Using Q methodology to investigate pre-service EFL teachers' mindsets about teaching competences

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Abstract
This paper reports on a study investigating the mindsets of 51 pre-service teachers at an Austrian university using Q methodology. Despite the recent growth in interest in the concept of mindsets, little research has addressed the mindsets of teachers – most of it focusing on the mindsets of learners – and the research that does investigate teachers tends to focus on beliefs about learning or intelligence. This study offers a new perspective by focusing on teachers' beliefs about their own teaching competences. A further aim of the study is to expand the methodological repertoire in language education researchers. This study considers the potential of Q methodology, a research approach used widely in social sciences and education, but, as yet, rare in this field. The data indicate that the most common mindset among the pre-service teachers is one based around a strong belief in the learnability of the more technical aspects of teaching, while interpersonal skills tend to be regarded as more of a natural talent fixed within the individual. One practical implication of this finding is that teacher education programmes may need to pay more attention to explicitly developing the interpersonal side of

teaching. A further finding was that teacher mindsets are constructed through individuals' management of various sets of implicit theories and tend not to conform to the established dichotomous model of mindsets.

Keywords: mindsets; Q methodology; pre-service teachers; EFL teachers; teacher beliefs

1. Introduction

The concept of mindsets has received considerable attention in education in recent years. What is notable about this attention is that discussions of, and interest in, mindsets have broken out of the narrow confines of academic inquiry to reach a broader, popular audience. The scale of this interest is reflected in Kohn's (2015) observation that the concept of mindsets "has approached the status of a cultural meme and is repeated with uncritical enthusiasm by educators and a growing number of parents." In this paper, we examine the concept of mindsets, at times with a critical eye, and consider its role in foreign language education. We hope to contribute to a small but growing body of research investigating mindsets in foreign language education and specifically teacher mindsets. We aim to do so by offering a fresh perspective investigating pre-service English as a Foreign Language (EFL) teachers and their views about the learnability of various core teaching competences.

A parallel concern running through our study is a methodological one. The psychological dimension of language education has become a key area of interest (Dörnyei & Ryan 2015; MacIntyre, Gregersen, & Mercer, 2016; Swain, 2013; Williams, Mercer, & Ryan, 2015) and with this, there has also been a broadening of the field in methodological terms moving away from the traditional quantitative paradigm inspired by an individual differences approach (Dörnyei & Ryan, 2015). One contributory factor to the diversification of methodological approaches in the field stems from recent thinking about the psychology of language learning, which eschews linear, cause-effect relationships in favour of more complex, dynamic explanations (Atkinson, 2011; Dörnyei, MacIntyre, & Henry, 2015; Gkonou, Tatzl, & Mercer, 2016). In our study, we turn to Q methodology to explore the perceptions of pre-service language teachers in the hope that it may generate insights, which are in turn more nuanced and complex than would be the case with other approaches. At the same time, we hope that drawing attention to this particular methodological approach can also contribute to the expansion of the methodological repertoire available to researchers in the field of foreign language education, in particular, in psychology of language learning.

2. What are mindsets?

The term mindsets is a recent articulation of the longstanding interest within psychology in the impact of people's everyday beliefs on how they think and act. An early example of this interest was Kelly's (1955) influential concept of personal constructs. Kelly examined how everyday beliefs shaped perceptions of the self and of others, and this line of inquiry was subsequently pursued within educational psychology through the work of Carol Dweck and numerous colleagues (Blackwell, Trzesniewski, & Dweck, 2007; Chiu, Hong, & Dweck, 1997; Dweck, 2000, 2012; Dweck, Chiu, & Hong, 1995; Dweck & Molden, 2005). Much of this work has revolved around the concept of implicit theories and how they affect approaches to learning. Implicit theories represent deeply held beliefs that people often find difficult to explain and, at times, may not even be aware of. In respect to learning and intelligence, two types of implicit theories were identified by Dweck (1999), entity theories and incremental theories. Individuals holding an entity theory view intelligence as a fixed, determined quantity within individuals, while those holding an incremental theory regard it as malleable in the sense that it can be developed and nurtured through effort.

In a highly influential paper (Dweck et al., 1995), these two sets of implicit theories were referred to as "a world from two perspectives." This description powerfully captures the magnitude of implicit theories and how they can shape our whole world view, but in another sense, it is a somewhat unhelpful portrayal in that it suggests a harsh dichotomy. Fortunately, more recent research into mindsets is moving away from simplistic dichotomous models. Nevertheless, some of language employed when describing newer, more complex conceptualizations of mindsets, can still imply a dichotomy; for example, Burnette, O'Boyle, VanEpps, Pollack, and Finkel (2012, p. 659) in an authoritative review of the field refer to "beliefs about the malleable versus fixed nature of human ability."

Perhaps the roots of the dichotomous approach can be partially explained by some of the methods initially employed to research implicit beliefs. Early studies (Dweck et al., 1995; Dweck & Leggett, 1988) were based around self-report questionnaire instruments that were analysed by excluding those participants who scored neutrally on the scales, in other words, those not strongly subscribing to either set of theories. Although this excluded only 15% of the population, in effect, these methods and instruments assumed and looked for a dichotomy. However, it is fair to say that much of the early academic interest in implicit theories, and certainly the subsequent popular acclaim for the concept of mindsets, has come from the intuitive appeal of a clearly defined dichotomy. In this study, we aim to examine this apparent dichotomy and consider how useful it is to frame mindsets in such a way. We would like to explore some of the

nuances between the two extreme viewpoints, to reintegrate the lost 15%, and to think about whether it is possible to do so without losing the power and intuitive appeal of the original model.

