A national survey of osteopaths' conceptions of practice in France: structural validity of the Osteo-TAQfr and the tendency toward technical rationality

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Abstract

Background Despite the growing popularity of osteopathy in France, little is known about how French osteopaths conceptualise key aspects of their practice, including skills, knowledge, and decision-making. This study aimed to adapt and validate the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ) for use in a French osteopathic population (Osteo-TAQfr) and to examine the professional profile and core elements of clinical practice among French osteopaths. The first objective was to establish the psychometric properties of the Osteo-TAQfr within a French osteopathic population. The second aim was to explore French osteopaths' conceptions of practice and their approach to patient care, thereby contributing to a broader understanding of the profession in France and its relevance within the discourse on allied health professions (AHPs).

Methods A cross-sectional study was conducted to (1) adapt and validate the French version of the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQfr) and (2) explore osteopaths' conceptions of practice in France. The translation and cultural adaptation process was informed by cognitive interviews to ensure linguistic and contextual appropriateness. Exploratory Factor Analysis (EFA) was performed to assess the factor structure in the French osteopathic context and Confirmatory Factor Analysis (CFA) was used to test the validity of previously established constructs—Professional Artistry (PA) and Technical Rationality (TR). Internal consistency was evaluated using McDonald's omega (ω).

Results The survey yielded 1,703 complete responses. Analysis supported a two-factor model with PA and TR subscales, both showing strong reliability estimations (PA $\omega = 0.882$; TR $\omega = 0.873$). Minor theory-informed adjustments improved model fit. A moderate negative correlation was observed between the PA and TR subscales (r=-0.407). Respondents with additional health professions qualifications scored lower on the PA subscale and higher on the TR subscale.

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Conclusions The Osteo-TAQfr is an original tool that assesses conceptions of osteopathic practice in France. Findings reveal a predominance of TR among French osteopaths, characterised by biomedical, technique-driven approaches. These results have significant implications for aligning osteopathic education and practice with contemporary AHP paradigms, including patient-centred care and interdisciplinary collaboration. Further research should explore the transferability of the Osteo-TAQ across other healthcare systems and its potential impact on clinical outcomes and professional development.

Keywords Osteopathy, Osteopathic medicine, Professional practice, Allied health profession, Validation study, Factor analysis, Statistical, Health workforce

Background

Osteopathy is a healthcare discipline that primarily addresses musculoskeletal health through manual (hands-on) therapy, but also incorporates psychological support, self-management strategies, and exercise interventions [27]. Osteopathy is recognised as an Allied Health Profession (AHP) in several countries, including the UK [68], Australia [3], and New Zealand [2]. This designation reflects its alignment with shared practices and core values centred on patient care, including person-centred approaches, interdisciplinary collaboration, and evidence-based practice, which are hallmarks of the broader AHP community [18]. Traditionally, osteopathic practice emphasises a 'whole person' approach to patient care which appears in part to be underpinned by concepts and frameworks emphasising the relationship between anatomy ('structure') and physiology ('function') [7]. However, there appears to be variability in how practitioners conceptualise and apply these principles in their practice [52, 94, 95] Research has explored various aspects of osteopathic practice,this includes multiple systematic reviews on the effectiveness of osteopathic care [6, 21, 36] and studies examining clinical methods, such as the type, reliability, and validity of examination techniques [9, 42, 43]. Cross-sectional surveys have also reported on the types of health conditions treated by osteopaths [32, 33, 99, 101], the specific treatment interventions used [32–34, 101] and the attitudes and beliefs in relation to low back pain [8, 31, 63]. By focusing on specific clinical conditions and interventions, these previous reviews and surveys assess relatively narrow aspects of osteopathic practice, and potentially fail to provide a comprehensive understanding of osteopathic care as a complex, individualised intervention [84]

Conception of practice

Through extensive qualitative research, Thomson et al developed a grounded theory to explain the nature and variation of osteopaths' therapeutic approaches including their professional identities, clinical decision-making, perceived therapeutic roles and their focus during patient interaction and is described in detail elsewhere [94–96]. Thomson et al's theory was developed from qualitative data generated via interviews, observations and video-recordings of osteopaths in practice [90] and informed by practice-based theory of professional knowledge and learning [30, 83]. At the centre of Thomson's theory was the core category of 'conception of practice' which Thomson et al propose as an osteopath's understanding of their practice, including their views on the nature of their skills and knowledge, and this continuum of conception of practice spans from 'technical rationality' to 'professional artistry' [94]. At the 'technical rationality' end, osteopaths view practice as systematic and rule-based, emphasising biomechanical and anatomical knowledge to address what is perceived to be straightforward physical problems [94]. Osteopaths with a technical rationality conception of practice tend to adopt a biomedical perspective, relying heavily on propositional knowledge (defined here as formal, codified knowledge such as biomedical theories and anatomical principles [47])—to guide clinical decision-making and technical skills to diagnose and treat patients with minimal emphasis on psychological, relational or social aspects [94]. In contrast, the 'professional artistry' end of the conception of practice continuum represents a more holistic, flexible, and interpretive approach. Practitioners that conceive practice as professional artistry see clinical practice as complex and uncertain, acknowledging the individuality of patients' experiences and the integration of knowledge from multiple sources, including patients' personal narratives [94]. Figure 1 illustrates the construct of the conception of practice continuum. From Thomson et al's grounded theory, the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ) was constructed to measure a range of attitudes, behaviours and dispositions that characterise osteopaths' approach to patient care. Following best guidance for health measurement instruments (COnsensus-based Standards for the selection of health Measurement INstruments) [67], our prior research has examined the face [91] and content validity [97] of the Osteo-TAQ, as well as its relevance to the practice of osteopathy in Australia [92, 93]. More specifically, our recent work [93] assessed the reliability of the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ) in the Australian context was evaluated using McDonald's omega to assess internal consistency. The two-factor solution, aligned with the Professional
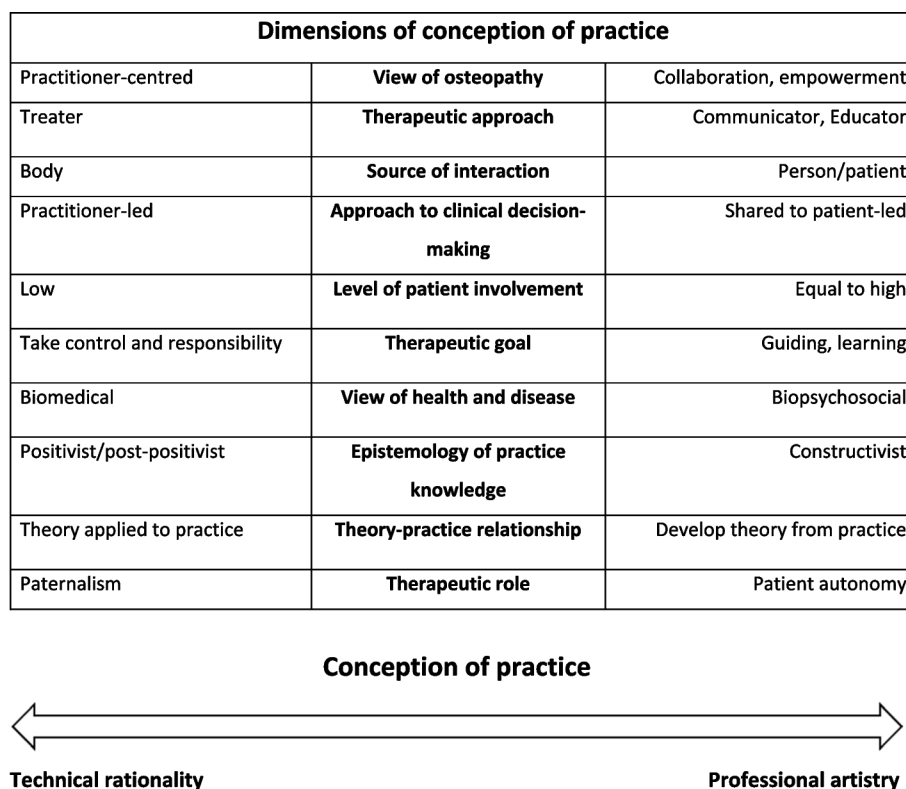
Dimensions of conception of practice		
Practitioner-centred	**View of osteopathy**	Collaboration, empowerment
Treater	**Therapeutic approach**	Communicator, Educator
Body	**Source of interaction**	Person/patient
Practitioner-led	**Approach to clinical decision-making**	Shared to patient-led
Low	**Level of patient involvement**	Equal to high
Take control and responsibility	**Therapeutic goal**	Guiding, learning
Biomedical	**View of health and disease**	Biopsychosocial
Positivist/post-positivist	**Epistemology of practice knowledge**	Constructivist
Theory applied to practice	**Theory-practice relationship**	Develop theory from practice
Paternalism	**Therapeutic role**	Patient autonomy

