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The use of an Advanced Simulation Training Facility to Enhance Clinical Psychology Trainees' Learning Experiences

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The University of Hertfordshire (UH) has recently opened a new simulation centre for its healthcare students. Although the centre is primarily used by nursing and paramedic students for its simulated clinical and community environments, its use for other professional training such as clinical psychology is evident. In this paper a brief history and description of the simulation centre is provided, before describing and reporting on a scenario-based simulation training exercise designed and implemented for clinical psychology doctorate trainees at UH. Trainee feedback on the effectiveness of the exercise was obtained via pre- and postsession self-report questionnaires. Trainees reported that they benefitted from taking part, increasing their clinical skills and confidence in joint working. They also valued the nonassessed and experiential nature of the exercise. Some of the main advantages of using interactive simulation training are outlined, as well as some of the challenges in using this advanced technology effectively.

INTRODUCTION

Simulation training – that is, the act of imitating the behaviour of some situation or some process by means of something suitably analogous for training purposes – is currently being used by a variety of disciplines. Increasingly, it is also being used in the training of healthcare professionals. In this paper I will describe a novel application of simulation in clinical psychology training through the use of an advanced simulation centre. However, given that simulation training can be located in different pedagogical orientations, I will start with a brief discussion of some recent pedagogical developments in higher education and current trends in clinical psychology training.

According to Brady (1985), one can distinguish between a 'traditional' or 'classical' educational approach that is predominantly teacher-centred, and an educational approach that is more student-centred. In a more traditional approach students are instructed by the teachers about what they regard as important (e.g., a prescriptive curriculum). In this approach the main task of the students is to accurately store and retrieve the information delivered by the teacher. In a more student-centred approach the role of the teacher shifts to facilitating the learning of the students – that is, supporting the students to develop their own understanding of what they have learnt. Brady (1985) argued that, to achieve this, teachers should incorporate the principles of constructivist learning, collaborative learning, and cooperative learning in their pedagogy. In the years since Brady's (1985) proposal, there has been more of an emphasis on pedagogical innovation in higher education, especially in the areas of autonomous learning, problem-based learning (PBL) and cooperative learning in most Western countries, including the UK (Boud, 1985, 1988; Slavin, 1995).

However, it has been argued that clinical psychology training programmes in the UK have generally been slow to respond to innovative pedagogical developments in higher education (Stedmon, Wood, Curle, & Haslam, 2005). Although the academic curricula of these programmes are typically augmented by considerable practical work experience (e.g., clinical placements) and some experiential learning (e.g., role plays), a good deal of clinical psychology training nevertheless remains situated in a more traditional pedagogical approach (e.g., didactic teaching, formal examinations, and model specific supervision). Moreover, although there is some scope for encouraging learner choice and individual development, trainers are often required to prioritise the accountability and assessment (against a common set of capabilities) of their trainees. There is, it seems, less room for a consideration of the *process* of learning, and rather more for a consideration of the assessment of the *outcome* of learning (competencies). This approach is in line with the so-called competency-based model of training for clinical psychologists that was adopted by the British Psychological Society (BPS) a few years ago (Membership and Professional Training Board (MPTB), 2003, 2007) and follows the example of a number of other training programmes, such as NVQs, nursing, midwifery, medicine and public administration.

A training approach of specifying a common set of capabilities together with an emphasis on measurable behaviours and outcomes (a competency-based model) has potential advantages, including transparent standards,

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increased public accountability, and individualised flexible training (Leung, 2002). However, in my view, it is also less likely to enhance reflective practice, self-directed learning, individual creativity and collaborative learning. In addition, regardless of its potential merits or drawbacks, there is currently a lack of evidence regarding competency-based training. For example, Elander, Towell, and Fox (2007, p. 74), broadly in favour of the competency model, stated that:

> *"There is…very little empirical evidence about the superiority or otherwise of competence-based training compared with more traditional training methods, and much less about the relative effectiveness of different approaches to competence-based training. Most evaluations are mainly descriptive and reflective, for there are few opportunities for controlled comparative studies."*

Following this brief discussion of some pedagogical developments in higher education and current trends in clinical psychology training, I will briefly pause to provide some context to the training of clinical psychologists at UH.