At this point, we should take care not to misrepresent Dweck's work and imply that she offers nothing more than a simplistic dichotomy. One of the most intriguing findings of the implicit theories research has been that people tend not to subscribe to a single overarching global set of implicit theories, but they hold independent theories for different domains. For example, it is entirely plausible for somebody to hold strong entity theories relating to athletic ability, essentially believing that some people are naturally more athletically gifted than others and success in athletic pursuits is dependent on these natural gifts, while subscribing to strong incremental theories in the area of, say, personal morality, believing that even the most evil people are capable of change if they make the effort. According to Dweck et al. (1995),

> . . . people need not have one sweeping theory that cuts across all human attributes. Indeed, our research shows that although some people do have one very generalized theory, others have different theories of different attributes. (p. 269)

From an educational perspective, this means that people may hold one set of theories in one academic domain, say science, and a different set in another, for example learning foreign languages. It is even possible that these theories may differ at the sub-domain level, so it is conceivable that someone could be an entity theorist when it comes to learning to speak in a foreign language, but an incremental theorist regarding learning to read that language (Mercer & Ryan, 2010).

Since the publication of the highly successful book, *Mindsets* (Dweck, 2006), the term 'implicit theories' has been overtaken by the more accessible term 'mindsets' (Burnette et al., 2012). In our view, this is a welcome development representing something more substantial than a mere superficial terminological makeover. The term 'mindsets' seems to be more intuitively appealing to a non-academic audience, better capturing the powerful, all-encompassing nature of mindsets and how deeply held beliefs interact other aspects of our psychology. Within the mindsets framework, a fixed mindset corresponds to an entity theory, while a growth mindset equates to an incremental theory.

The importance of mindsets for academic success has been evinced in a multitude of studies which have found mindsets to be connected to many other key psychological concepts, such as self-regulation (Kray & Haselhuhn, 2007; Nussbaum & Dweck, 2008), persistence (Yeager & Dweck, 2012), as well as goal orientations, and learning strategies (Dweck, 2012; Dweck & Molden, 2005). Robins and Pals (2002) propose that the interconnections between these variables

suggest that mindsets might be best thought of as an overall framework of interconnected beliefs and self-regulatory processes. It is this central, connecting role that makes mindsets so exciting to investigate at a time when researchers are looking for ways to understand how various aspects of psychology work together, as opposed to the more familiar tendency to isolate individual aspects of psychology and measure them in isolation.

3. Mindsets in foreign language learning

The most influential research into mindsets has taken place in domains where natural ability is believed to play a big part in successful outcomes, such as sport and music (Ommundsen, 2003; Scripp, 2013), or in academic fields that are believed to require some form of brilliance or genius (Leslie, Cimpian, Meyer, & Freeland, 2015). However, as we briefly mentioned in our introduction, there is a growing body of work looking at mindsets in foreign language learning (Lou & Noels, 2016; Mercer & Ryan, 2010; Ryan & Mercer, 2012). Given the widespread belief in some form of natural aptitude or "gift" for languages, it is somewhat surprising that research in this area has been slow to take off. Nevertheless, it was this split between language learning success as a product of innate talent or the result of sustained, purposeful effort that inspired the first, slightly simplistic, accounts of language learning mindsets. Subsequent research found the picture to be more complex, and more interesting, involving other factors, such as the nature of language learning (are languages consciously 'learned' or naturally 'picked up'?), the site of language learning (are languages better learned in classrooms or acquired in naturalistic settings without formal study?), and personality (are some personalities better suited to learning languages than others?), and if so is personality something that can be consciously changed? In the latest, most ambitious research into mindsets in foreign language learning, Lou and Noels (2017) explore the connections between mindsets and goals but, most importantly, they introduce an exciting, sophisticated research tool entitled *Language Mindsets Inventory* (LMI), which promises to make a strong contribution to the field. However, one feature that all of the research into language learning mindsets to date shares is, quite understandably, a focus on the mindsets of language learners. It is our belief that the time is now right to expand that agenda in order to provide a more complete picture by switching our attention to the mindsets of language teachers.

In education more broadly, in comparison to the vast body of work on learner mindsets, there has been relatively little research about teacher mindsets. Typically, the studies that do exist most often look at teachers' mindsets about their learners' subject abilities or intelligence more generally (e.g., Gutshall,

