Development of a Copilot Agent for behavioural analysis and intervention design in the pharmaceutical industry

KEY TAKEAWAY

Microsoft 365-based Copilot Agents can synthesise large volumes of behavioural evidence to support faster, more consistent, and more evidence-based intervention design in pharmaceutical settings. However, expert review remains imperative.

Authors: Clare Moloney[a*]; Ben Gallarda[b]; Andy Nock[a]; Lorelei Boston[a,c]
[a] IQVIA, United Kingdom
[b] IQVIA, France
[c] University of Stirling, UK
*clare.moloney@iqvia.com, corresponding author

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BACKGROUND

- Integrating behavioural theory into applied health and life sciences practice is time intensive and variable across practitioners.
- Desk-based behavioural analysis often relies on manual synthesis of theory, evidence, and practitioner judgement.
- This project involved development of a **Microsoft 365 Copilot Agent** to automate core components of the **Behaviour Change Wheel (BCW)**[1] process, using the **COM-B model** and the **Theoretical Domains Framework (TDF)**[2].
- The aim was to improve **efficiency, consistency and replicability** while retaining expert oversight.

AIMS

To design and evaluate a **high-precision Microsoft 365 Copilot Agent** that embeds behavioural science into applied health and pharmaceutical contexts through:

- Behavioural diagnosis
- Barrier identification
- Theory-driven selection of behaviour change techniques (BCTs)3

METHODS

Agent development and evaluation followed a structured, theory-driven approach:

- **User-centred development** – iterative development led by Health Psychologists, informed by applied health and pharmaceutical use cases.
- **Instruction and prompt design** – development of explicit instructions, structured prompts, and guardrails to guide behavioural analysis.
- **Theory-grounded knowledge base** – integration of the COM-B[1] model, Theoretical Domains Framework (TDF)[2], and Behaviour Change Technique Ontology (BCTO)[4] to support diagnostic mapping and intervention design.
- **Prototype testing** – simulated use cases and expert review conducted to assess theoretical accuracy, transparency, and usability.
- **Pilot evaluation** – evaluation with health psychology practitioners assessing feasibility, acceptability, and real world applicability.

RESULTS

User workflow

Each behavioural diagnosis follows a structured, theory-driven workflow guided by the Copilot Agent:

1. **Target behaviour specification** – users define one or more clear, observable target behaviours by specifying who (population), where (setting), and when (timeframe).
2. **Contextual evidence input** – users input relevant contextual insights, including literature, qualitative findings, surveys, reports, and stakeholder input, which form the exclusive evidence base for analysis.
3. **Barrier extraction and theoretical mapping** – the agent extracts behavioural barriers solely from user provided materials and maps them to capability, opportunity, and motivation, and the TDF[2].
4. **Behavioural diagnosis output** – findings are synthesised into structured behavioural diagnoses explicitly mapped to COM-B[1] × TDF[2].
5. **Behaviour Change Technique identification** – the agent links barriers to candidate BCTs[3] using the BCTO[4].
6. **Structured barrier-to-BCT recommendations** – BCTs[3] are prioritised using APEASE criteria and presented in structured tables with transparent rationale and APA 7 citations.

Extract From Barrier–Theory–BCT Mapping Output (Copilot Agent)

Example

Data inputs: 26 documents (interviews, reports, guidance materials)

Analytic scope: Full analysis identified a broader set of barriers; the table below presents an illustrative extract to demonstrate Copilot outputs.

Target behaviour
Improve daily adherence to daily treatment for Cystic Fibrosis. modulator therapy among people with cystic fibrosis in the UK and Ireland.

Context
CFTR modulators are self-administered treatments taken at home, with education and monitoring provided through clinical services. Sustained long-term adherence is critical for optimising lung function, reducing pulmonary exacerbations, and improving quality of life.

Note: Document links have been removed for anonymisation; formatting has been refined for illustration purposes.