Clinical Psychology Training at University of Hertfordshire

The overall course philosophy of the Doctorate in Clinical Psychology (DClinPsy) Programme at UH is currently located within a constructivist (Kelly, 1955) and social constructionist (Gergen, 1985) epistemology. In recent years staff on the programme have embarked on a reconstruction of the academic curriculum in order for it to reflect the course philosophy more closely (Nel, 2006). Whilst acknowledging the value of retaining elements of a more traditional teaching approach, it has also moved significantly towards a more reflective, self-directed, problem-based and collaborative approach to learning (Nel, 2006; Nel et al., 2008). It can be said that there has been a shift to a learning paradigm that is more constructivist and social constructionist orientated. Without implying any exclusivity, it seems important before moving on to make the point here that it is possible to *both* adhere to the BPS guidelines on competency-based training, *and* to go beyond their somewhat narrow focus on prescribing and assessing specific learning outcomes within this learning paradigm. That is, to focus not only on outcomes, but also on process issues in the training of competent clinical psychologists.

Coincidentally, the developments in revising the academic curriculum corresponded with the programme staff relocating to a new building which also houses a new healthcare simulation centre at UH (Alinier, 2007b). The potential access to this facility prompted staff on the programme to consider what possibilities this centre held for the training of clinical psychology students, particularly in light of the developments in our overall teaching strategy. With our new emphasis on more autonomous learning, could we use this simulation facility to help us achieve this goal? Would it be fit for this purpose? Given that simulation training in this setting has been recognised as a valuable tool for gaining knowledge in other professions (e.g., Alinier, Hunt, & Gordon, 2003), could the existing scenario-based simulation training methodology (Alinier, 2007a) also be of use to the learning of clinical psychology trainees? For us the simulation centre had clear potential to enhance the learning of our clinical psychology trainees, but how would we achieve this in practice? How could we make use of the innovative approach that simulation offers and of the simulation centre to complement our existing clinical psychology curricula? Before going on to explain how we started using the facility to enhance our trainees' learning, I will first pause to describe the simulation centre at UH.