Conception of practice

Technical rationality   Professional artistry

Fig. 1 Diagram illustrating the conception of practice continuum and associated dimensions [90, 94]

Artistry (PA) and Technical Rationality (TR) constructs, demonstrated strong internal consistency with $\omega = 0.881$ (95% CI [0.868–0.894]) for PA and $\omega = 0.796$ (95% CI [0.773–0.819]) for TR [93].

Osteopathy in France

In France, osteopathy has gained prominence as a significant component of primary care, with osteopaths in France providing an estimated 25 million consultations per year [58], particularly for musculoskeletal conditions. While not formally recognised as an AHP in France [56], osteopathy has integrated into the healthcare system as a non-pharmacological therapeutic approach [71]. The French osteopathic workforce is among the largest in Europe, with approximately 31,254 practitioners in 2023 [70, 71]. Osteopaths have been registered into the National Shared Directory of Professionals Working in the Healthcare System (RPPS) since October 2024 (esante.gouv.fr). In France, osteopaths include practitioners who are only qualified in osteopathy as well as those with dual qualifications, such as physiotherapists (29.5%), medical doctors (4.8%), nurses (1.1%) and midwives (0.16%) [49].

The legal framework for osteopaths in France is well defined by a series of decrees and regulations, including the 2002, 2007 and 2014 decrees [57], which have progressively established the professional standards, scope of practice, and educational requirements. These regulations have played a crucial role in professionalising French osteopathy and ensuring its alignment with broader healthcare objectives. The integration of osteopathy into the French healthcare system, supported by its legal recognition and growing workforce, highlights its importance as a non-pharmacological form of care. A recent survey of the osteopathic workforce in France offers valuable insights into the practice characteristics of osteopaths, including commonly treated conditions, practice locations, clinical experience, and levels of osteopathic training [101]. The survey by Wagner et al. [101] identified gaps in the training of osteopaths in France and recommended adopting aspects of other European models, such as strengthening collaboration with universities and integrating comprehensive learning on patient consent procedures in educational curricula. Furthermore, the development of research is emphasised, as the profession confronts challenges inherent in shifting from a traditional practice framework to frameworks underpinned by evidence-based practice.

Similar workforce surveys conducted in other countries, such as Australia [1], Italy [15], Austria [25] and the UK [78], provide essential overviews of various aspects of osteopathy and the osteopathic profession. These surveys play a critical role in helping the profession better understand its position and prepare for integration within

healthcare systems. Additionally, national workforce surveys are vital for supplying regulatory bodies and advocacy groups with the necessary information to support the regulatory processes in countries where osteopathy is still undergoing professionalisation, such as Spain [5] and Belgium [26]. It is argued that more focused survey tools which examine and measure the practice behaviours, attitudes and dispositions of osteopaths will offer a deeper understanding of the nature of osteopathic practice and its contribution to healthcare systems.

Given the unique socio-cultural context of France [17], this study builds on a broader research programme to develop and utilise the Osteo-TAQ across diverse jurisdictions. The specific aims of this present study are:

1. To adapt and validate the Osteo-TAQ for use in a French osteopathic population (Osteo-TAQfr) and evaluate its structural, content and construct validity.
2. To explore and describe the conceptions of practice among French osteopaths, particularly their approaches to patient care and decision-making.

To our knowledge, this is the first study to examine how French osteopaths conceptualise their practice. By addressing this gap, the study offers novel insights into the profession in France and contributes to advancing osteopathy's integration within AHP and medical healthcare systems.

Ethics
This study was approved by the Institut de Recherche Franc'Ostéo ethics committee (no. 2024-CEO IRFO-01) and respected the anonymity and privacy of data in accordance with the European directive 2002/58/CE and the General Data Protection Regulation - 2016/679. All participants provided informed consent prior to participation.

Methods
The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline was used to structure the reporting of this observational study [28].

Study design
This study employed a cross-sectional survey design and incorporated a translation and cultural adaptation of the questionnaire used.

Participants and recruitment
An online campaign was set up to reach French osteopaths. All French osteopathic professional associations were contacted and informed about the study. They were then invited to help recruit participants by disseminating details of the survey. Other sources of dissemination were used during this two-month recruitment period, including via social media, educational institutions and alumni networks and professional conferences. All communication materials included the link to the online questionnaire, which also provided information about the study, including expected time to complete the questionnaire, instructions for completion, information about the research team, purpose of the study, and ethical considerations.

The instrument - Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ)
The Osteo-TAQ is a 36-item questionnaire exploring a range of behaviours, dispositions and activities that characterise osteopaths' approach to patient care. Responses to each item were on a four-point unipolar Likert-type frequency scale (*never, rarely, often, always*). The questionnaire takes approximately 10 minutes to complete.

Translation and cultural adaptation of the Osteo-TAQ to French (Osteo-TAQfr)
The translation and cultural adaptation process for the Osteo-TAQfr followed the best practice guidelines for cross-cultural adaptation of self-report measures as recommended by Beaton et al. [10]. This process consisted of five stages: stage one - initial translation where two independent translators, both native French speakers, performed forward translations from English to French. One translator was informed about the concepts being examined, while the other was not, to ensure a balance between clinical and colloquial language. Stage two - synthesis of translations involved the two translations being compared and synthesised into a single French version. Discrepancies were resolved through discussion, referencing the translators' reports. Stage three - backward translation where an additional pair of independent translators, who were native English speakers and blind to the original version, translated the synthesised French version back into English. Stage four - expert committee review, involving five members of the research team that were also native French speakers (AW, EJ, JDR, LT, CM) reviewed all translations and reports. The committee members reached a consensus on discrepancies and cultural equivalence to produce a pre-final French version of the survey instrument (Osteo-TAQfr). Finally, stage five involved pretesting of the pre-final version of the Osteo-TAQfr with eight osteopaths from various regions of France, including overseas territories and diversity in years of experience. This phase ensured comprehensibility of the translated instrument, and that the original meaning of Osteo-TAQ items remained preserved and culturally relevant for the practice of osteopaths in France. The final version of the Osteo-TAQfr was established after incorporating feedback from phase 5.

