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## Psychotherapy Fidelity Measurement: Current Status and Improvements

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### Abstract

Fidelity in psychotherapy refers to the degree to which a treatment is implemented as intended according to a predetermined protocol; it is a key indicator for ensuring the quality of clinical practice and verifying the reliability of therapeutic efficacy. To fill the gap in fidelity research within the quality assessment of psychotherapy processes in domestic academic circles, this paper systematically reviews its conceptual components and the necessity of measurement, compares the advantages and limitations of common measurement methods, and evaluates the contributions and shortcomings of existing improvement strategies.

A review of existing research reveals that while methods such as observational coding, written surveys, and behavioral rehearsals each have their own characteristics, they suffer from issues such as being time-consuming and labor-intensive, having limited scope of application, and lacking inter-rater reliability. In recent years, explorations centered on the construction of measurement frameworks, precise descriptions of interventions, and computer-aided assessment have, to some extent, enhanced the standardization and efficiency of fidelity measurement; however, it remains difficult to simultaneously resolve the long-standing problems of “high cost” and “inconsistent assessment.” Future research needs to further refine fidelity measurement frameworks, establish unified knowledge bases, and continuously promote the empirical testing of automated assessment tools (such as large language models) in psychotherapy contexts, thereby driving the quality assessment of psychotherapy processes from theoretical advocacy toward standardized practice.

## Full Text

# Fidelity Measurement in Psychotherapy: Current Status and Improvements

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## Abstract

Treatment fidelity refers to the extent to which an intervention is implemented as intended by its developers. In psychotherapy research, measuring fidelity is crucial for ensuring internal validity, facilitating the dissemination of evidence-based treatments, and understanding the mechanisms of therapeutic change. This paper reviews the current status of fidelity measurement, identifies existing challenges—such as the high cost of expert rating and the lack of standardized instruments—and proposes potential improvements through the integration of machine learning and natural language processing technologies.

## 1 Introduction

Imagine that you are struggling with negative emotions and have finally gathered the courage to enter a psychotherapy session. The therapist appears gentle and professional; together, you discuss your childhood, interpersonal relationships, and workplace stress. Weeks pass, and you attend every appointment on time, paying substantial fees, yet the shadows deep within your heart do not seem to dissipate. The actual therapeutic outcome does not align with your expectations. You begin to wonder: is the therapist truly applying the “psychotherapeutic methods” reputed to be effective, or are you simply engaging in an expensive form of small talk?

Were those therapeutic techniques actually put into practice? Or did the therapist unconsciously deviate from the established protocol? These scenarios are not merely potential sources of confusion for individual clients; they reflect a long-standing and significant challenge in the field of psychotherapy: how to ensure that treatment is delivered accurately, faithfully, and with high quality.

Extensive research has confirmed that when psychotherapy is implemented according to standardized protocols, its clinical efficacy is significant [?, ?, ?, ?]. However, the reality is that a gap often exists between the theory and practice of psychotherapy, leading to discrepancies between the intended treatment plan and its actual execution [?, ?, ?]. Some therapists may drift away from core, evidence-based therapeutic priorities, fail to fully implement prescribed interventions, or indiscriminately mix strategies from different theoretical orientations during treatment [?, ?]. Furthermore, a therapist’s intervention style may evolve over time, making it difficult to maintain consistency in implementation between the early and late stages of treatment for the same case [?, ?].

In China, the expansion of the psychotherapy workforce has been accompanied by issues of inconsistent practitioner quality and varying levels of professional expertise [?, ?]. These industry-wide problems have been highlighted through clinical observations and empirical studies, underscoring the urgent need for systematic monitoring and quality assurance in therapeutic practice.

Clinical practice significantly impacts clients. For instance, a qualitative study investigating negative experiences during the psychological counseling process revealed that clients perceived issues such as a lack of competence and experience among some counselors, poor professional attitudes, and even violations of ethical codes [?, ?]. Unfortunately, when clients encounter negative experiences, they often lack direct evidence to explain the reasons for poor therapeutic outcomes. It remains difficult to determine whether the root of the problem lies within the therapy itself, the therapist' s execution, or the client' s own factors. From the perspective of third parties, such as the public or regulatory bodies, psychotherapy often appears as a mysterious “black box.” It is challenging for outsiders to ascertain what specifically occurs during sessions, which techniques are employed and to what extent, and whether supervision or training is sufficient to support therapists in conducting effective treatment.