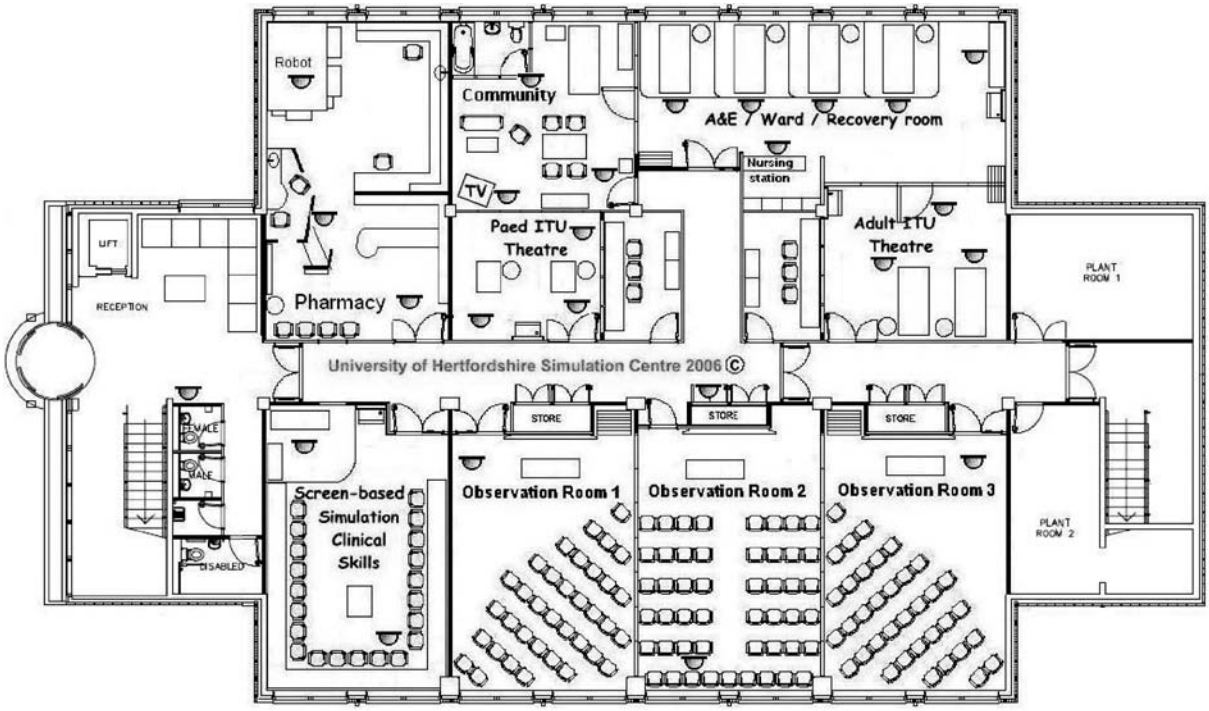
The Simulation Centre

Since opening its original simulation centre in 1998, UH has developed a well established and widely recognised track record (Issenberg, 2006) of providing scenario-based simulation training. Recently, the university made significant investments in their simulation training facilities and in 2007 inaugurated a purpose built simulation centre for its healthcare students. The centre is currently the largest facility of its kind in the UK, and one of the largest in Europe. It is a high-tech centre which provides very realistic and safe clinical and community environments for scenario-based training (Alinier, 2007b). The centre consists of paediatric and adult intensive care units that can also be used as operating theatres, a hospital ward or emergency department, a pharmacy, and a community setting (Figure 1). In addition to the simulation facilities, there are also two control rooms (manned by staff from the centre) and three observation rooms. The centre is equipped with a total of 26 digital cameras, which makes it possible to record the simulation activities and project them in any of the observation rooms or any computer with an internet connection.

Since its opening the centre has primarily been used by nursing, paramedic, pharmacy, and physiotherapy students and foundation doctors. However, given that this new centre includes a range of clinical and community environments, its use for other professional training such as clinical psychology is obvious. Recently, the DClinPsy Programme at UH has started to use the simulation centre on an ad hoc basis for training events (Davies, 2008; Nel, 2008).

In this paper I will describe our use of the simulation facility to enhance existing clinical psychology training at UH. To start with I will explain the four main theoretical concepts underpinning our approach to simulation training.

Figure 1 Layout of the University of Hertfordshire Simulation Centre



Theoretical Underpinnings

Before providing one example of how we made use of the simulation centre at UH to enhance the learning of a group of clinical psychology trainees, I will briefly outline four theoretical concepts that currently orientate our work on simulation training: 1) learners actively construct their own meanings; 2) learning occurs in social interaction; 3) the zone of proximal development; and 4) scaffolding.

Learners Actively Construct Their own Meanings

From a constructivist (Kelly, 1955) position every individual continuously constructs and reconstructs their view of the world on the basis of their perceptions. From this perspective all individuals can be regarded as 'scientists' who continuously develop understandings or theories of their world, test these, and modify or accept them for the time being (Kelly, 1955). If this perspective is applied to an educational environment, we can say that learners construct their own meanings, that they are active participants in this process, and that they build on previous knowledge (Moon, 2004). They do not simply absorb the material that is presented to them. Instead, from a constructivist perspective, they actively create their own unique meanings out of the same learning experience (Winitzky & Kauchak, 1997).

For the sake of the simulation exercise described in this paper, it was therefore important for us to take the view that the trainees, as adult learners, could interpret and pursue the material presented to them in different ways. It was not our task to teach them the 'correct' way to interpret the material or how best to act on it. Rather, we endeavored to create a context within which different meanings of the learning experience could emerge, and within which these different meanings were not only 'allowed', but actively encouraged.

