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Action research – questioning techniques in the FE sector: a qualitative study

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Abstract

This action research intervention examined the use of questioning strategies in the classroom, introducing a rich 'question-diet' to promote increased learning, engagement and independent thinking. A qualitative approach was taken, using interpretative phenomenological analysis (IPA) to explore the meaning-making and personal experiences of the students' experience of the intervention. The study was conducted with an upper sixth-form psychology class at a west London further education college. The results showed that students reported experiencing increased learning due to underlying factors such as increased independent thinking, effective sharing of knowledge, and increased engagement, all resulting wholly or partly from the questioning strategy adopted. This outcome points to the essential value of using a rich variety of questions, and the benefits of planning when and with which learner to use different question strategies. However, as the intervention was conducted on a relatively small class, there may have been issues with participant reactivity and demand characteristics. Effective methods to reduce bias in classroom action research interventions are outlined and discussed.

Keywords: action research; classroom interventions; collaborative learning; questioning strategies; Socratic questions

Introduction: action research and its use in education

Action research is a process of intervention used to improve teaching and learning, by undertaking an active research in the classroom, or, as explained more broadly by Anna Riggall (2009: vi), 'Action Research is a way of investigating a social situation, relationship, problem or context. It has two key, intertwined elements at its heart: gaining a better understanding and seeking to create improvements. In order to explain what action research is, and how to use it effectively, it is important to explore how it compares to other forms of research, conducted in more 'scientific' settings. Firstly, action research focuses upon both 'action', in the form of an intervention (often, but not always, in the classroom itself) conducted and orchestrated by the teacher-practitioner, and then *reflection* based upon the specific research intervention. This reflection is conducted by the same *research-practitioner*, thus separating action research from the positivistic approach which is based upon deductive reasoning, objectivity and replicability, incorporating the ideas of 'empiricism' (Locke, 1690, in Rescher 1985) where the researcher herself is value-free, distant and objective and only measures empirical (observable) data. In stark contrast, action research, which takes an interpretivist approach in line with interpretative phenomenological analysis (IPA) (Smith 2004), often uses a qualitative methodology, *collaborating with* the 'participants-learners' in order to explore and understand their personal experience of the intervention.

Action research therefore enables a much more in-depth understanding and welcomes the teacher-practitioner's input in the actual research process when designing and orchestrating the intervention, as well as analysing the data (Kidd & Czerniawski 2010). Furthermore, the key-aim of action research is its *aspiration for improvement* which is based on this powerful tool's use of 'practice–critical reflection–planning–intervention–feedback–data analysis–further reflection…' as based upon theory and shared with other practitioners, aiming to improve practice. Hence, action research only really becomes powerful when shared with other practitioners in order to stimulate understanding and further research. Also of crucial importance in action research (in education) is to aim to give the learner a *voice* and thus to aspire for improvement based upon an intervention that is ethical and allows the learners to honestly share their experience of the intervention in order to bring practice forward.

This approach was implemented in the current study. The action research was used on a group of seven A-level students (age range 18–25, two males and five females). To make the intervention effective, learners were asked to actively collaborate and engage with the intervention, reflecting upon the new questioning techniques implemented in the classroom and participating as effective critics, offering insight from their critical lenses.

It is worth differentiating action research from Kolb's learning cycle (Kolb 1984) and Schön's 'reflection-on-action' (Schön 1983). Although all three implement continuous, or spiral, reflection based upon 'action', in order to improve an implemented skill (seen in Kemmis & McTaggart's action research spiral (2005: 148)), in Kolb's (and Schön's) learning cycle this reflection is a result, not of *active and collaborative research*, but of individual reflection, making action research a more powerful tool. A key focus in the intervention was to implement more Socratic-questions (Beck et al. 1979). In addition, a better rationale was sought for *how and when* to pose questions, and *what* questions to use, with an increase in the questioning-diet (Pope, 2013) and better utilisation of assertive questioning techniques (Petty 2006).