Cognitive interviews

Following the translation, it was not assumed that the meaning of the items within the Osteo-TAQfr and the original grounded theory upon which it is based would be directly transferable to French osteopathic practice. This caution was due to differences in sociocultural and healthcare contexts [17], such as the fact that the majority of osteopaths are not considered healthcare professionals in France, resulting in different legal frameworks for their practice and training [101]. To ensure that the Osteo-TAQfr survey items were relevant and easily understood by French osteopaths, cognitive interviews were conducted in accordance with best practice methods for questionnaire design [81]. An additional purposeful sample (*n=8*) of practising osteopaths were recruited by email with heterogeneous characteristics in order to test and refine the questionnaire. Diversity in gender, location, and experience guided participant selection to capture varied perspectives within French osteopathy. This purposeful sampling approach aligns with qualitative research principles, focusing on rich, diverse insights over statistical representativeness [20]. The sample included five female osteopaths (with 5, 10, 13, 17 and 20 years of clinical experience respectively), three male osteopaths (with 1, 7 and 10 years of clinical experience respectively). Both urban (*n=4*) and rural areas (*n=3*) were represented and one (*n=1*) who was from a French overseas territory (974). The cognitive interview approach was modelled on our prior work assessing the relevance of the Osteo-TAQ for Australian osteopaths [93], and similarly to this previous work data was analysed using qualitative content analysis [53]. Given the time constraints of each session, participants were invited to discuss items they found unclear or particularly salient to their practice. Additionally, the interviewers, drawing on their cultural and professional understanding of osteopathy in France, guided the discussion towards key constructs related to decision-making and therapeutic approaches. While this approach allowed for in-depth, participant-driven insights, it did not involve a systematic item-by-item evaluation. In this present study the native French speaking members of the research team (JDR, AW, LT, EJ) conducted interviews with osteopaths and then independently read and re-read all eight interview transcripts using qualitative content analysis [53] to identify any problems with the structure, phrasing and accessibility of the Osteo-TAQ items as identified by participants [11]. Interviews lasted no more than 60 minutes, and the questions employed during the cognitive interviews in this study were adapted from our previous cognitive interview work [92, 93], and can be found in Supplementary Material 5. The aim of data analysis was to ensure that: (1) the translated survey accurately captured the nuances of French osteopathic practices, (2) it was comprehensible and relevant to French osteopaths, and (3) the conceptual integrity of the original English version was retained. These measures were taken to ensure the validity of the collected data [46].

Adaptation of the Osteo-TAQfr

As a result of the cognitive interviews, minor adaptations were made to the Osteo-TAQfr to ensure linguistic and contextual accuracy within the French osteopathic regulatory framework. Notably, wording adjustments were required for 'diagnosis' (item 18) and 'clinical examination' (items 4, 7, and 25) due to the specific legal definitions of these terms in France, where the processes of diagnosing and examining carry distinct regulatory implications in healthcare practice, including osteopathy [57]. Cognitive interviews also highlighted contextual discrepancies in terminology related to economic models and regulatory frameworks in France [57]. Specifically, terms related to diagnosis were refined to align with the two-stage diagnostic process in French osteopathy, distinguishing between Opportunity Diagnosis (*diagnostic d'opportunité*)—which assesses whether an osteopath can treat a patient by screening for contraindications or red flags—and Functional Diagnosis (*diagnostic fonctionnel*), which identifies biomechanical dysfunctions to inform treatment within the legal scope of osteopathy. These adaptations ensured that the Osteo-TAQfr accurately reflected osteopathic practice in France while maintaining conceptual equivalence with the original instrument.

Pilot testing

Once the Osteo-TAQfr had been adapted following the cognitive interviews, it was uploaded onto the Qualtrics platform for distribution. A convenience sample (*n=8*) of practising osteopaths in France was invited to participate in a pilot test. The primary purposes of the pilot were to ensure the functionality of the online survey platform, assess the suitability of the adapted changes for practicing French osteopaths, and evaluate the time required to complete the survey. Participants were asked to report any technical issues, ambiguities, or concerns regarding survey length. Only minor typographical edits were made, and the pilot test results confirmed the usability and appropriateness of the Osteo-TAQfr for the main study. Figure 2 summarises the steps involved in translation and adaptation of the Osteo-TAQ to French (Osteo-TAQfr).

Data collection

The Osteo-TAQfr was entered into Qualtrics and made available to potential participants via a weblink. The survey was available for two months, from May 14, 2024, to July 14, 2024. Participation was entirely anonymous, with no identifying information collected or stored, ensuring
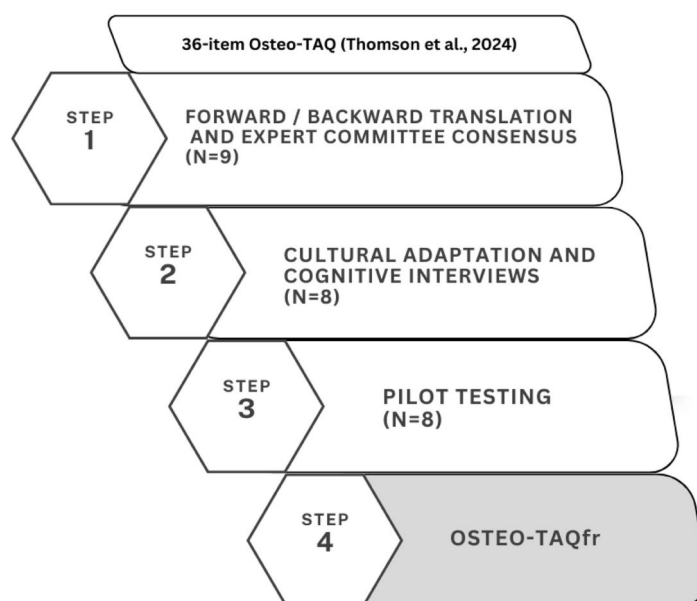
Fig. 2 Translation and adaptation steps of the Osteo-TAQ to the French version (Osteo-TAQfr)

