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Beliefs, identities and educational practice: a Q methodology study of general practice supervisors

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WHAT IS ALREADY KNOWN IN THIS AREA
- Postgraduate education relies heavily on clinical supervision as an educational strategy.
- The provision of clinical supervision is very variable.
- Clinical supervisors' beliefs have been associated with their behaviour in passing underperforming learners and in managing residents with clinical reasoning difficulties.

WHAT THIS WORK ADDS
- In the same institution, supervisors can hold a variety of beliefs about supervision.
- These beliefs reveal different ways of managing their multiple professional identities as clinicians and teachers.
- A stronger teacher identity was associated with more teaching experience.
- Faculty initiatives which foster reflection may influence beliefs and identities.

SUGGESTIONS FOR FURTHER WORK
- What is the process of identity formation in clinical supervisors?
- What is the influence of the way supervisors manage their multiple professional identities on their supervisory practice?
- How can faculty influence the process of identity formation in clinical supervisors?

Keywords: faculty development, family practice, graduate, medical education, Q methodology, supervision

SUMMARY

Introduction

Quality of supervisory practices varies. According to the integrative model of behaviour prediction, supervisors' beliefs may influence practice. This study aimed to examine the belief profiles of general practice supervisors, and their potential relationship with supervisory practice.

Methods

A cross-sectional study was conducted using Q-methodology to explore supervisors' beliefs and the Maastricht Clinical Teaching Questionnaire to measure self-reported supervisory practice.

Results

One-hundred and thirty-nine supervisors took part (76%). The most common belief profile (36.7%) comprised a proactive view of supervisors' roles, strong self-efficacy beliefs and awareness of university norms. It revealed merged identities as clinicians and teachers. The second profile (18.0%) included a belief that supervision essentially involved sharing one's experience, uncertainty about the impact of supervision and about university norms. This profile was consistent with a pre-eminence of supervisors' identities as clinicians. Supervisors

with merged identities were more likely to have more experience as supervisors and to engage in other teaching activities. Differences in self-reported supervisory practice were observed but did not reach statistical significance (P = 0.053).

Conclusions

Supervisors' beliefs reveal differences in the way they manage their multiple professional identities. Further research should be conducted into whether these differences are developmental and if so how development occurs.

INTRODUCTION

Postgraduate medical education is often likened to an apprenticeship. Apprenticeship has two main ingredients: task or work-based learning (i.e. learning 'in, from and to work'[1]) and supervision by a 'master' practitioner acting as role-model and providing instruction.[2] The role of supervisors, the 'master practitioners' of clinical apprenticeship, has been expanded through empirical and theoretically grounded studies to include other tasks such as *scaffolding and fading* (i.e. providing and progressively withdrawing support as appropriate), encouraging learners to *articulate* their thinking, encouraging learners to *reflect* on their experiences and helping learners to *explore* and pursue their learning goals.[3–6] In practice, however, the provision of clinical supervision has been found to be suboptimal and highly variable from one setting to the next, even in the critical task of providing constructive feedback based on observations of learner performance.[6–8] Improving the current state of affairs requires an examination of its root causes.

Fishbein's integrative model of behaviour prediction (IMBP, Figure 1)[9] theorises the determinants of behaviour as hinging on three factors: intention to perform the behaviour, ability (skills) to perform the behaviour, and environmental constraints. Intention to perform the behaviour is in turn determined by three types of belief. Behavioural beliefs include beliefs about the potential costs and benefits of the behaviour. Normative beliefs are concerned with what individuals think that significant others expect from them and with how much they want to comply with these expectations. Self-efficacy beliefs are an individual's beliefs about how likely s/he is to be effective in a specific task.

There is evidence pointing to all of these potential determinants as barriers to provision of optimal supervision. Lack of time is a commonly cited environmental constraint and a difficult one to tackle, requiring institutional-level interventions.[6,10,11] Insufficient knowledge and skills have also been identified[6,8,10,12] and are the main focus of faculty development endeavours. Studies of clinicians

