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Researcher experiences in practice-based interdisciplinary research

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Abstract

This article reports on a study that followed up on an initial interdisciplinary project and focused specifically on the experiences of researchers involved in practice-based interdisciplinary research. We share an approach to research evaluation that focuses on the experiences of those conducting the research rather than the outputs. The study allowed those involved in the initial successful project to reflect *post hoc* on their experiences. We show that neglecting fundamental conceptions about how the research is conceptualized can lead to challenges with the research itself. In addition to alternative understandings of research and concepts, practical and logistical issues, whilst seeming trivial, feed into communication issues such as misunderstanding of terms and language. We argue that tensions and confusions around the very nature of the research—what was being researched, and what was valued as research, epistemological differences between the disciplinary perspectives—need to be explored and interrogated in order to maximize the benefits of interdisciplinary research. We conclude with considerations of the relationship between interdisciplinary research in a team and identity work of team members, and the implications this may have for research design, an area of research evaluation that certainly needs further exploration.

Key words: interdisciplinary; research; higher education; teams; practice-based

Researchers are increasingly being encouraged to undertake interdisciplinary research. In fact, the phrase has become something of a ‘mantra’ (Metzger and Zare 1999; Klein 2008). Trends towards interdisciplinary approaches are widely seen as a means of finding innovative solutions (Jacob 2015), as specialists from different fields lend their respective expertise to a research project, especially where links to industry, business, and organizations are concerned (Carayol and Thi 2005). Interdisciplinarity can indeed result in creative breakthroughs, and it can be used to tackle complex or practical problems (Moti 1997). Whilst interdisciplinary research is increasingly promoted by funders, it can be fraught with difficulties (Gewin 2014), and such collaborations can encounter paradigmatic issues (Frodean, Klein and Mitcham 2010). Some fields of research have characteristic and accepted models of inquiry, and it can be challenging to come up with an agreed set of conceptual principles that underlie an interdisciplinary project (Massey et al. 2006). Teams who conduct interdisciplinary research are a particular area

of study (Reiter-Palmon et al. 2017), with ‘how to do interdisciplinary research’ (Fiore 2008: 251) being one larger area of interest alongside with how to judge or review interdisciplinary research (e.g. Laudel 2006; Shimada et al. 2007). Evaluation studies of interdisciplinary research focus specifically on assessment criteria and rubrics (e.g. Halfpenny and Miles 1993; Mansilla 2006), as a focus on one disciplinary approach obviously is insufficient to account for the balance required across disciplines (Mansilla 2006). In this article, we evaluate research from the perspectives of the researchers themselves, and consider how this may in turn have implications for research design.

Interdisciplinarity can be defined in terms of task, process, product, or usage (Porter and Chubin 1985). Universities, though historically structured into disciplinary schools or departments, are increasingly favouring multi-disciplinary groups or structures (Friedman and Worden 2016; Hall et al. 2008). Multi-disciplinarity implies that teams from different disciplines collaborate to work on a single project; inter- or trans-disciplinary implies work between

individuals or teams that cross-disciplinary boundaries. Interdisciplinary and collaborative approaches have been utilized in university teaching (Thompson and Kleine 2015) and writing (Lowry, Curtis and Lowry 2004), as well as research. However, the legitimacy of interdisciplinary knowledge production has been questioned (Greckhamer et al. 2008).

Such research is actively promoted and written about (Morrison, Dobbie and McDonald 2003; Gray 2008; Bossio et al. 2014), but often from the point of view of the results rather than the experience of those involved in the research. For example, the science of team science can be used to specifically examine how interdisciplinary teams function (Stokols et al. 2008), the attributes that make an interdisciplinary team (Lakhani, Benzie and Hayden 2012), and the principles of good interdisciplinary team work (Nancarrow et al. 2013).