respondent confidentiality. The Osteo-TAQfr items were set as forced responses, while other variables were not. Subsequently, there were no missing data for the Osteo-TAQfr items.
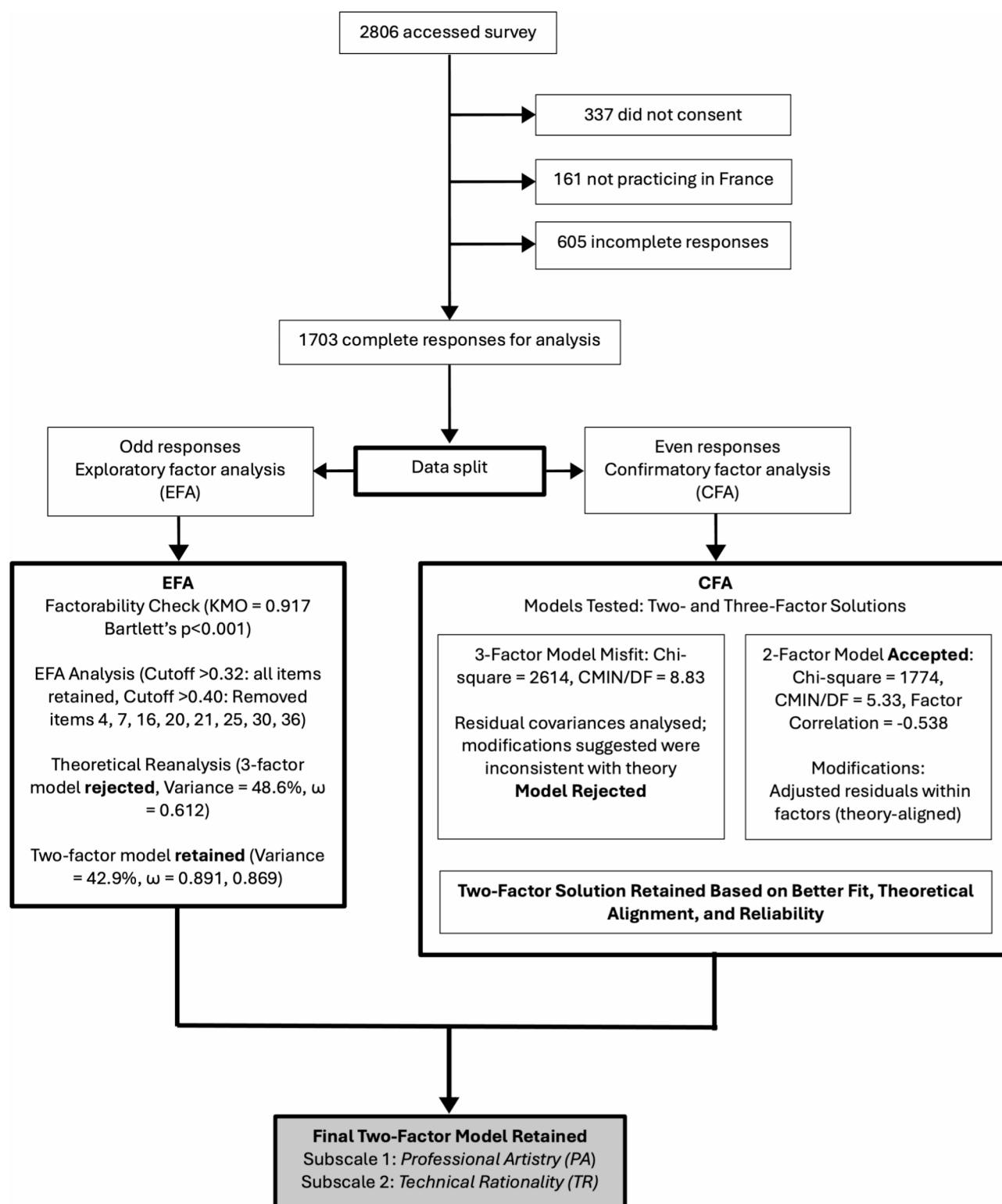
Data analysis

Data were exported from Qualtrics to Microsoft Excel for cleaning. Data were cleaned based on both accessing the survey but not responding and/or not providing consent to participate. Additionally, responses from respondents who indicated not practising in France at the time of the survey were also removed. The cleaned dataset was then exported to JASP [50] (version 0.19.3) for the analysis. Descriptive statistics were calculated for the demographic variables.

The dataset was then halved (Fig. 3) to enable an exploratory factor analysis (EFA) followed by a confirmatory factor analysis (CFA); odd number responses were included in the EFA and even number responses in the CFA. The number of factors to extract in the EFA was determined by parallel analysis (based on factor analysis) using the polychoric matrix [100]. The ordinary least squares (OLS) extraction method was used as the data were non-normally distributed (as indicated by Mardia's test) and item responses were ordinal in nature. The oblimin rotation was used as the factors were expected to correlate. OLS was selected due to its robust estimation of factor loadings while minimising the impact of non-normality in survey data. Given the ordered categorical nature of the Osteo-TAQfr responses, alternative robust extraction methods, such as maximum likelihood with bootstrapping, weighted least squares (WLSMV), or diagonally weighted least squares (DWLS),

were considered. However, OLS was deemed appropriate based on simulation studies demonstrating its stability in large sample exploratory factor analysis (EFA), while DWLS was retained for confirmatory factor analysis (CFA) to ensure optimal model fit evaluation.

Analyses were initially conducted with items being retained if they exhibited a factor loading greater than 0.32 and demonstrated a cross-loading of less than 0.32 [89]. A second analysis was undertaken with a cutoff of 0.40 [87] and items removed below this value based on the lowest communality first. The communalities were analysed and items with a value of 0.25 or less were removed [87]. The EFA was repeated with each modification until an interpretable solution (or otherwise) was identified. The factorability (Fig. 3) of the data was assessed using the Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's test of sphericity. Following the completion of the factor analysis, descriptive statistics were generated for each retained item, and reliability estimations were calculated using McDonald's omega (ω). Where the number of factors was not interpretable [102], reanalysis forcing 3 and 2 factors was undertaken based on the theory underpinning the Osteo-TAQfr using the process described above. Factors were deemed uninterpretable if they contained fewer than three items or if multiple items exhibited significant cross-loadings (>0.4). Interpretability was assessed based on theoretical coherence, item loadings (>0.4), and fit indices [102].

Confirmatory factor analysis (CFA) was used to analyse the factor structures of the Osteo-TAQfr identified in the EFA and reported on, consistent with best practice recommendations [13]. Model fit was established using the chi-square test and several fit indices were calculated for

Fig. 3 Analysis of the Osteo-TAQfr

each CFA factor structure [40]. Each fit statistic and the respective interpretations are in Table 3. As the data were ordinal, the diagonally-weighted least squares (DWLS) estimator was used [61]. Modification indices were generated and analysed to establish where improvements to the model could be made within the factor only. The CFA was reperformed after modifications were made.

Inferential statistics were used to explore differences for survey completion, gender (ANOVA with post-comparisons) and previous healthcare qualification (independent-measures t-test). Effect sizes (eta^2 and Cohen's *d*) were calculated where appropriate and interpreted as 0.1 (small), 0.3 (medium), and 0.5 or above (large). Tests of association were used to evaluate the associations between the Osteo-TAQfr subscale scores and age and years in practice (Pearson's *r*).

Results

The stages of translation, cultural adaptation, sampling, and resulting analysis of the Osteo-TAQfr is summarised in Figs. 2 and 3. The survey was accessed 2806 times. Of these, 313 (11.1%) did not respond to the consent question with a further 24 (0.08%) indicating they did not consent to participate. Of those who consented to participate, 161 (5.7%) indicated they were not currently practising osteopathy in France at the time of completing the survey and were excluded from the survey. The Osteo-TAQfr was not completed by 605 individuals (21.5%) resulting in 1703 (60.7%) complete responses for analysis. Younger osteopaths were significantly less likely to complete the Osteo-TAQfr with a small effect size (33.7+/−10.2 years v 34.5+/−10.0, *p*=0.047, d=0.08).

Table 1 Demographic characteristics of the 1703 respondents to the Osteo-TAQfr

Characteristics	Data analysis
Gender	
Male	777 (45.6%)
Female	917 (53.8%)
Non-binary/third gender	4 (0.2%)
Prefer not to say	5 (0.3%)
Age	
Mean (SD)	34.5 (+/- 10.0) years
Range	21–85 years
Median (IQR)	35 (29–42) years
Years in practice	
Mean (SD)	8.7 (+/- 7.7) years
Range	0–48 years
Median (IQR)	8 (3–15) years
Other health profession qualification	
Yes	202 (11.8%)
No	1497 (87.9%)
Not declared	4 (0.3%)

SD Standard deviation, *IQR* Interquartile range

Demographic characteristics of the 1703 respondents to the Osteo-TAQfr are presented in Table 1.

Exploratory factor analysis

An initial EFA was undertaken using a data driven approach based on parallel analysis to determine the number of factors to extract. Overall KMO was 0.917 and Bartlett's test was statistically significant (*p*<0.001) supporting factorability of the data. Parallel analysis supported extraction of 8 factors. At a factor loading cutoff at 0.32, all items were retained with four instances of cross-loading and two instances of items negatively loading onto a factor. Further, one factor comprised two items and two factors comprised three items. Increasing the factor loading cutoff to 0.4 resulted in two factors comprising two items and the exclusion of 10 items. Although the factors were interpretable based on the underpinning theory, the presence of two two-item factors supported the need for additional analyses.