2013; Jones, Bryant, Snyder, & Malone, 2012; Jonsson, Beach, Korp, & Erlandson, 2012; Leroy, Bressoux, Sarrazin, & Trouilloud, 2007; Lynott & Woolfolk, 1994; Pretzlik, Olsson, Nabuco, & Cruz, 2003). In some rare instances, they may examine teachers' mindset about their own subject competence (Asbury, Klassen, Bowyer-Crane, Kyriacou, & Nash, 2016) or look at, for example, how their mindsets affect the kind of feedback, praise or comfort they offer their students (Rattan, Good, & Dweck, 2012). However, to the best of our knowledge, there seem to be virtually no studies examining teacher mindsets about the competences of being a teacher. Given popular discourse about 'natural-born' teachers, we might suspect that teaching competences are also a domain susceptible to more fixed mindsets. Referring to a thesis by Gero (2013), Dweck (2014) explains the potentially central role played by pre-service teachers' mindsets about teaching. Gero's study examined teachers' mindsets about whether they believed that teaching was simply a deep-seated natural ability or it was more an ability that could be improved over time. Looking at how their beliefs combined with their practices, his findings were similar to those in the area of learning, in that he too found teachers with fixed mindsets less willing to take risks in their teaching and less likely to tackle problems head on. Dweck reflects on the implications for pre-service teachers and concludes that if they hold a fixed mindset, then difficulties in their training and challenges in their praxis experiences can threaten their sense of self, leading them to give up and drop out. In other words, they may conclude they are not 'natural-born' teachers and therefore not suited to the profession after all. Clearly, the potential implications for teacher education programmes are considerable.

4. Researching mindsets

Researching people's beliefs is beset with challenges. Self-report instruments risk requiring participants to make judgements on matters that may not be of any interest or relevance to them, and possibly ignoring other issues that may be of great significance. By nature of their construction, participants' beliefs as expressed through questionnaire data largely reflect the understandings and interests of the researcher who designed the instrument. To overcome some of these limitations, qualitative research approaches have been adopted (see Barcelos & Kalaja, 2011; Kalaja, Barcelos, Aro, & Ruohotie-Lyhty, 2015), although here too there are potential challenges for researchers in terms of the quality of the data, interpretation and boundaries of data collection. A particular problem in respect to mindsets is that people are often not aware of or find it difficult to articulate these deeply rooted beliefs. As such in a qualitative study, there is a strong possibility that the data obtained from participants may have serious omissions preventing any meaningful evaluation of the individual's mindsets.

The challenge therefore facing mindset researchers is how can we ask people in a systematic and principled way about things they may struggle to articulate without spoon-feeding them a narrow range of fixed beliefs? Our partial solution to this has been to turn to Q methodology, ultimately a qualitative approach, but one that bears many of the traits of quantitative research. A particular appeal of the Q approach is that it allows participants to express their views in a way that does not impose a dichotomy and explores how different views relate to each other within an individual. In our view, this makes it an ideal tool for investigating mindsets in a nuanced way.

5. Q methodology

Q methodology is a research approach used in psychology and health studies, among others, and is designed to explore and explain the subjective viewpoints of a group of people in a specific context. Its use within education and educational psychology is growing and it has been used to investigate the beliefs of teachers (Rimm-Kaufman, Storm, Sawyer, Pianta, & LaParo, 2006), the focus of our study. So far, its use in foreign language education studies has been limited but there are signs of a burgeoning interest (Collins & Angelova, 2015; Irie, 2014; Irie & Ryan, 2015; Mäntysaari, 2013; Pemberton & Cooker, 2012). One of the problems inherent in writing up a Q study for a language education audience is that, at present, a considerable amount of space is required to explain the assumptions and techniques involved; some of the fundamental principles of Q can seem counter-intuitive to people more familiar with conventional research approaches. Since space is limited, we will avoid an overly detailed description (for brief accounts, see Irie & Ryan, 2015) and confine our discussion to an outline of some of the principal features of a Q study and their relevance to our current research. (Limited space is also a major factor in our decision to restrict the current discussion to an interpretation of the numerical data obtained from our study, reluctantly leaving out in this paper the potentially rich but space-consuming interview data associated with a Q study.)

The term Q is used in contrast to R, which represents the conventional, more familiar form of correlational analysis that identifies general tendencies within a population by averaging out differences that exist between specific individuals. Instead, Q switches focus to the whole person and the feelings or views they have on a given topic, without attempting to break that individual down into a set of variables. The distinguishing features of Q research are: 1) data collection based on an activity that requires participants to sort items according to some subjective criterion; 2) statistical analysis of the data based on a by-person factor analysis technique; 3) a qualitative interpretation of that data

through a narrative account of each factor found in the analysis at the second stage. For us, the initial attraction of Q is that it is "primarily an exploratory technique" (Watts & Stenner, 2005, p. 89) that allows for an active, interpretative role on the part of the researchers and, in our view, this active interpretative role is essential for investigating mindsets and understand the complexities of participants' psychology.

When investigating mindsets, we are essentially asking participants to express their views on something they may not be fully aware of and perhaps have not consciously considered in much detail. This suggests that researchers need to find a way to first heighten participants' awareness of some of the issues under investigation and, second, to provide the opportunity to think about these issues at length. Q offers both of these. The success of a Q study is largely dependent on the set of items being sorted. This usually means a collection of statements that covers the topic under investigation as widely as possible, and this almost invariably means including statements from sources other than representative of the participants. A further advantage of a Q approach is that it enables participants to think about and make sense of these statements as they proceed with the activity. In sorting a set of statements, they are required to think about those statements and the degree to which the statements resonate with them; throughout the sorting activity, they have the opportunity to change their minds and move things around in relation to the other statements. In fact, it is not unusual to observe participants move items around to places completely different to where they initially placed them, the equivalent to switching from 'Strongly agree' to 'Strongly disagree' in a Likert-type scale, something very rare in a questionnaire study but unremarkable in a Q project. In fact, one of our key motives for adopting a Q approach was the belief that Q offers something concrete back to participants. In our case, we believe it gave the pre-service teachers a valuable opportunity to think about themselves, their learning and their teaching in a productive manner.