Barrier	COM-B[1]	TDF Domain(s)	Prioritised BCTs[3]	APEASE Rating (Effectiveness, Practicality)	Evidence
Low habit strength for daily treatment routines	Automatic motivation	Behavioural regulation	Habit formation (8.3); habit reversal (8.4)	5, 4 – Builds or replaces existing routines	Example source A
Limited perceived consequences of missed doses	Reflective motivation	Beliefs about consequences	Information about health consequences (5.1); Pros and cons (9.2)	5, 5 – Supports informed decision making	Examples Sources B and C
Knowledge gaps regarding CFTR modulator purpose and dosing flexibility	Psychological capability	Knowledge	Instruction on how to perform the behaviour (4.1); Information about health consequences (5.1)	5, 5 – Improves treatment understanding and confidence	Example Sources B, D and E

Note: APEASE ratings for effectiveness and practicality were assessed using a 5-point scale (1 = lowest, 5 = highest).

Key value demonstrated

- **Rapid synthesis** of heterogeneous qualitative evidence.
- **Transparent,** theory-driven linkage (barriers -> COM-B[1]/TDF[2] -> BCTs[3]).
- **Clear audit trail** from barriers back to source evidence.
- Generation of **personalised behaviour change plans** ready for intervention design.
- Expert feedback highlighted potential to **accelerate design, improve consistency**, and strengthen evidence-based practice.
- **High usability:** clear outputs, **strong relevance to applied practice**, and fit with existing workflows.
- Emphasised need for **clear rationale**, adaptable **context-sensitive guidance**, and **continued expert review**.

CONCLUSIONS AND IMPLICATIONS

This project demonstrates the applied value of Copilot Agents for translating behavioural science into practice. Automating foundational behavioural analysis can support **efficient, theory-driven intervention design**, while retaining the necessity of **expert oversight** to ensure appropriate interpretation and use.

While findings are promising, **further refinement is required** to maintain alignment with the latest **BCW** and **COM-B**[1] developments, including evolving guidance on behavioural diagnosis and intervention mapping.

NEXT STEPS INCLUDE:

- **Supporting uptake, training, and sustained use** among behavioural science colleagues.
- **Developing a robust set of guidelines and guardrails** to ensure appropriate and responsible use.
- **Refining agent logic** to remain aligned with evolving BCW and COM-B guidance.
- **Conducting larger-scale testing** to assess robustness and generalisability across use cases.
- **Exploring broader applications**, extending beyond health behaviour to wider behavioural and organisational contexts.

REFERENCES:

1. Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. Implementation Science, 6, Article 42. https://doi.org/10.1186/1748-5908-6-42
2. Atkins, L., Francis, J., Islam, R., O'Connor, D., Patey, A., Ivers, N., Foy, R., Duncan, E. M., Colquhoun, H., Grimshaw, J. M., Lawton, R., & Michie, S. (2017). A Guide to Using the Theoretical Domains Framework of Behaviour Change to Investigate Implementation Problems. Implementation Science, 12, Article 77. https://doi.org/10.1186/s13012-017-0605-9
3. Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., Eccles, M. P., Cane, J., & Wood, C. E. (2013). The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions. Annals of Behavioral Medicine, 46(1), 81–95. https://doi.org/10.1007/s12160-013-9486-6
4. Marques, M. M., Wright, A. J., Corker, E., Johnston, M., West, R., Hastings, J., Zhang, L., & Michie, S. (2024). The Behaviour Change Technique Ontology: Transforming the Behaviour Change Technique Taxonomy v1. Wellcome Open Research, 8, 308–308. https://doi.org/10.12688/wellcomeopenres.19363.2

ABBREVIATIONS:
APA = American Psychological Association; **APEASE** = acceptability, practicability, effectiveness, affordability, safety, equity; **BCT** = behaviour change technique; **BCTO** = behaviour change technique ontology; **BCW** = behaviour change wheel; **COM-B** = capability, opportunity, motivation, and behaviour; **TDF** = theoretical domains framework

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