On Behalf of Science and Practice –
Using Psychotherapy Research to Address Clinical Practice Concerns

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Kaline Mütze, M.Sc.

aus Bad Soden-Salmünster

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Referent: Univ.-Prof. Dr. Michael Witthöft

Korreferentin: Jun.-Prof. Dr. Stefanie M. Jungmann

Korreferentin: Univ.-Prof. Dr. Michèle Wessa

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Vorwort

Die vorliegende Dissertation wurde durch ein Promotionsstipendium der Johannes Gutenberg-Universität Mainz gefördert. Die eingeschlossenen Studien wurden über die Abteilung für Klinische Psychologie, Psychotherapie und Experimentelle Psychopathologie durchgeführt, wobei eine Zusammenarbeit mit Prof. Dr. Wolfgang Lutz der Universität Trier entstand (Studie 1). Den Studien zugrundeliegende Daten wurden an der Poliklinischen Institutsambulanz für Psychotherapie der Universität Mainz erhoben. Die Dissertation richtet sich an Interessierte aus der psychotherapeutischen Forschung, Praxis und Lehre.

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Nicht zuletzt möchte ich den Patient*innen, Therapeut*innen und Mitarbeiter*innen danken, die an der Datenerhebung beteiligt waren. Ohne sie wäre das Gesamtwerk dieser Arbeit nicht möglich gewesen und Psychotherapieforschung allgemein undenkbar.

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Abstract

The many efforts to seek common ground for psychotherapy research and practice could not yet fix the gap that exists between the two stakeholders of mental health services as it has been the case for decades. The mutual integration of research and practice is an essential ingredient in effective service delivery of psychological treatments. In this connection, practice-oriented studies that are conducted in naturalistic settings provide a context in which both parties can learn from and complement each other. With the aim of contributing to the improvement of psychological practice in terms of patient outcomes, professional well-being, and training, two research topics that are relevant to clinical practice concerns were investigated in this dissertation: the use of data-driven clinical support tools and occupational stress among psychotherapists.

Study 1 investigated whether basic outcome monitoring in outpatient psychotherapy (i.e., assessment intervals of 5 to 15 sessions) can be used for personalized outcome prediction. This is significant because outcome prediction and monitoring have been proven useful to prevent stagnation, deterioration, or premature dropout from psychological treatment. However, session-by-session evaluation is rare in most clinical settings in the context of limited time and resources. In this study, individual treatment progress and dropout risk were predicted using modern statistical machine learning techniques such as the nearest neighbor method and least absolute shrinkage and selection operator regression. For the prediction of individual treatment progress, each patient's nearest neighbors were selected based on variables that have been identified as significant predictors of symptom change (i.e., baseline distress, intrinsic treatment motivation, previous inpatient treatment, and number of suicide attempts in the past). Lower intrinsic treatment motivation, a lack of university entrance qualification, higher baseline impairment, previous inpatient treatment, and diagnosed personality or eating disorder accounted for higher dropout probability. Addressing potential obstacles in routine symptom assessment, this study points to the practical significance of evidence-based research. The findings demonstrate that innovative outcome prediction is not limited to elaborated assessment and provide a reasonable approach for successfully predicting individual patient outcomes as long as session-by-session assessment is not a valid standard.

While patient symptoms and outcomes have always been the focus of investigation, therapist well-being is not sufficiently studied in psychotherapy research. High prevalences of work-related stress, that can lead to reduced professional competence and associated risks

for their patients, make this topic an ethical priority in the workplace. Therefore, Study 2 investigated how potential work stressors (i.e., patient distress, working alliance, and treatment outcome) relate to occupational stress among psychotherapists. The results show that treatments with high-distress patients, poor working alliance, and non-remission are associated with higher levels of occupational stress. Furthermore, occupational stress was significantly negatively related to perceived learning opportunities and patient treatment satisfaction.

When interpreting the results, particular attention was given to psychotherapy training as the potential of clinical support tools is developed in clinical training regarding their utility and implementation and because trainees experience more insecurity and stress at work compared to more experienced therapists. The conclusions of this dissertation highlight the importance of research-supported psychological treatments (e.g., the use of clinical support tools as a useful supplement to evaluation based on therapist judgment). Furthermore, approaches for the prevention of occupational stress among therapists are proposed. Both, the integration of data-driven clinical support tools into psychological practice and the risks of occupational stress burnout should be targeted in the educational context.

Zusammenfassung

Zahlreiche Bemühungen um eine gemeinsame Sichtweise von Psychotherapieforschung und psychotherapeutischer Praxis konnten die seit Jahrzehnten bestehende Kluft zwischen den beiden Akteuren in der psychischen Gesundheitsversorgung nicht überbrücken. Die beidseitige Integration von Forschung und Praxis ist ein wesentlicher Bestandteil der effektiven Bereitstellung von Psychotherapie. Praxisorientierte, naturalistische Studien schaffen hierbei einen Rahmen, in dem beide Seiten voneinander lernen und sich gegenseitig ergänzen können. Mit dem Ziel, einen Beitrag zur Verbesserung der psychotherapeutischen Praxis in Bezug auf Behandlungsergebnisse, berufliches Wohlbefinden und Ausbildung zu leisten, wurden in dieser Dissertation zwei praxisrelevante Forschungsfelder betrachtet: die Verwendung datengestützter klinischer Hilfsmittel und die berufliche Beanspruchung bei Psychotherapeut*innen.

In Studie 1 wurde untersucht, ob sich regelmäßige Verlaufsmessungen im Abstand von 5 bis 15 Sitzungen für die personalisierte Vorhersage von Behandlungsergebnissen in der ambulanten Psychotherapie eignen. Dies ist insofern von Bedeutung, als sich die Beobachtung und Vorhersage von Behandlungsverläufen als nützlich erwiesen haben, um Stagnation, Verschlechterung oder den frühzeitigen Abbruch einer Behandlung zu verhindern. Allerdings sind sitzungsweise Messungen in den meisten klinischen Einrichtungen aufgrund begrenzter Zeit und Ressourcen schwer zu realisieren. In dieser Studie wurden der individuelle Behandlungsfortschritt und das Abbruchrisiko von Patient*innen mithilfe moderner statistischer Maschine-Learning-Techniken wie dem Nächste-Nachbarn-Verfahren und der *least absolute shrinkage and selection operator regression* (LASSO-Regression) vorhergesagt. Zur Vorhersage des individuellen Behandlungsfortschritts der Patient*innen wurden die jeweiligen nächsten Nachbarn anhand der Variablen Baseline-Belastung, intrinsische Therapiemotivation, stationäre Vorbehandlung und Anzahl der Suizidversuche in der Vergangenheit bestimmt, nachdem diese als signifikante Prädiktoren für Symptomveränderung identifiziert wurden. Bei niedriger intrinsischer Therapiemotivation, fehlender Hochschulzugangsberechtigung, hoher Baseline-Belastung, stationärer Vorbehandlung und einer Diagnose im Bereich der Persönlichkeits- oder Essstörungen erhöhte sich die Wahrscheinlichkeit eines Therapieabbruchs. Die Studie verweist auf die praktische Relevanz evidenzbasierter Forschung in Bezug auf potenzielle Hindernisse bei der routinemäßigen Verlaufsmessung. Die Ergebnisse bieten eine Herangehensweise zur Vorhersage individueller Behandlungs-

ergebnisse solang sitzungsweise Messungen nicht der Norm entsprechen und zeigen, dass die Anwendung innovativer Vorhersagemethoden nicht auf aufwendige Erhebungen beschränkt ist.

Während Symptomatik und Behandlungsergebnisse von Patient*innen seit jeher im Mittelpunkt der Psychotherapieforschung stehen, wurde das therapeutische Wohlbefinden bisher unzureichend untersucht. Hohe Prävalenzraten beruflicher Überlastung, welche wiederum zu verminderter Fachkompetenz und damit verbundenen Risiken für Patient*innen führen kann, fordern eine ethische Priorisierung dieses Themas am Arbeitsplatz. In Studie 2 wurde daher untersucht, wie potenzielle Arbeitsstressoren (Belastungsniveau von Patient*innen, Qualität der therapeutischen Beziehung und Behandlungserfolg) mit beruflicher Beanspruchung bei Psychotherapeut*innen zusammenhängen. Die Ergebnisse zeigen, dass Therapien mit hochbelasteten Patient*innen, einer niedrigen Beziehungsqualität und Nicht-Ansprechen auf die Behandlung mit einem erhöhten Maß an beruflicher Beanspruchung einhergehen. Darüber hinaus stand die berufliche Beanspruchung in signifikant negativem Zusammenhang mit selbst empfundenen Lernmöglichkeiten und mit der Behandlungszufriedenheit der Patient*innen.

Bei der Interpretation der Ergebnisse wurde ein besonderes Augenmerk auf die psychotherapeutische Ausbildung gelegt, da sich das Potenzial klinischer Hilfsmittel in Bezug auf deren Anwendung und Nutzen in diesem Kontext besonders entfaltet und weil Auszubildende im Vergleich zu erfahreneren Therapeut*innen mehr Unsicherheiten und Überlastung bei der Arbeit erleben. Die Schlussfolgerungen dieser Dissertation heben die Bedeutung forschungsbasierter psychotherapeutischer Behandlungen hervor, wie beispielsweise die Verwendung klinischer Hilfsmittel als Ergänzung zum therapeutischen Urteil. Weiterhin werden präventive Ansätze beruflicher Überlastung bei Psychotherapeut*innen aufgezeigt. Sowohl die Integration datengestützter klinischer Hilfsmittel in die psychotherapeutische Praxis als auch Risiken beruflicher Überlastung sollten im Ausbildungskontext aufgegriffen werden.

List of Abbreviations

APA	American Psychological Association
BDI	Beck Depression Inventory
BSI	Brief Symptom Inventory
CBT	Cognitive Behavioral Therapy
ETR	Expected Treatment Response
GLM	Generalized Linear Model
GSI	Global Severity Index
LASSO	Least Absolute Shrinkage and Selection Operator
MBI	Maslach Burnout Inventory
NN	Nearest Neighbor
OLS	Ordinary Least Squares
PAI	Personalized Advantage Index
QEEW	Questionnaire on the Experience and Evaluation of Work
RMSE	Root-Mean-Square Error
ROM	Routine Outcome Monitoring
SCID	Structured Clinical Interview for DSM-IV
TICS	Trier Inventory for Chronic Stress
WAI	Working Alliance Inventory

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List of Original Publications and Manuscripts

Parts of this thesis are presented in the following articles:

Mütze, K., Witthöft, M., & Bräscher, A.-K. (2022). *Occupational Stress Among Psychotherapists: Associations With Patient Distress, Working Alliance, and Treatment Outcome.* [Manuscript submitted for publication]. Institute of Psychology, Johannes Gutenberg University Mainz.

Mütze, K., Witthöft, M., Lutz, W., & Bräscher, A.-K. (2022). Matching research and practice: Prediction of individual patient progress and dropout risk for basic routine outcome monitoring. *Psychotherapy Research*. *32*(3), 358-371. https://doi.org/10.1080/10503307.2021.1930244

1 General Introduction

> I believe that there is no valid distinction between a pure science and an applied science. … [They] advance in a single front. What retards the progress of one, retards the progress of the other; what fosters one, fosters the other. (Witmer, 1907, p. 4)

Although psychology is a relatively young science, the efficacy and effectiveness of psychological therapies have a strong evidence base (Barkham & Lambert, 2021). Psychological treatments, such as cognitive behavioral therapy (CBT), psychodynamic, and systemic therapies are efficacious in treating mental disorders with large effects (e.g., Barkham & Lambert, 2021; Lambert, 2013; Wampold & Imel, 2015). For more than half a century, psychotherapy research aims to understand and improve psychological interventions, facilitate evidence-based and cost-effective patient care, and improve service delivery (e.g., Howard et al., 1996; Kazdin, 2017; Lambert, 2015; Lutz, 2003; for an overview of the history of psychotherapy research, see Lutz, Castonguay et al., 2021). Conversely, experiences in practice form the basis for research perspectives and questions. One could think of a mutual stimulation of research and practice with the common goal of optimal treatment. However, things are not that simple: From diverging interests to controlled trials that do not reflect real-world settings through to ineffective communication – there is no denying the gap between psychotherapy research and practice concerns (Lilienfeld et al., 2015). In 2006, the American Psychological Association (APA) states that effective psychological practice is achieved by integrating the best available research with clinical expertise to enhance public health. Methods of applying scientific evidence to psychological practice in a top-down approach are called *evidence-based practice* (e.g., APA Presidential Task Force on Evidence-Based Practice, 2006; Kazdin, 2008). Guided by research evidence, practitioners adapt interventions with the highest probability of treatment success which means that their efficacy was tested in controlled trials "in the lab" before implementation in routine practice. A complementary paradigm termed *practice-based evidence* refers to the effects of treatments in routine care, whereby naturalistic data is used to obtain higher-order evidence (Barkham et al., 2010; Castonguay, Barkham, et al., 2021; Holmqvist et al., 2015).

In recent years, attempts have been made to overcome obstacles to the integration of research and practice, and by now "bridging the gap" is a major interest of the psychological community as well as in graduate training programs (Barkham & Mellor-Clark, 2003;

Hershenberg et al., 2012; Teachman et al., 2012). However, some challenges remain in the overall optimistic development: While researchers might feel frustrated that their findings from controlled trials are not translated to clinical practice, clinicians criticize the way research often reflects narrow interests for homogeneous samples that do not match *real-world* practice (Teachman et al., 2012). Mischel (2008, p. i) terms the disconnect between clinical practice and psychological science "a case of professional cognitive dissonance with heavy costs". According to the author, "practitioners too often still choose to do whatever they feel like", regardless of the scientific evidence for assessment and treatment methods (p. i).

In the last 30 years, a promising approach to emphasize the bidirectional relationship between research and practice has evolved: Routine outcome monitoring (ROM) refers to the systematic assessment of individual patient progress during treatment, often integrated into predictive models of symptom change or dropout risk (Boswell, 2020; Castonguay et al., 2013; Howard et al., 1996; Lambert et al., 2003; Lambert & Harmon, 2018; Lutz et al., 2019; Wampold, 2015a). Information on observed and expected treatment outcomes may serve to support therapists in identifying irregularities and individually tailoring ongoing treatments (Delgadillo, de Jong, et al., 2018; Lambert & Shimokawa, 2011; Lutz et al., 2019). There is growing evidence for the use of ROM and individual outcome prediction methods to prevent stagnation, deterioration, or premature dropout in psychotherapy (Lambert & Shimokawa, 2011; Lutz et al., 2022; Shimokawa et al., 2010; Slade et al., 2008). Despite strong empirical support, the implementation of ROM into clinical practice is challenging, not least because practitioners remain skeptical about the relevance and clinical utility of routine assessment (Boswell, 2020; Boswell et al., 2015). Attempting to close the scientist-practitioner-gap, the paradigm of *patient-focused research* offers a bridge between psychological assessment and intervention in routine clinical practice: Therapists are provided with routine outcome measures and psychometric feedback on patient progress over the course of treatment, which may help to guide, adjust and personalize treatment decisions and thus improve individual outcomes (Castonguay et al., 2013; Lambert, Hansen, et al., 2001; Lutz, de Jong, et al., 2021).

Psychotherapy research is naturally concerned with the efficacy and effectiveness of therapies regarding the improvement of patient outcomes (Barkham & Lambert, 2021; Lambert, 2013). Associations with patient characteristics (e.g., Bohart & Tallman, 2010; Bohart & Wade, 2013; Constantino, Boswell, et al., 2021), therapist effects (e.g., Baldwin & Imel, 2013; Wampold & Owen, 2021), and relational factors (e.g., Constantino, Coyne, et

al., 2021; Del Re et al., 2021; Falkenström et al., 2016) are widely studied. More recently, factors that affect practitioner well-being have gained attention as mental health professionals are particularly vulnerable to occupational stress and burnout (Dreison et al., 2018; Johnson et al., 2018; O'Connor et al., 2018; Posluns & Gall, 2020; Simionato et al., 2019; Simpson et al., 2019). Occupational stress among psychotherapists is not only a risk factor for professional impairment but can result in reduced therapeutic effectiveness (Delgadillo, Saxon, et al., 2018; Yang & Hayes, 2020).

To address concerns about the relevance of science to practice, researchers are required to conduct investigations that are clinically important and representative of everyday practice. Furthermore, research based on treatments that are delivered in naturalistic studies highlights the relevance of findings for real-world clinical settings. Another key factor for mutual integration is transparent communication among those involved primarily in research or practice (Barkham & Mellor-Clark, 2003; Boswell et al., 2015; Hershenberg et al., 2012; Holmqvist et al., 2015; Teachman et al., 2012). Emphasizing the use of ongoing research and addressing relevant issues in psychotherapy today, this dissertation is concerned with outcome monitoring and prediction (individual patient progress and dropout risk) as well as therapist well-being (occupational stress in association with patient distress, working alliance, and treatment outcome) in naturalistic studies.

1.1 Psychotherapy Research: Measures and Methodological Concepts

1.1.1 Patients, Therapists, and Working Alliance

All psychotherapy settings comprise at least three basic components: a patient, a therapist, and their collaborative relationship. Thus, studies on treatment effects focus on these factors as correlates of the therapeutic outcome (Constantino, Boswell, et al., 2021). Patient characteristics, such as symptom severity, demographics, social support, treatment expectations, and motivation, explain the largest amount of variance in treatment outcome (Bohart & Tallman, 2010; Bohart & Wade, 2013; Constantino, Boswell, et al., 2021; Lambert, 2015). Patient factor-outcome correlations are therefore the most abundant in psychotherapy research (Constantino, Boswell, et al., 2021). Greater symptom severity, poorer treatment motivation, lower socioeconomic status, and specific diagnoses as personality or eating disorders, are associated with worse outcomes, including a lower likelihood of response or remission, and a higher probability of treatment discontinuation (Bohart & Wade, 2013; Swift & Greenberg, 2012; Uckelstam et al., 2019). By contrast,

associations with patient age and gender often show inconsistent or null effects (Bohart & Wade, 2013; Cuijpers et al., 2009; Lambert, 2010), with the exception that patients are significantly more likely to drop out of treatment if they are younger (Swift & Greenberg, 2012).

On the therapist-level, greater flexibility and responsivity, positive outcome expectation, and attentiveness to feedback are related to better treatment outcomes (Baldwin & Imel, 2013; Constantino, Boswell, et al., 2021; Miller et al., 2014). Occupational burnout and professional self-doubt, by contrast, are associated with poorer outcomes (Delgadillo, Saxon, et al., 2018; Nissen-Lie et al., 2013; Odyniec et al., 2019). Interestingly, good therapists cannot necessarily be defined by the type of treatment they provide, regarding the influence of adherence to a treatment protocol or manual on outcome, but overly strict delivery of interventions (i.e., rigid adherence to manual-prescribed techniques) might be ineffective or even harmful (Castonguay et al., 2010). Besides the predictive influence of therapist factors on patient outcomes, more recent studies investigate therapist well-being itself as an outcome of interest (Dreison et al., 2018; Johnson et al., 2018; Norcross & VandenBos, 2018; Posluns & Gall, 2020). Causes, consequences, and prevention of occupational stress among psychotherapists are introduced in section 1.2.1.

The therapeutic relationship, often termed *working alliance*, is defined by the quality of the therapeutic bond as well as the extent of agreement between patients and therapists on treatment tasks and goals (Horvath & Greenberg, 1989). A good therapeutic bond, the affective component of the alliance, is characterized by mutual trust, respect, and liking, whereas the consensual approach to defining and achieving treatment goals can be summarized in the term *commitment* (Crits-Christoph & Gibbons, 2021). Not surprisingly, a higher-quality working alliance is related to better patient outcomes (Flückiger et al., 2018; Gelso et al., 2018; Horvath et al., 2011; Martin et al., 2000). In the most recent meta-analysis on the alliance-outcome relationship, Flückiger et al. (2018) found an overall alliance-outcome association of $r = .28$ (95% CI [.256, .299], $p < .001$). Furthermore, higher quality of the working alliance is associated with greater therapist well-being. In a broad analysis of possible occupational and psychological factors that influence positive (personal growth, compassion satisfaction) and negative (compassion fatigue, burnout) aspects of therapist well-being, multiple regression showed that the therapeutic bond was the best predictor of positive therapist well-being and less burnout (Linley & Joseph, 2007).

The most widely used measure of alliance in psychotherapy is the Working Alliance Inventory (WAI; Hatcher & Gillaspy, 2006; Horvath & Greenberg, 1989) to assess therapist

as well as patient ratings on the above-named dimensions tasks, goals, and bonds. Although the alliance is a dyadic construct due to its reciprocal nature, there is growing evidence that the therapist rather than the patient contribution to the alliance predicts treatment outcome (Wampold & Owen, 2021).