Learning Occurs in Social Interaction

In addition to the idea that individual learners actively construct their own meanings, we are also influenced by Vygotsky's (1978) notion that learning is a socially constructed process, a type of social collaboration. Whereas *cognitive* constructivism emphasises how the individual learner create his or her own meaning, *social* constructivism emphasises how meanings emerge from social interaction. From a social constructivist perspective we do not learn in isolation. Rather, learning occurs in a social setting, involving the learner and at least one other person or source of information. Social constructivism, in my view, does not negate the view that learners construct their own meanings. Instead, it implies that learning is *both* individually *and* socially constructed. According to Wilson (2003, p. 1):

> *"…learning is both interactive in the sense that learners must interact with a source of ideas/ knowledge, as well as in the sense that they must take an active part in reconstructing ideas/knowledge within their own minds."*

Our approach to simulation training in clinical psychology at UH takes account of both cognitive and social aspects of learning. We actively create learning contexts where the trainees have the opportunity to work with each other and to compare and share their ideas. This ranges from working and reflecting in small groups to discussing ideas and experiences in the large group. However, we also acknowledge that the trainees construct their own meanings, and so we deliberately allocate time where this can happen without direct interruption from others.

Zone of Proximal Development (ZPD)

The 'zone of proximal development' (ZPD) is a term introduced by Vygotsky (1978) to describe the next developmental stage in a student's learning. Although Vygotsky (1978) considered the relationship between learning and development in the context of child education, the concept of ZPD is now also regarded as important in the wider field of educational thinking, including that of adult education (e.g., Harland, 2003). Vygotsky (1978) suggested that 'good learning' occurs just above the student's current level of ability or competence, that is, in the student's ZPD. He defined the ZPD as:

> *"the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (p. 86).*

From this point of view, the most effective teaching of a clinical psychology trainee will be somewhat, but not too much, in advance of her or his current level of development.

However, the ZPD is not only about distinguishing between the actual and potential developmental level of a student, it is also about the enhancement of learning through support from another, more knowledgeable or competent, person (e.g., a tutor or more experienced peer). In this regard, it is important for the tutor to match challenging tasks with appropriate levels of support and assistance. It is also important to determine what the student can manage on his or her own, and to allow the student to do as much as possible without any assistance. The overall aim is to help the student work with increasing independence, that is, to become a self-regulated and independent learner. It follows that the ZPD is always changing: as the student increases her or his knowledge and skills, so instruction must constantly be individualised to take account of their changing ZPD. This process of providing support to help the student complete a task is commonly referred to as 'scaffolding' and will be discussed next.

Scaffolding

The concept of scaffolding was originally developed by Wood, Bruner, and Ross (1976) in the context of early language learning, and is largely based on Vygotsky's (1978) notion of a ZPD. In the construction business, scaffolding refers to a temporary support system that is assembled next to a new building that is being erected. The scaffold supports the construction as needed and is dismantled when the building is able to stand unaided. In an educational context, this metaphor of scaffolding has been used to describe the process whereby the teacher provides his or her students with a temporary support structure to aid their learning. As such, an instructional scaffold should be designed to decrease in teacher support as the students increase their knowledge and develop skills of their own. It is therefore a structure that actively encourages students to develop their own initiative, motivation and resourcefulness (Lawson, 2002).

One of the aims of the simulation exercise described here was to create such a context (scaffolding) where the trainees' interaction with a supportive tutor enabled them to work with increasing confidence and independence. I therefore concur with Foley (1994, p. 101) who, drawing on the work of Applebee and Langer (1983), maintained that:

> *"…scaffolding is provided by leading or probing questions to extend or elaborate the knowledge the learner already possesses. Rather than evaluating the learner's answers, the teacher is supporting, encouraging and providing additional props. As the learner's competence grows, so the scaffolding is gradually reduced until the learner is able to function autonomously in that task and generalize to similar circumstances."*

Before going on to describe the exercise in detail, I will pause to briefly outline five specific factors that we took into account in the actual design of the exercise.

Designing a Scenario-Based Learning Exercise

In my view a simulation exercise such as the one described in this article is an example of experience-based or experiential learning (Andresen, Boud, & Cohen, 2000). It is beyond the scope of this paper to elaborate here on experiential learning, but we nevertheless drew on the work of Andresen et al. (2000) in the process of designing our scenario-based simulation exercise. In particular, we were guided by six factors that Andresen et al. (2000) identified as characterising the practice of experiential learning.