In an academy where ‘sciences and the humanities are like two very large and diverse countries separated by a wide river’ (Harpham 2015: 223) and ‘boundary crossing has been described as a risky endeavour’ (Geschwind and Melin 2016: 25), what are the experiences of researchers involved in these projects? What are the practical and epistemological difficulties involved, and how can they be solved? What then are the implications for research evaluation and design? The experiences of those who undertake such research, or who work within interdisciplinary teams, are largely underexplored and there is little research around the experiences of undertaking such work within a practice-based setting. This article reports on a study that followed up on an initial project that was intended to be interdisciplinary, and focussed specifically on the experiences of researchers involved in practice-based interdisciplinary research. It sets out a case study of what interdisciplinary work can look and feel like to those who are involved, in order to add a personal and experiential dimension to the body of work on interdisciplinarity. The study allowed those involved to reflect *post hoc* on the project, and to reflect on their experiences in a way that was not built in to the original study. In the following, we show that neglecting fundamental conceptions about how the research is conceptualized can lead to challenges with the research itself. Practical and logistical issues, whilst seeming trivial, feed into communication issues such as misunderstanding of terms and language. We argue that tensions and confusions around the very nature of the research—what was being researched, and what was valued as research, epistemological differences between the disciplinary perspectives—need to be explored and interrogated in order to maximize the benefits of interdisciplinary research and to minimize misunderstandings. We conclude with considerations of the relationship between interdisciplinary research in a team and identity work of team members, and the implications these may have for research design, an area that certainly needs further exploration.

1. Context and background

I (Jennifer) was a member of the original *Imagining Autism* project. This article arose from my experiences on the project, from my interests in reflective practice and embodiment (Leigh and Bailey 2013; Leigh 2016, 2017, 2019a,b,c), from informal and reflexive conversations and notes I had and made with principal researchers throughout, and the questions I had wanting to understand our experiences as researchers more.

Imagining Autism was conceived as an interdisciplinary collaboration between Drama, Psychology, and the Tizard Centre at

University of Kent, UK between 2011 and 2014. The project investigated the potential of drama and performance to impact upon the key diagnostic features of autism: communication, social interaction, and social imagination. The collaboration was initiated by drama researchers who believed that their intervention methods would be beneficial for autistic children. The *Imagining Autism* project was in effect testing and evaluating a programme of practical workshops. The *Imagining Autism* team was a group according to Keyton and Heylen’s (2017) definition, however, some members, particularly those who were not principal (PI) or co-investigators (Co-Is), may have felt more disconnected. Whilst the team had a ‘shared vision’ (Hare and O’Neill 2000), they were not strictly an academic peer group, in part because of the hierarchy and nature of the sub-teams that comprised the project. Only the PI and Co-Is were involved with the research design of the project. Three sub-teams were involved in the original *Imagining Autism* project. One comprised of the researchers who collected data in the schools from the children, parents, and teachers, and this is the team that was project managed by Jennifer Leigh. A second sub-team was comprised of mostly post-graduate psychologists who analysed some of the data. The third team was the drama practitioners who delivered the programme. This article does not report the findings relative to the outcomes of the project team, as these are reported elsewhere (Shaughnessy and Trimmingham 2016; Trimmingham and Shaughnessy 2016; Beadle-Brown et al. 2018). Instead, it reports on a secondary research project that focussed on the experiences of the researchers involved, as they reflected on their participation in the interdisciplinary research and what it meant to them.

2. Research approach and methods

For this research, we took a phenomenological approach with qualitative, reflective, and autoethnographic research methods to explore how the researchers, drama practitioners, and psychologists made sense of their personal experiences as team members. Phenomenology is a form of enquiry concerned with the nature of human experience and is a rigorous qualitative approach used to study everyday human activities and experiences (Pollio, Henley and Thompson 1997). As such, it is a methodological approach that is congruent with the approaches used within the drama aspect of the original research project, which was informed by a phenomenological and cognitive neuroscience perspective (Shaughnessy and Trimmingham 2016). This approach uses reflections of experience to give meaning. A systematic reflection extends the shared understanding of meaningful experience. This approach values individual subjectivities and voices, and as such was appropriate to explore research questions concerned with experiences of being part of an interdisciplinary project.