Drawing on the a-priori underpinning theory [90], a three-factor solution was forced. This decision was informed by the theory suggesting that osteopaths' conceptions of practice may extend beyond a dichotomous Professional Artistry (PA) and Technical Rationality (TR) model, potentially involving three distinct 'therapeutic approaches' of patient education, communication and treating [95]. At a factor loading cutoff of 0.32, two items were excluded and three items cross-loaded. Increasing the cutoff to 0.4 resulted in eight items (4, 7, 16, 20, 21, 25, 30 and 36) being excluded with no cross-loading. Decisions about item removal at each step are described in Supplementary Material 1. The solution for version 1 resulted in factor 3 comprising two items and was deemed unsuitable, however, version 2 resulted in an interpretable solution (Supplementary Material 2). Version 2 is described in Table 2 and accounted for 48.6% of the variance with the factor correlations being between −0.50 and 0.50. McDonald's omega for the three factors was: 0.882 (95%CI [0.871–0.894]); 0.857 (95%CI [0.843–0.872]); 0.612 (95%CI [0.572–0.652]). As the third factor was below an acceptable reliability estimation, and version 1 was not interpretable a two-factor solution was also forced which was also consistent with the theory. At a 0.32 factor loading cutoff, one item was excluded and three items cross-loaded. Increasing the cutoff to 0.4, resulted in three items being excluded and no cross-loading. Five items were also removed as their communalities were <0.25 (Supplementary Material 1). The two-factor solution accounted for 42.9% of the variance and the factor correlation was −0.355. McDonald's omega for the two factors was 0.891 (95%CI [0.880–0.902]) (PA) and 0.869 (95%CI [0.856–0.882]) (TR).

Table 2 Factor loadings for the two-factor exploratory factor analysis solution for the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQfr)

	PA	TR	U
19. I involve the patient in deciding what hands-on treatment I provide.	0.750		0.440
15. I seek the patient's views about what treatment and management approaches they think might help them.	0.738		0.367
3. I provide patients with a range of treatment and management options and let them choose.	0.673		0.543
10. I ask patients what treatment and management approaches they think would help them most of all.	0.650		0.488
35. I offer treatment and management options to patients for them to choose from.	0.649		0.545
23. I provide the patient an opportunity to decide the treatment they would like to receive.	0.644		0.460
9. I explain my clinical reasoning to the patient so they can make an informed treatment decision.	0.591		0.694
1. I collaborate with the patient (and their carer/guardian) to develop the most suitable treatment and management options for their presenting complaint.	0.580		0.702
33. I educate patients to support them to self-manage their presenting complaint.	0.579		0.706
14. I seek verbal feedback from the patient to understand how the hands-on treatment feels for them at the time.	0.566		0.714
2. I want my patients to self-manage their presenting complaint.	0.565		0.719
24. I combine information from different sources (i.e. clinical examination, the patient's expectations and the patient-practitioner relationship) to guide my clinical decisions.	0.560		0.726
6. I provide the type of management and hands-on treatment that the patient says they would prefer (if not contraindicated).	0.559		0.584
17. I am led by the patient as to their preferred approach to treatment and management of their presenting complaint.	0.526		0.507
31. I spend a significant portion of the consultation time talking with the patient to understand how their presenting complaint impacts their life.	0.517		0.704
28. I am led by the patient as to the treatment and management approaches they want.	0.503		0.562
5. I prioritise talking with the patient to understand their problem over hands-on treatment.	0.474		0.717
29. I use palpation and joint assessment to direct treatment to address dysfunctions.		0.766	0.405
34. I rely on palpation to provide information about the health of the body's tissues.		0.726	0.383
13. I tell patients to follow my instructions so that I can perform my hands-on treatment effectively.		0.656	0.618
11. I need to establish the specific anatomical structures associated with the patient's presenting complaint to provide effective treatment.		0.653	0.626
32. I decide the type of hands-on treatment that will be best for the patient.		0.636	0.426
8. I base my practice on osteopathic theories, principles and philosophy.		0.633	0.502
12. I use observation of the patient's body to direct my treatment.		0.631	0.645
27. I provide the management and hands-on treatment approaches that I think are most suitable to help the patient's presenting complaint.		0.566	0.701
18. I rely on my palpation skills as the primary diagnostic tools.		0.560	0.442
22. I decide the treatment approach the patient requires due to their lack of understanding of osteopathy.		0.552	0.416
26. I rely on hands-on treatment to address the patient's presenting complaint.		0.522	0.646

PA Professional artistry, *TR* Technical rational, *U* Uniqueness (1 - communality)

Confirmatory factor analysis

Model fit was assessed using multiple fit indices to ensure a robust evaluation of the Confirmatory Factor Analysis (CFA) model. We report the Chi-square test (χ^2), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardised Root Mean Square Residual (SRMR). In line with established guidelines, CFI and TLI values above 0.90 indicate acceptable fit, while values above 0.95 suggest excellent fit [48]. RMSEA values below 0.08 are considered acceptable, with values under 0.06 reflecting good fit [12]. SRMR values below 0.08 indicate an acceptable fit. Given the relatively large sample size, the chi-square test, which can be overly sensitive, was interpreted alongside these alternative fit indices to provide a more comprehensive assessment of model adequacy.

A CFA was undertaken using the three-factor (version 2) and two-factor solutions identified in the EFA.

For the three-factor model, the Chi-square test was statistically significant ($x2(296) = 2614.475$, $p<0.001$) and a CMIN/DF of 8.83 indicating model misfit. All fit statistics for the three-factor model were below the reference values. Modification indices suggested multiple changes however only one change was consistent with the theory, moving item 27 to factor 2. Residual covariances were identified and these acted upon where the two items were contained within the same factor. These changes resulted in improvements in model fit (Table 3). The resultant changes in the Chi-square test and CMIN/DF were $x2(296) = 1426.450$ ($p<0.001$) and 5.00 respectively, with the fit statistics presented in Table 3 and estimates in Supplementary Material 3. Factor covariances were Communicator/Educator (-0.549, $p<0.001$, 95%CI [-0.566, -0.532]), Communicator/Treater (0.639, $p<0.001$, 95%CI [0.595, 0.684]) and Educator/Treater (-0.269, $p<0.001$, 95%CI [-0.303, -0.234]).

Table 3 Confirmatory factor analysis fit statistics for the 2 and 3 factor models of the Osteopaths'Therapeutic Approaches Questionnaire (Osteo-TAQfr) before and after modification

Statistic	Reference value	2-factor solution	2-factor solution revised	3-factor solution	3-factor solution revised
Comparative Fit Index	>0.96	0.856	0.910	0.846	0.924
Tucker-Lewis Index (TLI)	>0.90	0.844	0.898	0.831	0.914
Bentler-Bonett Normed Fit Index (NFI)	>0.95	0.838	0.892	0.831	0.907
Root mean square error of approximation (RMSEA)	<0.08	0.088	0.071	0.096	0.069
RMSEA *p*-value	<0.01	<0.001	<0.001	<0.001	<0.001
Standardised root mean square residual (SRMR)	<0.08	0.095	0.079	0.101	0.075
Goodness of fit index (GFI)	>0.95	0.958	0.973	0.957	0.978

Chi-square was statistically significant ($x2(349) = 2662.790$, $p<0.001$) and a CMIN of 7.62 indicating model misfit for the two-factor solution. Fit statistics for the two-factor model are presented in Table 3 with the factor covariance being −0.50 ($p<0.001$, 95%CI [−0.488, −0.516]). Modification indices for the two-factor solution suggested changes could be made however the modifications were not consistent with the underpinning theory and were not acted upon. Residual covariances were identified and the model modified resulting in improvements in model fit (Table 3) as well as the Chi-square test ($x2(333)=1774$, $p<0.001$) and CMIN/DF (5.329). The factor covariance was −0.538 ($p<0.001$, 95%CI [−0.553, −0.523]) and estimates are presented in Supplementary Material 4.