In naturalistic studies, most of the presented factors are assessed at baseline. As some of them are likely to change over time (e.g., patient symptoms and working alliance), quality assurance in routine clinical practice requires repeated evaluation throughout the course of treatment (Lutz, de Jong, et al., 2021; Wasserheß & Lutz, 2021). Among others, the Brief Symptom Inventory (BSI; Franke, 2000) is a well-established instrument to systematically assess patient symptoms. Pre-post differences in symptoms are often quantified to determine response and remission as the primary treatment outcomes (e.g., Barkham & Lambert, 2021; Hiller et al., 2012; Lambert & Bailey, 2012). Another important outcome measure is dropout from therapy, not least because patients who prematurely terminate treatment tend to have poorer treatment outcomes (Cahill et al., 2003; Delgadillo et al., 2014; Swift & Greenberg, 2012).

1.1.2 Defining and Modeling Individual Change in Psychotherapy

As already noted, ROM aims at identifying irregularities in the treatment progress to prevent therapies from being ineffective. But how do therapists know if a specific patient is *on-track* to benefit from treatment rather than stagnating or worsening? Two strategies to identify patients who are at risk of treatment failure have been developed over the last 25 years: a rational method based on clinical judgment and an empirical method based on statistically-derived expected recovery curves. Rational decision-making depends on expert judgments about satisfactory patient progress, often based on the concept of clinically significant change (Lambert et al., 2002; Lutz et al., 2011). Reliable improvement can be statistically defined by using the Reliable Change Index (RCI), which indicates whether an observed change in test scores is greater than expected due to measurement error (Jacobson et al., 1984; Jacobson & Truax, 1991). Empirical decision rules, on the other hand, rely on expected treatment response (ETR) curves that are estimated based on previously treated patient data (e.g., Finch et al., 2001; Lambert et al., 2002). As in regression analysis, intake variables such as baseline impairment and treatment motivation for the full sample are used to predict individual patient progress for a target patient (Lutz et al., 2005). To determine whether a current treatment is progressing as expected, the observed treatment trajectory is

compared to the ETR. This way, discrepancies between observed and expected recovery curves can be identified (Howard et al., 1996; Lambert et al., 2003; Lueger et al., 2001).

The underlying methodological framework for modeling progress over the course of treatment is defined by the hierarchical structure of the data, with treatment sessions at level 1 nested within patients at level 2. Ideally, multilevel modeling is applied for nested data structures to capture individual variation in the treatment progress (Gallop & Tasca, 2014; Kenny & Hoyt, 2009; Lutz, de Jong, et al., 2021). Over the years, several approaches have been proposed to predict intra-individual change (i.e., within-patient variation) in psychotherapy. Within traditional methods, as explained above, indicators of symptom change are included in a regression model to predict patient progress based on these variables (Finch et al., 2001; Howard et al., 1996; Lambert et al., 2002; Lutz, Saunders, et al., 2006). In the last 20 years, advancements have taken place in the prediction of individual change in psychotherapy: Lutz et al. (2005) introduced the nearest neighbor (NN) method, which was shown to be more accurate in predicting individual patient progress compared to the conventional ETR method (Lutz et al., 2005; Lutz, Lambert, et al., 2006). In the NN approach, individual change of one patient is predicted by the average change that has been observed in a subset of patients with similar characteristics (the NNs). In this way, baseline indicators of change are only used to identify previously treated patients who closely match a new patient. Individual progress is then predicted using a model without predictors (i.e., an unconditional growth model) based on this homogenous subset. For an overview of the methodological foundations to measure, predict and track change in psychotherapy, see Baldwin and Goldberg (2021) and Lutz, de Jong et al. (2021). For a more detailed description of the NN method that was used in Study 1, see section 2.3.4.

1.2 The Practitioner

1.2.1 Occupational Health Among Psychotherapists

Like many people who work in caring professions, psychotherapists face a significant challenge in preserving their own mental health (e.g., Dreison et al., 2018; Johnson et al., 2018; Yang & Hayes, 2020). Challenges in treating patients with various psychological problems, including trauma, loss, conflict, violence, and suicidality, often co-occur with high work- and caseload (Rupert & Morgan, 2005; Simionato et al., 2019; Yang & Hayes, 2020). In the attempt to meet all the patients' needs, important coping strategies and resources for therapists like self-care, personal boundaries, collegial exchange, and supervision are put last

(Simionato et al., 2019). An imbalance between work demands and resources most likely results in occupational stress (i.e., work-related psychological stress) or even burnout (Bakker & Demerouti, 2007). Prevalence rates of severe burnout among psychotherapists reported in the current literature range from 21% to 67% (Dreison et al., 2018; Simionato et al., 2019; Simpson et al., 2019; Yang & Hayes, 2020).

In a recent meta-analysis on causes and consequences of burnout among psychotherapists that includes 44 quantitative and qualitative studies from the past decade, Yang and Hayes (2020) focus on patient, psychotherapist, and work factors that contribute to burnout: Among others, slow treatment progress, frequent relapse, nature of the disorder (posttraumatic stress disorder, comorbid conditions), difficult patient personality and behavior (impulsive, suicidal, not taking responsibility, questioning psychotherapists' competence), maladaptive coping strategies, low self-efficacy, lack of job control (e.g., influence on work tasks), high job demands (work- and caseloads), and lack of support from coworkers or supervisors were identified as risk factors for therapist burnout. Their findings are supported by Simpson et al. (2019), who identified treatments of highly distressed patients with chronic and complex issues, and concerns about patient security to be the main sources of occupational stress among psychotherapists. The authors further discuss that working relationships characterized by unsupportive patient behavior, over-identification with patient problems, or strong sympathetic responses to distressing patient presentations may increase vulnerability to burnout. Results from another meta-analysis by Lee et al. (2020) showed that among various work environmental factors (e.g., work hours, caseload, work demand, and role conflict) negative clientele related to aggressive, dangerous, and threatening patient behavior was most strongly associated with therapist burnout, especially in terms of depersonalization and reduced personal accomplishment. The authors conclude that difficult relationships with patients are a more important issue than the caseload itself when explaining therapist burnout.

These days, occupational health among psychotherapists is considered an ethics issue in psychotherapy, as it has been shown to interfere with clinical effectiveness (Delgadillo, Saxon, et al., 2018; Yang & Hayes, 2020). The duty of care to patients and responsibilities to employers extend the personal matters of burnout prevention to a fundamental obligation for practitioners, employers, and educational institutions (Simionato et al., 2019). Integrating implications from the job demand-control model (Karasek, 1979) and the job demands-resources model (Bakker & Demerouti, 2007), flexibility, autonomy, the opportunity for advancements, good relationships, and learning in the workplace are key elements to buffer

occupational stress. As the therapeutic dyad inherently depends on patient factors that are not within the therapist's control, including contribution to the quality of working alliance and the treatment outcome (Posluns & Gall, 2020), the decision-making and management capabilities of psychotherapists are limited. It may therefore be reasonable to aim at balanced treatment allocations regarding patients' distress levels, diagnosis, and personalities to preserve practitioners' well-being. This approach as well as possible interventions to counter the demands of clinical practice are discussed in detail in section 3.5.

Taken together, the high prevalence of psychotherapists experiencing significant work-related stress at some point in their career make this issue an important subject for psychotherapy research. Findings from the last decade suggest that patient, therapist, and relational factors as well as the work environment are significantly related to occupational health. At this stage more research is needed to evaluate systemic factors related to burnout to prevent and minimize occupational stress among psychotherapists, not least for the benefit of the patients they treat (Dreison et al., 2018; Rupert et al., 2015; Simionato & Simpson, 2018; Yang & Hayes, 2020).

1.2.2 Trainee Therapists: Extra Challenges and Support

In this dissertation, particular attention is given to psychotherapy training for several reasons. First, therapist samples with a high proportion of therapists in clinical training are common in psychotherapy research, which emphasizes the significance and representativeness of findings for this population (e.g., Dyason et al., 2020; Lambert et al., 2002, 2005; Lutz et al., 2019, 2022; Zimmermann et al., 2017). Furthermore, evidence was found that trainees experience comparatively more insecurity, stress, doubts, and anxiety at work and that therapists' self-efficacy increases with experience (Knox & Hill, 2021). Heinonen et al. (2022), who investigated life stress and satisfaction in a multinational sample of 1,214 psychotherapist trainees, found that meaningful levels of stress were present for about three-fourths of trainees, while 14.3% could be characterized as clearly distressed and troubled. Trainee therapists may be particularly vulnerable to occupational stress due to lack of experience, pressure to perform, and self-doubt regarding clinical performance, alongside the financial burdens of education (Brooks et al., 2002; Kaeding et al., 2017; Pakenham & Stafford-Brown, 2012).

A relevant educational concern is how stress among trainee therapists may affect learning and treatment outcomes. Regarding treatment effectiveness, there is modest support

for the relationship between therapist experience and patient outcomes with inconsistent results: Owen et al. (2016) found that trainees demonstrated growth in patient outcomes over time in working with less distressed patients, but there was no change over time when working with more distressed patients. In other studies, therapists in early stages of training obtained better patient outcomes compared to later stages in training or licensed therapists, indicating decreases with experience (Budge et al., 2013; Minami et al., 2009). More recent longitudinal studies with large patient samples found no effects of therapist experience level on patient outcomes (e.g., Erekson et al., 2017; Germer et al., 2022; Knox & Hill, 2021). Given that clinical judgment is one major therapeutic tool, ROM can be a useful supplement for less experienced trainees to assist in troubleshooting and the identification of irregularities in the treatment progress (Overington et al., 2015). Complementing supervision in psychotherapy training, ROM may serve as an additional source of reliable information to address areas in training that need attention, such as responding to patient-specific needs and discussing outcomes with patients (Overington et al., 2015; Wampold, 2015a).

Thus, finally, the potential of certain clinical support tools, including ROM, outcome prediction, and feedback systems, is developed in clinical training regarding their utility and implementation (Boswell, 2020; Boswell et al., 2015; Lutz et al., 2019). The context of psychotherapy training provides promising opportunities for research-practice integration, considering the desire of trainees to be taught, supported, and inspired by trainers and supervisors who are engaged in research, as well as their interest and willingness to participate in research projects (Widdowson, 2012). Regarding the use of ROM, Overington et al. (2015) discovered that most therapists who used ROM in training found that it was useful and were confident they would use ROM in post-degree practice.

1.3 Benefits of Practice-Oriented Research

1.3.1 Clinical Relevance

Practice-oriented research is predominantly guided by routine clinical practice, involving the participation of patients and therapists in day-to-day practice. Castonguay, Barkham et al. (2021) state that this research paradigm is likely to be intrinsically relevant to clinical practice as clinicians actively engage in the design and the implementation of research protocols in the work context. The authors list *clinical helpfulness* as the first important characteristic of high-quality practice-oriented studies, meaning that studies should provide helpful information to improve treatment plans and outcomes, implement

interventions, reduce deterioration, and better understand the effect and process of psychotherapy.

ROM, originally treated as an evidence-based practice (Boswell et al., 2015), aims precisely at improving therapy by informing the therapist timely about stagnation or deterioration in the treatment process. Considering deterioration rates of 5-10% (Cuijpers et al., 2018; Lambert, 2013) and a substantial amount of patients who show no significant change (up to 50%, depending on the change criteria used; Barkham & Lambert, 2021; Lambert, 2013), attention for patients at risk needs to be enhanced. In several meta-analyses, providing therapists with progress feedback was found to be effective in enhancing treatment outcomes with small to medium effects (de Jong et al., 2021; Knaup et al., 2009; Lambert et al., 2003, 2018; Shimokawa et al., 2010; Tam & Ronan, 2017). Additionally, feedback was found to reduce dropout by 20% compared to when no feedback was provided (de Jong et al., 2021). Larger effects were found for patients who have been identified as being *not-on-track* (i.e., significant deviations from the expected course of treatment), leading to the hypothesis that these cases present a greater opportunity for the adjustment of treatment based on ROM and feedback (de Jong et al., 2021; Lambert et al., 2018; Lutz, de Jong, et al., 2021; Shimokawa et al., 2010). As therapists appear to overestimate positive outcomes and are particularly poor at identifying patients at risk for treatment failure (Hannan et al., 2005; Hatfield et al., 2010), the use of data-driven clinical support tools to assist in accurate clinical judgment and especially in considering negative treatment responses is highly recommended (Lambert, 2017; Lutz, de Jong, et al., 2021). By now, ROM is a core component of practice-oriented research to improve the quality of psychotherapy at an individual level within the service (Boswell, 2020; Holmqvist et al., 2015; Wampold, 2015a).

Castonguay, Barkham et al. (2021) further define practice-oriented studies to be clinically helpful if they contribute to a better understanding of patient, therapist, contextual, and relationship variables. According to the authors, links between those variables are often of reciprocal causality (e.g., therapist emotions affecting alliance and alliance affecting therapist emotions; alliance and therapist experiences predicting patient outcome/treatment success and outcome/treatment success predicting alliance and therapist experiences). Insight into these processes provides useful information for the therapist to react to and cope with challenges and stressors in ongoing treatments.

It is important to say that the paradigm of practice-oriented research, or practice-based evidence, is not opposed but complementary to studies that are conducted in controlled

settings and both approaches have their justification. However, practice-oriented studies are especially relevant to enhance the knowledge base of psychotherapy for the following reasons: First, the data is assessed as part of routine care and thus reflects everyday clinical practice. Second, investigations do not involve researcher-imposed constraints on day-to-day practice (e.g., strict adherence to a specific treatment protocol that does not allow for individual adjustment). Moreover, research questions are conducted in naturalistic environments, sometimes in collaboration with therapists. If therapists actively engage in research that is grounded in everyday clinical practice, the scope of the investigation is likely to be intrinsically relevant to their concerns. As a result, practice-based studies yield results with external and ecological validity that can help improve day-to-day clinical practice (for an overview of the benefits of practice-oriented research for routine clinical practice, see Castonguay, Barkham, et al., 2021; Castonguay et al., 2013; Holmqvist et al., 2015).

1.3.2 Acceptance and Integration of Research Evidence

As scientific investigations are often perceived as being limited in terms of their clinical relevance, many practitioners appear indifferent toward psychotherapy research (Castonguay et al., 2013). Morrow-Bradley and Elliot (1986, as cited in Widdowson, 2012) were among the first who investigated the degree to which psychotherapists integrate research findings into their clinical practices. Reasons for not doing so included the following:

(1) The research questions in published papers were not relevant to clinical practice.

(2) The client groups studied in research were not representative of the type of clients who usually present in clinical practice. Similarly, the treatments and measures used in research did not appear to have relevance to ‘usual clinical practice’.

(3) Researchers do not communicate their findings in a way that is accessible and useful to therapists.

(4) Limitations of therapists, which include lack of motivation and having too many other commitments and demands on their time.

Since that time, it is increasingly required to conduct research that is not only relevant but also applicable to clinical practice, including collaborative initiatives between scientists and practitioners (e.g., Castonguay et al., 2015). Especially in the field of ROM, much effort has been made to increase the motivation for implementation in naturalistic settings (Boswell, 2020; Boswell et al., 2015; Holmqvist et al., 2015). Still, the perception

that “evaluation can be threatening” (Baldwin & Imel, 2013, p. 258) seems to prevent many therapists from using ROM. In a sample of 605 American psychology trainees (primary orientation in CBT), Overington et al. (2015) assessed attitudes toward progress monitoring in psychotherapy in users versus nonusers. Challenges associated with the use of progress monitoring measures included added time or paperwork, client willingness, interpreting scores, and fear that the data will be used in evaluation. Interestingly, actual challenges reported by trainees who used progress monitoring were significantly lower than anticipated challenges perceived by nonusers. This finding suggests that some barriers to progress monitoring may be overestimated and that introducing therapists to the measures may reduce initial concerns. Importantly, ROM can be seen as a tool to “support, but *not* replace, clinical decision-making with actual ongoing research data” (Castonguay et al., 2013, p. 87).

Widdowson (2012) investigated trainee therapists’ attitudes and perceptions of psychotherapy research to explore what would encourage them to participate in research. Results suggest that despite some barriers that exist to research, such as lack of knowledge and the perception that research is time-consuming or not relevant to practice, trainees are aware of the importance of psychotherapy research to enhance knowledge of how therapy works and what interventions are effective. Moreover, there was agreement among trainees that research was important in promoting wider acceptance of psychotherapy, that it may be useful in influencing policy, and that therapists have a responsibility to develop their profession through research. Personal and professional benefits, methodological training (e.g., in the administration of outcome measures), and reasonable demands on time were found to facilitate engagement in practice-based research.

To sum up, the successful integration of research evidence into clinical practice depends on therapists’ experiences and attitudes toward research, as well as on practical conditions regarding limited time and resources. Therapists may be best prepared to make use of research findings if methods and measures are introduced in the training context as barriers to research are likely to decrease if therapists are informed about the benefits of research-practice integration as early as possible (Overington et al., 2015; Widdowson, 2012). Feasibility regarding minimum burden of time and additional tasks as well as easy integration into routine clinical practice without imposing substantial changes is a key axiom of practice-oriented studies (Castonguay, Barkham, et al., 2021).

1.4 Conclusion and Research Questions

The integration of research and practice in clinical psychology is key to understanding the processes of psychotherapy, improving patient care, and facilitating effective service delivery. However, practitioners keep questioning the clinical utility of psychotherapy research as studies may be irrelevant or not applicable to practice. Practice-oriented studies that are conducted in collaboration between clinicians and researchers can foster a sense of mutual respect, complementary expertise, and thus the integration of research and practice activities (Castonguay, Barkham, et al., 2021). In the light of an ongoing debate, this dissertation refers to the utility of psychotherapy research for clinical practice concerns.

In Study 1, individual patient progress and dropout risk are predicted based on ROM in a large naturalistic sample. Prediction algorithms cannot replace clinical judgment. However, given the mistakes in decision-making (Hannan et al., 2005; Hatfield et al., 2010), ROM should be considered an additional source of reliable information to improve patient outcomes. The assessment and consideration of routine outcome measures in the treatment process inevitably involve additional time and resources. Thus, ROM needs to be easily integrated into the treatment process. Study 1 addresses these requirements by using basic ROM (i.e., assessment intervals of 5-15 sessions instead of session-by-session assessment) to predict patient progress and dropout risk. A major purpose of Study 1 is the validation of the NN approach, which has been proven superior in predicting individual treatment progress compared to alternative methods, for basic ROM.

Study 2 is concerned with occupational health among psychotherapists. Since occupational stress can lead to significant impairment and reduced professional competence in psychotherapists, preserving practitioners' well-being is an ethical obligation for therapists and their patients. Study 2 investigates the relationships between occupational stress and potential work stressors. Specifically, overall stress, emotional exhaustion, excessive work demands, and personal accomplishment in therapists are related to patient distress, working alliance, and treatment outcome. One objective of Study 2 is to explore whether occupational stress among therapists differs in treatments with low- versus high-distress patients. Furthermore, assumptions about the relationship between therapists' occupational stress level and the quality of working alliance as well as the relationship between occupational stress and remission in terms of patients' general psychopathology are tested.

The overarching aim of this dissertation is to contribute to the improvement of psychological practice in terms of patient outcomes, professional well-being, and training through practice-oriented research.

2 Study 1: Matching Research and Practice: Prediction of Individual Patient Progress and Dropout Risk for Basic Routine Outcome Monitoring[1]

[1] Parts of this study are presented in the following article:

Mütze, K., Witthöft, M., & Bräscher, A.-K. (2022). Matching research and practice: Prediction of individual patient progress and dropout risk for basic routine outcome monitoring. *Psychotherapy Research*. *32*(3), 358-371. https://doi.org/10.1080/10503307.2021.1930244

2.1 Summary

Despite evidence showing that systematic outcome monitoring can prevent treatment failure, the practical conditions that allow for implementation are seldom met in naturalistic psychological services. In the context of limited time and resources, session-by-session evaluation is rare in most clinical settings. This study aimed to validate innovative prediction methods for individual treatment progress and dropout risk based on basic outcome monitoring.

Routine data of a naturalistic psychotherapy outpatient sample were analyzed ($N = 3902$). Patients were treated with cognitive behavioral therapy with up to 95 sessions ($M = 39.19$, $SD = 16.99$) and assessment intervals of 5-15 sessions. Treatment progress and dropout risk were predicted in two independent analyses using the nearest neighbor method and least absolute shrinkage and selection operator regression, respectively.

The correlation between observed and predicted patient progress was $r = .46$. Intrinsic treatment motivation, previous inpatient treatment, university entrance qualification, baseline impairment, diagnosed personality disorder, and diagnosed eating disorder were identified as significant predictors of dropout, explaining 11% of variance.

Innovative outcome prediction in naturalistic psychotherapy is not limited to elaborate progress monitoring. This study demonstrates a reasonable approach for tracking patient progress as long as session-by-session assessment is not a valid standard.