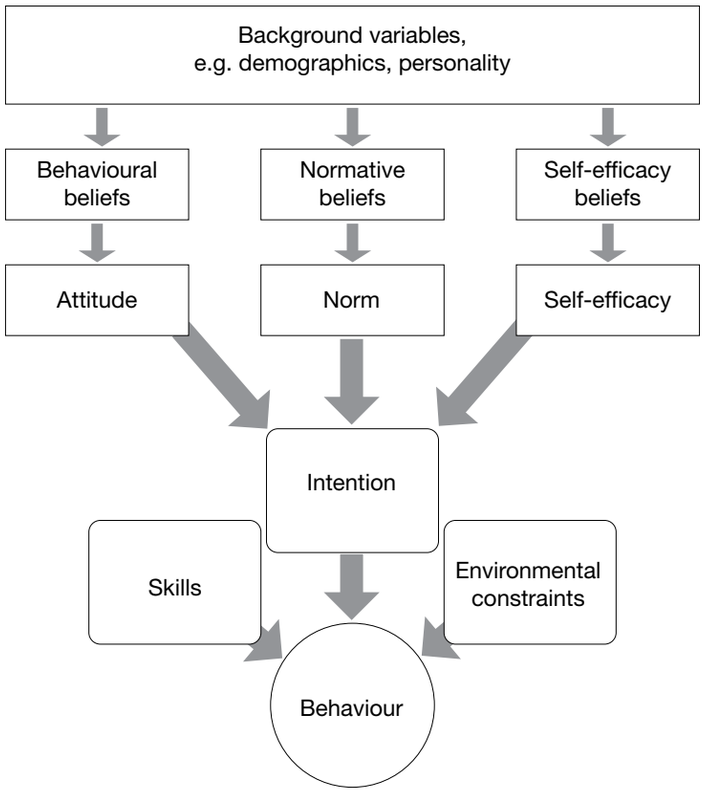

Figure 1 The integrative model of behaviour prediction. Adapted from Fishbein[9]

involved in teaching with medical students and/or residents also suggest that issues of beliefs and identity are relevant to the provision of good clinical teaching.[13–15] For instance, Cleland *et al* found that clinical teachers believed that the act of failing a student was likely to lead to negative outcomes for the student (e.g. excessive loss of confidence) which conflicted with their need to be supportive as part of a caring culture.[14] Supervisors in Audétat *et al*'s study[13] believed that good residents would simply pick-up skills through being immersed in the clinical setting and observing clinicians, thus implying that they could fulfil both their clinical duties and their educational ones through their clinical work. These examples illustrate the potential links between beliefs and identities, both individual (being a clinical teacher as being intertwined with being a clinician) and social (being lenient as being indicative of belonging to a caring culture).

The Cleland *et al* and Audétat *et al* studies both focused on particularly challenging aspects of clinical supervision, i.e. failing students and managing residents with clinical reasoning difficulties.[13,14] Furthermore, their qualitative approaches preclude precise determination of the prevalence of potentially detrimental beliefs. To our knowledge, there have been no studies focusing on the potential link between the overall quality of supervision in general practice and the different viewpoints and multiple identities of supervisors. If interventions focusing on supervisor beliefs are to be attempted, a better understanding of this link would be beneficial.

Research questions

The aim of this study therefore was to examine clinical supervisors' educational beliefs, and estimate the relationship between these beliefs and their self-reported supervisory practice. The research questions were:

1 Can different viewpoints in terms of supervisors' educational beliefs and underlying professional identities be discerned? If so, what is the prevalence of each viewpoint?
2 Are these viewpoints influenced by supervisors' gender, age, clinical experience, and/or educational experience?
3 Is there a relationship between these viewpoints and self-reported supervisory practice?

STUDY DESIGN

Design

A cross-sectional quantitative study was used.

Sampling and recruitment

The study population consisted of general practice residency supervisors affiliated with Université catholique de Louvain. A mandatory workshop to stimulate reflection on their beliefs and practices as supervisors was developed. The workshop was held three times between November 2011 and April 2012. After securing ethics approval, workshop attendees were invited to take part in this study on a voluntary basis, by granting access to the data generated from the materials used within the workshop and providing personal and professional details via a third questionnaire.

Instruments

Personal and professional details

Data were collected on participants' age, gender, length of experience as general practitioners (GPs) and as residency supervisors, and any additional teaching roles.

Self-reported supervisory practice

The Maastricht Clinical Teaching Questionnaire (MCTQ) was chosen to assess this. It is based on cognitive apprenticeship[3] and has been used for external and self-assessment of clinical teachers.[16,17] The short version of the MCTQ[16] with items worded as in the self-assessment version[17] was selected.

The published English version was translated by VD and four items were changed to negatively worded versions to avoid acquiescence, i.e. bias towards consistent agreement.[18] A colleague fluent in both English and French back-translated the questionnaire. Likert scale responses were scored between 1 and 5. Negatively worded items on the MCTQ were reverse scored. The maximum possible total score was $14 \times 5 = 70$. A higher score indicates 'better' self-reported supervisory practice according to the cognitive apprenticeship model. The internal consistency of the questionnaire in this study was alpha = 0.72.