After receiving ethical approval, I (Jennifer) conducted interviews with individuals from the three separate teams that formed *Imagining Autism*, and the PI and Co-Is. It was not possible to contact all the drama practitioners who had been involved. There were staff changes throughout the project, and not all contact details were current. It was also not possible to contact the post-graduate psychology researchers involved in data analysis, as again contact details were not held and many had moved on from the university. Counting myself, the total number of participants in this study was nine (one man and eight women). Interviews were semi-structured, but strongly aligned with the conceptualization of interviews as

interactions between researchers and participants (Brinkmann and Kvale 2015). As lead researcher who simultaneously held the role as a participant, I saw myself as a 'data traveller' (Brinkmann and Kvale 2015: 57) who was making sense of experiences and co-constructing meaning in collaboration with others. The interviews therefore truly were conversations with each participant that lasted for between 40 min and 2½ h. We reflected on our roles within the project, what had been learned, and any positives and negatives about the experiences. These reflective interview conversations were transcribed verbatim to form one pillar of the data collected in this study. The second data source was autoethnography. As mentioned, my role in this study encompassed both researcher and researched, 'I research my participants and myself concurrently in an interactive process... Sometimes I am the researcher, sometimes the researched, and sometimes I am both' (Meerwald 2013: 45). With this in mind, it would have been negligent to ignore my own role within the original project, and even more so within the context of this second study. Despite criticism that autoethnography may be narcissistic and self-indulgent (Sparkes 2002), the self has long been accepted as a lens for the exploration of the cultural and social (Chang 2016). Where autoethnographic analysis is done well, it is systematic and focussed on the wider social and cultural issues rather than being limited to the immediate I-story. All data were therefore analysed from a phenomenological perspective (Leder 1990; Merleau-Ponty 2002). In practice, analysis involved an immersion in the data, committing to understanding and interpreting all the participants' experiences taking an embodied and reflective approach to the data analysis (Leigh 2016). Qualitative data analytic software was not used in this process, so as to maximize the craft element of the data analysis (James 2013). Individual themes were first identified through Jennifer's reflections on the lived experience of participating in *Imagining Autism*, and these informed the foci of the semi-structured interviews. Then a process of reading and re-reading the transcripts and reflecting on the emotional responses and vocal cues from the interviews as well as the emotional responses generated from these re-readings began. As an 'outsider' to the original project, Nicole Brown added a layer of rigour to the analysis. In our view, data analysis can never be an objective process through which themes emerge. Instead, the researcher is required to actively work with data in a transparent, reflexive, and critical manner (Brown 2019a,b). It was therefore Nicole's task to identify key plotlines in a hermeneutic spiral, delving deeper into the analytical process with each iteration. In several iterations, Nicole considered participants' initial responses by focusing on descriptive, linguistic, and conceptual elements within the data (Smith, Flowers and Larkin 2012: 84). At the first level of analysis, Nicole merely noted what participants said without interpreting the data. In her second iteration, Nicole added a first layer of analysis by concentrating on how participants communicated the content. Although this level of analysis is not equivalent to discourse analysis, it is similar in that it borrows the consideration of use of language features and pauses to explore the immediacy and relevance participants experience in relation to the content they convey. The third analytical iteration focussed on conceptual elements. These are initial tentative interpretations of the descriptive and linguistic elements in relation to the analysts, in this case, Nicole's, personal and professional experiences, skills, and knowledge, as per Gadamer's (1990/1960) understanding of hermeneutics:

a person trying to understand a text is prepared for it to tell him [sic] something ... But this kind of sensitivity involves neither neutrality with respect to content nor the extinction of one's self but the foregrounding and appropriation of one's own fore-meanings and prejudices. The important thing is to be aware of one's own bias, so that the text can present itself in all its otherness and thus assert its own truth against one's own fore-meanings (Gadamer 1990/1960: 269).

Bearing in mind previous experiences and preconceptions and maintaining a particular focus on reflexivity, Nicole developed themes that were represented consistently across and within data, and that participants highlighted as relevant in relation to their personal experience of interdisciplinary research. The three key plotlines Nicole identified in the process are related to the conceptualization of research; language and communication; and the nature of the research. In order to demonstrate and evidence the interpretative analytical process, Nicole and Jennifer chose to employ the strategies of a reflective and narrative write-up of findings. The narrative approach to data analysis deliberately uses many and often long raw quotes and extracts from the data as they have the 'power to reveal the embodied experience' (Stephens 2011: 62) and allow readers to take different meanings from the same text, thus challenging the traditional approach expecting only one stream of meaning (Meerwald 2013). In order to preserve anonymity for the participants of this study, all participants except for Jennifer have been allocated a pseudonym from the top 100 baby names in Sweden. Direct quotations from the participants are identified to their pseudonym and the team they came from.