2.2 Introduction

Routine outcome monitoring (ROM) and individualized outcome prediction have become widely investigated subjects in psychotherapy research (Boswell et al., 2015; Lambert & Harmon, 2018). A major objective of ROM is to identify irregularities in the treatment progress and to detect whether a current treatment is at risk of being ineffective. By comparing observed treatment trajectories to predicted recovery curves, therapists can supervise if a patient is *on-track* to benefit from treatment or if there is a significant discrepancy (*not-on-track*) between observed and expected progress (Finch et al., 2001; Lambert, 2010; Lutz, 2002). Despite the consistent evidence that psychotherapy is effective for a majority of patients (about 65% of treated patients are expected to have a positive outcome), some fail to improve, with 5-10% even worsening over the course of treatment (Lambert, 2013). The absence of improvement and negative development can lead to premature therapy dropout (Lambert, 2017; Roos & Werbart, 2013), which in turn is associated with worse treatment outcome (Cahill et al., 2003). Especially in cases of treatment failure, therapists tend to underestimate the extent of deterioration and there is empirical evidence that integrating ROM data into predictions of treatment response outperforms predictions based on therapists' clinical judgment alone (Hannan et al., 2005). If therapists are alerted to a lack of progress and risk for dropout, ongoing treatment can be adjusted to the patient's needs. This may include, for example, identifying patients' concerns, fostering treatment motivation, and focusing on the therapeutic alliance. Individually tailored treatment can prevent stagnation, deterioration, or premature dropout and increases the effectiveness of psychotherapy (Lambert & Shimokawa, 2011; Shimokawa et al., 2010). One promising approach to address the question "Which treatment is working for a particular patient?" is the Personalized Advantage Index (PAI), which quantifies the individual advantage of one treatment over another. Thus, the PAI identifies the treatment predicted to produce the best possible outcome for a given patient (Bronswijk et al., 2021; Cohen & DeRubeis, 2018; DeRubeis et al., 2014).

An approved method in early psychotherapy process research to predict patient progress is the expected treatment response (ETR) method (Howard et al., 1996; Lutz, Saunders, et al., 2006). ETR curves are generated by setting pretreatment patient information as predictors of symptom change within a multilevel modeling framework. A more recent method that has been used extensively in machine learning algorithms, not only to predict treatment progress but also the occurrence of alpine avalanches, is the nearest neighbor (NN) strategy (Lutz et al., 2005, 2019; Lutz, Lambert, et al., 2006). This method is based on the

assumption that different predictors are meaningful for restricted subgroups and that a patient's expected course will most likely resemble the course of similar previously treated patients. In this context, similarity is defined as closely matching relevant pretreatment characteristics, as symptom severity, chronicity, or outcome expectancy. A patient's predicted treatment progress is modeled as the average course of those patients who are closest, hence NNs. This method allows the significance of certain predictors to vary by patient and reflects how therapists often use their clinical experience by comparing new patients to those that have already been treated (Lutz et al., 2005). While the ETR method includes patient variables as predictors in the model, the NN approach uses the average slope of neighbors from an unconditional growth model for the prediction. Basing predictions of treatment progress on homogenous subgroups (i.e., NNs) has been proven superior to prediction models that use combinations of optimally weighted variables like in ETR methods (Lutz et al., 2005; Lutz, Lambert, et al., 2006).

Research on statistical machine learning techniques has made rapid progress in the past years, including individualization and improved prediction accuracy (Aafjes-van Doorn et al., 2020; Dyason et al., 2020; Webb et al., 2020). However, the adoption and implementation of routine measurement in everyday psychotherapeutic services is anything but routine. This may be due to various reasons: First, routine symptom evaluation requires time, which clinicians often miss in daily practice (Garland et al., 2003; Trauer et al., 2006). Second, the ecological validity of research settings and therefore the generalizability of the results for real-world psychological practice are limited. If research designs do not adequately mirror everyday practice, individual clinicians may question implications as meaningful to them (Boswell et al., 2015; Gilbody et al., 2002). As a result, some practicing psychotherapists remain skeptical about the utility of ROM and outcome prediction. Further, ROM can interfere with therapists' professional autonomy or cause the fear of being revealed as ineffective (de Jong, 2016; Youn et al., 2012). Not least, financial burdens, lack of software requirements, or general aversions to the use of technical support tools hinder implementations (Boswell, 2020; de Jong, 2016). As a consequence, the discrepancy between research evidence and clinical practice is intensified. This so-called scientist-practitioner gap (Lilienfeld et al., 2015; Tavris, 2003) divides academic researchers and practicing psychotherapists, not least at the cost of patients. In fact, therapists' attitudes toward ROM and feedback moderate the effect of feedback on treatment outcome (de Jong et al., 2012). Simply put, therapists need to positively value ROM for considering the information in the treatment plan (Boswell, 2020).

Given that therapists comply with innovative methods and computer techniques, the practical conditions that allow for implementations are still not met in many naturalistic psychological services (Boswell et al., 2015; Lambert & Harmon, 2018; Trauer et al., 2006). For example, the majority of studies on change trajectories focus on patient progress on a weekly basis, allowing for immediate response to cases that are not-on-track (e.g., Kendrick et al., 2016; Lambert et al., 2003). However, few outpatient clinics and private practitioners assess symptoms on such a regular basis. As already mentioned, routine assessment and psychometric data evaluation can be quite challenging for the individual therapist. From a patient's perspective, answering identical questions at each session can be exhausting, which in turn might negatively affect the therapeutic relationship (Boswell, 2020; Youn et al., 2012). Moreover, prediction models are largely based on short-term treatments up to 25 sessions, what may be due to varying session contingents in different countries (for a comparison of treatment length in ROM studies, see Flückiger et al., 2020) and because most change happens within that treatment period (Lambert, Hansen, et al., 2001; Lambert, 2013). Consequently, the significance of results for patients with more extended treatment and less frequent symptom assessment may be limited.

In summary, research samples and designs are required to represent clinical practice, considering the importance of external validity and generalizability (APA Presidential Task Force on Evidence-Based Practice, 2006; Barkham & Mellor-Clark, 2003). Furthermore, statistical models should be trained based on naturalistic data to make research more relevant to practicing therapists (Aafjes-van Doorn et al., 2020). The current study aims to address these requirements by predicting individual patient progress and dropout risk based on a large naturalistic sample with a mean treatment duration of 39.19 sessions (range: 5-95) and assessment intervals of 5 to 15 sessions. The general purpose of the present study is the validation of an innovative prediction method (i.e., the NN approach, which has been proven superior in predicting individual treatment progress compared to alternative methods that use weighted combinations of variables) for relatively basic ROM.

First, variables that are predictive of symptom change over time and dropout, respectively, are identified in two distinct analyses. Second, individual treatment progress is modeled based on NNs. Third, two independent prediction models for treatment progress and dropout are evaluated. Finally, results are discussed with regard to practical and methodological implications.

2.3 Methods

2.3.1 Participants

The sample included 6375 psychotherapy patients treated between 2002 and 2020 at a university outpatient clinic for cognitive behavioral therapy in Mainz, Germany. Prior to treatment, all patients provided written informed consent allowing their anonymized data to be used for research purposes. Because inclusion criteria for the prediction of dropout risk do not correspond to those for the prediction of treatment progress, two samples are differentiated (Figure 1-1). In the following, the sample providing data for the prediction of treatment progress is described in detail (for full information about both samples, see Table 1-1). Of 5212 consecutive patients who finished treatment, 825 were excluded because therapy ended before the first routine data evaluation at session five. In a next step, patients who did not provide data on relevant baseline measures were excluded ($n = 485$). The remaining sample of 3902 patients (74.9%) ranked in age from 16 to 87 ($M = 35.83$, $SD = 13.05$), 66.9% identified as female ($n = 2610$). In the sample, 50.0% of patients ($n = 1951$) had completed university entrance qualification and 7.2% were currently unemployed ($n = 278$). Most patients suffered from mood disorders (34.9%) or anxiety disorders (21.7%). Additional primary diagnoses were somatoform disorders (10.6%), feeding and eating disorders (10.0%), personality disorders (6.3%), trauma- and stressor-related disorders (4.2%), obsessive-compulsive disorders (3.4%), schizophrenia spectrum and other psychotic disorders (1.6%), neurodevelopmental disorders (1.6%) or substance-related and addictive disorders (0.8%).

Figure 1-1

CONSORT Diagram Illustrating Patient Flow

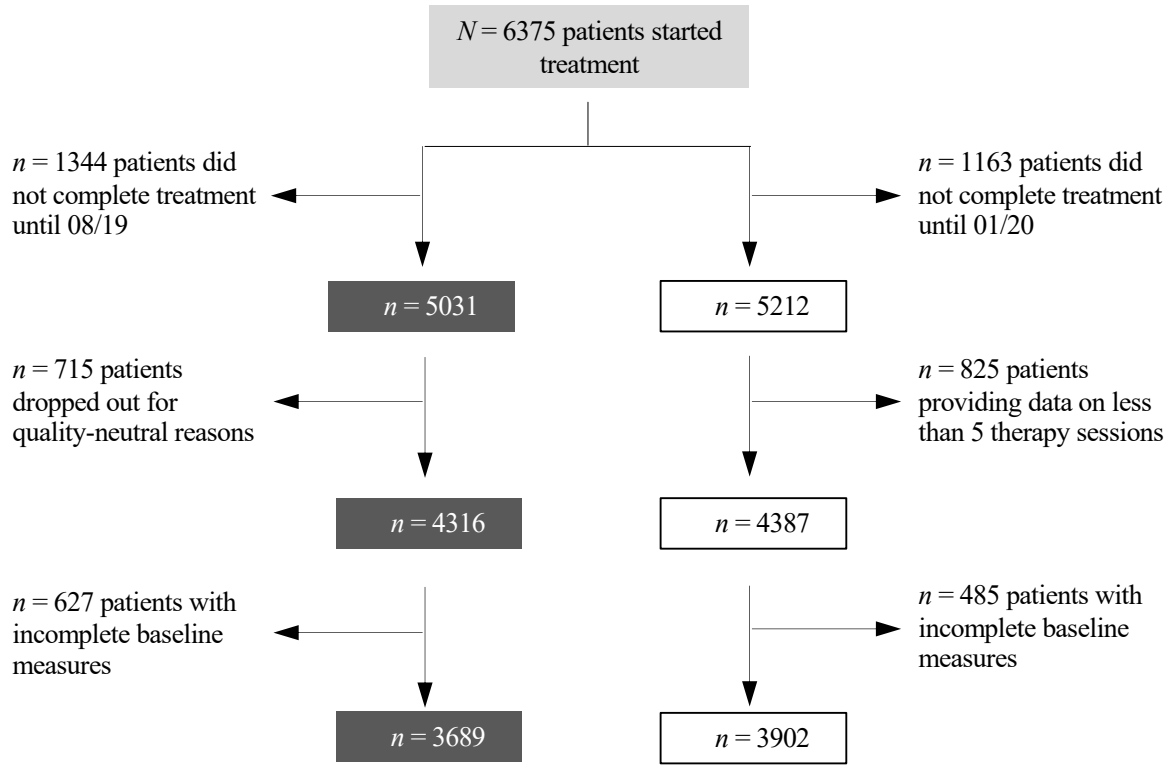


Table 1-1

Sample Characteristics

	Sample	
Characteristics	Treatment progress (n = 3902)	Dropout (n = 3689)
Age *M* (*SD*)	35.83 (13.05)	35.82 (12.99)
Gender (female) %	66.9	66.7
Education (university entrance qualification) %	50	48.7
Employment status (unemployed) %	7.2	8
Family status (single) %	45.3	45.4
Number of treatment sessions *M* (*SD*)	39.19 (16.99)	38.83 (17.98)
Primary diagnosis %		
Neurodevelopmental disorders	1.6	1.4
Schizophrenia spectrum and other psychotic disorders	1.6	1.8
Bipolar and related disorders	1.2	1.3
Depressive disorders	33.7	34.8
Anxiety disorders	21.7	21.5
Obsessive-compulsive and related disorders	3.4	3.3
Trauma- and stressor-related disorders	4.2	4.3
Somatoform disorders	10.6	10.9
Feeding and eating disorders	10	9.2
Substance-related and addictive disorders	0.8	0.7
Personality disorders	6.3	7.6

Note. *M* = mean; *SD* = standard deviation.

2.3.2 Procedure

Archival data of the outpatient clinic's routine data collection were used to identify variables that are predictive of treatment progress and dropout. Since 2005, the clinic's quality management system is certified in accordance with the international norm DIN EN ISO 9001 (Hiller et al., 2006). Patients attended cognitive behavioral therapy, paid for by the German health insurance, with on average one individual weekly treatment session. Patients were treated by trainee therapists (89.7%)[2] or by licensed therapists. Trainee therapists were supervised every fourth session by approved supervisors. Prior to therapy, patients completed a series of psychometric questionnaires assessing their mental health status in addition to demographic and biographic information. Routine data collection took place every fifth session from the beginning of treatment and five sessions before termination.

2.3.3 Measures

Patient Distress and Treatment Termination

Brief Symptom Inventory (BSI; Franke, 2000). The BSI is a short-form German translation of the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1992) and consists of 53 self-report-items assessing physical and psychological symptoms during the last week. Patients respond on a 5-point Likert scale ranging from 0 ("not at all") to 4 ("extremely"), with higher values indicating higher distress. The Global Severity Index (GSI) represents the average of all items and the intensity of general psychological distress. In the present study, the GSI served as a predictor as well as an outcome measure. After baseline assessment, the BSI was administered at session number 10, 20, 40, 55, 75, 90, and 95 with high internal consistencies between $\alpha_{min} = .95$ and $\alpha_{max} = .98$ in the present sample. To handle missing values, individual post-treatment scores were obtained by utilizing the last observation carried forward method.

Dropout. Treatment termination was classified as "completed" if it was consensual and planned. Otherwise, treatment was considered a dropout. In the case of interactional

[2] Successful completion of practical training I (§ 2 PsychThG-APrV) and at least 280 lessons of theoretical course credit

problems, insufficient motivation, disregard of agreements (e.g., missing appointments, not doing homework assignments) leading to treatment termination, or if the patient was dissatisfied with the treatment, dropout was defined as quality-associated. External circumstances (e.g., change of residence) were considered quality-neutral. Since the latter are not crucial for the evaluation of naturalistic psychotherapy, those cases (14.2%; n = 715) were excluded from further analyses on the prediction of dropout risk.

Predictor Variables

A multitude of variables routinely assessed at intake was analyzed as potential predictors for treatment progress and dropout. Sociodemographic characteristics (e.g., age, gender, and education), information on the patient's history of disorder (e.g., previous treatment, past suicide attempts), symptom severity measures, and motivational factors (intrinsic treatment motivation) were included. A list of all variables included in the selection process can be found in Supplement 1-1.

Beck Depression Inventory (BDI-I; Hautzinger et al., 1995; German translation of Beck et al., 1961). The BDI is a 21-item self-report inventory for the assessment of depressive symptoms. Patients respond on a 4-point Likert scale ranging from 0 to 3, with higher total scores indicating more severe depressive symptoms. Over the study period, the BDI-I was replaced by the revised version (BDI-II; Hautzinger et al., 2009). Both versions were included in the analysis as no differences were found in the psychometric properties of interest. In the present sample, good internal consistency of $\alpha = .89$ for the BDI-I was found at intake.

Structured Clinical Interview for DSM-IV Axis II Personality Disorders Screening Questionnaire (SCID-II-screening; ; German Translation of First et al., 1997). The SCID-II screening questionnaire was used to assess anomalies in patients' personality styles. This self-report instrument consists of 117 dichotomous items ("Yes" or "No"), which correspond to the personality disorders discriminated by the DSM-IV (American Psychiatric Association, 1994; text. rev. 2000).

Intrinsic treatment motivation. A patient's intrinsic treatment motivation was rated by the therapist on a five-point Likert scale ranging from 0 ("non-existent") to 4 ("very high") at baseline.

2.3.4 Data Analysis

Variable selection and model fitting analyses were conducted with the free software R version 3.6.0 (R Core Team, 2019), particularly using the packages "glmnet" v4.0-2 (Friedman et al., 2010), "elasso" v1.1 (Guo, 2015), "cluster" v2.1.0 (Maechler et al., 2019) and "lme4" v1.1-23 (Bates et al., 2015). The below-described methods were adapted to previous research on individualized outcome prediction following Lutz et al. (2019).

Prediction of Individual Treatment Progress

For the prediction of treatment progress, 26 potential predictors of pre to post improvement on the GSI were examined, controlling for baseline distress. Significantly correlating variables were included in a LASSO (least absolute shrinkage and selection operator) regression to select those variables that are most predictive. Specifically, a LASSO linear regression model for continuous outcome was fitted using a 10-fold cross-validation. As an alternative to Ridge or Elastic Net Regularization, this conservative machine learning approach is particularly suited for feature reduction to balance prediction accuracy and simplicity and to prevent overfitting (Guo et al., 2015). Since LASSO regression suffers from multicollinearity caused by large correlations among predictor variables (e.g., Schreiber-Gregory, 2018), a comparison in model fit was made between this method and Elastic Net Regularization. Based on those variables selected by the LASSO, a dissimilarity matrix was calculated with Gower's coefficient (Gower, 1971). The Gower coefficient was used to include categorical variables in the prediction. Using this coefficient, all variables were standardized (i.e., each value is divided by the corresponding variable's range after subtracting the variable's minimum value). Thus, all variables had equal weight in calculating the distances. The resulting distance between two patients ranges between 0 (no difference in observed variables) and 1 (maximum dissimilarity). For each patient, the 30 most similar cases (i.e., smallest distance) were identified as that person's NNs. The number of 30 neighbors was set following Lutz et al. (2019).

Treatment progress was modeled using a multilevel random slopes model with time (treatment sessions) at level 1 nested within patients at level 2 to allow for unevenly spaced assessment occasions and incomplete data (Hox, 2010). In accordance with prior research on the dose-response relationship between the number of sessions and the probability of improvement (e.g., Castonguay et al., 2013; Howard et al., 1986, 1993), a base-10 log-linear

transformation of time was used. Thus, rapid improvement is expected early in therapy with progressively fewer change during the course of treatment:

$$GSI_{ti} = \beta_{00} + \beta_{10} * \log(session)_{ti} + r_{1i} * \log(session)_{ti} + r_{0i} + e_{ti}$$

where GSI_{ti} is the distress level at session t for patient i, β_{00} represents the overall intercept, and β_{10} is the main effect of the log-transformed session number. At level 2, person-specific deviations from the average mean and slope are represented by the random terms r_{1i} and r_{0i}. The residual error term e_{ti} indicates time-specific deviations at level 1.

Each patient's expected slope was calculated as the average slope of this patient's NNs using the unconditional growth model with time (treatment sessions) as the only level-1 predictor. To evaluate the prediction accuracy, patients' observed slopes were correlated with the predicted slopes. Each patient's observed slope was calculated using an ordinary least squares (OLS) regression, with session number as the log-transformed prediction variable. Using this method, each observed slope is calculated based on only that patient's data, in contrast to random slopes within a multilevel framework, where information from the full sample is used to correct for missing values (Lutz et al., 2005). Additionally, the root-mean-square error (RMSE) was used to assess patients' variability around their OLS-trends. The RMSE can be interpreted as the standard deviation of a patient's actual scores around the regression line (Barkham et al., 1993). So far, intra-individual variability around a trend is difficult to predict, but there is empirical evidence that symptom severity is associated with discontinuous treatment progress (e.g., Lutz et al., 2013; Stulz et al., 2007). To assess potential differences in variability, RMSEs were calculated for three subsamples of patients with low ($T_{GSI} < .63$), moderate ($.63 \leq T_{GSI} < .80$), and high baseline distress ($T_{GSI} \geq .80$). Cut-offs were defined in accordance with Derogatis (1993).

Prediction of Individual Dropout Risk

The above-described two-step variable selection strategy was likewise applied to identify variables that are predictive of quality-associated dropout. Sixteen variables were observed as potential predictors. A LASSO logistic regression model for binary outcomes was fitted using a 10-fold cross-validated bootstrap ranking procedure (100 bootstraps). Significantly correlating variables selected by the LASSO algorithm were set as predictors in a logistic regression to obtain regression weights for the final prediction. The natural logarithm of the odds of dropping out of treatment is expressed in a linear equation:

$$ln\left(\frac{\text{dropout}}{1 - \text{dropout}}\right)_i = b_0 + \sum b_k * X_{ik} + e_i$$

In the generalized linear model (GLM), the effect of each predictor k is indicated by its unstandardized regression coefficient b. X is the individual value on k of patient i, and e_i represents the residual. Dropout risk was calculated as follows:

$$P(\text{dropout})_i = \frac{1}{1 + e^{-(b_0 + \Sigma b_k * X_{ik})}}$$

where e refers to the base of the natural logarithm.