Beliefs regarding supervision

Although existing questionnaires have previously been used in health sciences education[11,19] it was felt that they were more appropriate to classroom teaching than to clinical supervision. Therefore an instrument, based on Q methodology, was designed to capture supervisors' behavioural, normative, and self-efficacy beliefs regarding clinical supervision. There was concern that supervisors' beliefs about supervision would not be sufficiently polarised for subtle yet important differences to be captured by traditional Likert scale items. Furthermore the Audétat *et al* study suggested that supervisors' beliefs might be better represented as viewpoints.[13] Q methodology was developed by Stephenson to explore shared viewpoints.[20,21] Participants are asked to rank (sort) a precompiled list of statements based

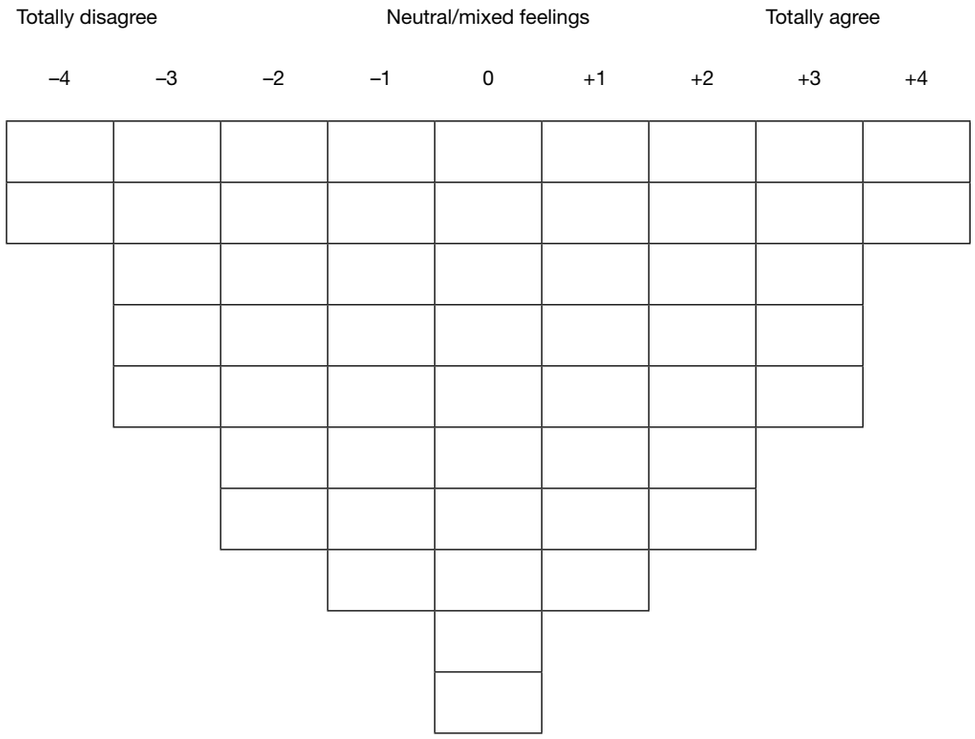

Figure 2 A Q-sort matrix. Each statement should be placed in a box

on their level of agreement. They are forced to use a quasi-normal distribution of ratings (Figure 2). This relative ranking of items can uncover subtle differences in the emphasis individuals place on items for which there may be general agreement or disagreement.

Q methodology uses factor analysis to find clusters of individuals who rank items in a similar way. These ranking patterns are then interpreted using a qualitative approach. Q methodology has been used to study viewpoints in a variety of fields including medical education.[22–27] It combines the strengths of qualitative and quantitative methodologies by using quantitative analyses to support qualitative interpretation of viewpoints.[28]

The first step in Q methodology is to develop a list of statements which should adequately represent the universe of beliefs about the topic at hand.[21]

A blueprint[20,21] was created based on Fishbein's integrative model of behaviour prediction (IMBP)[9] and the two viewpoints uncovered in Audétat *et al*'s study of supervisors managing clinical reasoning difficulties, i.e. residency as an apprenticeship and residency as an educational programme.[13] Actual statements from Audétat *et al*'s focus groups[13] were adapted to ensure that the phrasing of the statements was authentic. Because there were few participants (and therefore statements) with a 'residency as an educational program' viewpoint, two of the authors developed additional items to ensure that the list of statements was balanced.[21] The resulting list contained 54 statements (see Table 3).

