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# Assessing content validity of the Osteo-TAQ(Aus) using cognitive interviews: cross-jurisdictional evidence from UK osteopathic practice

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## Abstract

**Background** The Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ) has demonstrated content, construct, and face validity across multiple jurisdictions but required cognitive validation for use in the United Kingdom (UK).

**Objectives** To assess the cognitive content and face validity of the Australian-adapted Osteo-TAQ (Osteo-TAQ(Aus)) with practising UK osteopaths, and to determine whether any revisions were necessary.

**Methods** Cognitive interviews were conducted with six ($n=6$) UK osteopaths using a combination of think-aloud and verbal probing techniques, informed by the Cognitive Interview Reporting Framework (CIRF). Interviews were recorded, transcribed, and analysed using team-based content analysis to identify issues of item interpretation, clarity and relevance to UK practice.

**Results** Strong alignment with UK practice was demonstrated across all 36 items. No items required modification, providing positive validation evidence for cross-jurisdictional stability. Participants reported that the Osteo-TAQ(Aus) items were relevant, understandable and reflective of their day-to-day clinical practice.

**Conclusion** This study provides the first evidence of cross-jurisdictional cognitive stability for the Osteo-TAQ(Aus), demonstrating robust content validity in its country of origin and suitability for use in a UK setting. These findings support its continued use in UK-based research and professional development initiatives aimed at exploring therapeutic approaches and conceptions of practice.

**Keywords** Cognitive interview, Survey design, Content analysis, Osteopathic medicine

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## Introduction

Osteopathy is a statutorily regulated profession across the United Kingdom (UK) and is recognised as an Allied Health Profession (AHP) in England. Although national surveys have provided useful demographic and service-level data about the practice of UK osteopaths [1, 2], they offer limited insight into the *nature* of osteopathic clinical practice, particularly the deeper aspects, such as how practitioners think, reason, and work with patients in real-world settings. There has been limited empirical exploration of how the practice of osteopathy might vary across individuals, contexts, or international jurisdictions.

The Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ) was developed to help understand the nature of osteopathic practice. Based on qualitative grounded theory research with UK osteopaths [3, 4], the 36-item Osteo-TAQ captures conceptions of clinical practice, reasoning and therapeutic approach. The underpinning construct of the Osteo-TAQ is *conception of practice*; a theoretical construct that describes how osteopaths understand, frame and enact their clinical role [4]. The theoretical underpinning of the Osteo-TAQ is presented in detail elsewhere [3, 4, 8, 9].

The Osteo-TAQ has since been utilised to explore osteopathic practice in national studies in Australia (Osteo-TAQ(Aus)) [5] and France (Osteo-TAQ(Fr)) [6], generating new insights into how osteopaths practice across different healthcare jurisdictions and systems. These studies plus other work [7] have provided evidence for the validity of the Osteo-TAQ as a tool for evaluating osteopaths' conceptions of practice across diverse settings. While the Osteo-TAQ was previously adapted and evaluated in an Australian context using cognitive interviews [13], that study did not assess its interpretation within its country of origin. Moreover, although Australia and the UK share a common language and many cultural similarities, there are notable differences in osteopathic education, terminology, healthcare integration, and regulatory frameworks that may affect how the Osteo-TAQ items are interpreted. Thus, a UK-based evaluation is needed to confirm face and context validity and ensure the tool's relevance and clarity for UK practitioners.

This study aims to evaluate how UK osteopaths interpret and engage with the items in the Australian-adapted Osteo-TAQ (Osteo-TAQ(Aus)) using cognitive interviews, and to evaluate its face and cross-context validity [10].

## Methods

### Study design

The Cognitive Interview Reporting Framework (CIRF) guided the methodological approach of this study [11]. Cognitive interviewing is an established technique for evaluating survey items, particularly to identify issues with comprehension, interpretation, and relevance [12]. The methods used in this study were informed by a previous cognitive interview study assessing the Osteo-TAQ [13], ensured consistency in approach and allowed for meaningful comparison across jurisdictions.