This lack of transparency not only hinders the dissemination of therapeutic techniques but also risks undermining public confidence in the effectiveness of psychotherapy, making industry regulation virtually impossible. The more fundamental reason lies in the fact that there is a widespread lack of mechanisms to ensure that treatments are accurately implemented and can be objectively recorded and evaluated. Existing literature has pointed out that in the domestic field of psychological counseling and psychotherapy, there are significant issues such as insufficient emphasis on scientific research regarding clinical efficacy and a lack of evaluative feedback mechanisms for professional practice [?, ?].

Whether evaluating the quality of clinical implementation or validating the effectiveness of new or existing treatments, a critical prerequisite remains: ensuring that psychotherapy is delivered according to the intended protocol. This concept is known as psychotherapy fidelity. The international academic community has a long history of exploring fidelity, with concepts discussed as early as the 1970s [?, ?, ?]. Subsequently, researchers clarified the components and evaluative priorities of fidelity [?, ?, ?], facilitating the development of measurement tools [?, ?, ?, ?] and systematic evaluation frameworks [?, ?, ?, ?].

However, to this day, the systematic measurement and reporting of fidelity remain unresolved challenges [?, ?]. Ambiguities persist regarding specific conceptual definitions and measurement methodologies [?, ?]. Furthermore, within the domestic academic community, only a small number of publications have mentioned psychotherapy fidelity [?, ?, ?, ?, ?], and a systematic introduction is lacking. This paper clarifies the concept of psychotherapy fidelity, reviews the necessity of its measurement, analyzes common methodologies and their limitations, and offers perspectives on future research directions involving Large Language Models (LLMs).

## 2 Conceptual Analysis of Psychotherapy Fidelity

Psychotherapy fidelity refers to the extent to which a psychological treatment is implemented as intended according to a predetermined protocol [?]. As a methodological concept, fidelity emphasizes that judgments regarding treatment efficacy and professional regulation must be grounded in verifiable evidence, requiring the ability to objectively quantify whether the therapeutic process occurred as expected [?, ?, ?].

The conceptual framework of fidelity primarily stems from two foundational papers [?, ?]. [?] proposed that fidelity encompasses integrity (whether specific interventions were implemented) and differentiation (the degree to which different protocols differ). [?] further developed fidelity into adherence and competence. Adherence involves compliance with treatment manual requirements and the avoidance of prohibited interventions. Competence refers to the level of skill demonstrated by the therapist. [?] integrated these into three components: adherence, differentiation, and competence. However, some argue that measuring adherence is sufficient to establish differentiation [?, ?].

Competence is further subdivided into technical competence (skill in specific therapeutic interventions) and common competence (general skills like the working alliance and clinical judgment) [?, ?]. Some scholars also include treatment receipt and treatment enactment from the client's perspective [?], though others argue these relate more to outcomes than fidelity [?]. This paper adopts the definition that fidelity consists of adherence and competence (technical and common) [?, ?].

## 3 The Necessity of Measuring Psychotherapy Fidelity

### 3.1 Relationship Between Fidelity and Therapeutic Outcomes

Findings regarding the relationship between fidelity and outcomes remain contradictory. A meta-analysis by Power et al. (2022) found that adherence and competence are closely related to clinical outcomes. Similarly, Esposito et al. (2024) noted a positive correlation in 82% of reviewed group therapy studies. However, other studies, such as Husabo et al. (2022) and Dimitropoulos et al. (2020), failed to identify a clear link.

Conceptually, fidelity reflects the precision of implementation, analogous to “reliability” in psychometrics. If an intervention is not implemented to a “minimum dose,” exploring its relationship with outcomes is meaningless. Contradictory results may stem from inadequate measurement of competence or low inter-rater reliability [?]. Peterson et al. (1982) called the lack of systematic observation of the independent variable (intervention) while maintaining rigorous observation of the dependent variable (outcome) a “strange double standard.” Ultimately, ensuring a protocol was implemented as designed is a prerequisite for explaining treatment efficacy [?, ?].

### 3.2 Fidelity vs. Flexibility

Critics argue that rigid fidelity restricts therapist flexibility [?, ?]. However, “deviation from a protocol” and “recognizing/recording that deviation” are distinct. Recording deviations allows for the advancement of psychotherapeutic theory. The concept of “flexibility within fidelity” [?, ?] suggests that interventions have core components that must be preserved and an adaptable periphery for personalization. Fidelity monitoring ensures that therapists follow existing evidence while allowing for scientific integration.

### 3.3 Role of Fidelity in Research and Clinical Practice

Fidelity measurement excludes confounding factors between implementation and outcomes, ensuring internal validity [?, ?]. It also improves external validity by facilitating the generalization and replication of effective interventions [?, ?]. In clinical settings, it provides an objective basis for quality assessment and supervision, creating a “feedback loop” between protocol development, training, and evaluation [?, ?].