The main areas that Jennifer and the participants reflected on were the practical problems with conducting the project; issues with communication and terminology used between the teams; and the understandings of what constituted as research. In the next section, we will draw out some of the practical and emotional challenges of such work, including the time pressures, logistics, communication difficulties, and fundamental differences of ethos.

3. Results and interpretation

The main themes that relate to the interdisciplinary nature of the project included the conceptualization of the research—practical issues to address in future projects of this kind; difficulties of communication, language, and terminology between the different research team members; and differences in the intentions behind the research, the concepts of what counted, the very nature of the research.

3.1 Theme one: Conceptualization of research

3.1.1 Practical issues

As project manager of one of the sub-teams, I (Jennifer) was very aware of the practical difficulties of conducting this interdisciplinary research project, and these were echoed by the participants. These experiences, particularly in practice-based settings, are the kind of experiences that are missing in the current academic literature. The design of *Imagining Autism* called for the drama practitioners and the research team to be blinded to each other's work, whilst the PI and Co-Is led the interdisciplinary project. This meant that each team were not to know the work that the other was doing with the children, by way of workshops, tests, or measures. This approach of blinding, common to clinical research trials, was integral to the PI

and Co-Is' research design as it meant that the teams could not influence the outcome if they did not know what was being tested, or what was intended to happen in the workshops. In addition, the parents and teachers of the children were not told about the content of the workshops or tests so that any feedback they had was not influenced by them looking for affect. The blinding was included in order to give rigour.

The design of the project meant that the drama practitioners worked with the children in the three schools once a week for 10 weeks. They worked with one school at a time. The research team were present in each school regularly throughout the life of the project, over two academic years. They worked with the children individually for the baseline assessments and were in class for observations. On average, they would be in school for 10 days every term, and as a consequence they got to know the children and the staff at the schools quite well. I (Jennifer) reflected on this:

'We became a regular part of their academic life for that year that we were in and out... they recognised us, they knew us, and I think they were comfortable for the most part working with us. I think we did strike up relationships with the children that allowed us to work well with them'.

The development of such relationships was not accounted for in the PI and Co-Is research design, and when asked about the impact of such relationships, one psychologist commented 'I hope it was minimal' (Elias, Psychologist).

The schools participating in the project were unaware of the need for the blinding of the research team and the teachers to the project. The reasoning behind this had not been explained to them. A researcher reflected 'I think at times there was a lack of understanding about that and that probably was quite a tension for some of the schools'. Blinding limited the teams' ability to respond to changes, for example, the drama practitioners changed the order of the environments they presented to the children without informing the research team, which caused issues around repeatability.

As with many research projects, there were compromises with the timescale and issues around resources. All the participants in this study reflected on things that they would seek to change in future research. The blinding, whilst necessary for the research design, meant that teachers in particular were not familiarized with the project and could be resistant to it for practical or pedagogic reasons. The qualitative data from *Imagining Autism* were very rich, but it was only after the project had finished and the parents and teachers were aware of the work their children had been doing that they were able to attribute small changes or incidents to participation in the project.

The blinding inhibited the sub-teams' ability to reflect with each other on the processes of the research and to adapt to challenges. The practice of reflecting on and sharing the reflections from a project from the perspective of the researchers (Lingard et al. 2007) is unfortunately not common in the research literature. The *Imagining Autism* team reflected *post hoc* on this project; they are not a team that still exists. Whilst *Imagining Autism* was ongoing there was not the time to build in the kind of whole-group reflection that would have allowed the team to act in a complex and adaptive way to the challenges it faced (Ramos-Villagrana et al. 2018). The interviews demonstrated that the researchers involved were not all self-aware about the conceptual and methodological assumptions that were embedded in the research design and implementation (Robinson 2008). Relevant knowledge was not always shared with all members

although this has been shown to improve effectiveness (Tesler et al. 2018). Similarly, the kind of day-to-day practical difficulties outlined above are those that are often elided from the literature around successful research projects. As might be expected from a multi-disciplinary project, team working was an issue (O'Cathain, Murphy and Nicholl 2008), as the sub-teams fragmented into their separate disciplinary identities to get on with their aspects of the research, and communication between the team members was not always clear.