### Recruitment and sampling

Recruitment invitations were circulated through professional networks and communications from the Institute of Osteopathy (iO) and the National Council for Osteopathic Research (NCOR). Invitations outlined the purpose of the study and provided instructions for expressing interest. Individuals who responded were sent an information pack containing a participant information sheet and consent form, confirming they were currently practising as UK osteopaths. A purposive sampling strategy was employed [14] to ensure a diverse range of perspectives. Due to limited representative data on the UK osteopathic profession, we used available sources such as the OIA Global Report on Osteopathy [22] and NCOR Research network data [2] to guide purposive sampling. We aimed to recruit a diverse group of participants based on gender, age, years in practice, clinical focus (e.g., musculoskeletal, cranial, sports), and training background, to reflect variation in practice style and experience relevant to questionnaire interpretation.

### Data collection

Participants completed the Osteo-TAQ(Aus) (Appendix 1) up to 3 days prior to taking part in a semi-structured interview lasting no longer than 60 min. The interview guide was based on previous studies evaluating jurisdictional validity of the Osteo-TAQ in France [6] and Australia [13], and two established cognitive interviewing techniques were employed: the *think-aloud* method, where participants verbalised their thoughts while reflecting on each item and *verbal probing*, where researchers explored specific responses in greater depth [15]. This dual approach enabled insight into how participants interpreted the questionnaire and how well it aligned with their clinical experience. Interviews were conducted by two experienced qualitative researchers (OT and EG), each leading three interviews. The interviews were recorded via MS Teams and transcribed. An overview of the verbal probes and think-aloud instructions for participants is provided in Table 1. The questions shown in Table 1 were used as a flexible guide rather than a fixed script. Interviewers used their judgement to adapt the focus and flow of each session, depending on which topics had already been addressed through participants' prior answers. This approach helped ensure comprehensive coverage while avoiding unnecessary repetition.

**Table 1** Example verbal probes and think-aloud interview questions

1. **Overall understanding**:
○ What was your first impression of the questionnaire?
○ Did the questions seem relevant to everyday practice as an osteopath in the UK?
2. **Length and effort**:
○ How did you find the length of the questionnaire?
○ Were there any items you found repetitive or difficult to answer?
3. **Clarity**:
○ Did you understand what this question was asking?
○ Were there any words or phrases that were unclear or confusing?
4. **Relevance**:
○ Is this question relevant to osteopathy practice in the UK?
○ Can you provide an example from osteopathic practice where this question applies (or does not apply)?
5. **Contextual fit**:
○ Does the wording of this question fit with the way you think about osteopathy in the UK?
○ Are there cultural or professional differences in the UK that might affect how you interpret this question?
6. **Response options**:
○ Were the response options (e.g., never, rarely, often, always) suitable for the questions?
○ Were there any response options missing, or do you think they need to be adjusted?
7. **Suggestions**:
○ How would you rephrase this question to make it clearer or more relevant to your practice?
8. **Fit with UK osteopathic practice**:
○ Overall, do you think the questionnaire captures the different ways that osteopathy is practiced in the UK?
○ Are there any specific cultural or regulatory factors that might affect how osteopaths in the UK respond to these questions?
9. **Terminology and language**:
○ Did you notice any terms or phrases that seemed inappropriate or not commonly used in UK osteopathic practice?
○ Would you suggest alternative terms or phrasing for any questions?
10. **Think-aloud prompts**
○ Can you talk me through your thoughts when answering this question?
○ Tell me what you're thinking about when deciding which answer to choose?
○ When you see the term (e.g. self-management, palpation), what does that mean to you in your day-to-day practice?
11. **Reflection and recommendations**
○ If you could suggest one change to improve the questionnaire, what would it be?
○ How would you rate the overall relevance of the questionnaire to osteopathic practice in the UK?
○ Is there anything else you would like to share about your experience with the questionnaire?