6. The study

6.1. Participants

51 pre-service teachers at an Austrian university were asked to sort the Q statements in March, 2016. The mean age of the participants was 21.4 years of age, ranging between 19 and 32 with a standard deviation of 2.66. Thirty-four of the participants were female, 15 were male, while two did not provide gender information. This gender distribution is typical for the students studying to become EFL teachers in this setting.

6.2. Method

The central component of a Q study is the collection of data in the form of a sorting activity. Participants are required to sort a collection of items, usually statements relating to the topic under investigation, according to some subjective criterion such as "agree/disagree." In most Q studies, participants are forced to sort these statements according to a set pattern determined by a sorting grid (see Figure 1). This forced choice aspect of a Q study can be difficult for both participants and readers to understand as it can appear to be coercing participants to say things they do not wish to say. In a Likert-type questionnaire, it is possible – and very common – for a participant to respond in a neutral way to every item on the question but a Q study does not allow this. This is because in a Q study, we are not looking at responses to individual items but at the whole picture which emerges, taking into account the connections and relations between the statements being sorted.

In the current study, the final set of statements was constructed by first referring to a collection of narrative accounts on the topic of what makes a good language teacher written by pre-service language teachers from the same population although not the same students who sorted the Q statements. The idea behind this approach is that it would elicit a wide range of views common to the discourse of the population under investigation. The data obtained from these narratives were then supplemented by reference to the academic literature and popular texts, such as newspaper articles, on what makes a good teacher generally. The aim at this stage is to build as wide a coverage as possible of the discourse relating to the topic under investigation. An initial set of 140 items was compiled and this pool was then examined for repetition, relevance and overall coverage by a panel of five experts in the field. This process reduced the initial set to 58 items, which were then employed in an extensive pilot study conducted with a purposive sample of pre-service language teachers judged likely to offer strong opinions. After piloting, two statements, which were found not to make sense, were eliminated from the initial set, leaving a total of 56 and the pilot also study proved invaluable as a means of refining and adjusting the final presentation of the Q sort in several other respects.

The pilot study was based around the following condition of instruction:

> Here is a set of statements about what makes a good language teacher. Please rate these statements according to whether you think this is something you can learn and develop, or something you think that cannot be learned but rather something more innate. Those qualities/characteristics you think can be developed should be rated 0-5 (Learnable). Those you feel are innate and cannot be learned should be given 0-5 (Not learnable).

However, follow-up interviews revealed that our initial approach was problematic in that it was asking sorters to make two separate judgements: one regarding the learnability of the statements and a second one concerning the value or importance attached to the statement, whether this was something a "good language teacher" would do. So, for example, if we pick a statement at random – Good language teachers are confident – the condition of instruction used in the pilot study was simultaneously asking whether confidence is a quality that could be learned and if it was something desirable or essential for being a language teacher. In response to the interview feedback, we rephrased the statements in order to eliminate any reference to "good teachers" so as to allow participants to focus solely on the issue of learnability. Shifting to the term "learnable" was a strategic decision. Although Dweck's original conceptualization refers to malleability, in our judgement "learnable" represented an adequate synonym for "malleable" in this context, given the practical demands of designing the research instrument – in English – for participants for whom English was not a first language. Data from the pilot interviews supported our view that participants were interpreting the term "learnable" in a way consistent with our research aims.

A further significant revision prompted by the pilot study related to the final presentation of the Q-sort grid. In the pilot study, each column on the grid was headed by a numerical value, ranging from 5 (learnable) to -5 (innate), with 0 as a neutral middle value. The follow-up interviews revealed that sorters felt the positive and negative numerical values, in combination with the neutral 0, were forcing them into a stark dichotomous choice; for example, going back to the earlier confidence statement, placing the statement in the column headed by -5 was a clear expression that this was something not learnable, as opposed to being less learnable than other items in the set. This was a key discovery, leading to a major improvement in the research design.

This can also be problematic in the interpretation of a Q study, so it is worth spending a little time explaining this change. Our remedy was to remove all numerical values from the grid, placing the term "learnable" at the centre of the heading, and placing the choices on a continuum of "most likely" to be learnable and "least likely" to be learnable to the right and left of the grid (see Figure 1). Removing the numerical values reduced the sense of being forced into a false dichotomy on the part of participants. It is possible for people to believe that everything is learnable, but even in such a case they are unlikely to be considered learnable to the same degree; some things are easier to learn than others and Q explores how these views relate to each other. For people used to conventional Likert-type questionnaires – both participants and readers of articles – it is easy to assume that statements placed to the left of the grid represent a belief that something is not learnable while something to the right is learnable.

