that for participants with comorbid mental disorders, who had previously had unsuccessful attempts with conventional psychological treatments, PBBT may be perceived as feasible and effective, potentially leading to clinically significant
effects as measured by standardized self-rating scales. However, PBBT was also found to be perceived as frustrating, difficult to comprehend, and as conducted, insufficient in dose and outcome including some weak, missing, or even negative effects. Three Group Experiential Themes emerged, underscoring the importance of individualized treatment conditions, the challenges surrounding emotional presence, and the varied experiences of outcomes in PBBT. Two participants expressed a desire for more extended treatments and discussed the difficulties in confronting painful aspects of one’s self-story and the pain associated with insight in the absence of change. Perceived time constraints, trust in the treatment and the therapist, and confrontations with painful aspects of one’s history were potentially intertwined with the perceived outcomes. Variations in trust and treatment credibility were observed, and different paths concerning trust were potentially linked to individual histories of relating to others and the approaching of difficult emotions during the treatment. The findings also highlighted the need for clear communication about the potential emotional challenges associated with this kind of treatment and emphasized the crucial role of therapeutic alliance, stressing the importance of predictability and consistency in the therapeutic relationship.

The quantitative results were challenging to interpret, showing clinically significant fluctuations in symptoms and notable deviations within the quantitative measurements. This suggested that PBBT might have been effective or partly effective for different phenomena in different participants at different timepoints. The inconsistencies observed within the quantitative measurements might also be attributed to a lack of precision in the constructs and the standardized self-rating scales to accurately reflect phenomena at an individual level. The combined results suggested that for participants with comorbid mental disorders, PBBT may be perceived as feasible and effective, and potentially lead to clinically significant effects. However, this treatment approach may also be perceived as frustrating, difficult to comprehend, and insufficient in dose and outcome, with weak, missing, or even negative effects.
Even though the main outcome (the semi-structured interviews) was idiographic and captured relevant aspects of AARRing, it also involved noticing, interpreting, and verbalizing by the participant, as well as interpretations by the researchers. The design did not allow for any quantitative analyses on the process and the phenomenological account rather shed light on the “emergent” patterns such as the sense-making around thinking, feeling, and approaching difficult emotions. PBBT involves the need of influencing often highly established verbal networking through the participants’ contexts which may be both very difficult and time-consuming. The protocol has not been subject to a clinical trial before, and it is principle-based rather than manual-based, which poses some obstacles to therapist adherence and replication. This trial was the first systematic evaluation of this treatment approach. The main contributions to the field were rich idiographic data on feasibility through which concrete recommendations on methodology and the treatment were made. Future research should consider these results carefully before proceeding with further clinical trials. This includes making sure that a sufficient rational concerning the risk of difficult emotional confrontations and greater flexibility concerning the duration needed to achieve a desired outcome. Two out of three participants from a population with comorbid mental disorders (and dissatisfaction with their previous psychological treatments) still reported meaningful improvements which indicate potential clinical utilities for this group.

The general conclusions and considerations of this thesis come with an important caveat. Abstracting from the layers of noise and different levels of analysis within the data that makes up the empirical part of this thesis requires caution. Each time a new building block is added to the construction of clinical psychological science, the question *is this a brick that will strengthen the building or contribute to its collapse?* should be posed. It has been suggested that it is time for psychology to divorce medicine, and that ideographical approaches should be embraced. However, the empirical findings within this thesis rather highlight the theoretical and practical challenges of conducting clinical research in general. More questions than answers remain. This is not to say that questions are not important for advancing a science, but answering questions requires
the use of scarce resources and therefore it is also important to consider what questions will bring science forward and what questions will only lead into another blind alley. Any logical derivation or abstraction that rests on illegitimate assumptions will lead astray.

This dissertation is broadly entangled in three sets of inquiries: (1) how to deal with symptoms of common comorbid mental disorders (or heterogenous psychological suffering as the concept of disorders comes with psychiatric baggage), (2) how psychological suffering should be understood and conceptualized, and (3) how psychological interventions should be evaluated and developed. The first and primary set incorporates the general aim of this thesis: to find more effective psychological treatment approaches to common heterogenous psychological suffering. While this inquiry may appear straightforward, it soon engenders broader and more profound questions such as what role society plays in individuals’ psychological suffering, how a society should be structured and organized to foster psychological well-being, and what psychological well-being is. Also, within the boundaries of a certain society, what results are reasonable to demand from a psychological intervention?