Sampling and data collection was pragmatically defined, drawing on prior Osteo-TAQ cognitive interview studies and best practice in cognitive interviewing [11]. While partially based on convenience, we also applied a data sufficiency approach: after six interviews, no new comprehension issues or interpretive themes were emerging. At this point, we also felt we had achieved a good range of perspectives based on our purposive sampling criteria, indicating that the level of information power was sufficient for the study's aims.

### Data analysis

Transcriptions were checked against the original audio for accuracy by the lead researcher (OT). The analysis used a three-phase process. In the first phase, two researchers (OT and GM) independently reviewed all interview transcripts using qualitative content analysis [28], identifying issues of comprehension, item interpretation, or alignment with clinical practice. Early analysis highlighted several themes across participants, including strong overall alignment with UK osteopathic practice, perceived redundancy in some items, and nuanced interpretations of specific terms. Participants also shared reflections on the questionnaire's forced-choice response scale and reported how completing the Osteo-TAQ prompted deeper thinking about their practice. In the second phase, a third researcher (BV), who was familiar with the original theory underpinning the Osteo-TAQ [3, 4, 9], reviewed the data. This perspective was particularly valuable for considering the theoretical basis, item construction, and whether any potential changes would meaningfully alter item interpretation. In the final phase, four members of the research team (OT, GM, EG, BV) reviewed the complete data set, refined interpretations, and agreed on the final thematic structure.

Decisions to amend or retain items were guided by discussions within the research team. Potential changes were considered when comprehension problems, theoretical misalignment, or response difficulties were identified in multiple interviews and where these issues appeared likely to be shared across the wider UK population of osteopaths. However, proposed changes were only considered if they did not alter the intended meaning of the item as defined by the original theory underpinning the Osteo-TAQ [3, 4, 9]. Minor interpretive differences reflecting individual practice variations, were not deemed sufficient to warrant amendment if the core concept of the item remained intact. This ensured modifications addressed genuine clarity issues while preserving the theoretical integrity and cross-jurisdiction compatibility.

## Results

### Participants

A purposive sample of six UK osteopaths ($n=6$) participated in this study, with varied professional characteristics. All six participants were from England. The backgrounds of participants are summarised in Table 2. Five themes were identified from the cognitive interviews. Themes 1–3 relate to areas of alignment and validation of the Osteo-TAQ(Aus) tool, while Themes 4–5 highlight areas of concern or potential improvement. These are presented in turn below.

**Table 2** Professional and demographic background of participants

| | |
|---|---|
| **Gender** | |
| Female | 3 |
| Male | 3 |
| **Age** | |
| 20–29 | 2 |
| 30–39 | 2 |
| 40–49 | |
| 50–59 | 1 |
| 60–69 | 1 |
| **Main clinical area of interest** | |
| Musculoskeletal | 2 |
| Cranial | 2 |
| Sports | 2 |
| **Osteopathic education** | |
| British School of Osteopathy | 1 |
| University College of Osteopathy | 2 |
| European School of Osteopathy | 2 |
| College of Osteopaths | 1 |
| **Years in practice** | |
| < 5 | 2 |
| 5–10 | 2 |
| 11–15 | |
| 16–20 | |
| 21–25 | 1 |
| > 25 | 1 |

### Theme 1. Strong alignment with UK osteopathic practice and language

Participants demonstrated consistent understanding of questionnaire items, with terminology and concepts aligning with UK osteopathic practice.

*I feel that the tool captures the range of approaches in UK* (P4).

There were no major comprehension issues identified across items, and participants felt that the language was appropriate for their osteopathic practice;

*Overall, fairly quick and easy to understand. It* [the Osteo-TAQ] *does make a lot of sense […] there were no questions where I was like, this has nothing to do with me, (P2)*

*There's not any jargon* (P1).