Modification indices were generated and analysed to identify areas where model fit could be improved. Adjustments were only considered if they aligned with theoretical justifications and did not compromise the construct validity of the instrument. Specifically, modifications were restricted to within-factor adjustments, ensuring that the underlying conceptual structure of the Osteo-TAQfr remained intact. Following these adjustments, CFA was reperformed, and the refined model was evaluated based on predefined fit indices. Given the importance of maintaining theoretical coherence, no post-hoc modifications were introduced that would alter the two-factor structure originally derived from EFA and supported by the underlying theoretical framework [94, 95].

To ensure rigorous post hoc comparisons, we applied Tukey's Honestly Significant Difference (HSD) test when variance homogeneity was met and the Games-Howell test when variances were unequal. These tests were chosen to provide robust, conservative estimates, reducing the likelihood of Type I error when comparing gender-based differences in conception of practice. Given the large sample size ($N = 1,703$), it is acknowledged that even small differences can reach statistical significance. To account for this, effect sizes (Cohen's d, eta^2) were reported alongside *p*-values to provide a more meaningful interpretation of the magnitude of observed differences. The results were not solely interpreted based on statistical significance; instead, they were contextualised in terms of practical implications for osteopathic education, training, and professional development.

Reliability estimations

Reliability estimations for the three factor model were: Communicator ($\omega=0.866$, 95%CI [0.853, 0.880]); Educator ($w=0.868$, 95%CI [0.855, 0.851]); Treater ($\omega=0.589$, 95% CI [0.546, 0.632]). For the two factor model, the professional artistry subscale coefficient was $\omega = 0.872$ (95%CI[0.860−0.885]) and the technical rational subscale was $w = 0.877$ (95%CI[0.865, 0.890]) supporting calculation of total scores for each subscale.

Descriptive and inferential statistics

The descriptive and inferential statistics presented here are for the revised 2-factor model presented in the Likert plot in Fig. 4 and Table 4. The mean (SD) subscale scores for Technical Rationality (TR) and Professional Artistry (PA) in Table 4 were calculated as the average of item responses within each factor. Higher scores indicate a stronger tendency toward that respective conceptual orientation. Standard deviations (SD) indicate variability in responses across the sample. Item level descriptive statistics are presented in Table 3. With respect to respondent age, a small negative association was observed for the PA subscale ($r=−0.228$, $p<0.001$, 95%CI [−0.182 - −0.272]) and a moderate positive association for the TR subscale ($r=0.302$, $p<0.001$, 95%CI [0.265−0.351]). For gender, PA subscale scores were significantly different ($p<0.001$, eta2=0.015 95%CI [0.006−0.030]) with males demonstrating higher scores compared to females (50.18+/−8.48 *vs* 48.43+/−7.06, $p<0.001$). The TR subscale scores were also significantly different ($p<0.001$, eta2=0.02, 95%CI [0.008−0.036]) with females demonstrating higher scores compared to males (34.96+/−4.89 *vs* 42.96+/−6.50, $p<0.001$). No other significant differences for gender were observed.

Small to moderate associations were observed, with years in practice negatively associated with PA ($r=−0.248$,

Fig. 4 Likert plot of responses to the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQfr) items

$p<0.001$, 95%CI [−0.292, −0.203]) and positively associated with TR ($r=0.312$, $p<0.001$, 95%CI [0.268, 0.354]). Respondents with another health professional qualification exhibited statistically significantly lower PA ($p<0.001$, d=0.282, 95%CI [0.135, 0.410], mean difference −0.129) and higher TR ($p<0.001$, d=0.400, 95%CI [0.253, 0.548], mean difference 0.208) subscale scores compared to those with only an osteopathy qualification. A moderate negative association was observed between the PA and TR subscale scores ($r=−0.407$, $p<0.001$, 95%CI [−0.446, −0.367]) with a coefficient of determination of 16.5%.

Discussion

This study is the first to adapt and validate the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQ) and use it in a French osteopathic population (Osteo-TAQfr) and to assess its structural, content, and construct validity. Additionally, it is the first to explore how French osteopaths conceptualise their practice,

particularly their approaches to patient care and clinical decision-making.

Validity of the Osteo-TAQfr

A three-factor solution was initially considered, but the two-factor model was retained due to stronger reliability estimations (McDonald's omega >0.87), better theoretical alignment, and superior model fit indices. The third factor had low reliability (ω = 0.612), reinforcing the decision to adopt a two-factor structure encompassing *Professional Artistry* (PA) and *Technical Rationality* (TR). This structure aligns with the theoretical framework underpinning the tool, previous grounded theory research [94, 95], and findings from the Australian validation study [93]. To enhance reliability and model fit, eight items were removed, ensuring the instrument retained psychometrically robust items. Similar refinements in the Australian validation study further support the adaptability of the Osteo-TAQ across different populations. The results reinforce the transferability of the foundational

Table 4 Descriptive statistics for the Osteopaths' Therapeutic Approaches Questionnaire (Osteo-TAQfr) 28 items and respective conception of practice Professional artistry (PA), Technical rational (TR). Items 4, 7, 16, 20, 21, 25, 30 and 36 were excluded with no cross-loading at a cutoff of 0.4

Items	Mode	Median	Mean	Std. deviation	Conception of practice
1. I collaborate with my patient (and their carer/guardian) to develop the most suitable treatment and management options for their presenting complaint.	4	4	3.412	0.715	PA
2. I want my patients to self-manage their presenting complaints.	4	4	3.668	0.515	PA
3. I provide my patients with a range of treatment and management options and let them choose.	2	2	2.425	0.848	PA
5. I prioritise talking with my patient to understand their problem over hands-on treatment.	3	3	2.950	0.803	PA
6. I provide the type of management and hands-on treatment that my patient says they would prefer (if not contraindicated).	3	3	2.834	0.855	PA
8. I base my practise on osteopathic theories, principles and philosophy.	3	3	2.897	0.912	TR
9. I explain my clinical reasoning to the patient so they can make an informed treatment decision.	4	4	3.433	0.713	PA
10. I ask my patients what treatment and management approaches they think would help them most of all.	2	2	2.322	0.917	PA
11. I need to establish the specific anatomical structures associated with my patient's presenting complaint to provide effective treatment.	3	3	3.132	0.819	TR
12. I use observation of my patient's body to direct my treatment.	3	3	3.070	0.859	TR
13. I tell my patients to follow my instructions so that I can perform my hands-on treatment effectively.	3	3	3.193	0.775	TR
14. I seek verbal feedback from my patient to understand how the hands-on treatment feels for them at the time.	4	3	3.234	0.796	PA
15. I seek my patient's views about what treatment and management approaches they think might help them.	2	2	2.478	0.892	PA
17. I am led by my patient as to their preferred approach to treatment and management of their presenting complaint.	2	2	2.299	0.824	PA
18. I rely on my palpation skills as the primary diagnostic tools.	3	3	2.712	0.898	TR
19. I involve my patient in deciding what hands-on treatment I provide.	3	3	2.787	0.897	PA
22. I decide the treatment approach my patient requires due to their lack of understanding of osteopathy.	3	3	2.668	0.906	TR
23. I provide my patient an opportunity to decide the treatment they would like to receive.	2	2	2.342	0.917	PA
24. I combine information from different sources (i.e. clinical examination, my patient's expectations and the patient-practitioner relationship) to guide my clinical decisions.	4	4	3.614	0.605	PA
26. I rely on hands-on treatment to address my patient's presenting complaint.	3	3	3.326	0.617	TR
27. I provide the management and hands-on treatment approaches that I think are most suitable to help my patient's presenting complaint.	4	4	3.712	0.493	TR
28. I am led by my patient as to the treatment and management approaches they want.	2	2	2.398	0.784	PA
29. I use palpation and joint assessment to direct treatment to address dysfunctions.	3	3	3.089	0.810	TR
31. I spend a significant portion of the consultation time talking with my patient to understand how their presenting complaint impacts their life.	3	3	3.084	0.752	PA
32. I decide the type of hands-on treatment that will be best for my patient.	3	3	3.214	0.741	TR
33. I educate my patients to support them to self-manage their presenting complaint.	3	3	3.356	0.653	PA
34. I rely on palpation to provide information about the health of the body's tissues.	3	3	3.020	0.918	TR
35. I offer treatment and management options to my patients for them to choose from.	3	3	2.620	0.861	PA
Professional artistry subscale total score (17 items)			49.255	7.808	
Professional artistry subscale average item score			2.897	0.459	
Technical rational subscale total score (11 items)			34.033	5.775	
Technical rational subscale average item score			3.093	0.524	