The model was evaluated using Nagelkerke's pseudo-R^2, ranging from 0, the model does not explain any variation, to 1, the model perfectly explains the observed variation (Nagelkerke, 1991). Additionally, the positive and negative predictive value, sensitivity, and specificity were calculated for a predefined cut-off (dropout risk ≥ 20%).

2.4 Results

2.4.1 Prediction of individual treatment progress

Of 12 variables that correlated significantly with pre to post improvement on the GSI, four were selected by the LASSO procedure: baseline distress on the GSI (b = 0.46, p < .001), intrinsic treatment motivation (b = 0.07, p < .001), previous inpatient treatment (b = -0.07, p < .001), and number of suicide attempts in the past (b = -0.08, p < .001). A comparison of LASSO versus Elastic Net Regularization resulted in the same selection of variables. Unstandardized regression weights were obtained from a GLM predicting pre to post improvement, with R^2 = .26. Results of further analyses on the prediction of treatment progress after accounting for baseline distress are presented in Supplement Table ST1-1.

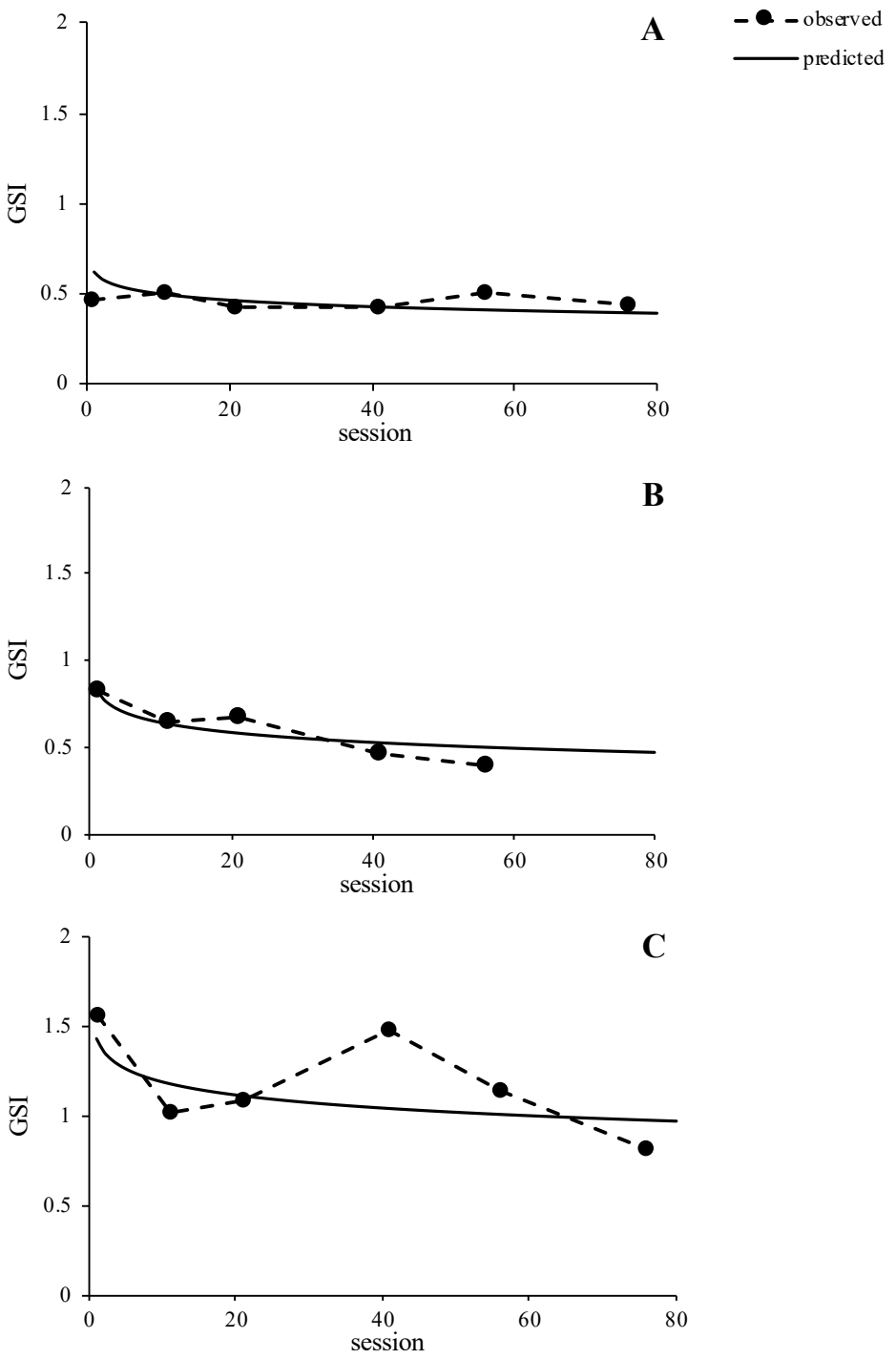
On average, there was significant negative growth over the course of treatment (β_{10} = -0.17, p < .001) with a mean baseline GSI score of 0.99. Note that in the base-10 log-linear model, a period of k treatment sessions is associated with an increase in distress of β_{10} * log(k). Thus, β_{10} indicates the average growth rate over the first ten sessions.

Comparing patients' actual treatment progress with expected courses based on their NNs, the correlation between observed and predicted slopes was .46 (p < .001). The average RMSE over all patients was 0.20. In the subgroup of patients with high initial distress level, variability around the trend was larger (RMSE = 0.28) than in the subgroups with moderate (RMSE = 0.20) and low initial distress (RMSE = 0.15). See Figure 1-2 for a graphical

depiction of observed and predicted treatment progress for three example patients with low (A) vs. moderate (B) vs. high (C) initial distress.

Figure 1-2

Observed and Predicted Treatment Progress Based on Nearest Neighbors for Three Example Patients



Note. Low (A) vs. moderate (B) vs. high (C) baseline distress measured with the Global Severity Index (GSI).

2.4.2 Prediction of individual dropout risk

In the final dropout sample, 14.6% of patients ($n = 539$) dropped out of treatment because of quality-associated reasons. Variables selected by the LASSO that accounted for higher dropout probability were lower intrinsic treatment motivation ($b = -0.44$, $p < .001$), previous inpatient treatment ($b = 0.31$, $p < .01$), lack of university entrance qualification ($b = -0.40$, $p < .001$), higher baseline impairment on the BDI ($b = 0.03$, $p < .001$), diagnosed personality disorder ($b = 0.87$, $p < .001$), and diagnosed eating disorder ($b = 0.74$, $p < .001$). The final model explained 11% of variance. There was no significant difference in model fit (Akaike Information Criterion) between LASSO and Elastic Net Regularization. In terms of prediction accuracy, both models performed equally well. Regression weights of the LASSO model and the GLM are depicted in Table 1-2. Note that all predictor variables are standardized in LASSO regression and the regression weights are shrunk toward zero. Therefore, the coefficients of the LASSO model are smaller, except for the BDI coefficient.

Defining a cut-off for risk ≥ 20% to identify those patients most likely to drop out of treatment (taking into account 14.6% of quality-associated dropout in the observed sample), the prediction accuracy was 77.1%. The positive predictive value (the probability that a predicted dropout, classified above the cut-off, actually drops out of treatment) was 30.2% and the negative predictive value was 89.5%, with a sensitivity (the probability that a dropout has been identified as such above the cut-off) of 43.4% and a specificity of 82.9%.

Table 1-2

Prediction of Dropout

	b	
	LASSO	GLM
Intercept		-1.01***
Intrinsic treatment motivation	-0.39	-0.44***
Previous inpatient treatment	0.12	0.31**
University entrance qualification	-0.15	-0.40***
BDI	0.21	0.03***
Personality disorder	0.19	0.87***
Eating disorder	0.22	0.74***

Note. b = unstandardized regression coefficient; LASSO = Least Absolute Shrinkage and Selection Operator; GLM = Generalized Linear Model; BDI = Beck Depression Inventory.

** $p < .01$; *** $p < .001$.

2.5 Discussion

The present study investigated prediction models for individual treatment progress and dropout risk based on relatively basic ROM (i.e., assessment intervals of 5 to 15 sessions). Using LASSO regression, four significant predictors for treatment progress (baseline distress, intrinsic treatment motivation, previous inpatient treatment, and number of suicide attempts in the past) were identified. Based on these variables, each patient's NNs were selected and individual slopes were predicted based on that homogeneous subgroup. The correlation between observed and predicted slopes was moderate, which is in part consistent with prior research. Janis et al. (2015) found correlations between .31 and .61, using the NN method to predict psychological distress with the Counseling Center Assessment of Psychological Symptoms (CCAPS; Locke et al., 2011). The authors report the smallest correlation for the general Distress Index, which integrates the CCAPS' disorder-specific subscales, equivalent to the GSI of the BSI that was used for the present analysis. The variables that have been used for selecting the NNs (baseline severity, previous therapy, previous medication, and previous suicidal ideation) largely correspond to the predictors in the present study. Lutz et al. (2005) found correlations of up to .75 between observed slopes and NN predictions, using the mean score of the Clinical Outcomes in Routine Evaluation (Evans et al., 2000) to measure individual patient progress. For the selection of neighbors, the authors used six variables: age, gender, and four measures of pretreatment symptom severity. As in the present results, baseline severity was the most significant predictor in both studies. Two assumptions can be made regarding these findings: First, predictions about individual treatment progress based on the NN method might be more accurate for specific areas of psychological impairment than for general distress. Second, as initial severity is one of the strongest predictors of symptom change (Bohart & Wade, 2013; Uckelstam et al., 2019), matching neighbors on multiple measures of baseline distress may further increase the prediction accuracy.

The mean RMSE in the present study implies that the patients' observed GSI scores deviated on average by 0.20 points from their individual trends. The degree of variability seems large in relation to the average slope but needs to be interpreted with caution. As the RMSE is in the same unit as the response variable, there is no consistent threshold for the size of absolute values. Accordingly, the RMSEs in the present study are interpreted in relation to the three subsamples with low, moderate, and high baseline distress. The observed variability of GSI scores around the trend was larger for patients with high initial distress compared to those with moderate or low baseline distress. This finding is consistent with

prior research showing that large, unexpected shifts are more frequently observed in patients with relatively high baseline impairment (e.g., Lutz et al., 2013). It is also possible that the log-linear model did not adequately fit the observed treatment progress of high distress patients, resulting in larger deviations from the expected trend for this subgroup. There is empirical evidence that patterns of change vary by symptom severity. For example, Stulz et al. (2007) found that higher baseline anxiety increases the probability of discontinuous treatment progress.

For the prediction of dropout risk, six variables were identified, namely intrinsic treatment motivation, previous inpatient treatment, university entrance qualification, baseline impairment, diagnosed personality disorder, and diagnosed eating disorder. The results of the LASSO selection are consistent with previous research on dropout in naturalistic psychotherapy: patients who are at risk for dropping out of treatment show comparatively higher baseline impairment, lower treatment motivation, lower education level, and are more likely to suffer from personality or eating disorders than those who complete treatment regularly (e.g., Barrett et al., 2008; Bohart & Wade, 2013; Flückiger et al., 2011; McMurran et al., 2010; Swift & Greenberg, 2012; Zimmermann et al., 2017). In the present study, individual dropout probability was calculated based on the selected intake characteristics. Additionally, a categorical prediction was tested that correctly identified 43.4% of actual dropouts above the cut-off (≥ 20%).

2.5.1 Strengths, Limitations, and Future Directions

The major strength of the present study is the integration of modern machine-learning techniques into basic ROM that can be used for individual outcome prediction in everyday psychological practice. In contrast to most studies in this area, the presented modeling approach requires no session-by-session monitoring and can be easily adopted by psychological services that routinely collect data on individual patient progress. Regarding the generalizability of the present findings, most variables that have been shown to predict treatment outcome have been identified in recent studies on personalized outcome prediction (e.g., Lutz et al., 2019; Webb et al., 2020). Furthermore, the large naturalistic sample ensured heterogeneity in patient characteristics such as demographics, diagnosis, and distress severity. This is the first study to show that relatively basic outcome monitoring can be used for personalized outcome prediction based on statistical machine-learning methods.

Several limitations are relevant to the interpretation of the present findings. To model treatment progress, session number was log-transformed following the dose-response model of psychotherapy. Although some patients meet the expectation of showing greater improvement early in therapy and progressively fewer change during the course of treatment, patterns of change are highly variable. Dyason et al. (2020), who explored individualized trajectories of change in psychotherapy, including (log-)linear, quadratic, and cubic trends, found only 7.5% of patients best-fitting the log-linear model while most patients showed linear or no change. Some studies suggest that the overall log-linear dose-response effect is detectable within just the first (4-8) sessions and does not hold for long-term psychotherapy (Lambert, 2013; Nordmo et al., 2020). Considering these findings, predictions of treatment progress could be improved by individualized modeling, possibly resulting in smaller RMSE values.

In the present study, a number of 30 neighbors per patient was chosen, taking into account the large sample size and following previous studies that found little difference in the prediction accuracy using 10-50 neighbors (Lutz et al., 2005). Noting that in this study, similarity between patients was based on two dichotomous variables, a five-point Likert scale, and an interval variable, a majority of neighbors were exact matches to the respective patient. As a result, the degree of similarity within one homogeneous subsample is of limited significance. To address this problem, interval measures rather than binary variables could be used for the distance calculation. Alternatively, neighbors might be selected by a predefined degree of similarity, resulting in unequal numbers of neighbors for each patient (Lutz et al., 2005) or by prioritizing variables that are most significant (e.g., baseline distress and diagnosis; Lutz et al., 2019). Regarding the statistically significant but comparatively small GLM coefficients for intrinsic treatment motivation, previous inpatient treatment, and number of suicide attempts in the past, future studies should consider other patient factors as potentially important predictors of symptom change. This may include, for example, social support, treatment expectation, coping style, social competence, and emotional regulation (for an overview, see Bohart & Wade, 2013).

Further limitations concern the restricted availability of continuous outcome data due to the large spacing between measurement occasions. Although the majority of patients provided data on at least three measurements, a larger number of repeated observations per individual is preferred for growth curve modeling. However, one major purpose of the present study was to investigate the utility of ROM in the very case of limited measurement capabilities.

Since there is evidence that predictions of change based on NNs may be more accurate for specific symptoms than for general distress (Janis et al., 2015), it would be interesting to extend the presented modeling approach by disorder- and symptom-specific treatment progress. In this context, it could be particularly useful to consider disorder-specific subscales for the selection of NNs.

As variables that affect outcome, for example, treatment motivation and therapeutic alliance, are expected to change over the course of an ongoing treatment, it seems reasonable to adjust the original prediction accordingly. This approach allows for a continuous update of individual outcome prediction, which places comparatively less weight on intake measurements. There is empirical evidence that adaptive treatment response models, including session-specific information or early change information as potentially important predictors, outperform prediction models based on intake characteristics alone (for an overview, see Lutz, 2002; Lutz et al., 2005, 2019). In the present study, it was not possible to develop a dynamic prediction model as relevant study variables were available only at intake. Future studies may explore the utility of integrating session-specific information into the prediction of treatment outcome using basic ROM data. In terms of practical utility, prediction accuracy and simplicity should be balanced in model development.

Given a routine outcome measure, such as the GSI, the presented approach can be used to develop a ROM system, in which a patient's actual course of recovery is mapped against an ETR. The performance of the proposed prediction model should be further examined in the context of systematic progress monitoring. As mentioned, prior experimental research has shown that ROM in combination with feedback to therapists significantly reduces deterioration in psychological treatment (Bone et al., 2021; Delgadillo, de Jong, et al., 2018; Lambert et al., 2018). Future studies could expand the presented method by a feedback mechanism on whether or not a patient is on track to benefit from treatment to further explore the utility of outcome prediction based on basic ROM. Lutz et al. (2019) developed a decision support tool to be used until session number 25, suggesting that most change occurs during that initial phase of treatment. It would be interesting to explore the feasibility of personalized psychometric feedback for longer treatments and assessment intervals.

Regarding the prediction of dropout risk, the retrospective categorization of patients into low versus high risk is a practical approach to determine the prediction accuracy of the presented model. However, the comparatively low sensitivity value indicates that the proposed classification does not capture a critical number of dropouts. One possibility to

improve sensitivity would be to lower the cut-off for high dropout risk at the cost of poorer specificity. A general approach to improve model performance is the identification of potentially important predictors that have not been considered so far. In the prediction of dropout, treatment expectations and therapeutic alliance are certainly variables of interest that should be examined in future studies (e.g., Sharf et al., 2010; Zimmermann et al., 2017). The comparatively low positive predictive value, related to the small base rate of dropout in the present sample, emphasizes a cautious interpretation of the individual risk compared to the overall rate of dropout.

The practical utility of the proposed model for the prevention of dropout remains to be tested in a prospective, randomized controlled trial. In an experimental design, the presented prediction model could be used to provide therapists with feedback (vs. no feedback) about their patients' dropout risk. Various thresholds could be tested to determine high dropout probability and decide whether the adjustment of treatment planning is required. Importantly, the choice of threshold determines the significance of sensitivity and specificity: high sensitivity means that many patients will be classified as potential dropouts and thus few actual dropouts will be missed, whereas a highly specific test will correctly rule out most patients who are *not* at risk for dropping out of treatment, resulting in fewer alerts. The question of how to set the threshold depends on the purpose of the prediction. A tool with high sensitivity could be useful as a screening instrument for the detection of potential dropouts. If false-positive results lead to additional costs that outweigh the benefits (e.g., time-consuming adjustment to treatment planning when not necessarily required), high specificity is desirable.

If a current treatment is at risk of being ineffective or the probability for dropout is high, therapists can benefit from specific recommendations to prevent negative outcomes (e.g., Delgadillo et al., 2017; Lutz et al., 2019; Whipple et al., 2003). Recommendations may include an open discussion about potential inhibiting factors (e. g., negative experience and reasons for dropout in previous treatment, fears that occur in association with psychotherapy), enhancing treatment motivation (e.g., make sure that there is consensus on significant treatment goals, review the treatment plan in cooperation with the patient if required), and contributing to the therapeutic relationship as a key variable in the treatment process. If patients improve faster than expected and symptoms decrease to a functional level, therapists may consider termination. Especially for trainee therapists, it may be helpful to discuss the proposed strategies with experienced supervisors.

2.5.2 Conclusions

Complementing previous research on individual outcome prediction in naturalistic psychotherapy, the present study validated innovative prediction methods for basic ROM. Due to increasingly required use, it is vital that ROM systems meet the challenges of application in routine clinical practice regarding time capacities, acceptance, financial burden, and methodological aspects. This study demonstrates a reasonable approach for the prediction of individual patient progress and dropout risk as long as session-by-session assessment is not a valid standard. Recognizing that research in that area is still in its beginnings, future studies are needed to identify predictors of treatment outcome, validate prediction models, and investigate the mechanisms that facilitate the utilization of ROM. Most certainly, the successful integration of research and practice is a key variable to improve this process and thus the effectiveness of individual psychotherapy.

Data and/or Code availability

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to restrictions that could compromise research participant privacy.

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Disclosure statement

The authors report no conflict of interest.

Ethics

The present retrospective study analyzed routine data from a university psychotherapy outpatient clinic in Mainz, Germany. All procedures were performed in accordance with the 1964 Helsinki Declaration and its later amendments. Written, informed consent allowing anonymized data to be used for research purposes was obtained from all participants.

3 Study 2: Occupational Stress Among Psychotherapists: Associations With Patient Distress, Working Alliance, and Treatment Outcome[3]

[3] Parts of this study are presented in the following article:

Mütze, K., Witthöft, M., & Bräscher, A.-K. (2022). *Occupational stress among psychotherapists: Associations with patient distress, working alliance, and treatment outcome.* [Manuscript submitted for publication]. Institute of Psychology, Johannes Gutenberg University Mainz.

3.1 Summary

Occupational stress can lead to significant impairment and reduced professional competence in mental health professionals. Preserving practitioners' well-being is an ethical obligation for therapists and educational institutions. Yet, occupational well-being among mental health providers is an understudied research area. The present study investigates the relationships between occupational stress and multiple work stressors to address this issue.

A self-report questionnaire was used to measure occupational stress among psychotherapists (overall stress level, emotional exhaustion, excessive work demands, and personal accomplishment) at a university CBT outpatient clinic. Routine data from a naturalistic patient sample (n = 194) was used to assess potential stressors (patient distress levels, working alliance, and remission). Differences in occupational stress between treatments with low- vs. high-distress patients were tested using t tests.