This is not the case at all; the position of the card on the grid represents its learnability in relation other cards in the view of the participant. The changes in the research design were reinforced by a revision to the condition of instruction:

> Please arrange the statements on the cards according to how likely you believe trainee teachers would be able to learn them. When you feel that the statement on a card describes something that is likely to be learnable, place the card on the right side of the grid. You should place those that you feel are most likely to be learnable at the far right gradually moving towards the left with statements you believe are less likely to be learnable.
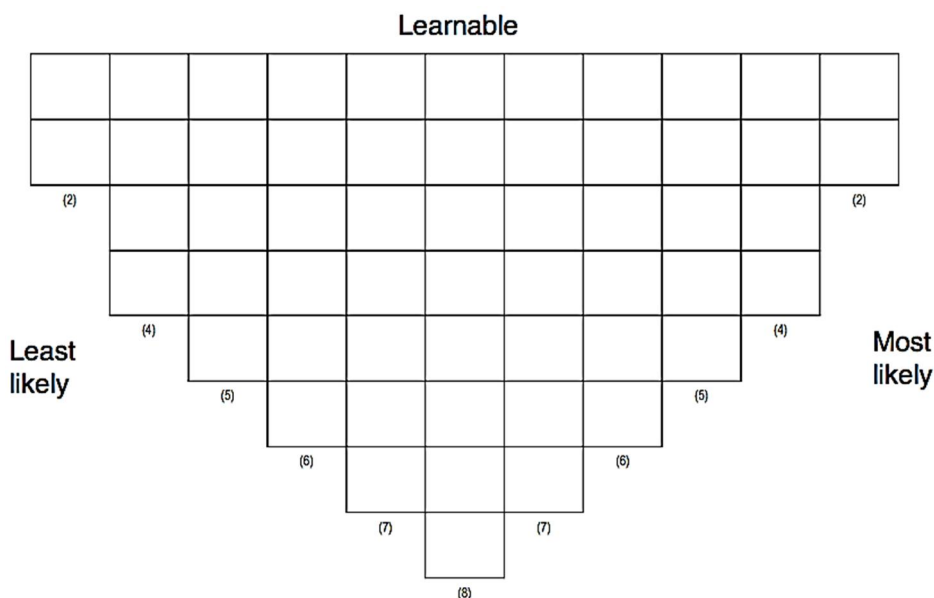
Learnable

Least likely   Most likely

Figure 1 The final Q-sort grid

6.3. Data analysis

In order to identify patterns of shared viewpoints, each of the 51 Q sorts were converted into numerical form with each item given ranking values ranging from -5 to +5 according to the forced distribution pattern shown in Figure 1. As discussed earlier, forced distribution is the element of a Q study that requires participants to sort the statements according to a predetermined pattern. Even if this pattern is not immediately appealing to participants, the act of accommodating their thoughts to the predetermined pattern requires them to think carefully about how the items relate to each other, and not just look at each item in isolation. The ranking values, shown in Table 1 range from 5, the extreme right of the grid shown in Figure 1 and expressing a view that the statement is most likely to be learnable, to -5, the left side of the grid

and expressing the view that the statement is least likely to be learnable. It should be reiterated that these numerical values were not available to the participants at the time of the sort but were applied at a later stage solely for the purposes of statistical analysis. The numerical data of Q sorts were intercorrelated and subjected to a by-person factor analysis using the PQMethod dedicated software package (Schmolck, 2014). The factor analysis revealed three key factors, which were rotated and accounted for the total of 57% of the variance, with 50 out of the 51 sorts loading significantly on at least one of the factors at $p < .01$ level, with loadings in excess of +/- .34. We chose the three-factor solution not solely based on eigenvalues (above 1.00), the volume of the variance, but also on the number of sorts covered.

Table 1 Forced-choice frequency distribution

Ranking value	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Number of items	2	4	5	6	7	8	7	6	5	4	2

6.4. Results

Table 2 shows *z*-scores which were calculated for each statement using the average of all the individual Q sorts that loaded significantly and exclusively on that factor. Since not all of these Q sorts contribute equally to define the factor, the technique of weighted average is used (see Brown, 1980 for details). This score lets us compare how each statement is valued across the factors. For example, *z*-scores of Statement 4 are -2.08 for Factor 1, 1.04 for Factor 2, and 1.90 for Factor 3. This means that those who loaded significantly on Factor 1 feel that being warm-hearted with learners is much less learnable or difficult to learn than those who share the views that emerged in Factor 2 and 3 do.

Table 2 *Z*-score for each statement

No	Statement	F1	F2	F3
1	Being enthusiastic about teaching.	1.00	1.00	-0.38
2	Acting as a mentor to learners.	1.42	-0.68	1.52
3	Being confident in a classroom.	-0.42	0.65	-0.76
4	Being warm-hearted with learners.	-2.08	1.04	1.90
5	Creating useful handouts for one's learners.	-0.73	-0.77	0.38
6	Having a good sense of humour in class.	0.82	-1.28	1.52
7	Creating good student-teacher-relationships.	1.90	0.90	1.52
8	Having clear objectives for each lesson.	1.57	0.21	1.52
9	Assigning effective homework.	1.15	0.39	-1.14
10	Serving as an inspiration for one's learners.	-1.70	0.76	1.14
11	Explaining language in more than one way.	-0.85	1.41	0.38
12	Engaging actively with the professional literature.	-0.45	0.38	-0.38
13	Having a deep love of the language.	0.13	-0.99	0.00