theory to French osteopathic practice, supporting the broader theoretical generalisability of conception of practice in this context [14]. Through cognitive interviews and expert panel review, this study builds on previous research establishing the content and face validity of the original Osteo-TAQ [92, 97], confirming its robustness and validity as a tool for evaluating osteopaths' conceptions of practice across diverse settings.

Conceptions of practice among French osteopaths
Data from the Osteo-TAQfr suggest that French osteopaths lean slightly towards a Technical Rationality (TR) conception, reflected in higher mean TR scores. Notably, 72.8% of respondents reported 'always' providing hands-on treatment based on their assessment—an approach characteristic of TR. This aligns with workforce surveys in France [101] and internationally [27], indicating that French osteopaths tend to determine treatments independently, prioritising palpation and observation over shared decision-making [94].

Paradoxically, 68.7% consistently encouraged patient self-management (PA subscale), yet patient-centred practices were reported far less frequently. For instance, only 6.5% 'always' followed patient preferences (item 17), while 42.8% did so 'sometimes'. This highlights a disconnect between endorsing self-management and implementing collaborative care, mirroring research suggesting that French osteopaths prioritise practitioner-directed interventions over patient involvement [54].

The moderate negative correlation ($r = -0.407$) between PA and TR suggests they are related but distinct, rather than strict opposites; implying that osteopaths may integrate both approaches depending on context, clinical experience, and case complexity. This aligns with evidence-based practice (EBP) models which emphasise balancing technical expertise with patient values [41]. The findings suggest that French osteopaths' practice model is evolving but still retains a practitioner-centred orientation. Research in the UK highlights limited shared decision-making in osteopathic education, reflecting similar trends in France [80]. While regulatory frameworks advocate patient-centred care [44, 45], barriers to implementation persist across healthcare professions [39]. Additionally, manual therapy remains central to osteopathic identity, likely reinforcing TR approaches [27].

French osteopaths frequently integrate multiple knowledge sources in decision-making (item 24, PA scale). However, some osteopathic theories developed in France emphasise biomechanical and palpatory guidance over patient expectations [60]. Notably, the moderate association between years in practice and a more PA-oriented conception suggests that clinical experience may gradually foster a shift towards patient-centred approaches.

This study aligns with Wagner et al. [101] in confirming that most French osteopaths train for five years and work in self-employment, though our sample had more female (65% vs. 53.7%) and younger practitioners (20–30 vs. 30–39 years old). Weekly consultation rates were similar (20–25 per week), but fewer respondents engaged in additional professional activities (20% vs. 31.4%). These demographic variations may influence the distribution of PA and TR orientations, warranting further research into how professional experience, gender, and education shape osteopathic practice.

Influence of education and professional background
Osteopaths with a prior healthcare qualification or academic degree had significantly lower PA scores than those with only an osteopathic qualification. We did not collect data on the type of respondents' additional healthcare qualifications, nor when the additional qualification(s) was obtained. However, given that biomedical beliefs (a dimension of TR– Fig. 1) are prevalent across MSK healthcare practice in France, including physiotherapy [35, 74], it plausible that some prior undergraduate healthcare degrees perpetuate a TR conception of practice. In contrast, evidence from manipulative/MSK physiotherapy suggests *postgraduate* (e.g. Masters) learning may facilitate movement towards expertise and professional artistry [76, 77]. Mhadhbi et al. [66] provide valuable insight into this paradox. Within French osteopathic education, both educators and students share similar beliefs about chronic pain management and exhibit comparable levels of pain knowledge [66]. Rather than challenging traditional approaches, this educational environment appears to reinforce existing practice paradigms. During clinical training, students likely adopt their educators' conceptual frameworks and practice styles, which may explain the predominance of TR conceptions among both groups. This suggests that the osteopathic educational environment in France may be more effective at transmitting established technical approaches than at fostering the development of PA capabilities.

Younger osteopaths exhibited a stronger TR orientation than older counterparts, despite EBP-focused education that emphasises critical appraisal and research methods, particularly post-2014 decrees. While structured protocol-driven training may reinforce TR, the development of PA—integrating relational, patient-centred, and adaptable approaches—likely requires time, clinical experience, and reflection beyond formal education. This aligns with expertise development theories, which suggest that novice healthcare practitioners initially rely on structured, technical frameworks before transitioning to more flexible, patient-centred decision-making as they gain experience [75]. Critical reflection on experience plays a

crucial role in clinical expertise, enabling practitioners to balance structured decision-making with adaptability in patient care [75].

Statistical analysis revealed small to moderate associations between years in practice and both PA ($r = -0.248$, $p < 0.001$) and TR ($r = 0.312$, $p < 0.001$), suggesting that while experience influences conceptions of practice, these shifts may be gradual rather than extreme. Contrary to expectations, more experienced osteopaths tend to exhibit a stronger TR orientation, whereas early-career osteopaths exhibit greater PA tendencies. These findings contrast with theory and research on professional expertise development, where experience fosters increased flexibility and patient-centred decision-making [51, 75]. A possible explanation is that more experienced osteopaths may not have been exposed to the contemporary shift in osteopathic education in France, which increasingly emphasises patient-centred care, therapeutic adaptability, and the biopsychosocial model [82]. Future research should examine how osteopaths' conceptions of practice evolve post-graduation and explore professional development strategies that support a more balanced integration of PA and TR orientations.

Osteopathic education prioritises biomedical knowledge and technical skills, reinforcing TR at the expense of relational competencies [64]. The absence of regulation recognising osteopathy as an AHP in France may further entrench traditional models [65], potentially leaving graduates ill-equipped to navigate clinical uncertainty or deliver patient-centred care [62, 94]. Limited emphasis on patient education in French curricula [79, 82] mirrors this TR dominance.

While two-thirds of French osteopaths support EBP [66, 101], integrating EBP into education remains challenging [85]. Educators endorse EBP [66], yet practical application remains moderate [19]. Calls for enhancing evidence-based education and critical thinking [24] highlight an opportunity to rebalance TR-PA competencies. The 2014 decrees stress modernising osteopathic education, yet challenges remain in shifting towards competency-based, learner-centred models. Professionalising clinical educators is crucial to integrating expertise into teaching. The Osteo-TAQfr may help by identifying osteopaths' conceptions of practice and evaluating educational reforms that promote shared clinical decision-making. Further research should explore how conceptions of practice evolve and how the Osteo-TAQfr can inform education strategies.