Therapists reported significantly higher overall stress (d = 0.57), emotional exhaustion (d = 0.35), and excessive demands (d = 0.35) but significantly lower personal accomplishment (d = 0.29) in treatments with comparatively high-distress patients. Working alliance and remission were significantly negatively associated with all measures of occupational stress, except for personal accomplishment, which was significantly positively correlated. Furthermore, occupational stress was significantly negatively related to learning opportunities and patient treatment satisfaction.

Psychotherapists are at risk of experiencing occupational stress in treatments with high-distress patients, poor working alliance, and non-remission. Implications to prevent occupational stress and associated risks for practitioners and their patients in mental health settings (e.g., balanced treatments of patients with heterogeneous distress levels, coping and self-care strategies), and recommendations for further research are discussed.

3.2 Introduction

For many professionals in mental health services (e.g., psychotherapists, counselors, social workers, and psychiatric nurses) work is a one-way street. They provide compassion and empathy, demonstrate patience and emotional support for their patients but cannot expect to receive such care in return (Guy, 2000; Posluns & Gall, 2020). As an ironic consequence, professionals may be unable to practice what they preach, instead overlooking their own needs. It is plausible, however, that practitioners must first be well themselves to promote responsible care to patients (Norcross & VandenBos, 2018; Posluns & Gall, 2020). Various components and causes of stress as well as the effectiveness of interventions have been studied among mental health providers (for an overview, see Dreison et al., 2018; Johnson et al., 2018; Morse et al., 2012). Findings suggest that especially psychological demands such as emotional involvement, interpersonal relationships, and patients' desire for improvement can lead to high levels of stress or even burnout and professional impairment in such professions (Posluns & Gall, 2020; Skovholt & Trotter-Mathison, 2011). Additional work demands related to large caseloads, paperwork, and time pressure are associated with high levels of stress in mental health providers (e.g., Rupert & Morgan, 2005; Yang & Hayes, 2020). No wonder many psychotherapists experience significant stress due to the presence of numerous stressors and exposure to recurrent topics of trauma, loss, and conflict (Figley, 2002; Simionato et al., 2019). This study seeks to investigate the relationships between practitioners' well-being and multiple work stressors within the context of psychotherapy practice. Specifically, relations between occupational stress among psychotherapists with patient distress, working alliance, and treatment outcome are examined.

The psychological syndrome of burnout refers to a state of emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment in response to work-related demands (Maslach & Jackson, 1981). In terms of occupational stress, burnout is characterized by energy depletion, increased mental distance from work, and reduced professional efficacy (World Health Organization, 2019). In their meta-analysis on burnout in mental health professionals, O'Connor et al. (2018) found a pooled prevalence of 40% for emotional exhaustion. Their findings are consistent with Simpson et al. (2019), who found a substantial occurrence of emotional exhaustion among clinical and counseling psychologists, namely 29.6% in the moderate range and 18.3% in the high range. Emotional exhaustion seems to be the most representative burnout factor for psychotherapists (McCormack et al., 2018; Rupert & Morgan, 2005; Simionato et al., 2019), which is not only a risk factor for

reduced physical health (Kaeding et al., 2017), depression (Gilroy et al., 2002), or professional impairment (Barnett, 2008) but can also result in reduced therapeutic effectiveness (Delgadillo, Saxon, et al., 2018). Especially trainees, who experience little self-efficacy in combination with perfectionistic expectations, are predisposed to emotional stress, with 49% reporting high levels of burnout (Kaeding et al., 2017).

There is empirical evidence for a range of variables that affect therapist well-being, including patient characteristics, relational factors, and therapeutic outcome (e.g., McCormack et al., 2018; Yang & Hayes, 2020). Certain patient characteristics, which are mostly beyond the practitioners' control, have been identified as particularly stressful for the therapist. First, comparatively high psychological distress can evoke negative emotional responses in the therapist, such as helplessness, frustration, and feelings of being overwhelmed (Lingiardi et al., 2015). High-distress patients often suffer from complex and chronic disorders that may result in recurrent crises or relapse (Lingiardi et al., 2015; Simpson et al., 2019; Warren et al., 2012). Additionally, high symptom severity is related to poorer treatment outcome in terms of response, remission, or dropout (Bohart & Wade, 2013; Castonguay & Beutler, 2006; Mütze et al., 2020). Slow progression and uncertainty about therapeutic success in combination with patients' wish for immediate improvement can be especially challenging for the therapist (Posluns & Gall, 2020). Second, treatments with patients who plan, attempt, or complete suicide contribute to psychotherapist burnout (Barnett et al., 2007). The confrontation with suicidal ideation and suicidality, typically accompanied by expressions of serious desperation, can evoke feelings of excessive responsibility and guilt in the therapist (Ellis et al., 2018). Third, the nature of the disorder (e.g., posttraumatic stress disorder, personality disorder, and eating disorders) can negatively affect practitioner well-being (Lingiardi et al., 2015; Warren et al., 2012; Yang & Hayes, 2020). Furthermore, lack of treatment motivation or commitment, aggressive and impulsive behavior, substance misuse, limit testing, and disrespect for personal boundaries have been identified as significant stressors related to patient behavior (McCormack et al., 2018; Posluns & Gall, 2020; Rupert et al., 2015).

At the beginning of treatment, psychotherapists invest a significant amount of time and effort to establish a trusting and sustainable working alliance, which is the most researched common factor in psychotherapy (Flückiger et al., 2018; Lambert, 2013; Wampold, 2015b). Throughout the treatment process, therapists continuously spend energy to maintain this relationship. Poor alliance, caused for example by inconsistent goals, lack of trust, respect, or compliance is correlated with burnout in mental health professionals

(Ackerley et al., 1988; O'Connor et al., 2018; Rössler, 2012; Simionato et al., 2019). Finally, therapeutic success is associated with therapist well-being (e.g., Davies et al., 2022). Already in 1937, Freud defined psychotherapy as one "of those 'impossible professions' in which one can be sure only of unsatisfying results" (Freud, 1937, p. 401). Lack of treatment success may lead to the perception of personal incompetence, frustration, feelings of helplessness, and an increased likelihood of job-related stress in therapists (Cambanis, 2012; Davies et al., 2022; Thériault et al., 2009). Importantly, the therapeutic alliance is one of the strongest predictors of treatment success (e.g., Lambert, 2013; Norcross, 2011).

In summary, high prevalences of work-related stress among psychotherapists and associated risks for practitioners and their patients (Delgadillo, Saxon, et al., 2018; Yang & Hayes, 2020) make this topic an ethical priority for this profession. The APA (2017, p. 3) states that "psychologists strive to be aware of the possible effect of their own physical and mental health on their ability to help those with whom they work". Likewise, the Canadian Code of Ethics for Psychologists requests practitioners to "engage in self-care activities that help to avoid conditions (e.g., burnout, addictions) that could result in impaired judgment and interfere with their ability to benefit and not harm others" (Canadian Psychological Association, 2017, p. 20). For effective prevention, systemic factors that contribute to occupational stress must be constantly evaluated. While employee health is currently an important research topic, occupational well-being among mental health providers remains understudied. Therefore, one objective of the present study is to validate the finding that occupational stress among therapists differs in treatments with low- versus high-distress patients. Furthermore, the study aims to determine the associations of occupational stress with working alliance and treatment success. Three assumptions were tested: Therapists experience significantly more occupational stress in treatments with high-distress patients compared to patients with low psychological distress (Hypothesis 1). There is an inverse relationship between therapists' occupational stress level and the quality of working alliance between therapists and patients (Hypothesis 2). There is an inverse relationship between therapists' occupational stress level and remission in terms of patients' general psychopathology (Hypothesis 3). For exploratory purposes, the relative importance of patient distress, working alliance, and remission to therapists' occupational stress was determined and therapist attributions of occupational stress were examined. Furthermore, associations of occupational stress with therapist learning experience and patient treatment satisfaction were investigated.

3.3 Method

3.3.1 Therapists and Patients

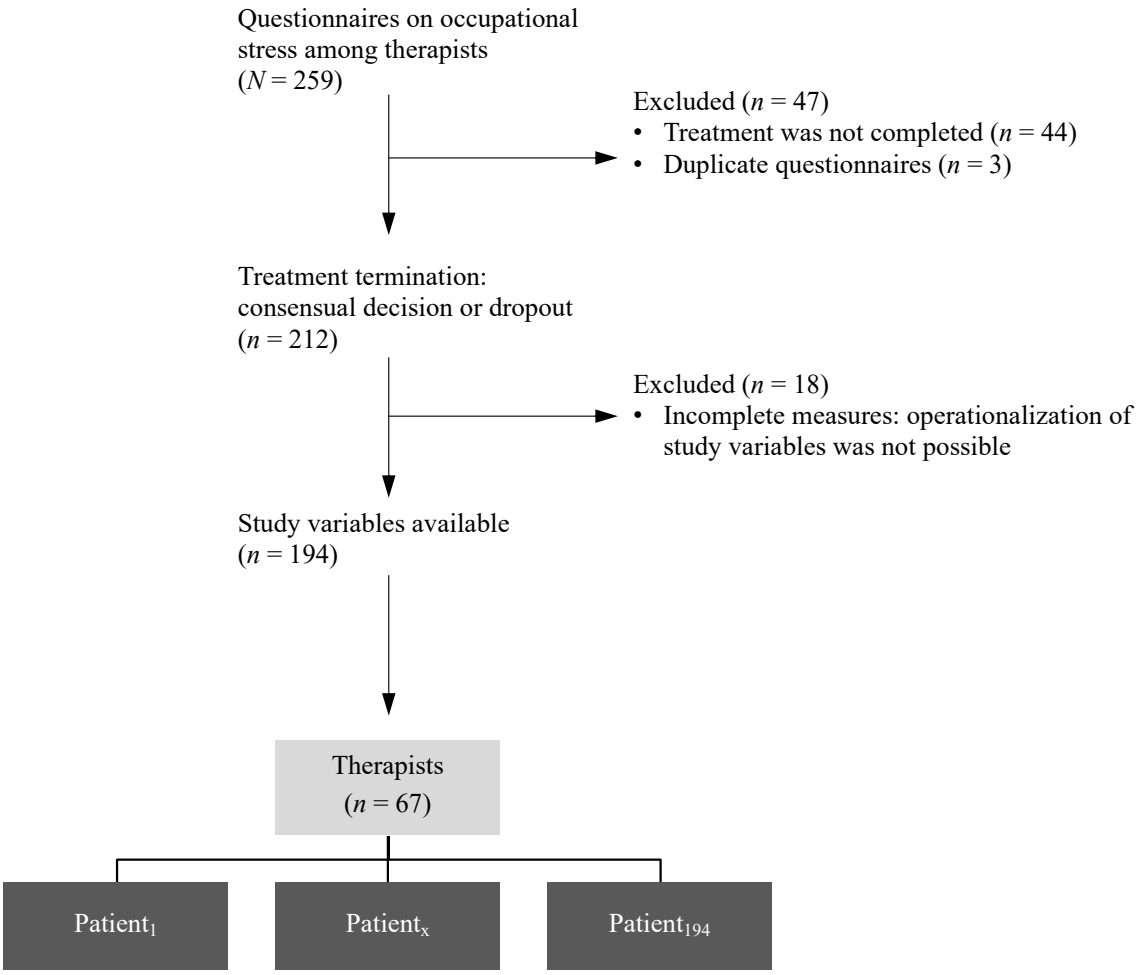
The study is based on a sample of 67 therapists as well as 194 patients being treated by these therapists between 2019 and 2021 at a university outpatient clinic for cognitive behavioral therapy in Mainz, Germany. Therapists treated between 1 and 10 patients ($M = 2.90$; $SD = 2.37$) in the context of this study. Therapists' age ranged between 25 and 56 ($M = 30.41$; $SD = 4.88$), 91.0% ($n = 61$) identified as female. The majority of therapists were in training[4] (80.6%), being supervised every fourth session by approved supervisors. To be eligible, treatments had to be completed (consensual termination or dropout) with available baseline and posttreatment measures comprising information about therapists' well-being and patients' psychological distress (see Figure 2-1).

Patients (59.8% identified as female) ranged in age from 18 to 78 ($M = 35.26$; $SD = 13.92$), 59.3% had completed university entrance qualification. As their primary diagnosis, most patients suffered from affective disorders (32.4%) or anxiety disorders (18.6%). Additional primary diagnoses were somatoform disorders (9.8%), feeding and eating disorders (6.2%), personality disorders (9.8%), trauma- and stressor-related disorders (9.8%), obsessive-compulsive disorders (5.2%), schizophrenia spectrum and other psychotic disorders (0.5%), and neurodevelopmental disorders (3.1%). All patients finished the diagnostic phase and received on average 43.31 individual treatment sessions ($SD = 20.04$). In the final sample, 6.7% of patients ($n = 13$) dropped out of treatment. Sample characteristics for therapists and patients are depicted in Supplement Table ST2-1.

[4] Successful completion of practical training I (§ 2 PsychThGAPrV) and at least 280 lessons of theoretical course credit.

Figure 2-1

CONSORT Diagram Illustrating Sample Flow



3.3.2 Procedure

From intake to termination, patients participated in the routine data collection of the university outpatient clinic. The clinic's quality management system is certified in accordance with the international norm DIN EN ISO 9001 since 2005 (Hiller et al., 2006). All patients provided written informed consent allowing their anonymized data to be used for research purposes. Prior to therapy, patients completed a series of psychometric questionnaires assessing their mental health status and demographic information. Routine assessment took place every fifth session from the beginning of treatment. At termination, therapists were asked to complete a questionnaire on occupational stress in the context of the respective treatment. Therapists consented separately for each treatment to participate in the study and to share their pseudonymized data. Participation was voluntary and refusal did not result in any adverse consequences. The university's ethics commission issued a declaration of no-objection (2019-JGU-psychEK-S002; 2020-JGU-psychEK-001).

3.3.3 Measures

Questionnaire on Occupational Stress Among Therapists

A questionnaire on occupational stress among psychotherapists was constructed from existing validated instruments (see below). In total, the questionnaire included 27 self-report items that could be completed in about 5 minutes. Additionally, therapists were asked to rate their overall stress level over the course of treatment on a visual analog scale ranging from 0 ("not at all") to 10 ("very much") and to add causal attributions (multiple possible specifications, e.g., "patient with suicidal tendencies", "lack of treatment progress", or "ambiguous therapeutic goals"). Therapists were instructed to judge their stress level exclusively in the context of one treatment with this very patient at treatment termination.

Maslach Burnout Inventory (MBI). The original form of the MBI (Maslach & Jackson, 1981) comprises 22 items assessing experiences of occupational burnout. In the present study, two subscales of the MBI, emotional exhaustion and personal accomplishment, were included. While the 9-item emotional exhaustion scale pertains to overextension and exhaustion regarding one's work, the latter represents feelings of competence and personal achievement with 8 items. Lower personal accomplishment scores correspond to greater experienced burnout. In the present study, a German version of the

MBI (MBI-D; Büssing & Perrar, 1992) was adapted to Heimerl (2014) and Maslach et al. (1996) to represent professionals in human services, namely psychotherapists. Therapists rated their emotional exhaustion (e.g., "I felt used/worn out at the end of a session with this patient") and personal accomplishment (e.g., "I was able to deal effectively with the problems of my patient") on a 6-point Likert scale ranging from 0 ("never") to 5 ("always"). In the current study, both subscales showed good internal consistency ($\alpha_{\text{emotional exhaustion}} = .88$; $\alpha_{\text{personal accomplishment}} = .89$).

Trier Inventory for Chronic Stress (TICS). The TICS (Schulz et al., 2004; English translation by Petrowski et al., 2018) differentiates between ten types of chronic stress, comprising 57 items. For the present study, the subscale measuring excessive work demands, which consists of 6 items, was adjusted to the context of psychotherapy practice (example item: "During this treatment, I was afraid I would not be able to fulfill my therapeutic tasks"). The 5-point Likert scale ranging from 0 ("never") to 4 ("very often") showed good internal consistency in the present study ($\alpha = .88$).

Questionnaire on the Experience and Evaluation of Work (QEEW). The QEEW (Van Veldhoven & Meijman, 1998) assesses work characteristics such as mental and emotional load, variety in work, and remuneration. In this study, the 4-item subscale opportunities to learn was used to measure therapists' feelings of developmental possibilities at work (e.g., "Did opportunities for personal growth and development arise while working with this patient?"). The original English items were translated into German and adjusted to the context of psychotherapy. Internal consistency for the 5-point Likert scale ranging from 1 ("never") to 4 ("always") was acceptable in the present study ($\alpha = .69$).

Working Alliance, Patient Distress, and Treatment Satisfaction

Working Alliance Inventory (WAI). A 12-item German short version (WAI-SR; Wilmers et al., 2008) of the WAI (Hatcher & Gillaspy, 2006) was used to assess the therapist-rated quality of alliance between therapists and patients. Items are rated on a 5-point Likert scale ranging from 1 ("rarely") to 5 ("always"). In the present study, the WAI-SR was administered every fifth session from the beginning of treatment. For each treatment, the total score of the three dimensions tasks, goals, and bonds averaged across all assessments to represent global alliance and to account for fluctuations over time. Internal consistency was between $\alpha_{min} = .73$ and $\alpha_{max} = .93$ in the current study.

Brief Symptom Inventory (BSI). The BSI (Franke, 2000) is a short-form German translation of the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1992) that consists of 53 self-report items assessing physical and psychological symptoms. Higher values on a 5-point Likert scale ranging from 0 ("not at all") to 4 ("extremely") indicate higher distress. In the present study, the average of all items, the Global Severity Index (GSI), served as an indicator for the intensity of patient distress at baseline and termination.

Remission. A score within the functional range of the GSI at termination, as a consequence of at least 50% improvement within the pathological range and an additional 25% within the full range, was considered a remission in terms of general psychopathology. The second criterion was added to prevent small, clinically insignificant improvements with baseline scores near the cut-off from being considered as remission (Hiller & Schindler, 2011). The cut-off 0.56 between functional and dysfunctional GSI scores was defined by clinical significance, according to Jacobson and Truax (1991).

Structured Clinical Interview for DSM-IV Axis II Personality Disorders Screening Questionnaire (SCID-II screening). A German Translation (Fydrich et al., 1997) of the SCID-II screening (First et al., 1997) was used to assess anomalies in patients' personality styles. The self-report instrument comprises 117 dichotomous items ("Yes" or "No"), corresponding to the criteria for personality disorders discriminated by the DSM-IV (American Psychiatric Association, 1994; text rev. 2000). The SCID-II screening was administered at baseline.

Suicidality. The German version (Hautzinger et al., 2009) of the BDI-II (Beck et al., 1996) was used to assess patients' suicidality ideations at baseline with one item ranging from 0 ("I don't have thoughts of killing myself") to 3 ("I would kill myself if I had the chance") on a 4-point Likert scale.

Classification of patient distress. At baseline, the patient distress level was categorized as low or high. This classification was based on four characteristics: Overall psychological distress ($T_{GSI} \geq 80$), suicidality (the corresponding item in the BDI-II exceeds 1), indication of personality disorder (at least five screening sections exceed the cut-off), and previous inpatient treatment. For low-distress patients, at most one of these criteria could be fulfilled. This was the case for 133 patients (69%) in the present sample. High-distress patients (31%, $n = 61$) met at least two of the presented criteria. Importantly, therapists were

not informed about the classification. For details on the selection and validation of criteria for the patient classification, see Mütze et al. (2020).

Treatment satisfaction. Patient treatment satisfaction was assessed with a single item ("Overall, how satisfied are you with the treatment you received?") on a 6-point Likert scale, ranging from 1 ("completely dissatisfied") to 6 ("completely satisfied"), at treatment termination.

3.3.4 Data Analysis

All analyses were conducted with SPSS (IBM SPSS v26.0.0.1 and IBM SPSS Amos v23 for path analysis). Differences in therapists' occupational stress between treatments with low- vs. high-distress patients were tested using *t* tests. Cohen's *d* was used to calculate effect sizes for mean differences and significance levels were set at $\alpha = 0.05$. Correlations were considered weak ($|r| \geq .10$), moderate ($|r| \geq .30$), or strong ($|r| \geq .50$; Cohen, 1988).

The relative importance of patient distress, working alliance, and treatment outcome to therapists' occupational stress was examined using path diagrams to display (residual) correlations among exogenous (patient distress levels, working alliance, and remission) and endogenous (overall stress level, emotional exhaustion, excessive work demands, and personal accomplishment) variables in the model.

As by definition remission cannot be achieved in cases of non-pathological baseline distress, patients within the functional range of the GSI at baseline were excluded from corresponding analyses. To measure the relationship between occupational stress and treatment satisfaction beyond therapeutic success, partial correlations controlling for total reduction in psychological distress (pre- to post-improvement on the GSI) were calculated. For the exploratory analysis, therapists' causal attributions for their perceived stress over the course of treatment were categorized into seven specifications (see Supplement Table ST2-2).