3.1.2 Power and motivation

One aspect that was highlighted in this study was the experiences of the more junior members of the team. In the current funding climate, it is often the PI and Co-Is who are involved with preparing research funding bids, and coming up with ideas and hypotheses. The day-to-day research is often carried out by research assistants, or research teams. The roles of team members are often well defined (Driskell et al. 2017). *Imagining Autism* was unusual in that in both the researcher and drama teams the lead researchers were also present and part of the work; however, they both employed additional support: research assistants; associates; and drama practitioners. The experience of research workers on short-term contracts is not within the scope of this article, but it is valuable to hear how the miscommunications outlined above translated into the day-to-day work of the research and drama teams on the ground. The psychologist research team and the drama practitioners both commented on their particular perceptions of the study. Without being PI or Co-Is, they had limited input into how the study was run, and though responsible for the delivering of the practical side (both performance and research), they were not involved in the design. Apart from the two drama academics who designed and delivered the practices, the drama practitioners were only employed for the duration of the performance work, and so were not necessarily aware of the ongoing analysis and findings of the study. The experiences touch on issues of power, similar to those found by Rogers-Dillon (2005) and are complicated by the interdisciplinary approach.

The practitioners and researchers at all levels talked about their initial perceptions of working on an interdisciplinary project, and what they perceived the benefits of working in this way might be. One researcher commented 'it was a different approach... Working or the anticipation of working closely with other departments' (Freja, Researcher). Similarly, a psychologist reflected:

'On the one hand working with people from the arts discipline was quite attractive and compelling because it offered a different experience to that which I'm used to, but on the other hand I was well aware from the start that it would likely be quite problematic in other ways, just because of the different approaches that we take.

My role [was] one of providing them with a methodological framework that was more robust than the frameworks that are currently used within drama based approaches' (Ebba, Psychology).

This exposes the underlying judgement of the psychological viewpoint towards the research practices of the drama practitioners. However, not all the participants reflected that the interdisciplinary nature of the work was what appealed to them about the project. One drama practitioner commented:

'I just sort of felt like there was something really attractive about the sound of the work the actual kind of practitioner work with the children and it would be really creative' (Astrid, Drama).

The Co-Is had more of an overview of the reasoning for wanted to work in an interdisciplinary manner. They described it as:

'Trying to give insights to psychologists about what drama is about and insights to drama practitioners about what the psychology is about and try and knit the two together' (Wilma, Drama).

This description chimes well with what might be anticipated to come from an interdisciplinary team. However, these reasonings were not always evident when the project was ongoing.

'When we were doing it we weren't necessarily aware of the interdisciplinary nature and the psychologists were just these figures that were absent' (Wilma, Drama).

Although, on reflection, after the project the drama practitioners were able to understand better:

'I see why the sciences need artists and the artists need the scientist as it were in trying to evaluate a project like this because the evaluation of theatre is really difficult and people view sciences and use them incorrectly sometimes in order to force what they think to try and make it more... it's about trying to find a way that communicates and is useful for both evaluative goals' (Saga, Drama).

Wilma reflected on the experience of the study, 'I don't think I had any idea what it was going to be like, those evaluations. I think that's one of the reasons I was so naïve about it' (Drama). This practitioner was referring to the assessments that the children undertook, as they were mostly desk-based, could be repetitive, and had to be very formalized.

3.2 Theme two: Language and communication

3.2.1 *The words we use*

It is commonly accepted (Jeffrey 2003) that different disciplines use different language to discuss research. In addition, individuals have different preferences for the ways in which they communicate, express themselves, and learn (Wurman 1991). Many of the team members discussed difficulties with the terminology and language used between the different sub-teams, and the misunderstandings that had resulted as a consequence. The term misunderstanding is used here to describe a lack of awareness of alternative understandings. I (Jennifer) become intensely aware of this in the first interview where I used the terms 'therapy' and 'education'. My own background is in somatic movement therapy and education (Leigh 2019b) and my doctoral study focussed on work not dissimilar from the drama practitioners (Leigh 2012) and as such I expected my use and understanding of the terms to be in tune with that of the drama practitioners. However, within drama these terms have specific meanings and usages which are not reflected within my own field. In drama, both of the terms 'education' and 'therapy' have particular connotations for particular approaches. Due to differences such as this and the already mentioned issues such as the blinding and separation of the teams, there were tensions around communication. The perceptions of the participants with regards to the study were different, as were at times their intentions behind the work.