*It used common terminology I would typically use* (P6).

### Theme 2. Nuanced interpretation of key terms

Some participants felt some terms evoked varied interpretations. For example, the term 'management' (items 1, 3, 6, 10, 15, 17, 28) was sometimes viewed as medicalised or restrictive:

*I think the word* [management] *is like a containing word rather than a open word. Do I manage my patient this way medically? Yes. But I think osteopathically there's something else we could draw on (P6).*

The term 'self-manage' (items 2, 33) was seen by some as excluding hands-on care and the term 'palpation' (items 18, 29, 34) had varied meanings:

*Self-management sounded like I'm telling them to manage alone, without help* (P2).

*The word palpation can be something very different to a lot of people* (P3)

*One question just stands out about palpation and joint assessment to direct hands on treatment to address dysfunctions. So I would think maybe something additionally to cover those who maybe use cranial or visceral (P6)*

### Theme 3. Reflections prompted by completion

All participants felt the Osteo-TAQ tool prompted reflection on their practice, particularly regarding patient-centredness and collaborative practice.

*By the end, I realised I collaborate more than I initially thought.* (P5)

*I've gone from things [answers] very like self-centred osteopath and the 5–6 questions like no, I decide and then by the end I'm like no, actually I do a lot more collaboration* (P4).

For participant 4, engaging with the Osteo-TAQ resulted in them linking the specific item to a specific patient they had seen recently in practice and reflecting on the case:

*There were a few* [questions] *where I was like, oh, it's interesting* [and] *quite hard to answer because I'm like, yes, of course. But then the problem is then you end up in some situations like a case I've had recently. (P4)*

Other participants acknowledged a shift in how they perceived their answers as they progressed through the questionnaire.

*It was quite good from a reflection point of view, it really made me think a bit more; and then looking back, I'll sometimes surprise myself that actually I was doing something that I expected I wasn't doing.* (P3)

### Theme 4. Perceived repetition and item redundancy

Several participants noticed overlapping or repetitive items, especially among those addressing collaboration, treatment preferences, and shared decision-making (e.g. items 2, 10, 15, 17, 19, 23, 28). This was interpreted by some as intentional (to test consistency).

*There were a few that were very similar and I wasn't quite sure.* (P3)

*I just thought, oh, it's asking this again, but it's asking it in a slightly different way, so maybe it's just kind of drawing out a slightly different response. (P6).*

*I got the impression you've already asked me that in slightly different words. It's either trying to catch me out, make sure that I'm consistent in the way I'm answering it. (P2)*

**Theme 5. Desire for more flexible response options**

Some participants expressed difficulty with the forced-choice four-point Likert scale (Never – Rarely – Often – Always), which lacks a neutral midpoint, and indicated a preference for a more flexible or intermediate response option:

*I answered 'never', and then jumped to 'often' and 'always', so it felt like there was something missing in the middle.* (P6)

*I think what I found quite challenging is the box ticking, which I guess is the downside of having a questionnaire, is that a lot of the time was like, oh, well, it depends. And then I'm like, well, is that rarely or is it often; I kind of want to answer sometimes (P4).*

The same participant (P4) found the questions to be clear, but sometimes challenging to select a response option that characterised their practice.

*I think everything is pretty clear. I didn't think any of the questions were ambiguous. I think that it's a struggle to decide kind of where you're going to sit in terms of how it represents (P4).*

## Discussion

This study aimed to explore the face and cross-context validity of the Osteo-TAQ(Aus) within the UK osteopathic context. The findings suggest that the instrument remains highly relevant and aligned with UK osteopathic practice. Participants consistently reported that the questionnaire used familiar language, reflected a wide range of clinical behaviours and was easy to complete. These findings build on previous Osteo-TAQ research, including the original content validity work [7] and a recent cognitive interview study conducted in Australia [13], where only minor amendments were required to suit the local context. Importantly, while participants provided insightful feedback - particularly around terminology and response preferences - no items were identified as unclear or misaligned with UK practice. As such, the researchers reached consensus that no amendments to the Osteo-TAQ were warranted. These findings support the tool's face validity and cross-context applicability within the UK osteopathic context.