The Wagner et al. [66, 101] workforce survey and IGAS report similarly highlight gaps in osteopathic training and call for stronger research integration and professionalisation [37]. The Anglo-Saxon model, while often referenced, requires adaptation to French regulatory and institutional frameworks [29]. Challenges include

increasing professional representation, regulatory development, and university integration [59]. This study reinforces these concerns, particularly the dominance of TR in French osteopathy. The Osteo-TAQfr provides a means to evaluate how systemic and educational changes influence practice over time, informing curriculum development and professional policy. Further research should examine the relationship between conceptions of practice and clinical outcomes and how education fosters a balanced TR-PA approach.

Implications for health service delivery

The predominance of TR among French osteopaths suggests a structured, biomechanical approach to care. Given the evidence that practitioner beliefs and clinical orientation influence musculoskeletal health outcomes [22, 38], aligning osteopathic training with broader healthcare frameworks that promote both PA and evidence-based clinical reasoning could enhance service delivery. Encouraging a more integrated approach through continuing professional development (CPD) may help practitioners navigate complex cases, improve patient engagement, and foster consistency in the provision of osteopathic care. Educational reforms should prioritise clinical reasoning, shared decision-making, and relational competencies, fostering a PA approach that aligns with contemporary AHP paradigms [18]. To enhance service delivery, CPD programs should address key gaps, including integrating patient preferences, managing clinical uncertainty, and strengthening communication skills.

Globally, osteopaths support EBP [4, 16, 55, 73, 88], yet EBP integration remains a challenge, especially in non-university programmes [85]. Limited institutional support and resource access are key barriers, but further research is needed to explore motivational factors and the gap between EBP knowledge and clinical application [72].

Strengthening communities of practice within osteopathy could enhance interdisciplinary collaboration and translate research into clinical reasoning. As healthcare increasingly moves towards multidisciplinary models, osteopaths must adapt and integrate within broader teams. The reliance on TR conceptions may limit the quality of care for complex cases, underscoring the need for more flexible, individualised therapeutic strategies that reflect the nuanced and contextual nature of MSK service delivery [69].

This study provides a foundation for future research into conceptions of practice across AHPs. Comparative studies examining TR and PA orientations in physiotherapy, chiropractic, and occupational therapy could clarify how regulatory, cultural, and educational factors shape practice. Further research should explore how practice

conceptions evolve among students and practitioners. Trials could assess the impact of TR/PA conceptions on clinical outcomes and the effectiveness of interventions promoting a balanced TR-PA approach. Cross-country comparisons could offer valuable insights for international osteopathic service improvements.

Strengths and limitations

This study has several strengths. Firstly, it benefits from a relatively large sample size, enabling detailed statistical analyses and stable factor solutions. The methodical development process involved systematic translation, cultural adaptation, and robust psychometric validation, ensuring relevance in the French context. Its originality lies in examining PA and TR, providing insights into French osteopathic practice with implications for education, policy, and professional development. The study also lays the groundwork for international comparative research.

However, limitations exist. Recruitment relied on convenience sampling via professional networks, social media, and osteopathic associations, potentially introducing selection bias by over-representing osteopaths engaged in professional development. Social media recruitment, while effective for sample size, prevented accurate response rate calculation [98]. Duplicate responses were possible despite explicit instructions against multiple submissions and data screening mitigated this risk.

A common limitation in survey research is the discrepancy between reported and actual behaviour due to participant biases. Future research which utilises observations of osteopaths in clinical practice together with the Osteo-TAQ might help understand how reported behaviour relates to real-world care. National representativity is another concern; 5.4% of French osteopaths participated, aligning with workforce estimates (31,254 osteopaths in 2023) [71]. The lack of a central registry precluded an exact response rate calculation, and selection bias may be present, favouring osteopaths more engaged in research. Nonetheless, this dataset is one of the most extensive on French osteopaths' practice. The absence of Practitioner-Based Research Networks (PBRNs) in France (common in UK, NZ, and Australia) likely impacted recruitment [23, 86]. While the sample size allowed for detecting small effects, findings should be generalised with caution due to convenience sampling. However, no prior national survey has recruited as many French osteopaths.

Social desirability bias may have led participants to overstate engagement with active care over manual therapy. Given the strong professional identity of French osteopaths and the centrality of manual therapy [66, 101], responses likely reflect sincerely held views. Acquiescence bias is also a concern, however, the survey items and response choices were designed to reduce this risk, as uniformly selecting the same response across all items would be inconsistent with typical osteopathic practice and may reflect inattentive or careless responding.

The Osteo-TAQfr demonstrated strong reliability estimations and construct validity, but test-retest reliability was not assessed, limiting evaluation of long-term stability. Convergent validity was also not assessed in this study, as no comparable instruments exist within the osteopathic field. Future studies should incorporate, identify or develop appropriate instruments to evaluate this aspect of the Osteo-TAQfr's validity.

Conclusion

This study shows that the Osteo-TAQfr measures two key dimensions of osteopathic practice—Professional Artistry (PA) and Technical Rationality (TR)—with strong reliability estimations, providing some support for the structural validity of the instrument. The findings indicate that French osteopaths predominantly adopt a TR conception of practice, characterised by structured, technique-oriented approaches. These results offer significant insights into the professional behaviours of French osteopaths, reinforcing the utility of the Osteo-TAQfr as a dependable tool for assessing conceptual orientations within osteopathic practice. By focusing on the nuanced interplay between PA and TR, this study provides a foundation for enhancing osteopathic education, professional development, and policy. It aligns the profession with broader AHP values, such as patient-centred care and interdisciplinary collaboration, and paves the way for future international research. Further exploration is needed to assess how conceptions of practice evolve over time and how these orientations influence clinical outcomes and healthcare delivery.

Abbreviations

ABS-mp	Attitudes to Back Pain Scale in Musculoskeletal Practitioners
CARE	Consultation and Relational Empathy
COSMIN	Consensus-based Standards for the selection of health Measurement Instruments
CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
ORION	Osteopathy Research and Innovation Network
Osteo-TAQ	Osteopaths' Therapeutic Approaches Questionnaire
Osteo-TAQfr	Osteopaths' Therapeutic Approaches Questionnaire in French
PABS-PT	Pain Attitudes and Beliefs Scale for Physical Therapists
PBRN	Practitioner-Based Research Network
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology
TR	Technical Rationality
PA	Professional Artistry

Supplementary Information

Supplementary Material 1.

Supplementary Material 2.

Supplementary Material 3.

Supplementary Material 4.

Supplementary Material 5.

Authors' contributions
OT and BV contributed to the design and conception of the study. LT, CM, JDR, EJ, AW translated the Osteo-TAQ and contributed to the cognitive interview methods. All authors contributed to the data collection and all authors contributed to data analysis. All authors contributed to the drafting of the manuscript, and all have read and approved the final manuscript.

Data availability
No datasets were generated or analysed during the current study.

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 Institut de Recherche Franc'Ostéo ethics committee (no. 2024-CEO IRFO-01), and respected the anonymity and privacy of data in accordance with the European directive 2002/58/CE and the General Data Protection Regulation - 2016/679. 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 International Journal of Osteopathic Medicine. Receives fees for 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.
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CM reports employment in Université de Sherbrooke; 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.
BV reports employment at the University of Melbourne; non-financial support and travel reimbursement from University of Technology Sydney's Faculty of Health - Australian Research Centre in Complementary and Integrative Medicine; fees for providing osteopathic clinical services.

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