## 4 Traditional Measurement Methods and Their Limitations

### 4.1 Observational Coding: The “Gold Standard”

Observational coding involves evaluators labeling key events during a session according to preset criteria using video, audio, or transcripts [?, ?, ?].

**4.1.1 Measurement Tools** Tools include checklists (binary occurrence) and rating scales (nuanced assessment of frequency and competence) [?, ?]. Examples include the CTS-R for CBT [?, ?] and the MITI for motivational interviewing [?, ?].

**4.1.2 Measurement Process** The process typically involves four phases: (I) Data Sampling (10-20% of sessions), (II) Training (pilot ratings and consensus building), (III) Fidelity Assessment (independent coding), and (IV) Reliability Assessment ( $ICC > 0.75$  or  $Kappa > 0.70$ ).

**4.1.3 Advantages and Limitations** Advantages include directness and objectivity. However, manual evaluation is exorbitant in cost, requiring dozens of hours for training and hours of coding per session [?, ?, ?]. Furthermore, a lack of unified standards leads to evaluative inconsistency, particularly in the complex dimension of competence [?, ?, ?].

### 4.2 Alternative Measurement Methods

**4.2.1 Written Survey Methods** These include therapist self-reports, treatment record reviews, and client reports. While cost-effective, they are sus-

ceptible to social desirability bias, memory bias, and subjective overestimation [?, ?, ?].

**4.2.2 Behavioral Rehearsal Method** This involves role-playing with standardized patients. While it allows for situational control, it assesses “competence potential” rather than actual implementation fidelity in real-world cases [?, ?].

### 4.3 Summary of Traditional Methods

summarizes the strengths and weaknesses of these methods. Observational coding remains the gold standard, but its high cost and inconsistency necessitate improvement.

## 5 Current Improvements and Limitations

### 5.1 Fidelity Measurement Frameworks

Frameworks aim to standardize terminology and provide principles for measurement.

**5.1.1 Conceptual Frameworks** Carroll et al. (2007) identified adherence as the core mediator, refined into content, coverage, frequency, and duration.

**5.1.2 General Implementation Frameworks** Frameworks like TREND [?, ?] and CONSORT [?, ?] (with the TIDieR checklist) standardize the reporting of intervention details but often lack operational guidance specific to psychotherapy.

**5.1.3 Specialized Implementation Frameworks** The BCC framework [?, ?, ?] evaluates fidelity across five stages: design, training, delivery, receipt, and enactment. However, it focuses heavily on compliance and lacks detailed guidance for psychotherapy-specific non-specific factors.

### 5.2 Precise Description of Interventions

Research into Behavior Change Techniques (BCTs) [?, ?] provides a “dictionary” for interventions at the molecular level. While this improves adherence description, it does not address competence or the quality of execution.

### 5.3 Computer-Assisted Assessment

Machine learning and NLP have been used to automate coding for MI and CBT [?, ?, ?]. These methods offer cost-effectiveness and consistency but traditionally require large-scale, high-quality annotated datasets and have poor generalization capabilities .

## 6 Research Outlook

### 6.1 Refining the Measurement Framework

Future frameworks should incorporate the latest advancements (e.g., CONSORT 2025) and deepen content by providing standardized descriptive methods and behavioral anchors [?, ?]. The Dreyfus Model of Skill Acquisition can be used to grade competence [?, ?].

### 6.2 Establishing a Unified Knowledge Base

A unified knowledge base should identify valuable therapeutic components across schools [?, ?] and integrate empirical evidence with clinical experience using frameworks like “Evidence to Decision” (EtD) [?, ?].

### 6.3 Utilizing Large Language Models (LLMs)

LLMs (e.g., ChatGPT, DeepSeek) offer few-shot learning capabilities, reducing dependence on large labeled datasets [?, ?]. Since psychotherapy is mediated through language, LLMs are well-suited for identifying and categorizing verbal functions [?, ?]. Prompt engineering, constrained by structured frameworks and knowledge bases, can mitigate the inherent stochasticity of LLMs, providing a scalable solution for fidelity assessment [?, ?].

## 7 Conclusion

The measurement of psychotherapy fidelity is essential for ensuring the quality of mental health services. By refining measurement frameworks, building unified knowledge bases, and leveraging LLM technology, the field can transition from theoretical advocacy to standardized practice, ultimately enhancing public confidence in psychotherapy.

*Note: Figure translations are in progress. See original paper for figures.*

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