Missing Data

To handle missing values on the BSI, individual post-treatment scores were obtained by utilizing the last observation carried forward method. Cases with incomplete measures on the questionnaire on occupational stress among psychotherapists were excluded from further

analyses, as the proportion of missing data on the corresponding subscales was considered too large for imputation (see Figure 2-1).

3.4 Results

In the patient sample, overall psychological distress was significantly reduced after treatment with a large effect size (pre- to post-improvement on the GSI = 0.54; *SD* = 0.62; $t(193) = 12.02$; $p < .001$; $d = 0.86$). At termination, 46.1% of patients ($n = 71$) could be classified as remitted. A total of 6.7% ($n = 13$) dropped out of treatment for quality-related reasons (e.g., interactional problems, insufficient motivation, disregard of agreements).

3.4.1 Occupational Stress in Treatments With Low- vs. High-Distress Patients

While the overall stress level across all treatments was in the lower middle range of the scale, therapists reported a significantly higher stress level in treatments with high-distress patients compared to treatments with low-distress patients ($t(192) = 3.68$; $p < .001$; $d = 0.57$). Therapists also reported significantly higher levels of emotional exhaustion in treatments with comparatively high-distress patients ($t(192) = 2.27$; $p < .05$; $d = 0.35$), and perceived significantly lower personal accomplishment ($t(192) = -1.84$; $p < .05$; $d = 0.29$). Excessive work demands were reported more frequently in treatments with comparatively high-distress patients ($t(192) = 2.25$; $p < .05$; $d = 0.35$). In support of hypothesis 1, therapists reported to experience more occupational stress in treatments with high-distress patients compared to treatments with low-distress patients. Comparisons of therapists' occupational stress between treatments with low- vs. high-distress patients are presented in Table 2-1.

Table 2-1

Comparisons of Therapists' Occupational Stress Between Treatments With Low vs. High Distress Patients

	Total (n = 192)		Low distress (n = 133)		High distress (n = 61)		t(192)	p	Cohen's d
	M	*SD*	*M*	*SD*	*M*	*SD*			
Overall stress level	3.58	2.25	3.18	2.20	4.43	2.15	3.68	<.001	0.57
Emotional Exhaustion	10.88	7.32	10.08	7.19	12.61	7.28	2.27	.012	0.35
Personal Accomplishment	26.59	6.83	27.16	6.67	25.23	7.06	-1.84	.034	0.29
Excessive work demands	5.82	4.28	5.38	4.34	6.85	3.99	2.25	.013	0.35

Note. Low/high distress = patient distress level at baseline according to the presented categorization.

3.4.2 Associations of Occupational Stress With Working Alliance and Treatment Success

In line with hypothesis 2, working alliance was significantly negatively correlated with therapists' overall stress level (r = -.45; p < .001), emotional exhaustion (r = -.47; p < .001), and excessive work demands (r = -.49; p < .001). There was a strong and significant positive correlation between working alliance and personal accomplishment (r = .57; p < .001). Supporting hypothesis 3, remission was significantly negatively correlated with therapists' overall stress level (r = -.24; p < .01), emotional exhaustion (r = -.26; p < .001), and excessive work demands (r = -.21; p < .01). There was a significant weak positive correlation between remission and personal accomplishment (r = .21; p < .01).

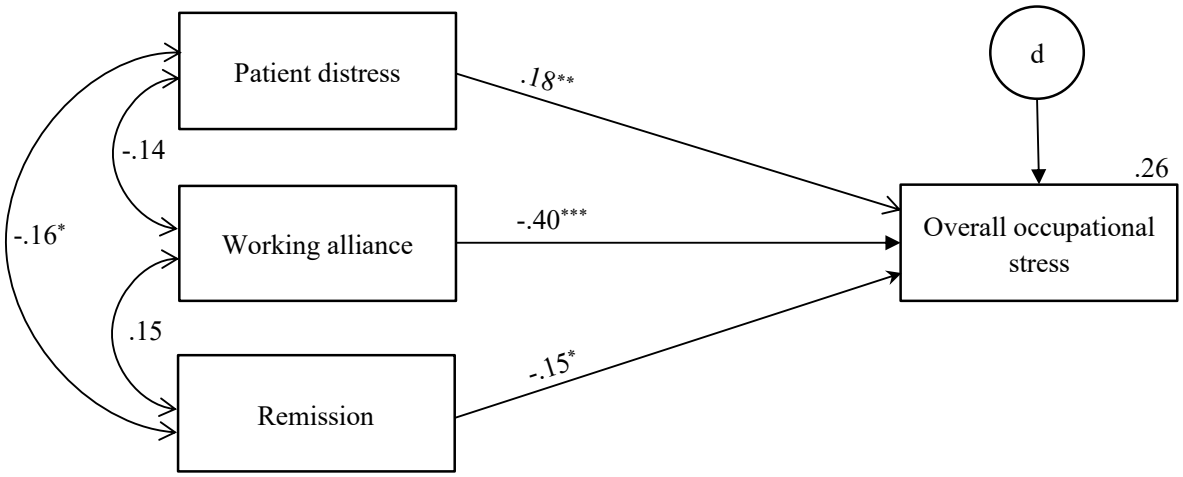
3.4.3 Exploratory Analyses

Relative Importance of Patient Distress, Working Alliance, and Remission

As displayed in the path-analytic results in Figure 2-2, working alliance (β = -.40; p < .001), patient distress (β = .18; p < .01), and remission (β = -.15; p < .05) explained 26% of variance in therapists' overall stress level. Working alliance accounted for the largest amount of variance in emotional exhaustion (β = -.44; p < .001), personal accomplishment (β = .55; p < .001), and excessive work demands (β = -.45; p < .001). While patient distress did not account for a significant amount of variance in either emotional exhaustion, personal accomplishment, or excessive work demands, remission significantly predicted emotional exhaustion (β = -.18; p < .05). Together, the exogenous variables explained 26% of variance in emotional exhaustion, 35% of variance in personal accomplishment, and 25% of variance in excessive work demands. Working alliance did not correlate significantly with either patient distress or remission. A weak significant relationship was found between the two exogenous variables patient distress and remission (r = -.16; p < .05). Residuals of all three endogenous variables were significantly correlated (for details, see Figure 2-3).

Figure 2-2

Path Analysis Model of Associations Between Working Alliance, Patient Distress, Remission, and Overall Occupational Stress

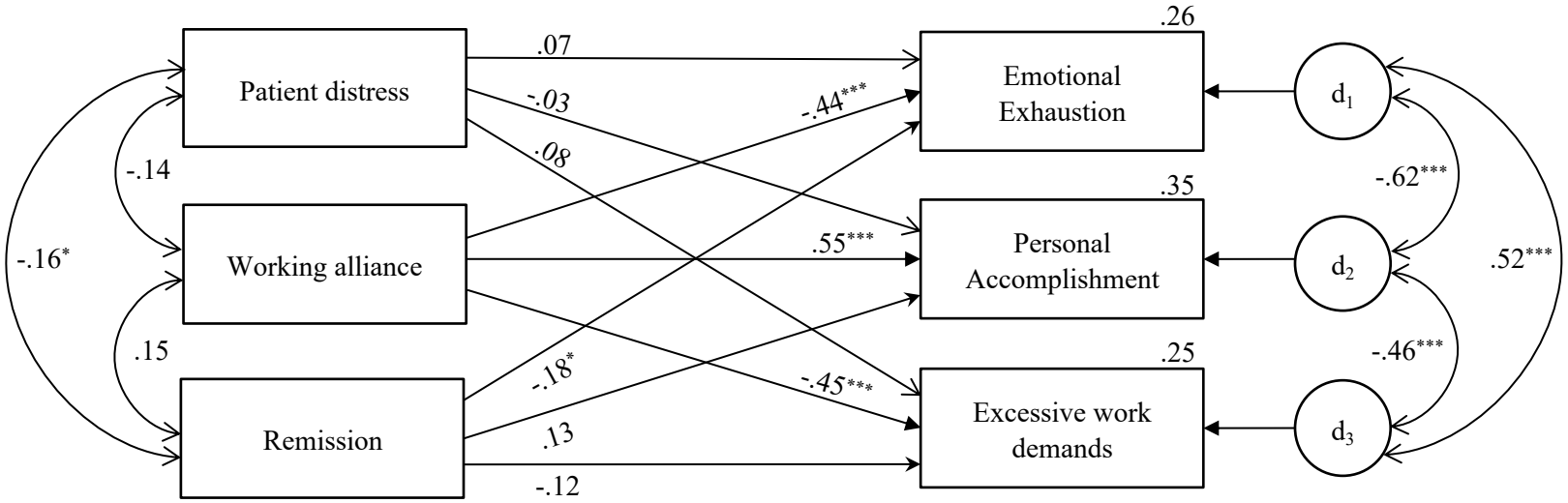


Note. The path analysis shows associations between exogenous variables (working alliance, patient distress, remission) and therapists' overall stress level. Single-headed arrows indicate path coefficients (standardized linear regression coefficients). Curved, double-headed arrows denote correlations among exogenous variables. d represents the error term for the endogenous variable; $R^2 = .26$.

$^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

Figure 2-3

Path Analysis Model of Associations Between Working Alliance, Patient Distress, Remission, and Subscales of Occupational Stress



Note. The path analysis shows associations between exogenous variables (working alliance, patient distress, remission) and subscales of therapists' occupational tress. Single-headed arrows indicate path coefficients (standardized linear regression coefficients). Curved, double-headed arrows denote correlations among exogenous variables and residuals. $d_{1\text{-}3}$ represent error terms for endogenous variables. For emotional exhaustion, $R^2 = .26$; for personal accomplishment, $R^2 = .35$; for excessive work demands, $R^2 = .25$.

$^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

Causes of Occupational Stress: Therapist Attributions

Therapists most frequently identified lack of treatment progress (30.4%), doubts about their therapeutic skills (29.9%), patients with complex personalities (27.8%), and lack of commitment (25.3%) as the cause of their perceived occupational stress. Less often, therapists attributed their occupational stress to patients' suicidal tendencies (5.2%) or ambiguous therapeutic goals (18.6%). Therapists added further causal attributions, including patients' poor reflective abilities or emotional shutdown, disrespect for therapists' personal boundaries, or multimorbidity. For full information on therapist attributions of occupational stress, see Supplement Table S2-2).

Associations of Occupational Stress With Therapist Learning Experience and Patient Treatment Satisfaction

Regarding the association of occupational stress with learning experience, significant weak to moderate negative correlations were found between therapists' perceived learning opportunities and their overall stress level (r = -.23; p < .001), emotional exhaustion (r = -.37; p < .001), and excessive work demands (r = -.42; p < .001), respectively. A strong positive correlation was found between opportunities to learn and personal accomplishment (r = .59; p < .001). Controlling for total reduction in psychological distress, negative correlations were found between patient treatment satisfaction and therapists' overall stress level (r = -.31; p < .001), emotional exhaustion (r = -.34; p < .001), and excessive work demands (r = -.20; p < .01), respectively. A moderate positive correlation was found between patient treatment satisfaction and personal accomplishment (r = .37; p < .001).

3.5 Discussion

This study sought to investigate the relationships between occupational stress among psychotherapists and multiple work stressors. Specifically, overall stress, emotional exhaustion, excessive work demands, and personal accomplishment in therapists were related to patient distress, working alliance, and treatment outcome (i.e., remission). In line with the hypotheses, therapists reported to experience significantly more occupational stress (higher overall stress, emotional exhaustion, and work demands but lower personal accomplishment) in treatments with high-distress patients compared to treatments with low-

distress patients. The quality of working alliance and remission were negatively associated with all measures of occupational stress, except personal accomplishment, which was positively correlated.

In a simultaneous investigation, the relative importance of working alliance increased while the influence of patient distress and remission on occupational distress decreased. These results suggest that patient distress, working alliance, and remission explain overlapping variance in therapists' occupational stress and support the theory that working alliance is one key psychological factor related to therapist burnout (Linley & Joseph, 2007).

Additional exploratory analyses showed that occupational stress in therapists was negatively related to learning opportunities. The job demands-resources model (Bakker & Demerouti, 2007) illustrates that learning, growth, and development are stimulated when demands and resources are balanced. In contrast, high job demands in combination with low resources likely result in psychological costs including burnout. In line with these assumptions, therapists in this study reported to experience fewer learning opportunities with high work demands, overall stress, and emotional exhaustion. Unsurprisingly, learning opportunities co-occurred with feelings of personal accomplishment in this study. Furthermore, occupational stress in therapists was negatively related to patient treatment satisfaction. If therapists succeed in coping with job strain their professional competence may not necessarily be affected. It is possible, however, that patients perceive therapists' occupational stress as negative.

In line with the current literature, therapists themselves identified a lack of treatment progress, doubts about their therapeutic skills, patients with complex personalities or poor reflective abilities, a lack of commitment, and disrespect for personal boundaries among other factors to cause occupational stress.

3.5.1 Strengths, Limitations, and Future Directions

The naturalistic sample of patients and their therapists ensured heterogeneity in demographics, diagnosis, and distress severity. As therapists were blinded to the hypotheses and the patient classification (low vs. high distress), ratings are expected to be free of confirmation bias (i.e., self-fulfilling prophecy). Additionally, the concept of occupational stress was operationalized by multiple validated measures, including resources, that showed consistent results. Thus, the findings of this study allow comparisons with other research and different contexts (workplaces, professions, or clients). Several limitations are relevant to the

interpretation of the study results. First, therapists were required to give a retrospective report on occupational stress, which may have led to cognitive biases (e.g., primacy or recency effect). Since no baseline measure of occupational stress was included in the assessment, alternative stressors and resources (e.g., personal problems, work-life imbalance, social support, physical health, or self-care strategies) could not be controlled for. Because of the cross-sectional data, the directions of effects regarding associations of treatment success and alliance with therapists' occupational stress are ambiguous. Previous research identified therapist burnout as a predictor of poorer treatment outcomes (e.g., Delgadillo et al., 2018) and vice versa (Cambanis, 2012; Davies et al., 2022). Nevertheless, the finding that a quarter of therapists in this study attributed occupational stress to lack of treatment progress suggests that treatment success had a predictive influence. Likewise, it is possible that therapist stress affected the quality of working alliance in this study. When asked about their own interpretation, however, more than 40% of the therapists in this study identified lack of commitment or ambiguous therapeutic goals as causes of occupational stress. The two categories match the WAI subscales tasks and goals. The third subscale, bonds, was also reflected in the therapist attributions (Supplement Table ST2-2, category *others*). For example, one therapist traced back her perceived occupational stress in the context of one treatment to the fact that the patient "did not speak openly about problems". Another therapist stated that her patient "was demanding and skeptical about [her] age", which had caused the stress. Yet another therapist related her perceived occupational stress to "feelings of unease because [she] did not know how to cope with very personal questions asked by the patient". These interpretations suggest that if the therapeutic relationship is characterized by a lack of trust and respect, therapists might respond with increased feelings of stress. Concerning the importance of temporal precedence to establish causality, future studies should include repeated measures of occupational stress throughout the treatment process. This way, patterns of change in occupational stress can be modeled as pre- to post-improvement and growth.

Second, patient distress is confounded by treatment outcome in this study. A significant negative correlation of $r = -.16$, that was found in the present study, confirms the persistent finding, that treatment success tends to be lower for patients with comparatively high psychological distress (e.g., Bohart & Wade, 2013; Mütze et al., 2020; Riedel et al., 2011). To address this problem, a post-hoc analysis of covariance was performed. The effect of patient distress on occupational stress after controlling for remission was still significant $F(1,150) = 7.51$; $p < .01$). Since patient characteristics are inevitably related to treatment

outcome (Bohart & Tallman, 2010; Bohart & Wade, 2013), statistical control is a practical method when confounding cannot be prevented by randomization, restriction, or matching (Pourhoseingholi et al., 2012).

Another limitation refers to the sample of mostly psychotherapy trainees, limiting the generalizability for other samples. It is possible that occupational stress in trainees is higher compared to senior therapists due to lack of experience, financial burdens, and performance pressure (Heinonen et al., 2022). Unfortunately, a group comparison between trainees and senior therapists regarding occupational stress could not be performed because of strongly unbalanced sample sizes. When interpreting the results, one should take into account that some identified risk factors for occupational stress might especially affect early career therapists.

Furthermore, the nested nature of the data (i.e., patients nested in therapists) could not be accounted for in the analyses because the level-1 sample size of $M = 2.90$ patients per therapist was not sufficient to apply suitable statistical methods (for details on sample size, statistical methods and power analysis in multilevel regression, see Hox, 2010). If possible, future analyses in this research field should consider statistical methods for nested designs (e.g., multilevel modeling) to disaggregate within- and between-patient effects.

Finally, a possible self-selection bias might have affected the results of the present study to the effect that therapists who agreed to participate experienced comparatively low occupational distress. Although paperwork is a possible work stressor in psychotherapy practice (Rupert & Morgan, 2005), the requested time to complete the questionnaire on occupational stress in this study (5 minutes maximum) seems reasonable.

The significantly correlated errors of emotional exhaustion, personal accomplishment, and excessive work demands (i.e., residual correlations; Figure 2-3) arise from unmeasured exogenous variables that explain shared variance. In addition to the above-named baseline measure of occupational stress, future research could expand the current study by different measures of therapeutic success (e.g., pre- to post-improvement, response, and dropout), and patient as well as therapist characteristics (e.g., personality traits, treatment expectations, and motivation) that possibly affect therapist well-being. For example, Zeeck et al. (2012) found therapist rather than patient characteristics to predict stressful involvement in psychotherapists. It would certainly be interesting to explore how resources and coping strategies like self-care, collegial exchange, personal therapy, setting realistic goals, establishing and maintaining boundaries, acceptance of uncontrollable events, work autonomy, or clinical experience may buffer occupational stress among therapists. It

would also be meaningful to replicate this study in different psychotherapy approaches, such as psychodynamic therapies, with particular regard to working alliance as a conscious, reality-based collaboration including the function of transference and countertransference in these treatments (Horvath, 2018).

Although not significant, therapists in this sample reported to experience a comparatively better quality of working alliance with low-distress patients throughout treatment (see Supplement Figure SF2-1). In support of this finding, high patient distress was associated with deteriorating alliance in previous research (Hersoug et al., 2010). Perhaps therapists experienced more occupational stress in treatments with high-distress patients partially because the development of working alliance was less favorable. A possible mediating effect should be considered in future studies.

Prevalences of up to 59% of emotional exhaustion among mental health professionals (O'Connor et al., 2018) highlight the need for action, not least at an organizational level. Simionate et al. (2019, p. 473) claim that "understanding the difference between 'talking the talk' and 'walking the walk' is key to creating ethical workplaces in the mental health sector." Since patient-related stressors often are beyond the therapists' control, a balanced allocation of patients with heterogeneous distress levels can be helpful in the prevention of occupational stress. The presented classification of low- versus high-distress patients is easy to implement and proves reasonable in naturalistic settings, especially in the educational context to counter an excessive workload in psychotherapy trainees. For example, therapists may not treat two high-distress cases consecutively and start training with comparatively low-distress patients (Mütze et al., 2020). However, not all stressors can be balanced or avoided in the context of therapeutic work. Thus, it is critical to integrate further resources such as support from co-workers and supervisors, professional and personal boundaries, and autonomy in the workplace. Furthermore, setting realistic treatment goals and acceptance of uncontrollable events may be important strategies to cope with lack of therapeutic success in terms of slow progression or non-remission. Interestingly, so-called supershrinks (i.e., exceptional good therapists) are "much more likely to ask for and receive negative feedback about the quality of the work and their contribution to the alliance" (Miller et al., 2014, p. 7). Thus, transparent communication with patients is a possible strategy to cope with poor alliance. Bringing together many of these implications, Simionato et al. (2019) provide important guidance for practicing psychologists for the identification, prevention, and remediation of burnout in a 5-P model (person-centered workplaces, peer and collegial networks, professional advocacy, preventative training, and psychotherapist self-care).

3.5.2 Conclusion

Psychotherapists are at risk to be exhausted from work demands in treatments with high-distress patients, poor working alliance, and non-remission. Occupational stress can lead to significant impairment in both, therapists and their patients. Preserving practitioners' well-being should be an ethical obligation for employers and educational institutions. Because lack of experience, financial burdens, and performance pressure make trainees especially vulnerable to occupational stress, awareness should be embedded in teaching. Implications from this study (i.e., balanced treatments of patients with heterogeneous distress levels, coping and self-care strategies) can help prevent occupational stress among psychotherapists and other mental health providers.

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Data and/or Code availability

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to restrictions that could compromise research participant privacy.

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Disclosure statement

The authors report no conflict of interest.

Ethics

All procedures presented in this manuscript were performed in accordance with the APA ethical principles regarding research with human participants.