The initial set is pragmatically delimited as this thesis does not deal with societal structures nor with the concept of well-being (at least not directly). The second and third sets, how psychological suffering should be conceptualized, and how psychological interventions should be evaluated and developed are merely indirectly explored through the implicit philosophical assumptions, the theoretical crossroads, and the methodological choices made within each clinical trial. In other words, the results do not only reflect the interventions, but also the concepts and methods involved. Although we may gain some crude sense of how concepts at different levels, and methods work by engaging with them, and varying them across different trials, this thesis encompasses trials designed to answer how each treatment performs or is received, not how the methods or concepts themselves work.
The lack of means to directly assess how different philosophical assumptions, definitions of processes and outcomes, and scientific designs interact and work is problematic since these inquiries are profoundly intertwined with the outcome. Each question gives rise to new questions, fundamental to the initial inquiry, which in turn leads to a linguistic and scientific rabbit hole. Philosophers, biologists, sociologists, theologians, political scientists, psychologists, anthropologists, neuroscientists, social workers, other healthcare professionals, and researchers from various interdisciplinary fields such as public health, cognitive and behavioral science, and human development have dedicated their life's work to bring us to this point – a point characterized by vast complexity. Not that the science of psychology is necessarily more complicated than other fields, but it is heterogenous and often abstract. There is also disagreement on the units of analysis which gives rise to myriads of different levels, perspectives, overlapping and incoherent concepts. Although some disagreements are healthy and inherent to science, being too disparate (e.g., disagreement over fundamental questions) and too narrow (e.g., inventing the same treatments repeatedly) at the same time must be counterproductive. Psychological suffering, mental distress, disorders (call it whatever you like) are very common. In review after review, it is concluded that different psychological treatments (most often CBT) are effective for most common disorders, and effect sizes are indeed often large, or even very large (See for example: Hofmann et al., 2012; Öst et al., 2023; Ost et al., 2022; Ost et al., 2023a, 2023b). But what is considered large, effective, and efficacious is also to some extent arbitrary. This is reflected by the fact that only about half of those who receive a psychological treatment under circumstances that coincide with the execution of a sufficient high quality RCT report clinically meaningful effects. These circumstances, including settings associated with effectiveness rather than efficacy, may or may not be representative for psychological treatments offered in regular care.

The collective endeavor of bringing the science of psychology forward should neither be disregarded nor derided; instead, the current state underscores the arduous nature of the task at hand. As important as delimitation is to scientific inquiries, as limiting it seems to approach
these inquiries through nomothetic reductionism. This is akin to predicting when and where a raindrop will fall by studying how particles generally interact. As complexity increases, do outcomes really improve? And when outcomes do seem to involve improvements, how often can we say with certainty that these improvements were “caused” by our intended interventions and techniques? (See for example Luborsky et al., 2002 on the dodo bird verdict).

While the results from trials I, II, and III directly and indirectly provide suggestions for future research, concrete clinical advice must be carefully inferred. First, future psychological research should strive to further increase consistency between philosophy, basic science, and application. I also believe that researchers should be careful of getting stuck in any topography (i.e., “this is the one true way of conducting clinical research and executing psychological interventions”). Mixed idiographic methods should be further explored with well-matched designs and research questions (as simple and substantial as possible). Means for measuring processes and outcome in individuals with as few difficult-to-meet assumptions as possible should be secured. Both SCED and IPA offer promising implications, yet they are also time-consuming, and a large number of measurements can be burdensome and serve as potential confounding variables. Future research should aim to develop better guidelines for creating efficient idiographic measurements.

Secondly, while direct clinical advice should be limited based on these findings, some recommendations can be inferred upon reviewing the trials. Many times, therapists are forced to do much with very little, and often something is better than nothing. But too much discrepancy between the needs and the means of meeting them can in a worst-case scenario do more harm than good, for both client and therapist. In all trials included in the present dissertation, insufficient means most probably affected the outcome. Trial I was a project for a master thesis which entails a lack of recourses, time, and limited experience with the treatments, scientific methods and the design. Trial II involved group sessions and poor means of tracking in-session adherence. It is not unlikely that therapists with more experience
from RFCBT and individual sessions could have improved the results in several areas. Practice under strict supervision may also have strengthened internal validity. In trial III, taking on participants with life-long difficulties with 12 sessions was not optimal. The treatment was extended to 20 sessions, but the extension was offered at session 10-11 (when a supplementary ethical approval was obtained) which may have reduced positive effects of prolonging the treatment. In a subsequent, yet unpublished study, notably improved results were seemingly achieved with 30 sessions. However, it is also likely that the execution of this relatively advanced treatment approach was improved as it included the insights from the first trial, more experience and additional supervision.