Findings suggest some participants found the four-point Likert-scale restrictive, preferring an intermediate option to reflect variability in their practice. The Australian cognitive interview study [13] addressed this by replacing 'sometimes' with 'often' to reduce ambiguity [16], while the French Osteo-TAQ(Fr) validation study retained the four-point scale and demonstrated acceptable construct validity [6]. Together, these findings suggest that while the change to 'often' addressed ambiguity, the complexity and context-dependence of clinical practice [17] may mean that fixed-option frequency scales will inevitably fail to capture all nuances, representing a potential, inherent limitation of the tool. The broader literature [25, 26] highlights that forced-choice formats may reduce precision and increase respondent frustration. This suggests an inherent tension in questionnaire design: fixed-response frequency scales may enhance clarity but risk oversimplifying complex, context-dependent decision-making in osteopathic practice. Future iterations of the Osteo-TAQ may need to revisit scale design to balance clarity with flexibility.

The present UK study provided evidence of the instrument's context validity likely reflecting the similarities between osteopathic practice in the UK and Australia [18] as well as the questionnaire's UK origins [19] and suggests that the tool has retained conceptual and linguistic fidelity across its iterations. Moreover, despite varied interpretations of certain terms like 'self-management' and 'palpation', these differences did not impair understanding or the meaningful responses. This highlights the flexibility and applicability of the Osteo-TAQ instrument across different practice styles within the profession. For example the varied treatment interventions used [18], different attitudes to evidence-based practice [20] and osteopathic theory [21].

The findings have several implications. First, they reinforce the face validity and applicability of the Osteo-TAQ for use in a national survey of UK osteopaths. Second, together with prior applications in Australia [5]and France [6], the positive reception in this UK sample supports its use in future research into osteopathic practice. Finally, the absence of recommended amendments in this study adds to the growing body of evidence demonstrating that cognitive interview pretesting can confirm, as well as refine, survey instruments [22]. Although cognitive interviewing is widely acknowledged as best practice in questionnaire development [12, 22, 23], it is infrequently reported in survey research and, when reported, methodological detail is often lacking [11]. For the Osteo-TAQ, this UK validation adds to cross-context validity evidence, improves transparency in its development record and supports reproducibility for future use.

### Limitations

This study has several limitations. The small sample size ($n$ = 6) may limit the breadth of perspectives captured, reduce generalisability, and may not fully reflect the variability of practice styles in UK osteopathy. Although we aimed to recruit participants from across all four UK nations, all respondents who expressed interest and were eligible were based in England. As such, the findings may not fully reflect perspectives from osteopaths practising in Scotland, Wales, or Northern Ireland. While purposive sampling was used to include diversity in clinical background, experience and approach (e.g. cranial, sports, and musculoskeletal), it may have introduced selection

bias. Whilst our sample size sits at the lower bound of common recommendations for cognitive interview studies [24] few new insights emerged as interviews progressed, suggesting that data sufficiency for the study's aims was largely achieved.

Additionally, while the study supports cross-jurisdictional validation by comparing the UK osteopathic practice with that in Australia, the similarities between these English-speaking nations such as shared language, broadly comparable professional structure and Western healthcare norms, may limit the extent of cross-cultural generalisability. Broader international work in more diverse sociocultural and linguistic contexts is warranted to explore the tool's broader applicability [27].