14	Helping one's learners to love the subject.	-0.55	1.13	0.76
15	Being flexible in one's teaching.	-0.36	2.15	0.38
16	Remembering the names of learners.	-2.11	-0.03	1.14
17	Providing challenge for one's learners.	1.44	1.26	0.76
18	Being patient with learners.	-1.21	-1.63	0.38
19	Monitoring learners' progress effectively.	-0.20	0.26	-1.14
20	Reflecting on one's own teaching.	-0.61	-1.42	0.38
21	Using the target language throughout the lesson.	-1.92	0.67	1.90
22	Focusing on practising speaking skills.	0.32	0.21	-1.14
23	Giving constructive feedback.	0.62	0.15	0.00
24	Encouraging learners to speak without worrying about mistakes.	0.47	-0.99	-1.52
25	Smiling in the classroom.	1.00	0.21	0.00
26	Having good classroom management skills.	1.00	0.32	-1.52
27	Promoting critical thinking skills in one's learners.	-0.96	-2.02	-0.76
28	Praising learners appropriately.	-0.85	1.61	0.76
29	Staying in control of one's emotions in the classroom.	0.62	-0.66	-0.38
30	Being well organized in one's professional work.	1.11	-0.90	-1.52
31	Understanding individual learners' needs.	-1.51	1.77	0.76
32	Loving one's job.	0.19	0.61	-1.90
33	Caring about one's learners.	-0.54	-0.87	-0.38
34	Being aware of different learning styles.	-0.08	-0.43	0.00
35	Being kind to learners.	-0.32	-1.62	0.76
36	Having good pronunciation.	1.54	0.98	-1.52
37	Having an understanding of the details of language and grammar.	0.51	-1.49	0.38
38	Serving as positive role models.	-0.11	1.13	0.00
39	Being highly proficient in the target language.	-0.47	0.44	-0.38
40	Treating all learners equally.	0.54	-0.72	-1.14
41	Finding the right balance between being strict and friendly.	-0.24	-0.30	0.00
42	Developing materials to supplement the textbook.	0.96	1.94	0.76
43	Providing an insight into the target language culture.	1.22	-0.46	-1.90
44	Being approachable for learners.	-1.48	-0.09	1.14
45	Taking learners' concerns seriously.	-1.43	1.41	1.14
46	Being able to focus on meaning rather than grammatical form.	-0.31	-0.75	0.00
47	Expressing clearly what one expects from one's learners.	-0.83	0.16	-0.76
48	Being able to control one's classes.	0.58	-0.98	1.14
49	Having a passion for teaching.	0.68	-0.30	-0.76
50	Creating an entertaining atmosphere to carry out class activities.	-0.50	-0.37	-0.76
51	Being on time for classes.	1.03	-0.29	0.00
52	Designing entertaining classroom activities.	0.47	-1.26	-0.76
53	Being imaginative in one's teaching.	0.15	0.15	-1.14
54	Motivating one's learners.	0.80	-0.45	0.38
55	Encouraging one's learners to use their skills beyond the classroom.	0.02	-0.60	-0.38
56	Persevering with weaker learners.	-0.47	-0.98	-0.38
Eigenvalues		24.98	2.47	1.62
Variance explained		49%	5%	3%

6.5. Interpreting the factors

Now we will describe and explain these three factors in a way that transforms the raw numerical data into recognizable individuals. To prepare the results of

the factor analysis for interpretation, the statements were also rank-ordered according to the z-scores from the most learnable (+5) to least learnable (-5) within each factor and to fit the distribution used in the Q-sort grid (Table 1). This step transforms the shared views emerged in the factor analysis, back to the hypothetical Q sorts by the people who have the exact views. This allows the researcher to see the relative importance of all the statements within each factor to gain the overall sense of the viewpoint and identify the statements which distinctively contribute to the shaping of the particular view. For the purposes of illustration, we will include the top and bottom ranking statements for each factor (Table 3, 4, and 5), but we should point out that our interpretations were based on an analysis of all the sorted statements.

A key consideration in the interpretation of the three factors was to remain aware that participants were expressing a view as to what extent something was learnable and not the degree to which it was desirable or important. There was a constant danger of interpreting these sorts as expressions of the participants' goals as teachers, but this was not the purpose of the sorting activity. Nevertheless, Q requires the researcher to take an active interpretative role at this stage, and in our view, it was impossible to dismiss the likelihood that teachers at the earliest stages of their careers will have a greater interest in those qualities or abilities that seem possible to them. In our interpretation, we walked a fine line between focusing on learnability, while not ignoring the relevance of learnability to individuals in a learning situation.

6.5.1. Factor 1: The developing professional

Table 3 Factor 1: The top and bottom ranking statements

Ranking	Item #	Statement
Top 6		
5	7	Creating good student-teacher-relationships.
5	8	Having clear objectives for each lesson.
4	36	Having good pronunciation.
4	17	Providing challenge for one's learners.
4	2	Acting as a mentor to learners.
4	43	Providing an insight into the target language culture.
Bottom 6		
-4	44	Being approachable for learners.
-4	31	Understanding individual learners' needs.
-4	10	Serving as an inspiration for one's learners.
-4	21	Using the target language throughout the lesson.
-5	4	Being warm-hearted with learners.
-5	16	Remembering the names of learners.