Initially, the PI and Co-Is underestimated the difficulties that might arise due to differences in language. One psychologist Co-I commented, 'I was making assumptions that they would understand things that they needed to do' (Ebba, Psychologist). Similarly, a drama Co-I said 'You know, it's crazy, isn't it, as if you're talking in different languages and you're assuming the other person is thinking along the same lines as you. Bit disastrous isn't it [laughs]?' (Wilma, Drama). Ebba went on to say:

'I underestimated I guess the importance of being really clear, explaining why things were important. I assumed that they would know because they did so much of this stuff... But of course I was speaking a completely different language to them' (Ebba, Psychologist).

As the project went on, such communication became easier, and the study was successful by the measures of both sub-teams—as a pilot for *Imagining Autism* showing cause to continue the research through clinical trials (Beadle-Brown et al. 2018) and as having impact on individuals as evidenced by case studies (Shaughnessy and Trimmingham 2016; Trimmingham and Shaughnessy 2016). However, there were certain terms that continued to cause tension between the teams, for example, the labelling of *Imagining Autism* as an intervention by the psychologists. The drama practitioners did not see their work as an intervention. The word 'intervention' to the drama team 'assumes that there is some kind of condition or disability that has to be remediated' (Wilma, Drama). One psychologist, when questioned on the use of the term agreed that it was disputed by the drama practitioners, but continued to use it when thinking about future work.

3.2.2 *Therapy*

Another term that caused disagreement was the use of the word 'therapy'. The psychologists understood therapy as a term that meant nothing more than a treatment to relieve a disorder, or in this case, that the intended outcome of participation in *Imagining Autism* was the amelioration of some of the difficulties associated with autism. My (Jennifer's) understanding of the term would be the intentional use of an approach in order to support an individual work through or address issues that are impacting on their life which is slightly different. 'Drama therapy' is, however, a specific approach to using drama and is based on psychoanalytic theory. Whilst drama therapists were involved with *Imagining Autism* throughout, and there was a drama therapist on the advisory board, the drama practitioners did not recognize their work as 'drama therapy'. Drama therapists at conferences have responded to the work in this way, suggesting that the children were returned to a space that is prior to or beyond language. There is some potential validity here in the approaches returning the children to a space of play, but *Imagining Autism* did not undertake a psychoanalytic approach and was not seeking to release emotion or address trauma. The *Imagining Autism* methods helped children to engage with the social world, and to understand their relation to and within this. The team worked with participants in small groups rather than in the individualized way that is needed for drama therapy. There was no endeavour to work in a psychotherapeutic way, although it would appear from anecdotal data that the methods positively impacted on well-being. One practitioner explained:

'Very often what people think we did in *Imagining Autism* was a kind of drama therapy, it becomes a shorthand that's actually

totally incorrect and it doesn't identify what are the key elements in the project' (Wilma, Drama).

This shorthand was used by one psychologist throughout and after the project. Describing the drama practitioners and highlighting the differences in the usage of the term therapeutic:

'They are therapists...On argument...implicitly they are performing...a therapeutic role. Even if they don't identify with that...implicitly it may be the case, we hope, that they are providing something of therapeutic value... They are performing a therapeutic role in my opinion' (Elias, Psychologist).

The view of the drama practitioners as therapists was not shared by all the psychologists 'Of course, this wasn't even therapy. This was facilitation they were doing' (Alicia, Psychologist).

Aside from differences in the usage of terminology between disciplines, the boundary between therapy, research, and education in this kind of work is not always clear-cut.¹ One difference between these approaches is the training and support offered to therapists (Rogers 1967) as opposed to that offered to drama practitioners or facilitators. I (Jennifer) reflected:

'The practitioners aren't trained to work therapeutically but actually they might benefit from a lot of that support structure because the work they're doing has therapeutic outcomes and so it has all of those [emotional] costs involved, you wouldn't expect someone doing drama therapy to work for hours and hours and hours and hours without being able to process it afterwards and I think it's the same'.

Looking more widely at artistic approaches used in this kind of context (including music, movement, dance, etc.) whether something is therapeutic or not may depend on the practitioner intention, as well as the participant experience. However, a therapeutic approach implies a specific level of training and support for the practitioner that may not be evident in a purely performance-based approach.