The involvement of researchers familiar with the development of the Osteo-TAQ presents a risk of interpretive bias, despite efforts to enhance rigour through multiple analysts and collaborative analysis. As with all qualitative research, findings should be interpreted within the context of the study's scope and design. One potential source of bias arises from the involvement of the lead author (OT), who led the original qualitative research which underpins the tool [3, 4] and also the development of the Osteo-TAQ [5, 6, 13, 19]. The lead author (OT) also took part in the data collection and analysis in this study. While this dual role presents a risk of interpretive bias, the researcher remained critically reflexive throughout the process, drawing on his clinical and academic experience to support analytical depth and contextual sensitivity. Importantly, data collection and analysis were also conducted and reviewed by other members of the research team who were not involved in the tool's development, ensuring that interpretations reflected a range of independent perspectives. Finally, in this study participants were not invited to review the findings or interpretations, due to the study's exploratory focus and time constraints. However, collaborative analysis involving multiple team members helped to ensure analytical rigour and interpretive credibility.

## Conclusion

Using cognitive interview methods, this study is the first to evaluate the Osteo-TAQ(Aus) within the UK context, establishing its face and cross-context validity. While participants identified minor wording and interpretation nuances, these were not considered likely to enhance the tool's utility for the wider UK osteopathic population. The findings therefore support the Osteo-TAQ's continued use in national surveys and provide a robust foundation for further research exploring conceptions of practice among UK osteopaths.

### Abbreviations

| | |
|---|---|
| CIRF | The Cognitive Interview Reporting Framework |
| Osteo-TAQ | Osteopaths' Therapeutic Approaches Questionnaire |
| Osteo-TAQ (Aus) | Australian-adapted Osteopaths' Therapeutic Approaches Questionnaire |
| Osteo-TAQ(Fr) | French-adapted Osteopaths' Therapeutic Approaches Questionnaire |

## Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s13104-025-07582-9.

Supplementary Material 1

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### Author contributions

- **Conceptualisation: ** OT, BV, JDR- **Methodology: ** OT, BV, SV- **Investigation: ** OT, EG- **Data curation: ** OT, EG- **Formal analysis: ** OT, EG, BV, GM- **Writing – original draft: ** OT, BV- **Writing – review & editing: ** All authors- **Approval of final manuscript: ** All authors.

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### Data availability

No additional data available.

## Declarations

### Ethics approval and consent to participate

All participants provided informed consent prior to taking part in the study. This study was approved by the School Research Ethics Panel at Health Sciences University (SOC-0325-013). The research was performed in accordance with the Declaration of Helsinki.

### Consent for publication

Not applicable.

### Competing interests

OT is an Associate Editor for BMC Health Service Research and the International Journal of Osteopathic Medicine. He is co-director of the Centre for Osteopathic Research and Leadership (CORaL). Receives fees for Journal editing, providing osteopathic clinical services; grants, non-financial support and travel reimbursement from University of Technology Sydney's Faculty of Health - Australian Research Centre in Complementary and Integrative Medicine; speaking/lecture fees from Kookie Learning and Metropolia University of Applied Sciences.JDR reports financial support from Osteopathic Foundation; employment with National Council for Osteopathic Research; fees for providing osteopathic clinical services; grants, non-financial support and travel reimbursement from Osteopathy Europe; non-financial support and travel reimbursement from University of Technology Sydney's Faculty of Health - Australian Research Centre in Complementary and Integrative Medicine; speaking/lecture fees from Kookie Learning and Metropolia University of Applied Sciences; and consulting/advisory fees from College of Health Sciences Fribourg. Co-director of the Centre for Osteopathic Research and Leadership (CORaL).GM acknowledges non-financial support from the Faculty of Health at the University of Technology Sydney and holds a Visiting Fellowship at the Centre for Osteopathic Research and Leadership (CORaL). EG reports employment at Plymouth Marjon University; employment as an external examiner for Health Sciences University; and past employment with National Council for Osteopathic Research. SV has received income from private osteopathic practice and the delivery of continuing professional development for physical therapists. He reports employment with Health Sciences University. He serves on the executive committee of the Society for Back Pain Research. He is Editor in Chief of the International Journal of

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## Publisher's note