Administering the instruments

The personal and professional details questionnaire and the MCTQ were administered in a pencil-and-paper format.

For the Q-sorting exercise, attendees were given an envelope containing 54 pieces of paper, each with a numbered statement, and a sticky board. They sorted the statements on their board. Attendees who wished to take part in the study transcribed the statement numbers on a smaller version of the Q-sort board, which they returned to the investigator with the other questionnaires. The resulting Q-sorts were manually entered in the dedicated software PQMethod version 2.31 for Windows (available at: www.lrz.de/~schmolck/qmethod/downpqwin.htm).

Analyses

Q-sorts were analysed by first conducting centroid factor analysis followed by varimax rotation using the dedicated software PQMethod. Two factors, representing two patterns of statement ranking were extracted. These patterns were synthesised into typical sorting patterns by averaging the rankings of individuals who were significantly associated with each cluster (i.e. who loaded significantly on a single factor).

Each of these two typical Q-sorts was examined individually and then compared looking for similarities and differences in the relative ranking of statements.

Descriptive analyses were computed to estimate viewpoint prevalence (research question 1). Fisher's exact and Mann-Whitney tests were used to compare supervisors with different viewpoints in terms of their gender, age, and clinical and educational experiences (research question 2). Effect sizes were calculated as follows:[29,30]

$$\text{Categorical variables: } \phi = \sqrt{\frac{\chi^2}{N}}$$

$$\text{Continuous variables: } r = \frac{Z}{\sqrt{N}}$$

Self-reported supervisory practice scores were compared across supervisors grouped according to gender, age, educational experience and viewpoint (research question 3) using the Mann-Whitney test (effect size, *r*, calculated as above). The relationship between educational and clinical experience on the one hand and self-reported supervisory practice score on the other was analysed using Spearman correlations.

Statistical analyses were conducted using IBM SPSS Statistics version 19.

RESULTS

Participants

One-hundred and eighty-seven GP supervisors attended the mandatory workshops. One-hundred and sixty-seven (89%) consented to take part in the study. Three participants were registered as clinical supervisors but had yet to be matched with residents. There were missing data for 25 participants. A total of 139 sets of questionnaires were analysed (76% of attendees).

Participant characteristics are reported in Table 1.

One participant failed to answer two items on the MCTQ. Missing responses were replaced by the median response of other study participants. Scores on the MCTQ ranged between 32 and 68 out of a possible 70 (median 55, interquartile range 51–58).

Median supervisory practice scores were not significantly different according to the various personal and professional variables tested (Table 2).

Belief profiles (research question 1)

Factor analysis

By default, PQ method extracts 7 factors which explained 42%, 4%, 3%, 3%, 3%, <1%, <1% of variance, respectively. We selected a two-factor solution which was varimax rotated.

Two Q-sorts (1.4%) failed to load significantly on any factor. Sixty-one Q-sorts (43.9%) were confounded, i.e. they loaded significantly on both factors. Fifty-one Q-sorts (36.7%) loaded significantly on factor 1 and 25 (18.0%) on factor 2. Factor 1 explained 29% of the observed variance and factor 2, 17% (total 46%).

Table 1 Participant characteristics

Characteristics		*n*	%	
Gender	Male	96	69.1	
	Female	40	28.8	
	Missing data	3	2.2	
Age (years)	30–34	1	0.7	
	35–39	9	6.5	
	40–44	21	15.1	
	45–49	20	14.4	
	50–54	38	27.3	
	55–59	26	18.7	
	60–64	14	10.1	
	65+	8	5.8	
	Missing data	2	1.4	
Other teaching roles	Yes	30	21.6	
	No	107	77.0	
	Missing data	2	1.4	
Experience as a GP (years)		Range	3–42	
		Median	25	(interquartile range: 16–30)
Experience as a supervisor (years)		Range	1–30	
		Median	7	(interquartile range: 3–11)

The 'typical' item rankings in both viewpoints are indicated in Table 3. Tables 4 and 5 indicate the most salient statements for each viewpoint.

Interpretation of viewpoint 1: Strong merged identities as clinicians and teachers (numbers in parentheses indicate statement number and typical ranking)

Supervisors with this mind-set are aware of their key role in residents' learning (statement 1: typical ranking 0; statement 15: typical ranking +2; statement 16: typical ranking +2; statement 23: typical ranking –4). While they do not view residents as students (12:–2), they do not view them as fully fledged colleagues either (17:0; 22:–2; 23:–4). They appear to take on their teaching responsibilities proactively. They think it is important to monitor residents' progress regularly (3:+3) and to provide explicit role-modelling (13:+4) and feedback (14:+3).