4 General Discussion

4.1 Summary and Integration of Findings

The present dissertation aimed at highlighting the utility of psychotherapy research for clinical practice concerns, thus driving the progress of science-practice integration. Two current research topics that directly address psychotherapy practice were presented: Study 1 investigated the integration of modern machine-learning techniques into basic ROM that can be used for individual outcome prediction in everyday psychological practice. Variables that have been identified to predict individual treatment progress based on the NN method (i.e., baseline distress, intrinsic treatment motivation, previous inpatient treatment, number of suicide attempts in the past) and dropout (i.e., lower intrinsic treatment motivation, previous inpatient treatment, lack of university entrance qualification, higher baseline impairment, diagnosed personality disorder and/or eating disorder) largely correspond to previous studies on the prediction of treatment outcome. The results show that innovative outcome prediction is not limited to elaborate progress monitoring (i.e., session-by-session assessment) and can be easily adopted by psychological services that routinely collect patient data.

Study 2 investigated associations between occupational stress among psychotherapists with patient distress, working alliance, and treatment outcome. In this study, therapists reported to experience significantly more occupational stress (i.e., overall stress level, emotional exhaustion, excessive work demands) and significantly lower personal accomplishment in treatments with comparatively high-distress patients, poor working alliance, and non-remission. Additional exploratory analyses showed that occupational stress was significantly negatively related to learning opportunities and patient treatment satisfaction. Furthermore, path analyses showed that working alliance plays a dominant role in the experience of occupational stress among therapists compared to patient distress and remission. Among other factors, therapists identified lack of treatment progress, doubts about their therapeutic skills, patients with complex personalities, and lack of commitment as the main causes of their perceived occupational stress. Implications for the prevention of occupational stress and associated risks for therapists and their patients were discussed, including an approach to balancing treatments of patients with heterogeneous distress levels as well as recommendations for coping and self-care strategies that might be especially helpful for trainee therapists.

The presented studies contribute to the field of practice-oriented research and have important implications for the improvement of patient outcomes, professional well-being,

and training in psychological practice. An integration of the present findings with the existing literature will be discussed in the following sections.

4.1.1 Outcome Monitoring and Prediction in Routine Clinical Practice – Do the Benefits Justify the Costs?

The use of outcome monitoring and prediction to facilitate the treatment of mental health disorders, including the identification of irregularities in the treatment process and the possibility of individually tailoring ongoing treatments with the aim to improve treatment outcomes, sounds promising. At this stage of research, studies on the utility of ROM and the associated feedback for therapists largely agree on the potential benefits for patients, therapists, and economic interests including a better understanding and communication of patient symptoms, assistance in clinical judgment, decision-making, and treatment tailoring, change in the duration of treatment, improvement of patient symptoms as well as the prevention of stagnation, deterioration, and dropout. However, the effects of outcome monitoring, prediction, and feedback (hereinafter referred to as *ROM systems*) need a close examination given the costs and barriers that come with the implementation in routine clinical practice.

A Cochrane review on the routine use of patient-reported outcome measures for improving treatment of mental health disorders that included seventeen studies, some of which have been mentioned above (i.e., de Jong et al., 2012; Lambert, Whipple, et al., 2001; Whipple et al., 2003), found insufficient evidence to support the use of ROM systems (Kendrick et al., 2016). Meta-analytic results showed no significant differences in patient-reported outcome measures in terms of improved symptom scores between feedback and no feedback (standardized mean difference = -0.07, 95% CI -0.16 to 0.01; $p = 0.10$). Furthermore, feedback was not shown to be helpful in changing the duration of treatment. The authors acknowledge, however, that their findings are subject to considerable uncertainty since all the included studies were judged to be at high risk of bias (e.g., lack of blinding of participants and outcome assessors or significant attrition at follow-up) and that more research is required.

In a more recent study, Lutz et al. (2022) investigated the effects of a ROM system that supports therapists during treatment with psychometric feedback on individual patient progress, adaptive recommendations, and clinical problem-solving tools. Patients being treated in a CBT outpatient clinic were randomized to either the therapist having access to a

support system or not, thus therapists treated patients in both conditions. The authors found no main effect for feedback (i.e., feedback on individual patient progress with integrated clinical problem-solving tools did not lead to better treatment outcomes in terms of symptom reduction). However, the therapist-rated usefulness of feedback was a significant moderator of the feedback-outcome association. That is, therapists who reported high usefulness of the feedback system across their patients did better in treatments with feedback than without feedback whereas therapists with a lower overall usefulness score did not do as well with feedback and did better without feedback. The authors conclude that therapists who rate the usefulness of feedback as low, may be unable to effectively integrate computer-based feedback with clinical skills and that misinterpretations or overreactions may lead to negative treatment developments. Therapists who rate the usefulness of feedback as high, on the other hand, seemed to apply feedback well by staying focused and rethinking their current practice. In addition, de Jong et al. (2012) found that therapists with an open attitude toward ROM feedback showed faster progress with their patients compared to therapists who trusted their own opinion rather than feedback. The findings by Lutz et al. (2022) and de Jong et al. (2012) emphasize the need for understanding therapist attitudes and concerns before simply implementing ROM in routine practice and calling it a *support* system.

Besides individual concerns or refusal to comply with ROM systems, the practical implementation of ROM systems is a significant obstacle, especially in self-employment. By far not all psychological service settings provide the time and materials (e.g., assessment tools and evaluation software) for ROM, let alone the technical feasibilities that are required for more elaborate support tools including outcome prediction and systematic feedback. Additionally, the time requirements and financial costs associated with the implementation and routine use must not be neglected.

In a qualitative study, Ionita et al. (2016) examined the challenges faced by psychotherapists currently using progress monitoring measures. The three domains that emerged in this study summarize all of the above-named challenges: technical concerns (related to administering measures, dissatisfaction with specific characteristics regarding the length and validity of progress monitoring measures, and concerns that the measures might not be a good fit with all patients), negative response from others (colleagues in senior positions who are resistant, thus challenging the hierarchies or patients who do not see the purpose of progress monitoring or disengaged from using the measures because of the weekly repetition), and therapists' personal barriers (lack of knowledge, feeling uncomfortable or anxious about how to introduce the measures to patients, the novelty of

measures, or about being evaluated and colleagues would have access to their results). According to the authors, the incorporation of progress monitoring early in training programs, the use of online systems that reduce the time of administration and interpretation, the ability to select measures based on individual patient needs (e.g., therapists can adjust areas of functioning, comprehensibility, length, and frequency of the measures), and informed consent standards involving explanations of the purpose and benefits of the measures to patients may be solutions to resolve many of the presented challenges.

To sum up, the potential costs and benefits of ROM systems depend on the features included and on the context of implementation. Basic outcome monitoring does not necessarily contain outcome prediction or alarm signals for cases that are not-on-track, while more elaborate clinical support tools even provide personalized treatment recommendations for decision-making (e.g., Lutz et al., 2019). Considering the insufficient evidence for elaborate feedback systems, the above-named costs weigh heavily on everyday psychological practice. However, quality assurance in routine clinical practice requires repeated assessment and evaluation of patient outcome measures throughout the course of treatment. Therefore, basic ROM systems that are applicable in terms of administration, accessibility, and affordability should become a valid standard in the treatment of mental disorders. Practical suggestions for the successful integration of ROM systems in everyday psychological practice, as investigated in Study 1, are further discussed in section 4.3.1.

4.1.2 Practitioner Well-Being in the Treatment Process: Cause or Consequence?

There is a large consensus in the literature that certain patient characteristics contribute to negative well-being in psychotherapists, to the effect that therapists *respond* to patients' symptomatic expressions and personality traits. Associations between therapist well-being and factors that develop over the course of treatment as the quality of working alliance, on the contrary, seem more complex. In Study 2, the therapist attributions of occupational stress suggest that poor working alliance had a predictive influence. Likewise, there is empirical evidence that therapists' perceived stress prospectively predicts their experiences of working alliance: In a sample of 333 patients treated with psychodynamic therapy by 70 therapists, Heinonen et al. (2014) investigated pre-treatment therapist characteristics as predictors of working alliance measured by the WAI during treatment. In that study, better therapist-rated alliances were experienced by therapists who felt more confidence and enjoyment in their work (i.e., higher relational skills, current skillfulness,

feelings of flow, efficaciousness and investment, lesser anxiety, boredom, difficulties, and stressful involvement). Interestingly, therapists' lower self-confidence and work enjoyment did not predict patient-rated alliances. The authors argue that therapists' self-experienced qualities may have less strong or direct bearing on their patients' experiences and that therapists may be able to contain negative feelings in a way that does not influence patient appraisals of the alliance. This interpretation is supported by Nissen-Lie et al., (2010), who investigated therapist predictors of early patient-rated working alliance in a naturalistic outpatient sample ($N = 68$ therapists and $N = 335$ patients) using multilevel modeling. Contrary to the authors' expectations, stressful involvement in therapeutic work did not significantly impact patient alliance ratings. Surprisingly, professional self-doubt in the therapist sample turned out to positively predict the patient-rated alliance. The authors discuss this unexpected finding as follows:

> We may interpret this unique, positive effect of PSD [professional self-doubt] as a reflection of sensitivity on the part of the therapist that allows him or her to engage in healthy self-critical evaluation. In fact, it is possible that PSD in this case reveals an attitude of therapist humbleness and caution, which is experienced by the patient as respectfulness, which, in turn, reinforces the therapeutic alliance. (p. 640)

Similar to the association between therapist well-being and working alliance, the finding that some therapists in Study 2 traced back their perceived occupational stress to a lack of treatment success suggests a causal relationship, whereas the results of other studies indicate an opposite direction of effect (e.g., Delgadillo, Saxon, et al., 2018; Salyers et al., 2015; Wampold & Owen, 2021; Yang & Hayes, 2020). Additionally, a higher degree of resilience and mindfulness in therapists was found to have a positive impact on treatment outcome (Green et al., 2014; Lutz & Deisenhofer, 2020; Pereira et al., 2017). Heinonen and Nissen-Li (2019) state that most therapist characteristics do not show direct effects but impact treatment outcomes in interaction with other factors, such as patient factors, or measures of the therapeutic process (e.g., therapeutic alliance). The authors "point to the complexity of how therapists interact as professionals and people overall with the numerous variables linked to outcome, and contraindicate the study of therapists in a vacuum" (p. 12). It is important to note, however, that work-related stress and negative feelings do not necessarily lead to reduced therapeutic competence. Professional self-doubt and healthy self-criticism, corresponding to "modesty or humility as a potential virtue in therapeutic work" and "a prerequisite for successful practice" (Heinonen & Nissen-Lie, 2019, p. 13), might

even have a beneficial effect on treatment outcome (Lutz & Deisenhofer, 2020; Nissen-Lie et al., 2017) and on the working alliance (Nissen-Lie et al., 2010).

There is currently a greater focus on the predictive influence of therapist well-being on patient outcomes than on research considering therapist well-being as the outcome of interest. It is notable, however, that many studies recommend coping strategies such as limited caseloads, setting realistic treatment goals, maintaining boundaries with patients, and acceptance of uncontrollable events, especially when working with *difficult clientele* (e.g., Lee et al., 2020; Posluns & Gall, 2020; Warren et al., 2012; Yang & Hayes, 2020), so these factors are expected to affect therapist well-being.

Taken all together, some treatment variables have been identified as both risk factors for and effects of therapist well-being. As a result, therapist well-being can be the cause and consequence of one and the same phenomenon, such as poor working alliance and treatment progress. Approaches to assess mutual influences in therapist well-being, working alliance, and outcomes in the treatment process will be discussed in the following section.

4.2 Limitations and Future Research Directions

In the following two sections, general limitations and implications of the present dissertation will be discussed that are non-redundant with the discussions of Study 1 (section 2.5.1) and Study 2 (section 3.5.1).

The first limitation arises from an exclusively cognitive-behavioral perspective on the present findings. This is problematic for two reasons: (1) some findings may not hold for non-CBT interventions as treatment settings and strategies differ in terms of treatment duration, standardization of interventions, use of diagnostic tools, therapeutic transparency, the role of the therapeutic alliance, and treatment goals, for example. This might affect the feasibility and utility of ROM systems as well as practitioner well-being and its correlates in different approaches. (2) As CBT is the most researched form of psychotherapy (Barkham & Lambert, 2021; Hofmann et al., 2012; Leichsenring & Steinert, 2017), the gap between research and practice can be expected to be larger for other treatment approaches as psychodynamic and systemic therapies. Not only is there quantitatively larger empirical support for CBT-based treatments, but differences in general effectiveness, even if marginally, often favor cognitive or behavioral treatments over non-CBT approaches, although the results from well-designed comparative, dismantling, and components analysis studies suggest a relative equivalence of treatments (Barkham & Lambert, 2021; Lambert,

2013). Thirty years ago, Kiesler (1994, p. 143) stated that “the answer to whether psychotherapy research findings have any relevance to the practicing clinician is a relative one, one that depends crucially upon the findings and the particular clinician”. Considering the uneven research base, it seems understandable if non-CBT therapists today express concerns about the utility and representativeness of psychotherapy research findings for clinical practice. To increase the interest in and relevance of psychotherapy research for a wide range of practitioners, the present findings require replication in non-CBT treatments. In general, researchers should be careful not to show more interest in evidence-based practice and practice-based evidence, respectively, that primarily relate to their own treatment approaches compared to others.

Second, the present research setting is based on the German health care system and thus on a comparatively large number of treatment sessions in outpatient psychotherapy (Flückiger et al., 2020). This is especially relevant when it comes to the implementation of a suitable ROM system. As presented in Study 1, basic outcome monitoring and prediction do not require session-by-session assessment but can be based on assessment intervals of 5-10 sessions. If, however, treatments are shorter (e.g., contingent of 8-20 sessions maximum in the UK; Flückiger et al., 2020), closer monitoring is needed for growth curve modeling and the provision of useful feedback on individual patient progress. Because of little convergence across countries regarding treatment duration, researchers should exercise caution when generalizing conclusions about the treatment progress and its measurement.

The generalizability of the present findings is further limited by the sample demographics. Although there was no information available on racial or ethnic identity, the majority of therapists and patients who participated in Study 1 or 2 are expected to reflect WEIRD societies (Western, educated, industrialized, rich, and democratic). The racial inequality in psychological research that is prominent in the participation, writing, and editing, is especially problematic because WEIRD samples represent as much as 80% of study participants, but only 12% of the world’s population (Azar, 2010; Roberts et al., 2020). It is hardly possible to increase racial diversity in naturalistic data collection. When interpreting the results of psychological research, including the present studies, one should keep in mind that race plays an important role in how people think, develop, and behave (Roberts et al., 2020). Additionally, researchers should justify their sample demographics and describe inclusion efforts for diverse populations.

Given that therapists at the outpatient clinic already participated in the time-consuming routine data collection, Study 2 was designed with consideration for minimal

additional workload. However, the correlational design is a major limitation as it does not allow for firm conclusions about the direction of effects. A longitudinal multilevel approach is proposed for further research to understand causal connections between therapist well-being and its correlates. Future studies could address the following research questions:

(1) What factors (e.g., working alliance, treatment progress, patient symptoms, personalities, and behaviors) contribute to between-patient variability in therapists' occupational stress?
(2) How do therapist characteristics (e.g., general well-being, self-efficacy, sense of professional competence, support, and resources) affect feelings of occupational stress?
(3) Are there interactions between patient and therapist characteristics that explain occupational stress among therapists? For example, suicidal tendencies among patients might increase occupational stress, especially in therapists with a low sense of professional competence compared to those who are confident in their therapeutic ability.
(4) Regarding within-treatment (-patient) variability, do specific patient and therapist behaviors, relational interactions, or events in one session lead to reduced/increased feelings of occupational stress in the following sessions?
(5) Are there reciprocal effects between occupational stress among therapists and the quality of working alliance, whereby prior occupational stress is associated with future alliance, and prior alliance is related to subsequent occupational stress?

Another limitation of the present research is that most measures are based on self-reports. The use of self-report instruments is very common in psychological research and practice, as it is confidential, easy to obtain, and because some thoughts, feelings, and behaviors cannot be observed directly. However, self-reports are subject to biases (e.g., recall bias, social desirability, and other response biases) that reduce the reliability and validity of measurement. If possible, self-report data should be combined with other information, such as informant assessment/other-report, behavioral observation, and psychophysiological measures. For example, therapists' self-report of occupational stress could be complemented by a measure of physiological stress response (e.g., ambulatory electrocardiogram) and reports from other observers (e.g., colleagues, supervisors, reference persons). Likewise, a multimodal assessment of patient distress and treatment outcome should be considered for future investigations.

Probably the biggest *selling point* of ROM systems is that their use leads to specific changes in the treatment of mental disorders, influencing therapists to adjust therapy and consider alternative interventions. Although the potential for the use of data-driven clinical support tools to improve mental health care is growing, the underlying mechanisms have yet to be identified. The positive effect of ROM may be partially mediated by the beneficial effects of patient involvement thus educating patients about the measures and their interpretation, who in turn may be more aware of their symptoms and capable of managing relevant problems. ROM systems may also promote a greater understanding of individual patient symptoms as well as better communication between therapists and their patients, enabling joint decision-making and increasing patient treatment satisfaction, which in turn can potentially improve treatment outcomes (Kendrick et al., 2016). Regarding the beneficial effects of ROM systems and yet insufficient evidence for the use of elaborate clinical support systems in routine care, three aspects of future investigations seem to be especially important: First, the effectiveness of ROM systems should be tested in multicenter clinical trials, including different work settings, treatment standards, and patient populations. Second, therapists' attitudes, perceived usefulness, and actual usage should be assessed as potential moderators in the feedback-outcome relationship. Suggestions on how to assess therapist opinions on the utility of ROM systems are provided, for example, by Lutz et al. (2015) and Lutz et al. (2022). Third, future research should address possible harmful effects of ROM, such as extra effort, effects on job autonomy, or the therapeutic relationship.

In that regard, it would be interesting to investigate if the use of ROM systems affects therapist well-being in terms of occupational stress. On the one hand, it is conceivable that therapists feel supported by technical assistance that provides additional objective information or reassurance and thus experience less occupational stress. On the other hand, the routine use of technical support could change the conception of professional competence to the effect that therapists make treatment decisions conditional on technical feedback, no longer trust their own clinical judgment, or get confused when their personal evaluation diverges from the ROM system. It is also possible that therapists perceive ROM information as threatening or controlling, thus enhancing the occupational stress level. Future studies could explore the voluntary use of ROM feedback in an open system where therapists have access to information whenever they consider it necessary, rather than receiving feedback on a regular basis. In this way, it is possible to determine at what point in treatment and for which patients ROM may be especially helpful. For example, future research could

investigate if the voluntary use of ROM systems is increased during early sessions, in difficult treatment situations, or for particularly challenging cases.

Following Study 1, a randomized controlled trial was designed as part of the present research to test the practical utility of the proposed model for the prevention of dropout. At the current stage, therapists at the CBT university outpatient clinic in Mainz, Germany are randomly assigned to the experimental group with feedback or the control group without feedback on their patients' individual dropout risk. The predicted probability for individual dropout is plotted against the average dropout rate (14.6%) at the beginning of treatment. In cases of high dropout risk (≥ 20% as defined in Study 1), therapists are provided with additional recommendations on how to reduce the risk of dropout (e.g., request support from the supervisor, reevaluate treatment goals with the patient, focus on the therapeutic relationship and treatment motivation). At the end of the trial, therapists will be asked about the usability and acceptability of the feedback. The design allows for a prospective test of whether dropout can be reduced by feedback and recommended actions. Information and recommendations for therapists in cases of high dropout risk can be found in Supplement 3.

4.3 Implications for Psychotherapy Practice and Training

While it is the task of psychological researchers to conduct clinically relevant research, practitioners have the responsibility to translate research findings into psychological treatments. For this to be successful, the latter require access to reliable and valid information. Practitioners can inform themselves about current research for example by attending conferences, reading scientific journals, or becoming part of a psychological organization that represents the scientific and professional community such as the APA. Instead of valuing personal clinical experience over research evidence, therapists would do well to adopt an open and positive attitude toward scientific methods. A good example of this is the use of ROM: Therapists who doubt the role of science in clinical psychology are unlikely to use clinical support tools although there is strong evidence of efficacy. If, however, ROM is used as a complement to clinical expertise, professional skills and treatment outcomes are potentially enhanced. To allow confident use, ROM systems must be properly introduced. Additional courses on and supervision of the application can easily be implemented at a university outpatient clinic. In private practice settings, education courses and regular peer supervision groups could be a promising approach to successful implementation (Lutz et al., 2022). If there is no possibility to develop a ROM system based

on own data collection, existing software tools can be used for electronic administration of outcome measures, outcome prediction, and feedback (e.g., OQ-Analyst; Lambert, 2012). Most importantly, ROM should not add to challenging workloads but meet the requirements of individual workplaces, patient and therapist needs.