Firstly, we wanted the exercise to involve the whole person – intellect, feelings and senses. Secondly, we wanted to recognise and actively draw on the trainees' prior experience. Thirdly, we intended to incorporate a reflective process in the exercise. Fourthly, we aimed to construct a deliberately designed (structured) learning event. Fifthly, we wanted to establish a more equal (rather than a more hierarchical) relationship between the facilitators and the trainees. Finally, we intended to assess learning outcomes through self-reports (rather than through 'objective' teacher evaluations).

Example of a Scenario-Based Learning Exercise

The Exercise

The exercise described in this paper is located at the beginning of the second year of a three-year programme of clinical training. By this time the trainees will have had a year of academic teaching and clinical placement experience, mainly with individual clients of an adult or older adult age. The next phase of the programme focuses on preparing them for clinical work with children and their families, and with people with learning disabilities. This exercise is therefore designed to fit with these overall learning objectives. Each trainee is given the opportunity to participate in two practice interviews: one a simulated child and family scenario in a hospital setting, and the other a simulated learning disability scenario in an outpatient service. Two case vignettes are developed by programme tutors, which then form the basis for the practice interviews with the simulated clients and their relative(s) if required. To simulate the referral process, trainees are given this information in advance of the interviews. The trainees are randomly divided into groups of three: two acting as interviewers (clinicians) and one as a consultant.

On the day of the interviews, time is allocated to brief the trainees about the practical arrangements. Care is also taken to use this time to create a context for learning that fits with the theoretical orientation described above. For example, the trainees are told that we do not expect them to do the interviews in a particular, correct way. Instead, we indicate our interest in seeing how different people might approach the same scenario in different ways. We make explicit that the exercise is not formally evaluated. We invite the trainees to experiment and not to be unduly worried about making mistakes. We also clarify the role of the facilitator. Finally, the trainees are asked to complete a pre-exercise self-report questionnaire.

Each practice interview is designed to last 30 minutes. Initially, the two trainees interview the 'clients' for 10 minutes. This is followed by a five-minute consultation break with the third trainee and one of the tutors. The two trainees then continue with the interview for a further 10 minutes. Finally, the 'clients' reflect on the interviews in front of the trainees, highlighting what worked well, and what did not. Each group of trainees (two interviewers and a consultant) also get the chance to observe another group remotely through the camera system from an observation room once they have completed their own interview. All interviews are recorded and they are made available to each trainee as a multimedia file.

Review and Development of Clinical Skills

Following the practice interviews, each trainee is required to watch the interviews that she or he participated in from start to finish. They are asked to identify those clinical skills which they believe they have demonstrated competently, and to identify at least one clinical skill that they would like to develop further. They are also asked to select a section of an interview which they would like to show for review and further discussion.

Figure 2 A Hospital-Based Clinical Scenario

A few days after the interviews the trainees meet in groups of three to four with one of the course tutors who facilitated the practice interviews. The time is divided so that each trainee gets a chance to review and discuss their work with the rest of the group. In line with the theoretical underpinnings described above, the facilitators consciously do not position themselves as 'experts' who would deliver verdicts on the correctness or not of the trainees' work. Rather, the aim is to create a context that allows the trainees to learn from everyone present and to create their own meanings in the process. The role of the facilitator is to provide a 'scaffold' for this type of learning to take place. Typically, the facilitator asks questions to encourage each trainee to elaborate the knowledge and skills that she or he already possesses, that is, to move into their zone of proximal development. In this way the facilitator becomes a catalyst (Fanning & Gaba, 2007) for learning to occur.

Assessment of Learning Outcomes

In order to evaluate the effectiveness of the exercise the trainees were asked to complete a self-report questionnaire before and after the exercise. The questionnaire comprised a number of items related to simulation training which the trainees were asked to rate on a Likert scale. It also contained an open-ended question asking the trainees for qualitative feedback on their experiences of completing the task.