Table 2 Background variables and self-reported supervisory practice

IQ range = interquartile range

	Supervisory practice							
Personal and professional details	*n*	Median	IQ range	Min	Max	Mann-Whitney *z*	*P*-value	Effect size *r*
Age (years)								
< 50	51	56	53–59	45	68	–1.869	0.062	0.160
50 +	86	54	51–58	32	66			
Gender								
Male	96	55	51–58	32	66	–0.237	0.813	0.020
Female	40	54	51–58	36	68			
Other teaching roles								
Yes	30	57	53–59	42	65	–1.903	0.057	0.163
No	107	54	51–58	32	68			
	n	Spearman's ρ					*P*-value	
Experience as GP (years)	134	–0.144					0.097	
Experience as supervisor (years)	136	0.042					0.626	

Table 3 Typical sorting patterns for each viewpoint

The ranking for each statement is indicated on a scale of –4 (most disagree) to +4 (most agree). Discriminating factors are in bold. Δ: absolute difference between the typical rankings in both viewpoints.

Type of belief		Statements	V1	V2	Δ
			n=51	*n*=25	
Behavioural beliefs	**1**	**The resident's progression depends first and foremost on his/her motivation**	**0**	**4**	**4**
	2	**The more patients a resident sees, the more s/he learns**	**–2**	**2**	**4**
	3	**It's important to check whether a resident meets the expected level of performance at each stage of his/her training**	**3**	**0**	**3**
	4	**Being a good supervisor requires specific educational skills**	**2**	**–1**	**3**
	5	**I have two professional roles: that of clinician and that of supervisor**	**2**	**–1**	**3**
	6	**The most important thing we have to pass on to residents is our experience**	**0**	**3**	**3**
	7	**My teaching role gives me a lot of satisfaction**	**3**	**1**	**2**
	8	**I want my residents to feel good rather than to stress them**	**2**	**4**	**2**
	9	**I see my role as a companion**	**1**	**3**	**2**
	10	**I count on the resident to ask for help if s/he needs it**	**0**	**2**	**2**
	11	**My role is to correct my residents' mistakes**	**0**	**2**	**2**
	12	**I consider my resident as a student**	**–2**	**–4**	**2**
	13	**When you show residents how to do things, it's important to explain how and why you're doing them**	**4**	**3**	**1**
	14	**The best learning comes from receiving relevant and useful feedback**	**3**	**2**	**1**
	15	**It's up to me to actively contribute to my residents' development**	**2**	**1**	**1**
	16	**Residents need direction**	**2**	**1**	**1**
	17	**I consider my resident as a colleague**	**0**	**1**	**1**
	18	**It sometimes takes a lot of work to get a resident on track**	**–1**	**0**	**1**
	19	**The more you are good as a clinician, the more you are a good clinical supervisor**	**–1**	**0**	**1**