Questioning strategies

Extensive research was conducted around questioning techniques, particularly focusing upon the Socratic-dialogue, assertive questioning strategies (Petty 2006), 'thinking time' (Rowe 1986) and Bloom's (1956) taxonomy. Rowe (1986) argues for the many benefits of giving students a *wait-time* before answering questions, in that 'slowing down may be a way of speeding up' (1986: 43). Rowe points out that the majority of teachers ask lower-order questions, followed by a waiting-time of less than a second for a student's response. This response is then not followed through with probes or feedback in order to enhance learning, but is instead followed by another low-level unplanned question, or by the teacher giving the answer away themselves. An interesting finding from Cotton's (1988) meta-analysis, examining 37 different reports on questioning, found that increasing the use of *higher-order* questions by 50% led to a significant positive change in students' performance (in Killen 2006: 114). Furthermore, the importance of Socratic questions/probes to promote higher-level learning was outlined by Ofsted's (2012: 37) criteria for outstanding lessons: "teachers use questioning and discussion to assess the effectiveness of their teaching and promote pupils' learning' . Based on this, the *six question-types* used in the Socratic dialogue were implemented, focusing upon: questions for clarification, questions that probe assumptions, reasoning and evidence, and questions that probe implications/consequences (see Apparatus/materials).

In Marzano's (2001: 112) research on questioning techniques, he states that 'questions that require students to analyse information – frequently called higher order level questions – produce more learning than questions that simply require students to recall or recognise information'. Building upon this, questions asking students to *elaborate* on their given answer; giving *supporting evidence*; allowing *waiting-time*; and asking whether anyone *disagrees* were considered essential and implemented repeatedly in the intervention. In order to do this effectively, *at the right time and with the right learner*, Bloom's (1956) taxonomy for teaching, learning and assessing was implemented. Moreover, the guidelines proposed by Ted Wragg (Hastings 2006: 68) focusing on 'empirical, conceptual and value questions' were used in combination with questions focusing on knowledge, recall, comprehension, analysis, application, synthesis or evaluation.

Finally, Petty's (2006) assertive questioning strategy, where learners work upon a thought-provoking or challenging task as a small group before sharing this with the class, in order to facilitate a bigger discussion platform and prevent students from being 'spotlighted' without the right preparation, was utilised. This was implemented as an evidence-based strategy, involving students as active participants and building a ground for higher-order questioning.

Methodology

The approach taken was qualitative, using transcendental phenomenology. The key aim was to do an in-depth analysis, gaining an 'insider perspective' (Conrad 1987) on the process by which a small group of seven A-level students made sense of the newly implemented change in the classroom and their unique perceptions of how the changes made affected their learning (Willig 2001; Smith et al. 2009).

As phenomenology is concerned with individuals' idiosyncratic, unique engagement with *their* life-world, the epistemological position taken is that of a naïve realist (Willig 2001); individuals are assumed able to reflect upon classroom experiences and to give a coherent account of those (Parker 2001; Willig 2001; Smith et al. 2009).

Interpretivism's three epistemological roots, phenomenology, symbolic interaction and hermeneutics, were focused upon. The relevance of hermeneutics and the interpretative role of the teacher-researcher; aiming to make sense of how the student-participants are making sense of the intervention, (Smith & Osborn, 2003; Smith et al 2009) was highlighted. Effort was devoted to implementing an idiographic, inductive and interrogative position (Smith 2004). The inductive principle focuses upon how meaning is obtained and theory is developed from the students' account. The interrogative principle focuses upon how the teacher-research will co-construct those meanings, as based upon examination and interpretation, and how she inevitably is influenced by her own unique way of thinking about teaching.

Apparatus/materials

The idea for the questions chosen for the intervention was based upon extensive research (Petty, 2006, , 2009; Kidd & Czerniawski, 2010; Pope, 2013). Pope's diagram for useful questioning strategies was of particular importance as a structure for how to choose the right questions, and at the right level, at the right time (2013: 44) in accordance with *1.What is the question about? 2. What is the question for? 3. At what level is the question to be pitched? 4. In what context will the question be asked? 5. How do I need to phrase the question?*

Socratic questions were used to promote students' critical and reflective thinking. The hierarchy of questions chosen followed the following template: *1. Questions for clarification 2. Questions that probe assumptions 3. Questions that probe reasoning/evidence 4. Questions for viewpoints and perspectives. 5. Questions that challenge underlying thinking and probe implications (see list of questions below). In accordance with Rowe's and Petty's advice, 'thinking time' was consciously implemented, as the questioning strategies would be ineffective unless thinking-time before answering questions was encouraged.*

A set of questions was chosen to effectively widen the questioning diet and promote higher-order thinking. Although not exhaustive, the list of questions prepared, in accordance with Pope's diagram (Figure 1), was as follows:

1. Why do you think that? 2. What do you mean by that? 3. Can you explain what you mean a bit more? 4. Can you give me an example of that? 5. What do others think? 6. What is your evidence? 7. Is there any counter-evidence? 8. Why do you think this is true? 9. How do you know that? 10. What would be an alternative? 11. Why is this important/not important? 12. Does anybody agree with that? 13. Has anybody got anything different?

