Visualizing Self-Report Data for Clinical Insight:
Practitioner Perspectives on ESM Feedback for Assessing Therapy Effectiveness

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Introduction

Experience Sampling Method (**ESM**) is a technique that allows intensive, real-time monitoring in an individual's natural environment. The method could provide mental health practitioners with rich data on client's thoughts, feelings and behaviours in context [1]. This has several advantages over traditional approaches:

- reduce recall bias [2]
- more personalized care [3]
- lessen overestimation of practitioner's skills [4]

Information gap
Despite the promise of ESM in mental health care, there is limited literature on how to display data to practitioners.

Research Question

How can meaningful insights from ESM data be derived and presented to assess therapy effectiveness?

Methodoloy

Literature review	• Background information on ESM • Variables to show treatment progress • Practitioners opinions on usefulness of specific graphs
Design	• Creating 2 mock-up visualizations • Exploring clarity, intuitiveness, and perceived clinical utility
User evaluation	• Creating questionnaires with **open questions** • Distributing to practitioners and psychology and medicine students • Thematic analysis with double coding

References
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Visualizations

Line graphs capture temporal dynamics, while bar graphs provide straightforward snapshots [3]. Each client's situation is unique and their goals, symptoms, and relevant contextual factors different [5]

Visualization 1: Single Temporal Line Graph (Figure 1)
Multiple variables in a single graph might facilitate relational reasoning
- extra: expected trajectory range

Visualization 2: Dashboard Consisting of Multiple Graphs (Figure 2)
Combination of graph types might give comprehensive overview
- extra: homework task experienced effort level

<u>Visualizations include:</u>
Client progress, **client adherence** and possible **contextual variables** that have impact on treatment response.

Figure 1: Single Temporal Line Graph

▶ Multiple datastreams in single graph

Figure 2: Dashboard–style layout with multiple graphs

▶ Segmented information

Results

- Ten participants filled out the questionnaire
- Inter-coder reliability measure **Cohen's Kappa**: 0.862
- Visualization 1 was received more positively than Visualization 2

Figure 3: Overview of identified themes

Visualization 1 allowed for **relational reasoning,** linking changes across variables → maybe facilitating meaningful insight

Visualization 2 was found to be more confusing, due to less understanding of graphs and possible **cognitive overload** → guidance could enhance utility

Well-being, homework, interaction were useful variables. Other variables as well, but those were not specifically mentioned. Breakdown of the emotional, physical, and behavioral was viewed as useful for guidance in therapy → desire for **customization and personalization**

Conclusion

- Value of inclusion of contextual and well-being related variables, as these were seen to influence clinical progress.
- Temporal line graphs with multiple variables showed a relational reasoning process.
- Emphasis on the need for flexibility in exploring and customizing data displays, because of differences in clients and practitioners
- More complex, dashboard-style layouts may allow for complementing graphs that offer additional insight. However, they introduced challenges in this study related to cognitive load and clarity.
- Differences in preferences and interpretation skills among practitioners suggest that no single visualization will be optimal for all users.