One psychologist pointed out 'We disagree fundamentally about terminology and what we're trying to achieve but we disagree in a very well natured and well-intentioned manner because we all share the same underlying mission' (Elias, Psychologist). In Brian Patrick's terms, the team did have one underlying ethos (Patrick 2006). The lead researchers in *Imagining Autism* did define an implicit set of conceptual principles (Massey et al. 2006) that underpinned the project. The issues around language and communication seemed to occur most around loose definitions and understanding of the type associated with situated learning within communities of practice (Wenger 1998). These differences in understanding of language exemplify how different disciplines provide different learning situations and produce academics with differing understandings of terms and ways of doing research.

3.3 Theme three: The nature of research

3.3.1 Validity

In addition to the challenges of language and communication already discussed, some of the participants spoke about the differences in the very concepts of research that existed within the team. One psychologist described the concept of practice-as-research as 'very unconstrained and very woolly' (Elias, Psychologist). This view was not unexpected by the drama practitioners, who had initiated the collaborative study in order to benefit from a rigorous evaluation.

'And the idea of evaluating it just seemed a real step forward because having worked in the arts...we all know as arts practitioners that this stuff works, we know it but you can't convince a psychologist unless they've got their evaluations. And you will ask any practitioner who works with special needs children in the arts and they will say it works, you know. Ask parents. This is all anecdotal evidence' (Astrid, Drama).

The psychologists and drama practitioners had different understandings of what constituted research. For example, the idea of practice-as-research (Trimingham 2002; Thomson 2003; Nelson 2006) whilst still contested within drama, is an accepted mode of practice, whereas it is not recognized within psychology. Similarly, there were misunderstandings of the nature of devised improvised performance. Again, as with language and terminology, we are using the word misunderstanding to denote a lack of awareness of alternative understandings. Expectations from the psychologists and researchers might have been of a play with a set script, which led to confusions over why the drama practitioners altered the research schedule. For the drama practitioners it was inconceivable to do the same thing twice as that is not the nature of improvised performance. As mentioned previously, practice-as-research is an accepted methodology within drama, and has been for over 15 years. The drama brought fluidity, flow, and creativity that gave access to areas of human experience that are hard to access within a laboratory. However, what is considered valid in one discipline is not within another. The 'role' of the psychologist and research teams in this study was to provide the tools to evidence the change that the drama practitioners, parents, and teachers saw happening. 'The data has to be strong enough to show it to the scientific world otherwise we don't get any more funding to keep exploring' (Elias, Psychologist). Elias went on to explain one tension between drama and psychology was the tendency to talk about it before there was conclusive evidence.

'We know we haven't got enough evidence to say for definite that it makes a change for people, children, not even all children, not even some children of certain types. We haven't got enough data yet' (Elias, Psychologist).

Alicia rationalized the difference in approaches:

'It's this idea that there is this track for them of Practice as Research. That is how they do their research, but for us we're evaluating practice. So it's research of practice' (Alicia, Psychologist).

3.3.2 Changing minds

The collaboration did change the opinions of some of those involved. One psychologist commented:

'I am shifting a little bit. My initial approach really was very reductionist and it was like, we must approach or identify particular elements that we really think are driving the change, if change exists at all. But as time has moved on, I've recognised that we don't really have the capability at this point to confidently identify individual drivers that we then control for, if you like, in the next day. We might just have to take the intervention holistically as it is' (Elias, Psychologist).

Elias had changed ways of thinking on how possible it would be to say scientifically what was working when the drama practitioners were working with the children, but had not changed the language that was used to describe it—still using the word 'intervention'. The

experience of collaborating had not changed the view of what counted as research, more the idea of what was researchable. Interdisciplinary or collaborative research can provide opportunities for personal growth, and allow academics to change their thinking (Leibowitz, Ndebele and Winberg 2014).

One of the aspects that the participants talked about in this study was the approach to working with children taken by the practitioners. This approach was the ‘black box’ that was to be evaluated and considered by the psychologist teams. The drama practitioners valued the creativity and freedom that underlined their work, identifying its nature as improvisational performance, rather than therapeutic or an intervention. One reflected:

‘You have to have a certain type of practitioner who is able to work in the way that we did and by that I mean someone who I think is really important to be trained or have background in an improvisational nature... I don’t know if there is any training for that energy that is a kind of emotional landscape you get with a group of people’ (Wilma, Drama).