Type of belief		Statements	V1	V2	Δ
			n=51	*n*=25	
	20	**I see my role as an older brother/sister**	**–2**	**–3**	**1**
	21	**Having to supervise residents is a burden**	**–2**	**–1**	**1**
	22	**Residents are there first and foremost to take care of patients**	**–2**	**–1**	**1**
	23	**Once in specialised training, most residents don't need us to intervene**	**–4**	**–3**	**1**
	24	Although it's rare for residents to have serious problems, it's common that there is room for improvement	1	1	0
	25	It's up to residents to take charge of their learning	–3	–3	0
	26	It's my job to identify residents' potential difficulties	2	2	0
	27	I see myself as a clinician who shares his/her experience with residents	1	1	0
	28	I see my role as being a guide	0	0	0
	29	Residents develop skills by observing and imitating their supervisors	0	0	0
	30	To learn from their experience, residents need to take time to reflect on their actions	3	3	0
Normative beliefs	**31**	**Treating patients is what is most expected of me**	**–1**	**3**	**4**
	32	**The medical school provides us with training and support in our teaching role**	**0**	**–3**	**3**
	33	**The medical school encourages me to establish a collaborative relationship with my resident**	**0**	**–2**	**2**
	34	**The way I do things as a supervisor is based on the educational recommendations made by the medical school I am affiliated with**	**0**	**–2**	**2**
	35	**We have to organise regular sessions of case discussions with our residents**	**4**	**2**	**2**
	36	**To my knowledge, none of the supervisors I know observe their residents**	**–3**	**04**	**1**
	37	**As a supervisor, I take inspiration from how the supervisors I know do things**	**–1**	**–2**	**1**
	38	**Supervisors usually establish a teacher–learner relationship with their residents**	**–1**	**–2**	**1**
	39	**The medical school recommends that we observe our residents regularly**	**1**	**0**	**1**
	40	**Supervisors usually have an egalitarian relationship with their residents**	**–1**	**0**	**1**
	41	I do with my residents as my own supervisors did with me	–2	–2	0
	42	The medical school expects me to establish a teacher–learner relationship with my resident	–1	–1	0
Self-efficacy beliefs	**43**	**My teaching interventions are the result of structured logic**	**1**	**–2**	**3**
	44	**I play it by ear when I try to help my residents**	**–3**	**0**	**3**
	45	**It's interesting to see the similarities between the clinical reasoning process and the process of educational reasoning**	**1**	**–1**	**2**
	46	**I don't know whether my interventions have any impact on my residents' progression**	**–3**	**–1**	**2**
	47	**I can help a good resident become even better but there's nothing I can do for bad ones**	**–3**	**–1**	**2**
	48	**You sometimes have to be prepared to say difficult things to residents**	**2**	**1**	**1**
	49	**I am convinced that my interventions have an impact on my residents' progression**	**3**	**2**	**1**
	50	**I believe that I am a good supervisor**	**1**	**0**	**1**
	51	**It's difficult to play an educational role while at the same time managing patients**	**–1**	**0**	**1**
	52	**I don't really see what I can bring to my residents**	**–4**	**–3**	**1**
	53	It's obvious that if we don't do anything, residents' difficulties won't get better on their own	1	1	0
	54	I don't know how to deal with potential conflicts with my resident	–2	–2	0

Table 4 Salient statements in viewpoint 1: Strong merged identities as clinicians and teachers (discriminating factors are in bold)

Statements		Ranking
13	**When you show residents how to do things, it's important to explain how and why you're doing them**	4
35	**We have to organise regular sessions of case discussions with our residents**	4
3	**It's important to check whether a resident meets the expected level of performance at each stage of his/her training**	3
7	**My teaching role gives me a lot of satisfaction**	3
14	**The best learning comes from receiving relevant and useful feedback**	3
30	To learn from their experience, residents need to take time to reflect on their actions	3
49	**I am convinced that my interventions have an impact on my residents' progression**	3
25	It's up to residents to take charge of their learning	–3
36	**To my knowledge, none of the supervisors I know observe their residents**	–3
44	**I play it by ear when I try to help my residents**	–3
46	**I don't know whether my interventions have any impact on my residents' progression**	–3
47	**I can help a good resident become even better but there's nothing I can do for bad ones**	–3
23	**Once in specialised training, most residents don't need us to intervene**	–4
52	**I don't really see what I can bring to my residents**	–4

Table 5 Salient statements in viewpoint 2: Hierarchical identities with a pre-eminence of the 'experienced doctor' identity (discriminating factors are in bold)

Statements		Ranking
1	**The resident's progression depends first and foremost on his/her motivation**	4
8	**I want my residents to feel good rather than to stress them**	4
6	**The most important thing we have to pass on to residents is our experience**	3
9	**I see my role as a companion**	3
13	**When you show residents how to do things, it's important to explain how and why you're doing them**	3
30	To learn from their experience, residents need to take time to reflect on their actions	3
31	**Treating patients is what is most expected of me**	3
20	**I see my role as an older brother/sister**	–3
23	**Once in specialised training, most residents don't need us to intervene**	–3
25	It's up to residents to take charge of their learning	–3
32	**The medical school provides us with training and support in our teaching role**	–3
52	**I don't really see what I can bring to my residents**	–3
12	**I consider my resident as a student**	–4
36	**To my knowledge, none of the supervisors I know observe their residents**	–4

They are aware that this role requires specific educational competencies (4:+2; 50:–1) on top of their clinical experience (6:0) and have developed multiple professional identities as clinicians and clinical supervisors (5:+2). How they perceive others' expectations conforms to these multiple identities, i.e. they understand that they have a responsibility towards residents as well as towards patients (31:–1; 35:+4). They are also aware of recommendations from the university (32:0; 34:0; 39:+1). They enjoy their role (7:+3; 21:–2) and have a strong sense of agency as clinical supervisors (46:–3; 47:–3; 49:+3; 50:+1; 51:–1; 52:–4).