This is someone who sees the "technical" side of teaching as eminently learnable. When we say the "technical side", we are referring to areas such as classroom management and language proficiency, skills such as developing clear goals for each lesson (8) and having good pronunciation (36). However, what is intriguing about this view is that certain interpersonal skills, such as creating good relationships and acting as a mentor to students are seen as learnable, while other interpersonal skills, perhaps those seen as closer to personality traits, such as being warm-hearted (21) or approachable (44), are seen as the least learnable aspects of being a teacher. The appearance of remembering the names of learners (16) as the least learnable skill offers further insights. This suggests a view that certain cognitive capacities and personality traits are seen as fixed – this was supported by other items in the sort – while other interpersonal skills connected to teaching are possible without a fundamental change in personality; if a change in personality is not possible, then those qualities that require sincerity, such as warm-heartedness or empathy, can never be genuinely learned, maybe faked but never truly learned. Perhaps the most revealing contrast comes in the view that teachers can learn to be good mentors (2) but they can never learn to be inspirational; mentoring is regarded as a skill that can be taught and learned but the capacity to inspire is a gift that these participants view some people as having, while others do not.

6.5.2. Factor 2: The adaptable classroom practitioner

Table 4 Factor 2: The top and bottom ranking statements

Ranking	Item #	Statement
Top 6		
5	15	Being flexible in one's teaching.
5	42	Developing materials to supplement the textbook.
4	31	Understanding individual learners' needs.
4	28	Praising learners appropriately.
4	11	Explaining language in more than one way.
4	45	Taking learners' concerns seriously.
Bottom 6		
-4	6	Having a good sense of humour in class.
-4	20	Reflecting on one's own teaching.
-4	37	Having an understanding of the details of language.
-4	35	Being kind to learners.
-5	18	Being patient with learners.
-5	27	Promoting critical thinking skills in one's learner

This is someone who can learn to adapt and offer variety. All of the most learnable qualities are connected to responding to classroom situations. Teachers can be flexible in their teaching (15) by understanding individual student needs (31) and taking their concerns seriously (45). They can learn to provide variety by explaining language in different ways (11), perhaps in response to their developing understanding of learner needs and concerns, and develop their own original materials (42). This is someone who regards adaptability and responsiveness to situational needs as qualities that can be learned but, in contrast to the *developing professional,* regards some of the technical side of teaching as far less learnable. It is particularly interesting that items such as understanding the details of language (37) are not regarded as learnable. However, this individual does share the view that certain personality traits related to teaching cannot be changed, such as having a sense of humour (6), being kind to (35), and patient with (18) students.

Both the *developing professional* and the *adaptable classroom practitioner* share a reasonably optimistic outlook regarding the learnability of most aspects of becoming a language teacher. However, they also seemed to share the view that this learnability is to a great degree restricted by fixed personality traits.

6.5.3. Factor 3: The caring-sharing teacher

Table 5 Factor 3: The top and bottom ranking statements

Ranking	Item #	Statement
Top 6		
5	4	Being warm-hearted with learners.
5	21	Using the target language throughout the lesson.
4	6	Having a good sense of humour in class.
4	7	Creating good student-teacher-relationships.
4	8	Having clear objectives for each lesson.
4	2	Acting as a mentor to learners.
Bottom 6		
-4	30	Being well organized in one's professional work.
-4	36	Having good pronunciation.
-4	24	Encouraging learners to speak without worrying about mistakes.
-4	26	Having good classroom management skills.
-5	43	Providing an insight into the target language culture.
-5	32	Loving one's job.

This is someone, who in contrast to the two earlier examples, has great optimism about the learnability of interpersonal skills required for teaching. Teachers can learn to create good student-teacher-relationships as they can be their mentors (2), they can learn to be warm-hearted (4) and they can learn to have

a sense of humour (6). However, here it is the more technical side of teaching that is difficult to learn. Good pronunciation (36) and insight into the target language culture (43) are thought to be difficult to master even with effort, as are being organized at work (30) and having good classroom management skills (26). It seems like the latter two are behavioural manifestations of certain personality traits, and disorganized people can never learn to overcome this aspect of this personality, but are perhaps able to compensate through learning to develop the interpersonal side of teaching.

7. Discussion

The first point to note is that the majority of participants loaded on to the *developing professional* factor. This was the overwhelmingly dominant view and perhaps this should not be so surprising given the population being investigated. In fact, it is difficult to conceive of group of people likely to be more favourably disposed to an optimistic view of learnability than a group of pre-service teachers in the early stages of their professional development. However, this raises an interesting question about the nature of mindsets and the extent to which they are situationally dependent. It may be that people with an already growth-oriented mindset tend to be attracted to teaching, but it is also conceivable that being in a growth-oriented environment, such as a teacher training course, promotes a growth mindset.

Further questions as to the role of situational factors in shaping the development of mindsets arise when we consider the connections between the pre-service teachers' views on learnability and the existing curriculum. The dominant view of the participants in our study was that the more technical aspects of teaching, such as classroom management and language awareness could be learned, while the more interpersonal dimension could not. This is a view that neatly reflects the existing curriculum and it is worth speculating as to what extent their views of what is learnable and what is not have been influenced by the contents of their current curriculum. It may well be that views of what is learnable are being shaped by what is on the curriculum, that there is a kind of circularity based on an assumption that what is on the curriculum is there by virtue of the fact that it is learnable and the interpersonal skills are not on the curriculum because they are not learnable.