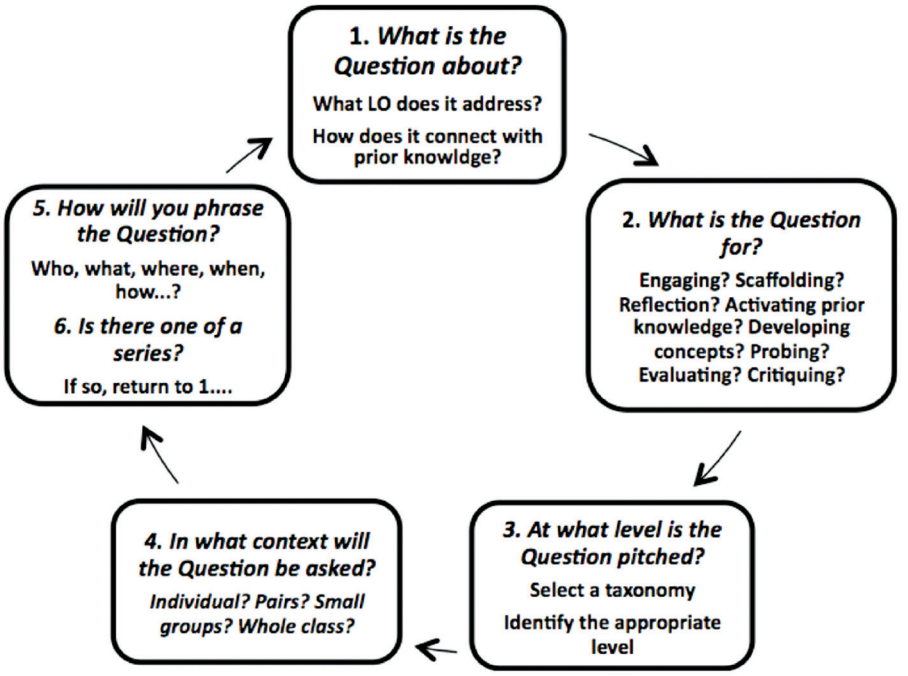
Procedure

The intervention was spread out over two subsequent classes, each lasting for two hours. In lesson one, the students were informed that 'one part of being a teacher-practitioner is also being a lifelong learner, involving the need for continuous reflection in order to develop and improve my own practice'. Students were told that the teacher had identified an area that she believed needed to be trialled over two lessons (and then continuously implemented, should it be considered useful). In the first lesson, the students were not informed about what the actual intervention was, to reduce bias, and the intervention was simply implemented in the classroom with the students as collaborative, *naïve* participants. At the end, all students were asked to provide oral feedback about what they believed had changed and whether they perceived those changes to be useful. At the start of the following lesson, students were informed about the intervention, and a brief session was held exploring the thoughts prompted by the initial lesson. Although no student had correctly guessed the intervention, students were very engaged in finding out what had changed and offered many interesting reflections directly related to the new questioning technique (see Discussion).

After the second (transparent) lesson, where the students acted as *informed* participant-learners collaborating with the new questioning approach, they were asked to write a brief entry expressing their thoughts, reflections, ideas, personal outcomes, experiences and critical evaluation of the intervention. They were given ten minutes for this, and all notes were anonymous. In order to reduce any form of bias reducing the accuracy of the students' reflections of the interventions, they were encouraged to be critical, as the teacher stated that 'she saw critical reflections as a useful tool to support further development'.

Individual reflection was followed by class discussion in which all learners were exceptionally engaged and very motivated to explore the impact the intervention had on them. All students were asked to provide their oral informed consent before writing down their reflections; no student who wished not to engage in this activity would be asked to. However, all students gave their informed consent.

Figure 1. How to frame questions: taken from Pope (2013: 44).



To ensure that the research was robust, no set questions in the form of a questionnaire were used to assess the effectiveness of the intervention. The rationale behind this is based upon the interpretative methodology facilitated, focusing upon each student's unique experience of the intervention; hence, asking learners to fill in a questionnaire involving preset questions would narrow and potentially limit the responses provided and potentially also be biased by the researcher's own assumptions about the intervention.