Twelve trainees out of a possible 15 (80%) completed both pre- and posttest self-report questionnaires. A further two completed the posttest questionnaire only, but these were discounted from the analytic process.

For items with normally distributed responses a related-samples t-test showed significance beyond the .05 level on two items: 'Familiarity with clinical simulation' [$t(12) = -4.42$, $p = .001$] and 'Increase in clinical skills' [$t(12) = -2.55$, $p = .025$]. Also, for items for which responses were not normally distributed a Wilcoxon nonparametric test showed significance beyond the .01 level on a further two items: 'Benefit from taking part' ($p = .006$) and 'Confidence in joint working' ($p = .001$).

Two themes emerged from a basic thematic analysis (Miles & Huberman, 1994) of the qualitative feedback. Firstly, the trainees[2] commented on what a *positive learning experience* it was to have participated in the simulation exercise. "A really good experience" (Jo) and "A really valuable experience" (Christine) were some of the typical remarks. They found both the experiential and reflective aspects of the exercise useful: "I really enjoyed the reflective session… it was just as valuable as the practice interview itself" (Helen). Some of the trainees commented on the usefulness of the exercise for their clinical practice: "It was much more helpful to clinical practice than I had been expecting it to be" (Gaby).

Secondly, the trainees suggested that the *non-assessed and experimental nature* of the exercise was instrumental in enhancing their learning experience: "I was really pleased it was billed as for our learning rather than as an assessment process" (Jenny) and "I feel more confident doing the interviews…and feel this may be partly due to the way that they were introduced/set up. That is, 'they are to learn from' and 'no right or wrong way of doing them!'" (Julie).

Discussion

In my view the simulation centre at UH offers a unique opportunity to enhance clinical psychology trainees' learning experiences and their professional development. Clearly, the facility provides a context where learning can occur in a realistic environment, whether it is in a community or clinical area, with the additional bonus of a fully integrated camera system that allows for easy recording and playback of scenarios. Within this type of learning environment trainees can prepare themselves optimally for working in real-life clinical situations when on placement. It affords them the chance to experience working with 'clients', but, importantly, allows them to make mistakes without causing any harm to 'real' clients.

Some writers (e.g., Smith & Tillema, 2003; Snadden & Thomas, 1998) have noted the potential detrimental effect of formal assessment on learning and professional development. The feedback from the trainees who participated in this simulation exercise confirmed that, in the absence of any formal assessment arrangements, they felt empowered to experiment with their learning and development. One could say that, with sufficient 'scaffolding', they successfully managed to move beyond their existing levels of development and into their zones of proximal development.

The simulation centre clearly also provides a context for interactive and collaborative learning. In this context the trainees are not simply required to absorb knowledge from an 'expert' or replicate the clinical skills prescribed in some preexisting manual. The nature of the simulation environment is such that trainees can participate actively in their own learning and meaning making. What is more, they can build on their existing knowledge with the help and contributions of their fellow trainees. In this way the learning process becomes truly collaborative and self-directed.

The use of a simulation facility also presents some challenges for the trainers of clinical psychology students at UH. The success or otherwise of this type of 'trainee-centred' learning depends to a large extent on the ability of the trainers to recast themselves (at certain times) so that they can work as facilitators, rather than simply as instructors and evaluators, of learning. In a student-led learning experience such as the one described here, trainees are in control of their own actions, and have a great deal of influence on the direction and the outcome of their scenario (Alinier, in press). In a context (clinical psychology training) that has historically emphasised a more traditional, teacher-/expert-centred approach this might feel uncomfortable/be difficult to achieve for some. In fact, it is an open question to what extent this kind of freedom would actually be available, either to staff or trainees, in the prevailing culture of clinical psychology training, with its heavy emphasis on the formal evaluation of specific competencies (MPTB, 2003). As long as this emphasis on formal evaluation persists, both staff and trainees will be limited in the extent to which they can truly experiment with learning, and learning to learn.