Interpretation of viewpoint 2: Hierarchical identities with a pre-eminence of the 'experienced doctor' identity

Supervisors with this mind-set understand that residents still have a lot to learn (23:–3) but they view their own role in this learning as supporting rather than leading (1:+4; 9:+3; 15:+1; 16:+1). They see their role as providing a good environment for residents to learn on-the-job (2:+2; 8:+4) and being available to share their experience if residents come

to them for guidance (6:+3; 10:+2). They see their residents as junior colleagues rather than students (12:–4; 17:+1). They see themselves first and foremost as experienced clinicians whose primary responsibility is towards patients (5:–1; 31:+3). In fact they tie their ability to help residents to their clinical expertise rather than to any educational expertise (4:–1; 19:0). They do not base their supervisory practice on university guidelines (34: –2). They have a stronger sense of the potential challenges of their role and appear less confident in their ability to consistently impact residents' learning (18:0; 21:–1; 46:–1; 47:–1; 49:+2; 50:0). Both groups of supervisors shared some common ground. In particular they both strongly agreed on the importance of reflection (30:+3).

Viewpoints and other variables (research questions 2 and 3)

Having merged identities was significantly associated with having more experience as a supervisor, and to having other teaching roles (Table 6). Other factors were not statistically significant.

DISCUSSION

Main findings in response to the study's research questions

1 Can different viewpoints in terms of supervisors' educational beliefs and underlying professional identities be discerned? If so, what is the prevalence of each viewpoint?

In terms of behavioural beliefs, supervisors agreed on the importance of reflection in experiential learning but differed in their conceptions of their own role in residents' learning. One group of participants (hierarchical identities) saw supervision as primarily about sharing their experience, whereas the other (strong merged identities) understood supervision as a systematic endeavour, involving regular monitoring of performance and explicit coaching. The former conception is similar to a traditional apprenticeship view of residency whereas the latter is more consistent with a cognitive apprenticeship model. Our holistic exploration of beliefs indicates that these behavioural beliefs are intertwined with normative and self-efficacy beliefs. The two groups of supervisors differed in their endorsement of directives from the medical school. Supervisors with strong merged identities placed more emphasis on their duties as supervisors and also felt more confident in carrying them out to good effect. Moreover these patterns reveal different ways of 'being' a supervisor. Acting as a supervisor adds a new professional identity to one that has developed over many years, i.e. being a doctor,[31] and individuals may negotiate such multiple identities in different ways.[32]

Contrary to Audétat *et al*'s study,[13] we found few supervisors with hierarchical identities (fewer than 20%). This may be due to a difference in focus of the two studies: Audétat *et al* examined supervisors' views in relation to managing residents with clinical reasoning difficulties, a particularly challenging area of supervision where supervisors may have felt overwhelmed by the task of managing these struggling residents.[13,33]

Finally, the fact that many participants were 'confounded' (i.e. they loaded on both factors) confirms our intuition that supervisors' viewpoints are not polarised and share many commonalities. Stenfors-Hayes *et al* similarly found that medical and dental teachers' shared a core conception of development as a teacher involving content expertise, with some teachers adding a layer of pedagogical expertise.[34]

2 Are these viewpoints influenced by supervisors' gender, age, clinical experience, and/or educational experience?

Supervisors with more supervisory experience and those who had additional teaching activities (e.g. lecturing in a school of nursing or facilitating case-discussion groups for residents) were more likely to have merged identities. This previously described link between a strong identity as a teacher and educational experience[35] could indicate a greater interest for teaching, or a *process* of identity formation that takes place with more educational experience.

3 Is there a relationship between these viewpoints and self-reported supervisory practice?

The difference between the self-reported levels of supervision provided by the two groups of supervisors did not quite reach statistical significance. In view of the relatively small number of participants who fell into the two clear-cut groups (particularly the group with hierarchical identities), this could indicate a Type II error.

Strengths and limitations

This was a cross-sectional study of GP supervisors at one institution. Recruitment was conducted at mandatory workshops, ensuring good access to our target population. Furthermore, the participation rate was high. However, caution is advised in generalising these findings, particularly in terms of the actual prevalence of each viewpoint, to supervisors in other specialties and other countries where the prevailing culture of clinical teaching may be different.