Results/analysis

Following the suggested guidelines of interpretative analysis (Smith et al. 2009), the students' entries/reflections were reread in depth and notes were made of anything interesting: contradictions, repetitions and 'echoes' of anything continually reappearing. A total of seven themes were decided upon, believed to capture the key aspects of the students' experiences. Themes were then named in a more condensed form, and relatedness between themes was searched for: four main clusters appeared. The themes are summarised in Table 1. Main cluster/themes appear on the left, extracts in the middle, and transcript sources on the right.

As can be seen in Table 1, the concept of experiencing increased learning results from various underlying factors such as increased independent thinking, effective sharing of knowledge, and increased student engagement, all resulting wholly or partly from the questioning strategy. In this sense, the value of the questioning techniques used with the learners seems to have had a knock-on effect on many other areas of their learning experience, leading students to feel more engaged with, and aware of, their own learning.

The result of this intervention points to the essential value of using a rich diet of questions, as well as the benefits of planning *where and when (and with which learner)* to use the different questions/probes.

Figure 1. How to frame questions: taken from Pope (2013: 44).

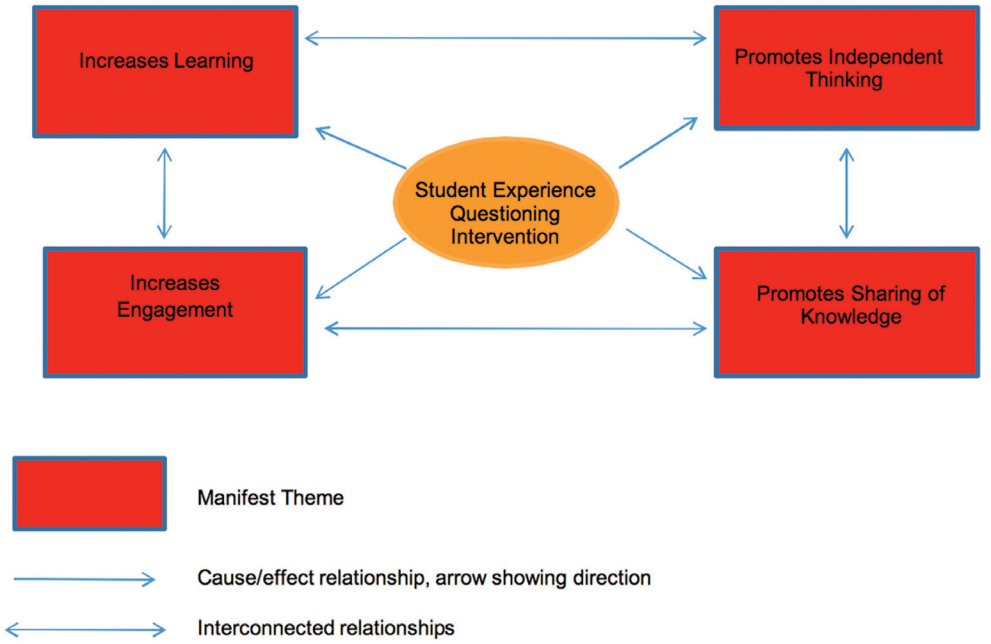
Main cluster 1: Promotes independent thinking		
Demands 'learner maturity'	'it's a better way hearing people's points of view and ideas rather then the conventional 'put your hand up' method, and is also more mature in terms of how the students are treated'	Student 1, lines 4–8
Prevents 'spoon-feeding'	'You are pushed to think for yourself rather than rely on the teacher to spoon-feed you.'	Student 1, lines 8–10
Main cluster 2: Promotes sharing of knowledge		
Promotes interesting discussions	'What I've noticed, using this new method, was that the discussion became more extended and detailed. It also got much more information out of other students. Rather than just stating the points, we examined them, and got more opinions and views.	Student 5, lines 3–6
	'the questions asked were thought-inducing and sparked discussions amongst the students.'	Student 1, lines 2–3
Promotes scaffolding	'There has been greater discussion of our own personal views which as psychology students helps us to understand why we hold certain views and allows us to evaluate our own opinion.'	Student 6, lines 9–13