Bridging the use of ROM systems and therapist well-being, professional self-doubt might be an important factor to consider in clinical practice. As discussed above, therapists' self-criticism and reflection might have a beneficial effect on treatment outcomes, which is supported by Millers supershrink therapists who are more likely to ask for negative feedback about the quality of their work than average practitioners (Miller et al., 2014). Considering the fact that therapists rarely accurately predict treatment outcome and have considerable difficulties recognizing deterioration (Hannan et al., 2005; Hatfield et al., 2010), professional self-doubt seems almost appropriate. Rather than being eliminated, doubts could serve as a personal warning signal that encourages therapists to seek assistance, including the use of clinical support tools. Communication among practitioners certainly plays an important role in this context: The use of data-driven clinical support tools may be challenging if therapists anticipate that their colleagues or supervisors have negative opinions toward ROM (Overington et al., 2015) or fear that their professional incompetence will be revealed. And yet therapists should be encouraged to express uncertainties and openly discuss professional struggles because that is what *being professional* is supposed to be. Practitioners are thus asked to establish an awareness of fallibility that adds to the concept of professional competence. Especially in the training context, data-driven clinical support tools have the potential to take pressure off therapists who are insecure about the treatment progress or prognosis and training can be targeted toward areas that need growth, such as the delivery of a coherent treatment protocol, if ROM is used in conjunction with an assessment of professional skills (Wampold, 2015a). Therapists are further encouraged to discuss the results from ROM with their patients instead of keeping information to themselves. Transparent communication and joint decision-making are important contributions to the working alliance and may thus relate to occupational well-being. The communication about outcome measures should be addressed in training to prevent insecurities and discomfort in conversations with patients.

The significant negative association between occupational stress and therapists' perceived opportunities to learn, that was found in Study 2, has another important implication for psychotherapy training. Following the job demands-resources model (Bakker & Demerouti, 2007), training programs most likely stimulate professional growth, learning,

and development when work stressors (demands) are identified and controlled. One possible approach to address this concern is to balance allocations of patients with heterogeneous distress levels. Educational institutions should hence cultivate a supportive learning environment, in which trainees are able to explore personal limits, set boundaries, and have access to professional resources, such as (peer) supervision and collegial networks. In any case, therapists should be aware of the risks that are associated with practitioner burnout and therefore take care of their own mental health. This also means that practitioners should make sure personal needs remain a priority in daily life and perhaps particularly in the workplace.

Opportunities for the integration of research into clinical practice are provided especially in the educational context. The more teachers and supervisors bridge scientist and practitioner positions in the training setting, the more likely therapists are to incorporate scientific knowledge into clinical work (Teachman et al., 2012). It is important to say, however, that practitioners are not to rely on research findings without skepticism. Data-driven information are influencing mental health care decisions and will probably do so even more in the future (Castonguay, Eubanks, et al., 2021). Still, "therapists' attention and response to the subtle and complex fluctuations of interpersonal dynamics at the heart of psychotherapy" (Castonguay, Eubanks, et al., 2021, p. 799) are essential components of deliberate practice. Therapists are thus encouraged to incorporate research evidence into their practice but also raise concerns about hindering aspects that interfere with their own clinical knowledge. In this way, practitioners can participate in and even become a part of psychotherapy research.

4.4 Conclusions

Although there might be no easy fix for the disagreements between researchers and practitioners that have existed for decades, there are many reasons to be optimistic about an ongoing approximation including the common ground in naturalistic psychotherapy studies. Psychotherapy research and practice are not *apart from*, but rather *a part of* each other. Similarly, evidence-based practice and practice-based evidence are complementary paradigms and neither approach alone is sufficient to build a strong knowledge base for research or practice. In the context of the present dissertation, the following conclusions are drawn to increase the dialogue and narrow the gap between clinical researcher and clinical practitioner roles:

- ROM and associated feedback for therapists are useful supplements to evaluation based on clinical judgment alone. ROM systems must be accessible, affordable, and quick to administer for different work settings in common mental health services.

- Practitioner well-being is an understudied topic with high clinical relevance, as it relates to patient outcomes and professional impairment. Antecedences and consequences of practitioner well-being should be addressed by psychotherapy research.

- Educational institutions are encouraged to promote enhanced training in research-supported psychological treatments in order to augment clinical judgment. Training programs should further pay attention to therapist well-being, including optimal treatment allocations, access to resources, and supportive strategies.

- The development of clinically relevant research questions and study designs are best achieved through collaboration between researchers and practitioners. Here, the naturalistic setting provides a context in which both parties can learn from and complement each other.

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Supplemental Material: Table of Contents

Supplement 1-1

Variables included in the predictor selection process. All variables were routinely collected at intake.

Categorical variables

Compliance in previous treatment ("difficulties" vs. "no difficulties")
Education
Emotional state in childhood & youth ("happy" vs. "unhappy")
Employment status
Intrinsic treatment motivation
Medication
Previous treatment
Primary diagnosis
    Structured Clinical Interview for DSM-IV Axis I Disorders
    Structured Clinical Interview for DSM-IV Axis II Personality Disorders
Gender

Continuous variables

Age
Beck Depression Inventory
    Total score
Brief Symptom Inventory
    Global Severity Index
Suicidality
    Risk at intake
    Past suicide attempts

Supplement 1-2

Supplement Table ST1-1

Hierarchical Regression Analysis for the Prediction of Treatment Progress

	Model 1			Model 2		
	b	*SE*	β	*b*	*SE*	β
Intercept	-0.11***	0.02		-0.31***	0.04	
Baseline distress	0.44***	0.01	0.49	0.46***	0.01	0.51
Intrinsic treatment motivation				0.07***	0.01	0.10
Previous inpatient treatment				-0.07***	0.02	-0.06
Suicide attempts				-0.08***	0.02	-0.06
R^2		.24			.26	
ΔR^2		.24***			.02***	

Note. N = 3902; Treatment progress = pre to post improvement on the Global Severity Index; Suicide attempts = number of suicide attempts in the past; b = unstandardized regression coefficient; *SE* = standard error of b; β = standardized regression coefficient.
***$p < .001$

Supplement 2-1

Supplement Table ST2-1

Sample Characteristics

Characteristic	Sample	
	Patients (n = 194)	Therapists (n = 67)
Age *M* (*SD*)	35.26 (13.92)	30.41 (4.88)
Gender (female) *n* (%)	116 (59.8)	61 (91.0)
In training[a] *n* (%)		54 (80.6)
Education (university entrance qualification) *n* (%)	115 (59.3)	
Number of treatment sessions *M* (*SD*)	43.31 (20.04)	
Primary diagnosis *n* (%)		
Neurodevelopmental disorders	6 (3.1)	
Schizophrenia spectrum and other psychotic disorders	1 (0.5)	
Bipolar and related disorders	2 (1.0)	
Depressive disorders	61 (31.4)	
Anxiety disorders	36 (18.6)	
Obsessive-compulsive and related disorders	10 (5.2)	
Somatoform disorders	19 (9.8)	
Feeding and eating disorders	12 (6.2)	
Trauma- and stressor-related disorders	19 (9.8)	
Personality disorders	19 (9.8)	
Other	9 (4.6)	

Note. M = mean; *SD* = standard deviation.

[a] Successful completion of practical training I (§ 2 PsychThGAPrV) and at least 280 lessons of theoretical course credit.

Supplement 2-2

Supplement Table ST2-2

Causes of Occupational Stress: Therapist Attributions

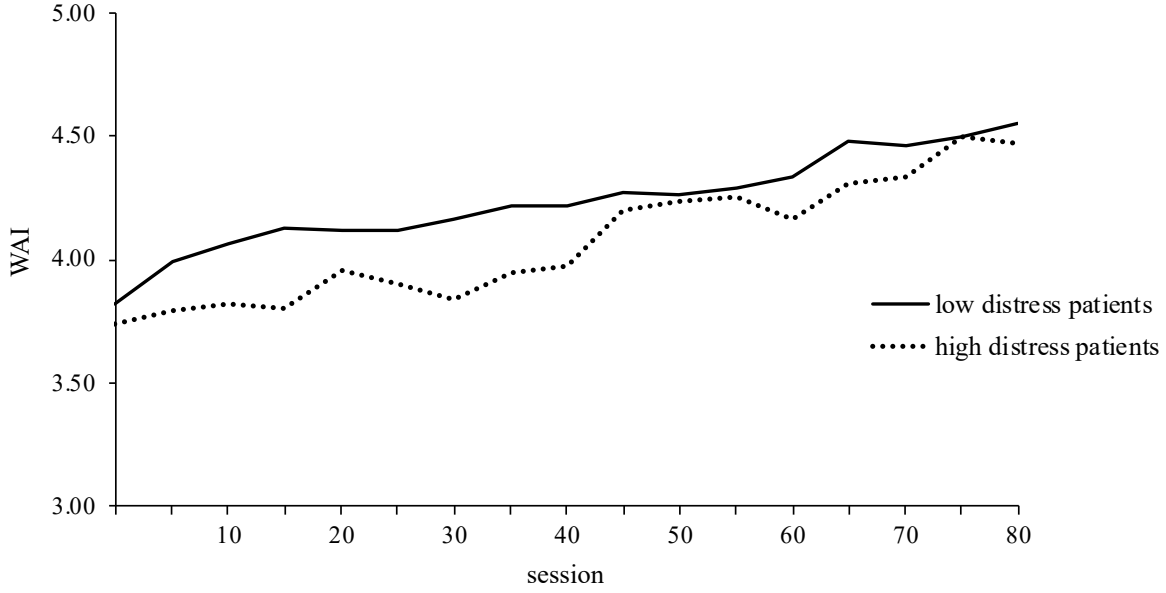
Causal attribution	*n*	%
Ambiguous therapeutic goals	36	18.6
Patient with suicidal tendencies	10	5.2
Patient with complex personality	54	27.8
Lack of treatment progress	59	30.4
Lack of commitment	49	25.3
Doubts about own therapeutic skills	58	29.9
Others	54	27.8

Note. $N = 194$ treatments.

Supplement 2-3

Supplement Figure SF2-1

Therapist Rated Working Alliance in Treatments With Low vs. High Distress Patient



Note. WAI = Working Alliance Inventory.

Supplement 3

Information and recommendations for therapists in cases of high dropout risk. [in German]

Wie wird das individuelle Abbruchrisiko berechnet?

Das Abbruchrisiko wurde anhand von Eigenschaften berechnet, die unter anderem das Störungsbild, mögliche therapeutische Vorbehandlungen, die Schwere einer depressiven Belastung sowie die Therapiemotivation umfassen. Es handelt sich lediglich um eine Schätzung, die naturgemäß mit einer gewissen Unsicherheit behaftet ist.

Weshalb erscheint eine Warnung?

Bei der_m vorliegenden Patientin_en besteht ein erhöhtes Risiko für einen Therapieabbruch. Das individuelle Abbruchrisiko dieser_s Patientin_en übersteigt die durchschnittliche Gefährdung, die bei ca. 14% liegt.

Was kann ich tun?

Neben individuellen Gründen für einen Therapieabbruch besteht wissenschaftliche Evidenz für allgemeine Risikofaktoren (wie z. B. ein hohes Belastungsniveau) und protektive Faktoren (wie z. B. eine gute therapeutische Beziehung und eine hohe Therapiemotivation). Die folgenden Hinweise sollen als Anregung und Unterstützung dienen und stellen keine verpflichtenden Handlungsschritte dar.

- Besprechen Sie das erhöhte Abbruchrisiko Ihrer_s Patientin_en in der Supervision
- Überlegen Sie gemeinsam mit Ihrer_m Patientin_en, wie die Motivation für die Behandlung gestärkt werden kann
- Erfragen Sie ggf. Gründe für einen früheren Therapieabbruch bzw. Befürchtungen, die bei der_m Patientin_en im Zusammenhang mit einer psychotherapeutischen Behandlung auftreten
- Vergewissern Sie sich im Verlauf der Behandlung, dass die vereinbarten Therapieziele weiterhin gültig sind und ein klarer Therapieauftrag vorliegt
- Messen Sie der therapeutischen Beziehungsqualität als Teil der Behandlung besondere Aufmerksamkeit bei

Auch bei optimalen Voraussetzungen können Therapieabbrüche nicht immer verhindert werden bzw. sich sogar als sinnvoll erweisen. Ein transparenter Umgang in der Supervision

sowie im gemeinsamen Gespräch mit der_m Patientin_en kann dennoch helfen, mögliche Ursachen für einen Abbruch frühzeitig zu erkennen, Präventionen einzuleiten oder den Zugang für zukünftige / alternative Behandlungen zu erleichtern.

Erklärung

gemäß § 6 Absatz 2 g) und gemäß § 6 Absatz 2 h) der Promotionsordnung der Fachbereiche 02, 05, 06, 07, 09 und 10 vom 04. April 2016

Name (ggf. Geburtsname): Mütze
Vorname: Kaline

Hiermit erkläre ich, dass ich die eingereichte Dissertation selbständig, ohne fremde Hilfe verfasst und mit keinen anderen als den darin angegebenen Hilfsmitteln angefertigt habe, dass die wörtlichen oder dem Inhalt nach aus fremden Arbeiten entnommenen Stellen, Zeichnungen, Skizzen, bildlichen Darstellungen und dergleichen als solche genau kenntlich gemacht sind.

Von der Ordnung zur Sicherung guter wissenschaftlicher Praxis in Forschung und Lehre und zum Verfahren zum Umgang mit wissenschaftlichem Fehlverhalten habe ich Kenntnis genommen.

Meine Erklärung bezieht sich auf Schriften, die ich als alleinige Autorin eingereicht habe oder bei Ko-Autorenschaft auf jene Teile, für die ich mich verantwortlich zeichne.

Ich habe keine Hilfe von kommerziellen Promotionsberater*innen in Anspruch genommen.

Datum Unterschrift

Curriculum Vitae

Name:	Kaline Mütze
Geburtsdatum:	23.12.1992
Geburtsort:	Bad Soden-Salmünster
Nationalität:	Deutsch
Familienstand:	Ledig

Ausbildung und beruflicher Werdegang

10/2023	Ph.D. in Psychologie, Johannes Gutenberg-Universität, Mainz Titel: "On Behalf of Science and Practice – Using Psychotherapy Research to Address Clinical Practice Concerns" (*magna cum laude*)
Seit 10/2022	Wissenschaftliche Mitarbeiterin der Abteilung für Klinische Psychologie, Psychotherapie und Experimentelle Psychopathologie Psychologisches Institut, Johannes Gutenberg-Universität Mainz
Seit 04/2019	Postgradueller Weiterbildungsstudiengang zur Psychologischen Psychotherapeutin (Schwerpunkt: Verhaltenstherapie) Poliklinische Institutsambulanz der Johannes Gutenberg-Universität Mainz
04/2019 - 09/2022	Promotionsstipendiatin der Abteilung für Klinische Psychologie, Psychotherapie und Experimentelle Psychopathologie Psychologisches Institut, Johannes Gutenberg-Universität Mainz
01/2019	Abschluss Master of Science Psychologie an der Johannes Gutenberg-Universität Mainz, Schwerpunkt klinisch-gesundheitsbezogen (Gesamtnote: *sehr gut*) <u>Prüfungsfächer:</u> Forschungsmethoden und Diagnostik Klinische Psychologie und Klinische Neuropsychologie Wahrnehmung und Kognition Aktuelle Trends der Persönlichkeitsforschung Angewandte Gesundheitspsychologie

Aktuelle Forschung
Klinische Bedingungsmodelle, Risikofaktoren und Entscheidungen
Differenzielle Gesundheitspsychologie
Nebenfach: Psychiatrie und Psychotherapie für Psychologen - Basiswissen psychodynamische Psychotherapie

Hochschullehrer*innen:
Dr. Christoph Freiherr von Castell, Jun.-Prof. Dr. Stephanie Jungmann, Prof. Dr. Günter Meinhardt, Prof. Dr. Mario Wenzel, Dr. Michèle Wessa, Prof. Dr. Michael Witthöft

02/2018 - 03/2018 Praktikum an der Klinik für Psychiatrie und Psychotherapie der Universitätsmedizin Mainz
Offene Wahlleistungsstation

04/2017 - 02/2019 Psychologiestudium an der Johannes Gutenberg-Universität Mainz

Juli 2016 Abschluss Bachelor of Science Psychologie an der Universität Mannheim (Gesamtnote: *sehr gut*)

Prüfungsfächer:
Einführung in das wissenschaftliche Arbeiten
Statistik
Empirisch-wissenschaftliches Arbeiten
Grundlagen der Diagnostik
Diagnostische Verfahren
Allgemeine Psychologie
Biologische Psychologie
Entwicklungspsychologie
Differentielle Psychologie und Persönlichkeitspsychologie
Sozialpsychologie
Arbeits- und Organisationspsychologie
Markt- und Werbepsychologie
Klinische Psychologie
Nebenfach: Psychiatrie

	Hochschullehrer*innen: Prof. Dr. Georg Alpers, Prof. Dr. Herbert Bless, Prof. Dr. Arndt Bröder, Prof. Dr. Edgar Erdfelder, Prof. Dr. Thorsten Meiser, Prof. Dr. Rüdiger Pohl, Prof. Dr. Sabine Sonnentag, Prof. Dr. Dagmar Stahlberg, Prof. Dr. Michaela Wänke
09/2015 - 01/2017	Wissenschaftliche Hilfskraft am Zentralinstitut für Seelische Gesundheit Mannheim Abteilung Psychosomatik und Psychotherapeutische Medizin: Patientenbetreuung und Diagnostische Untersuchungsmethoden Abteilung Versorgungsforschung: Datenerhebung und -analyse
06/2015 - 07/2015	Hochschule der Bundesagentur für Arbeit im Bereich der quantitativen und qualitativen Datenanalyse
01/2015 - 02/2015	Praktikum an der Klinik für Psychiatrie und Psychotherapie der Universitätsmedizin Mainz Station für Borderline-Persönlichkeitsstörungen, Traumafolgestörungen, Angst und Depression
08/2013 - 07/2016	Psychologiestudium an der Universität Mannheim
2005 - 2012	Gymnasium Elisabethschule Marburg Schulabschluss: Abitur (Gesamtnote: *sehr gut*)
1999 - 2005	Grundschule Otto-Ubbelohde-Schule Marburg

Publikationen

Mütze, K., Witthöft, M., & Bräscher, A.-K. (2020). Prediction of therapeutic outcome in a naturalistic setting using pretreatment psychological distress indicators. *Verhaltenstherapie*. Advanced online publication. https://doi.org/10.1159/000510272

Mütze, K., Witthöft, M., Lutz, W., & Bräscher, A.-K. (2022). Matching research and practice: Prediction of individual patient progress and dropout risk for basic routine outcome monitoring. *Psychotherapy Research*. *32*(3), 358-371. https://doi.org/10.1080/10503307.2021.1930244

Germer, S., Weyrich, V., Bräscher, A.-K., **Mütze, K.**, & Witthöft, M. (2022). Does practice really make perfect? A longitudinal analysis of the relationship between therapist experience and therapy outcome: A replication of Goldberg, Rousmaniere, et al. (2016). *Journal of Counseling Psychology*. *69*(5), 745-754. https://doi.org/10.1037/cou0000608

Eingereicht zur Veröffentlichung

Mütze, K., Witthöft, M., & Bräscher, A.-K. (2022). *Occupational stress among psychotherapists: Associations with patient distress, working alliance, and treatment outcome.* [Manuscript submitted for publication]. Institute of Psychology, Johannes Gutenberg University Mainz.

Konferenzbeiträge

Mütze, K., Witthöft, M., & Bräscher, A.-K. (2021, May 12-15). *Was kann ich wissen? Was darf ich hoffen? - Prognose psychotherapeutischer Behandlungsergebnisse im naturalistischen Setting durch Belastungsindikatoren zu Behandlungsbeginn* [Digitale Posterpräsentation]. 38. Symposium Fachgruppe Klinische Psychologie und Psychotherapie der DGPs. Mannheim, Germany.

Bräscher, A.-K., **Mütze, K.**, & Prof. Witthöft, M. (2019, July 17-20). *Guided assignment of patients to trainee therapists in a university outpatient clinic: A validation of predictors for more complex therapy courses* [Open paper presentation]. 9th World Congress of Behavioural & Cognitive Therapies, Berlin, Germany

Germer, S., Weyrich, V., Bräscher, A.-K., **Mütze, K.,** & Witthöft, M. (2022, June 7-11). *Does practice really make perfect? A longitudinal analysis of the relationship between therapist experience and therapy outcome: A replication of Goldberg, Rousmaniere, et al. (2016)* [Poster]. 1st German Psychotherapy Congress, Berlin, Germany.

Reviewtätigkeit

Psychotherapie, Psychosomatik und Medizinische Psychologie