From a more general theoretical perspective, we found no evidence of the clear dichotomy posited in much of the mindsets literature. In fact, we had to significantly redesign our research after our pilot study found participants reluctant to engage with any items assuming this kind of dichotomy. We have already speculated that one reason for this could be the nature of the participants and

the fact that pre-service teachers are a special group likely to tend towards a growth mindset. However, it is worth considering if the study tells us anything else about the mindsets theory. Some of the early mindset theories (implicit theories) were built around somewhat decontextualized data that asked about learning in an abstract way. However, when we consider learning in context, such as learning to become a language teacher, the picture becomes infinitely more complex. For example, if we had conceptualized becoming a language teacher as being based around acquiring a specific single set of skills, such as classroom management techniques, then it is highly possible that we would have obtained a clearer, more dichotomous picture consistent with the existing literature. A long-term undertaking such as becoming a language teacher, and learning a foreign language for that matter, involves the development of multiple skills and competences and thus implies various sets of implicit theories. Prominent in our study were theories about the ability to learn a language, the ability to learn classroom techniques, the ability to develop the appropriate interpersonal skills, and individual personality. None of these single sets of theories were important in isolation, it was the ways in which they interconnected relative to each other that informed the overall view. The three narratives constructed from our data suggest a process of balancing or managing the various aspects of becoming a teacher. For example, our *caring-sharing teacher* seemed to be accepting that certain personality-based aspects of becoming a teacher, such as being well organized, could never be learned but perhaps the effects of this "natural" lack of organization could be offset by the ability to learn more about the interpersonal side of teaching, such as being warm-hearted. Our research suggests that in language teaching – and learning – it is not really feasible to construct mindsets around any single set of implicit theories and that we need to focus more on how people manage the various competing implicit and explicit theories. As a result, we conclude that it may be more productive to conceive of mindsets in terms of prototypes, rather than a simple dichotomy.

8. Limitations

Our study was intentionally designed to focus on a specific situation: pre-service EFL teachers in Austria. As such, it is difficult to apply any generalizations from our study to other contexts, given specificities of local concerns. However, the question of generalization was an issue in the actual collection of data. The statements in our research instrument asked about the learnability of the core competences associated with becoming a teacher in a general, abstract fashion; in effect, we were asking how learnable the various skills were for pre-service teachers generally. However, it is difficult to be certain as to how the participants

were interpreting the statements. Especially in the case of unfamiliar, unexpected items, one way of assessing a statement is to use oneself as an example and in the current study this meant asking "Is this learnable for me?" A risk inherent in instruments that require individuals to offer an evaluation of the general case is that they mix up assessments that refer to the broader context with those referring to themselves as a specific individual. Looking back, it may have been more productive to focus on statements deliberately referring to the specific individual to eliminate the possibility of confusion and to perhaps offer a more accurate account of personal mindsets.

A fundamental challenge connected with investigating mindsets is connecting views on learnability with some measure of value. It is possible, for example, for an individual to believe that learning how to set challenging tasks for learners is impossible, yet an important part of becoming a good teacher, or on the other hand, that changing fundamental aspects of personality is possible but just not worth the effort, as maintaining one's essential personality is more important than the demands of a job. Research that connects assessments of learnability and the value individuals assign to those skills is now required as a next step.

9. Implications for practice

The clearest practical issue identified by our research concerns the role of interpersonal skills in teacher development programmes. The overwhelming view of our participants was that the various interpersonal skills required to be a good teacher are unlikely to be learned. However, the research also raised questions about whether individual beliefs were being influenced by the setting. At the moment, we have a situation where pre-service teachers tend to believe that the interpersonal skills required to become a good teacher are difficult, or impossible, to learn and these skills are not included in the current curriculum. It is highly possible that the young teachers at the beginning of their careers are influenced into believing that these skills are not really learnable because they are not on the curriculum. If this is the case, then it is conceivable that by including a greater focus on the interpersonal side of teaching on teacher development programmes, we may encourage a more optimistic, more positive view of learning these skills, which are especially important in language education (Gkonou & Mercer, 2017).

10. Conclusion

We began this paper by commenting on the current popularity of the concept of mindsets and the uncritical enthusiasm with which it is being received in some quarters. Our own enthusiasm springs from the potential of mindsets to

serve as framework for understanding how diverse aspects of psychology connect and work together. The word *set* is key here, as it implies a collection of various elements, indeed, "Mindsystems" might be a more accurate reflection of our interest in exploring how these psychological components fit and how they work together. Understanding any system requires looking at how the various components connect and not focusing on any single part in isolation. Our study suggests that in a long-term, multi-dimensional undertaking, such as becoming a teacher, mindsets are constructed through individuals' management of various sets of implicit theories for different competences within a domain, with no single ability or skill entirely dominant. This is consistent with a trend within mindsets to research that is moving away from familiar, established dichotomous models towards multi-layered and multi-polar accounts. We believe such perspectives offer a much richer, more complex and more accurate view of mindsets in context. Whether such a view will be as popular as the dichotomous view in practice is a different question.

Acknowledgments

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