	‘This helped me remember things and by adding my contradictions to other people’s answers, I was able to cement my own ideas if correct as well as linking them to other people’s, increasing my knowledge on the topic.’	Student 7, lines 5–8
Main cluster 3: Increases engagement		
Promotes elaboration	‘There were more questions and more questions for us to elaborate on, so that we can give our own full answer’ ‘In particular, I noticed the question, “can you elaborate on that?”. I felt this engages us into the lesson and allowed us to broaden our ability to explain exactly what we mean. I feel this will aid our ability to write down what we mean in exams as well.’	Student 3, lines 1–3
Increases learning by sharing	‘Also, we had to read up on validity and reliability [of schizophrenia] and share what we researched with another person. We were also questioned about the exam answer and that was good’	Student 1, lines 3–9

Figure 1. How to frame questions: taken from Pope (2013: 44).

Main cluster 4: Increases learning		
Promotes real-life application	'Asking those types of questions helps to apply knowledge and helps to place the knowledge we have learned in a real-life scenario, which not only aids in retaining knowledge, but also helps to understand why we have to learn certain elements of the specification.'	Student 6, lines 1–8
Increases shared in-depth thinking	'It promotes more in-depth, reflective thinking due to those questions, as it helps you to think about the questions and in the exam, one can benefit from... the brainstorming as the ideas are original and thought out by you… this brainstorming allows you to see different perspectives from fellow students so helps with A02 + A03 marks!'	Student 2, lines 1.3
	'In the last two lessons, Pepita used a new teaching technique which, in my opinion, was a very good technique to engage us students and let us think deeper in order to access the information we need.'	Student 7, lines 1–5

Figure 2. A cognitive map of students' experience of the questioning intervention.



Discussion

The multifaceted value of implementing effective questioning strategies can clearly be seen in this small-scale action research and strongly supports established questioning theories and models, highlighting the crucial importance of effective questioning strategies for enhanced learning. Moreover, the use of 'assertive questioning' (Petty 2006) also proved essential as students felt more engaged, more stretched and were more willing to offer higher-level thinking points when working in 'buzz-groups' rather than using the conventional 'hands up' approach. The continuous use of 'thinking time' (Rowe 1986; Petty 2006) had a positive impact on the quality of answers. Although the students did not elaborate on this, the teacher, in her own reflection, noticed her initial desire to shorten incorrect answers, but realised the positive impact of not doing this, both for the depth of learning displayed and for the classroom atmosphere. An interesting point arising from the first lesson was that although no student proposed a correct understanding of what had changed in the classroom, many students noted that the teacher's movement across the classroom and body language had changed. Also, students pointed out that the time the teacher spent explaining 'stuff' had reduced. This is worth noting, as although none of these explanations mentions the desired intervention, they were all important components of the actual intervention, which perhaps simultaneously changed with the new teaching strategies implemented, as the teacher unawaringly altered her presence with the new intervention.

It is important to note that no negative effects of the teaching strategies emerged from the study. Although the students genuinely seemed to enjoy and engage much better with the increased questioning diet in the classroom, there is always the risk that students did not want to write up negative (although constructive) evaluative points for fear of the teacher reading them.

This risk of potential participant reactivity as well as researcher bias when analysing the data could in the future be mitigated by having a teaching colleague collect and analyse the anonymous entries.

However, by doing this, action research fails to be the collaborative intervention that it should be, so a better way is to encourage (as in the current intervention) *equality* in the research process, where a teacher–student relationship is laid down that invites and encourages the student's voice to be heard and where students are considered equal to the teacher-practitioner.

Literature review

When evaluating this intervention, it is important to reflect upon the strong focus placed upon phenomenology, and the aim of gaining an understanding of each *student's* specific experience of the intervention, which can be questioned. It may be dubious to what extent students can effectively communicate nuances of specific and perhaps subconscious experiences taking place in a fast-paced classroom (Willig 2001).

Moreover, Smith (1996) and Smith et al. (2009) highlight the necessity of enhancing internal validity/reliability by focusing upon rigour and transparency. However, despite precautions taken to enhance validity through a robust and very transparent procedure, the *process* of describing the experience (new questioning strategies) may still shape the experience related by the students. As intepretivism appreciates, by being a person-in-context one can never fully break free from constraints and expectations. Although the teacher *attempted* to distance herself from her underlying beliefs when analysing the data and collecting the data in a systematic fashion (Larkin et al. 2006), there is no certainty this has been fully achieved.