Finally, applied psychological science would likely have a lot to gain by finding its way into the clinics where therapists, whether they think about it or not, are already producing data daily, and where the results eventually should be applied. To fully utilize this data and make it available without compromising ethics would require new ways of documenting, reporting, and sharing data, but it would also provide instantaneous and valuable feedback for each practitioner in their ongoing treatments, encouraging them to think more about what they do and how it works. The shift from nomothetical to principle- or process-based idiographic approaches and the rise of technology at least bring us closer to this possibility.
Epilogue

As a practitioner of CBT, after only a few years I started to feel disillusioned. Some clients turned out great, and some did not seem to have gained anything from their treatments. Some likely got worse. The ones that turned out great were motivated, and the ones that did not “just weren’t there yet”. I was great, and then I was terrible. Everything new merely seemed like new versions of something I already thought I knew. Through the gradually refined show I put on from my whiteboard, little by little, I also started to notice the contradictions I ran into. Some of the contradictions turned out to boil down to the confusing of monism and dualism. I could neither articulate nor decide whether the clients should be considered rational agents with free will or pinballs, and I could not specify my own role. Was I the objective expert standing on the side conducting analyses, or should I be part of the analyses? Most often this issue was solved by analyzing behaviors there and then, and my temporary and implicit stance on monism/dualism probably depended mostly on the perceived success in each case. The more a treatment progressed, the more inclined I would be to distance myself from the analysis and appeal to moralistic thinking stemming from dualism (“well, if you do not take the medicine that I prescribe...”). I was mixing up levels of analysis, I did not see the relation between language and ontology looking for truth, and I neglected the context in favor of dualistic concepts like laziness or grit as it suited me. But worst of all, I was entirely blind to the literal and metaphorical distance between me as the expert, and the client. I left very little space for another human being to be something besides smaller than me, even if that meant relatively big at times. Rather than modelling authenticity, letting the person in front of me see that ultimately, “we’re just two lost souls swimming in a fishbowl” (Waters and Gilmour, 1975), I modelled comparisons. Eat, or be eaten. The most important thing, whatever I did, was for me to be the most important. This was and it keeps being a harsh lesson to digest, and I am a rather slow student. This is also a lesson for which I will always be very grateful to my main supervisor Maria Tillfors as well as to Yvonne Barnes-Holmes and Ciara McEnteggart.
One of the biggest obstacles with worldviews, it seems, is that most often they are implicit to the degree that you may not even be aware that you adhere to them. As my worldview became more pragmatic and relativistic, I could no longer retain ontology. My new reality was, “I have no means of contacting an ontological reality”. Unfortunately, the same goes for that conclusion, as a real-time demonstration of the never-ending regression of language and ontology.

These six years have been the most transforming years of my life. Besides the lessons on implicit assumptions and functional patterns, the lessons on humbleness (thank you Maria), friendship (thank you Essi), and metaphysics (thank you Anette) have been by far the most important ones. None of them are explicitly visible in the scientific publications that make up this thesis, but they make all the difference for me as a human and future researcher.

“Good morning, and in case I don’t see ya, good afternoon, good evening, and good night!”

- Truman Burbank
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Shifting the lens on heterogenous psychological suffering

This doctoral thesis addresses the pervasive issue of psychological suffering, underscoring the high prevalence of and common comorbidity between mental disorders. Despite the undeniable efficacy of psychological treatments in alleviating suffering, a significant proportion of individuals fail to benefit from evidence-based approaches. Research on treatments for people who meet criteria for several disorders is scarce and current evidence-based treatment approaches still tend to target and or be evaluated on delimited disorders. This raises the question of how to address heterogeneous psychological suffering.

Acknowledging the multitude of angles and paths available for evaluating and developing psychological treatments, the overarching goal of this dissertation is to explore and evaluate novel treatment approaches in populations with heterogeneous psychological suffering. By bridging the gap between nomothetic designs, disorder-based treatments, and the emerging wave of idiographic designs and process-based treatment approaches, this thesis also aims to explore some of the scientific dilemmas that arise from developing and evaluating psychological treatments in a predominantly psychiatric paradigm.

Daniel Wallsten
Shifting the lens on heterogenous psychological suffering

Exploring and evaluating novel treatment approaches to comorbid mental disorders

Daniel Wallsten

Licensed psychologist
Founder of the, the universe and everything