Table 6 Viewpoints and other variables (statistically significant results are indicated by*)

	Factor 1 (*n*=51)		Factor 2 (*n*=25)		Test, statistic and effect size	*P*-value
	n (%)	Descriptive statistics	*n* (%)	Descriptive statistics		
Age (years)					Fisher's exact test	0.615
<50	20 (40)		8 (32)		χ^2=0.456	
50+	30 (60)		17 (68)		ϕ=0.078	
Gender					Fisher's exact test	1
Male	35 (70)		18 (72)		χ^2=0.032	
Female	15 (30)		7 (28)		ϕ=0.021	
Other teaching roles					Fisher's exact test	0.024*
Yes	16 (32)		2 (8)		χ^2=5.263	
No	34 (68)		23 (92)		ϕ=0.265	
Experience as GP (years)					Mann-Whitney	0.153
Median		22		28	z=–1.427	
Interquartile range		15–29		16–33	r=0.168	
Minimum		3		4		
Maximum		40		40		
Experience as supervisor (years)					Mann-Whitney	0.013*
Median		8		4	*z*=–2.497	
Interquartile range		4–13		1–8	*r*=0.290	
Minimum		1		1		
Maximum		30		17		
Practice (MCTQ score out of a possible 70)					Mann-Whitney	0.053
Median		56		54	*z*=–1.934	
Interquartile range		52–59		49–57	*r*=0.222	
Minimum		32		36		
Maximum		66		68		

Nevertheless, in view of their consistency with other studies in a variety of settings, their thrust in terms of the ways supervisors manage their identities and how these are linked to a variety of underlying beliefs is likely to illuminate our understanding of supervisory practices whatever the cultural setting.

The findings are also constrained by the theoretical approach. The conception of multiple identities stems from a constructivist perspective where individuals develop an internal sense of identity, even if external sources such as collective norms influence this personal construct of self. Socio-constructionist perspectives view identities as being more context-dependent and performed through social interactions rather than existing as cognitive schemas.[36]

Another limitation of the study is the use of a self-reported measure of supervisory practice. It was not possible to use resident assessments of their supervisors because in this setting, each supervisor is matched with a single resident for one year which would lead to unreliable ratings.[16] Observations would have been much less feasible on this scale and possibly less acceptable to supervisors. Furthermore, this is, to the authors' knowledge, the first time that the survey was used in French. The survey was developed in Dutch. The published English version was used to translate and backtranslate but the resultant survey was used without piloting it.

Using Q-methodology allowed the authors to examine and categorise the educational beliefs of supervisors into viewpoints on a larger scale than qualitative explorations of the topic.[13,14] Items were developed from both theory (the IMBP) and previous empirical data[13] which builds confidence in the relevance and breadth of coverage of beliefs provided by the statement sample.[20,21]

Educational implications

Although tentative, the findings suggest that having a strong sense of one's role and ability as a clinical teacher may be associated with better self-reported supervisory practice. There have been several calls for research and practice in faculty development to focus on the process of identity formation.[37] There is some empirical evidence that despite increased training for clinical supervisors, practice remains patchy,[6–8,12–14] suggesting a need for something different. Qualitative evidence suggests that teaching identity and beliefs about teaching are associated with the quality of teaching practice.[13–15] In higher education, one small study found a positive impact of a faculty development initiative aimed at changing teachers' conceptions of teaching on teaching practice.[38]

In higher education generally, faculty development designed to change beliefs has used reflective writing, peer discussion, and creating metaphors of teaching.[38–40] Reflection is also thought to be key in identity formation.[32] In the workshops, the Q-sort activity triggered animated discussions about the role of supervisors in residents' learning. These discussions within peer groups may influence behavioural, normative, and self-efficacy beliefs, and ultimately foster a sense of belonging to a teaching-oriented professional group.

Suggestions for further research

Further research should be conducted on how clinical teachers manage their complex professional identities as doctors and teachers, how their multiple identities change over time, and how they impact their practice. These questions require programmes of research using a variety of methods[32] and a pragmatic research methodology.[41] Longitudinal studies are needed to robustly establish the developmental process of identity formation for clinical supervisors. These could include qualitative studies using methods such as audio-diaries,[31] repeated interviews and longitudinal observations. The role of faculty development interventions on participants' beliefs and identities should also be examined, as should their potential impact on supervisory practice. Studies could triangulate qualitative data (e.g. from interviews and/or observation) with quantitative data (e.g. from questionnaires). While there are challenges in terms of study design and implementation, the potential of this line of research is significant, so should not be ignored.

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Competing interests

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Ethical approval

Researchers were not directly involved in residency education at Université catholique de Louvain. Although programme directors took part in the workshops, we ensured that they were not aware of which attendees took part in the study. Because the study was conducted as part of VD's Master in Medical Education at University of Dundee, we secured ethical approval from the University of Dundee's ethics committee (UREC 11080) as well as from Université catholique de Louvain's biomedical ethics committee (B403201112283).

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