Despite these issues, the research intervention was considered useful, to be further reflected upon and continued along the lines of Kemmis & McTaggart's (2005) action research spiral. The action enquiry was seen as an energising, motivating and liberating process, furthering the teacher-practitioner's professional skills.

Conclusion

This qualitative action research highlights the importance of using varied questioning techniques for increased student learning, resulting from various underlying factors such as enhanced independent thinking, effective sharing of knowledge, and increased student engagement. The current study also shows the benefits of planning when and with which learner to use the different questions and probes, in order to make the use of questioning more effective, and highlights the importance of giving learners a *voice*, in order to promote essential feedback required for professional development. The intervention highlights the requirement of continued action research in the classroom, to effectively enhance teaching and learning along the lines of Kemmis & McTaggart's (2005) action research spiral. Based upon the findings of the current study, this intervention will be further redefined and rerun to enhance the teacher-practitioner's professional skills, with a view to sharing future findings with colleagues and building upon the questioning strategies dialogue.

References

Beck, A., T. Rush, A. J., Shaw, B. F. & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford Press.

Bloom. B. (ed.) (1956). *Taxonomy of educational taxonomies. Handbook 1: Cognitive domain*. New York: David McKay.

Conrad, P. (1987). 'The experience of illness: recent and new directions'. *Research in the Sociology of Health Care*, 6, 1–31.

Hastings, S. (2006).' Using questions'. *In The complete classroom: issues and solutions for teachers*, ch. 11. Abingdon: Routledge.

Kemmis, S. & McTaggart, R. (2005). 'Participatory action research: communicative action and the public space'. In N. Denzin & Y. Lincoln (eds.) *The SAGE handbook of qualitative research* (3rd edn), ch. 23. London: Sage.

Kidd, W. & Czerniawski, G. (2010). *Successful teaching 14–19: theory, practice and reflection*. London: Sage.

Killen, R (2006). *Effective teaching strategies: lessons from research and practice* (4th edn). London: Thomson.

Kolb, D. A. (1984). *Experiential learning: experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice-Hall.

Larkin, M., Watts, S. & Clifton, E. (2006). 'Giving voice and making sense in interpretative phenomenological analysis'. *Qualitative Research in Psychology*, 3, 102–20.

Marzano, R. J., Pickering, J. & Pollock, J. E. (2001). *Classroom instruction that works: research-based strategies for increasing student achievement*. Alexandria, VA: ASCD Publications.

Ofsted (2012) School inspection handbook DfE 'Teachers' Standards': effective from September 2012: http://www.education.gov.uk/schools/teachingandlearning/reviewofstandards.

Parker, I. (2001). 'Qualitative research'. In P. Bannister, E. Burman, I. Parker, M. Taylor & C. Tindall, C (eds.) *Qualitative methods in psychology: a research guide*. Buckingham: Open University Press.

Petty, G (2006). *Evidence based teaching: a practical approach*. Cheltenham: Nelson Thornes Ltd.

Petty, G (2009) Teaching Today: a practical guide. Cheltenham: Nelson Thornes Ltd.Pope, G (2013). *Questioning technique pocketbook*. Alresford: Teachers' Pocketbooks.

Rescher, N. (1985). *The heritage of logical positivism*. Lanham, MD: University Press of America.

Riggall, A. (2009). *Action research: making a difference in education*. Volume 1. Slough: National Foundation for Educational Research.

Rowe, M. B. (1986). 'Wait times: slowing down may be a way of speeding up'. *Journal of Teacher Education*, 37(1), 43–50.

Schön, D. A. (1983). *The reflective practitioner: how professionals think in action*. New York: Basic Books.

Smith, J. A. (1996). 'Beyond the divide between cognition and discourse: using interpretative phenomenological analysis in health psychology'. *Psychology & Health*, 11, 261–71.

Smith, J. A. (2004). 'Reflecting on the development of interpretative phenomenological analysis and its contribution to qualitative research in psychology'. *Qualitative Research in Psychology*, 1, 39–54.

Smith, J. A. & Osborn, M. (2003). 'Interpretative phenomenological analysis'. In J. A. Smith (ed.) (2006). *Qualitative psychology: a practical guide to research methods*, ch. 3. London: Sage.

Smith, J. A., Flowers, P. & Larkin, M. (2009). *Interpretative phenomenological analysis: theory, method, research*. London: Sage.

Willig, C. (2001). *Introducing qualitative research in psychology: adventures in theory and method*. Maidenhead: Open University Press.

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