Nevertheless, the potential of the simulation centre is inviting to training staff to develop a curriculum which encourages more 'learning by doing' or 'experiential learning' (Dewey, 1938; Kolb, 1984). But even where this is possible, what would be the best way of integrating simulation activities into an existing curriculum? In an already busy timetable it might be difficult to find enough time to make simulation training a meaningful learning experience. Moreover, even if finding time is not an issue, what might be the best balance between simulation training and more traditional or theoretical teaching?

[2] The names of the trainees have been changed to ensure their anonymity.

Another challenge is to determine what makes a simulation exercise realistic and effective (Alinier, in press). It is widely acknowledged in the simulation literature that for a transfer of knowledge to occur, the simulation needs to be as realistic as possible, enabling the students to 'suspend disbelief' and to participate more fully (Campbell & Daley, 2009; Dieckman, Gaba, & Rall, 2007; Fritz, Gray, & Flanagan, 2007). Moreover, according to Alinier (2007a), it is also very important to create a context within which trainees can experience the same pressure and stress they would in a real-life clinical situation. The exercise described here was developed by four clinical psychologists with significant knowledge and experience of the client population and service delivery contexts in each scenario. Moreover, we also have considerable experience of teaching clinical psychology trainees. Taking this into account, we are confident that the content of the simulation exercises are realistic and relevant for the trainees at this stage of their training. In this way we were able to ensure "psychological fidelity" (Fritz et al., 2007, p. 2) – that is, a believable representation of an actual clinical problem. This was borne out by the feedback from the trainees themselves, who corroborated the view that the exercises were realistic and relevant.

Beyond psychological fidelity, one also needs to consider the "environmental fidelity" (Fritz et al., 2007, p. 2) – that is, the realism of the environment in which the simulation takes place. The advanced simulation centre at UH provides realistic environments for simulating scenarios that are typical of clinical psychology practice – that is, a home setting (that can also be used as an office or a counselling room) and a hospital ward. The physical cues provided by this unique teaching environment help to separate it out from an ordinary classroom where other experiential learning (such as role plays) can take place. Another characteristic of the simulation centre that enhances environmental fidelity is the discreet ceiling mounted cameras. Trainees at UH have commented favourably on this aspect of the simulation centre in enabling them to suspend disbelief.

In summary, as was noted above, the more realistic the environment, the more likely it is that students will be able to suspend disbelief, the more they will be able to participate fully, and finally, the more likely it is that a transfer of knowledge can occur. The feedback from the trainees confirmed this last point: the exercises were effective in enhancing their knowledge and clinical skills. In future we will also consider the potential advantages and disadvantages of involving actors or perhaps other, more senior, trainees, in making the simulation exercises more realistic.

Finally, what can be regarded as reliable and valid measures of performance? In this paper I reported some quantitative and qualitative feedback from the trainees who participated in the exercise. But what else could be done? It would be possible, for example, to make use of existing measures (or develop new ones) to evaluate 'objectively' the performance of the trainees. Whilst this may have some advantages, most notably to quantify any changes, it would also go against the constructivist learning model which underpins this work. It is also likely to change the dynamic between the facilitators and participants, defining it much more as an evaluative context and potentially inhibiting experimentation by the trainees. Also, with the small numbers involved it would be difficult to reach sufficient power to draw any firm statistical conclusions. The ultimate challenge, though, would be to try and determine whether this type of training has any direct benefit for the clients that the trainees work with in their daily clinical practice.

CONCLUSION

In conclusion, a simulation-based training approach, such as the one now used at UH, offers unique learning opportunities for clinical psychology trainees. Trainees are exposed to simulated clinical scenarios in a realistic environment and are invited to experiment with their responses in a supportive setting, before being asked to face similar scenarios in their actual clinical practice. In this way they become active participants in their own learning. It is my view that the skills and knowledge developed in this process will help the trainees deliver better care and, as such, have clear benefits for both the trainee practitioner and her or his actual clients. Finally, with more and more simulation centres opening throughout the UK, most nursing and medical schools will have some simulation facilities that could be used to replicate the learning experience described here with other clinical psychology trainees.

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