Development & validation of the MyBarriers Questionnaire (MBQ)

To identify cognitive behavioural phenotypes among adults initiating GLP-1 receptor agonist-based therapy in a digital weight management programme.

Authors: Zoe Griffiths, BSC, RD[1], Rebecca Jones PhD, MPH[1], Victoria Rogers BSc, MSc[1], Emily Fulton, MSc, DPsych, CBTDip[1], Jennifer E Dent, MSc, MRes[1], PhD, Paul Sacher, PhD[1]
Contact: zoe.griffiths@numan.com

Introduction
Personalised weight management requires understanding the behavioural and cognitive barriers that influence early engagement and sustained behaviour change. Although GLP-1 receptor agonist (GLP 1-RA)-based therapy is increasingly used, few validated instruments assess the cognitive and behavioural mechanisms relevant at treatment initiation, particularly in real-world digital pathways.

This study developed and validated the MyBarriers Questionnaire (MBQ), a self-report tool created using literature, qualitative analysis and behaviour change theory to identify cognitive and behavioural phenotypes relevant to weight management.

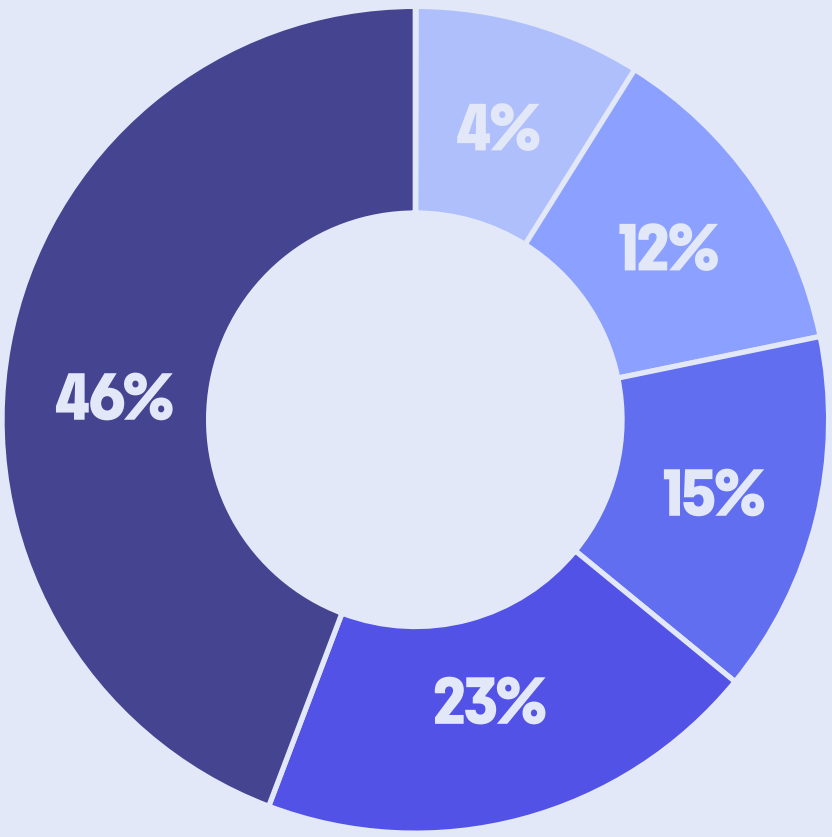
Methods
Two sequential online studies were conducted within a UK digital weight management programme. Study 1 (N=402) used exploratory factor analysis to refine a 56-item pool into a concise provisional instrument. Study 2 evaluated the final 20-item MBQ using confirmatory factor analysis, internal consistency testing, seven day test-retest reliability (N=121), and convergent, divergent and known groups validity testing using the Weight Efficacy Lifestyle Questionnaire – Short Form (WEL-SF) and the Medical Outcomes Study 20-item Short Form Survey (SF-20). Sensitivity analyses examined whether medication initiation timing influenced MBQ absolute and change scores.

Individuals received continuous scores for each phenotype. For descriptive analyses, a dominant phenotype was defined as the highest scoring phenotype for an individual; ties were permitted where scores were equal.

Results

- Across both studies, participants were predominantly women (≈ 75%), mostly white ethnicity (≈ 90–94%), with mean BMI ranging from 34.3 to 34.8 kg/m²
- Exploratory factor analysis supported a five-phenotype, 20-item structure
- The phenotypes were labelled ‘self-critic’, ‘doubter’, ‘habit struggler’, ‘emotionally driven eater’ and ‘environmentally shaped eater’
- Confirmatory factor analysis showed good model fit (SRMR 0.067; GFI 0.971; NFI 0.958).
- Internal consistency was satisfactory (total α = 0.88; phenotype α = 0.53–0.81)
- Test-retest reliability ranged from ICC 0.66 to 0.84
- Convergent validity was demonstrated through negative correlations with self-efficacy (r = -0.69 to -0.31), and divergent validity through weaker associations with SF-20 domains
- Known groups validity showed higher MBQ scores among individuals with lower self-efficacy (all p < 0.001)
- Sensitivity analyses indicated minimal influence of medication initiation timing on phenotype scores, aside from a small shift in ‘the doubter’ phenotype
- In Study 2, 73% of individuals were assigned a single dominant phenotype, indicating a predominant behavioural profile. 20.7% were assigned two, and 6.6% three or more.
- Of those with a dominant phenotype, the self-critic phenotype was the most prevalent (46.3%)
- Overlap most frequently occurred between the ‘self critic’ and the ‘emotionally driven eater’

Of those with a dominant Phenotype assignment



Conclusion
The MBQ is a reliable and valid instrument for assessing cognitive behavioural barriers among adults initiating GLP-1 RA therapy in a real-world digital setting.

The phenotype-based structure offers a practical framework for guiding tailored programming and support that addresses both cognitive and behavioural mechanisms and may inform scalable intervention design within both human-delivered and digital or AI-assisted weight management programmes.

[1] VIR Health Ltd, London, UK
[2] Faculty of Medicine, Imperial College London, London, UK