This novel approach was recognized by members of the psychology team: Alicia (Psychologist) reflected that the project ‘brought home the importance of engaging creatively and imaginatively with children with autism’, yet she also reported that one can ‘easily lost and so easily confused if you’re thinking about a text book definition of autism’ (Alicia, Psychologist). This type of practitioner approach and the support for practitioners and researchers working with vulnerable groups is something that could be focussed on more explicitly within research projects.

4. Discussion

The findings from this research reiterate that in interdisciplinary research, it is vital when designing and evaluating research to ensure that there are mechanisms to ensure that communication is clear, and that there are spaces within the project design for communication to happen across all levels. This finding echoes that by Nancarrow et al. (2013) who identified communication as both the most important characteristic in an interdisciplinary team, and two of the top three challenges that face them. Similarly, Lakhani Benzies and Hayden (2012) reported communication to be one of the seven attributes necessary within a successful interdisciplinary team. Whilst communication is vital for any team, in an interdisciplinary one it is particularly easy for misunderstandings to occur. Each discipline is likely to have its own assumptions of how research is carried out, but these are not necessarily shared by another (Massey et al. 2006; O’Cathain, Murphy and Nicholl 2008). In the case study presented here, whilst the initial project was created to be interdisciplinary, and has been described as such within the literature (see Beadle-Brown et al. 2018), in fact, it combined the work and perspectives from three different sub-teams. Whilst it may have been interdisciplinary at the level of the PI and Co-Is where they created a group identity, the individual researchers instead maintained the small group identities from the teams that they were in. Instead of a collective understanding, there was fragmentation, a process that is considered as ‘internal insularity’ (Derwin et al. 2003). The misunderstandings around repeatability exemplify this—for the artists it was inconceivable that a participatory performance would be the same twice. The psychologists did not explain that for their understandings of rigour, the order and content of the sessions needed to be identical. If the practical and epistemological details

had been discussed and clarified at the outset of the planning, and space allowed within the research design to allow for ongoing discussions around this, then the needs of all parties could have been built into and accommodated within this research design. However, in order for this to occur, there would have needed to be a recognition of the disciplinary differences in understandings of the nature and concepts of research, and in addition to clarifying and working through misunderstandings at the level of the PI and Co-Is, this research shows that it is vital to ensure that the operational researchers and practitioners are also kept in the communication loop, and space is allowed for communication between and with them to avoid instances where research measures are forgotten, or meanings misunderstood.

Similarly, the experiences of researchers are not always valued or documented in the way that the experiences of the research participants are valued. In the arts, practice-as-research is an accepted research paradigm (Trimingham 2002), where such experiences are not only valued but are integral to the research outcomes, however, within the social sciences this approach is less known. In addition to the explicit impact of collaboration within the interdisciplinary teams such as research outputs in the form of papers, conferences and the like, it may be that there are also more subtle impacts.

Many lessons were learned from the practical challenges that were faced in *Imagining Autism*. Fundamentally, many of these challenges would have been prevented if the team had been allowed space in the research design to discuss and address the underlying epistemological differences between drama and psychological approaches to and understandings of research. This would have allowed the psychologists to design effective evaluation measures that accounted for the improvised nature of the drama work, and ensured that the drama practitioners understood and knew the variables that their improvisation had to be contained by (e.g. content, order of delivery, etc.). In addition, ongoing communication and opportunities for reflection between the two teams would have allowed them to be blinded to the elements that they needed to be whilst ensuring that the schools involved had a seamless relationship with the university throughout the project. One of the things I (Jennifer) struggled with whilst working on the project was the large gap between the embodied, holistic, and fluid nature of the drama work with the sessions, and the rigid, regimented, and traditional work of the research evaluations. The PI and Co-Is of the project may have been subject to what de Bruin and Morgan (2019: 7676) term “‘false consensus effects,” such that they perceive their own behaviour as typical for people in general even when it is not’. They did not realize that others, not expert in their own specialism, would not think or understand concepts in the same way as they did.

The data highlight that doing interdisciplinary research is a social project, which upsets or potentially uproots existing conceptualizations of selves and group identities. Identity in essence is the process of a person categorizing or identifying oneself with specific characteristics. A person chooses to belong and fit, and therefore knows to belong to a social category or group (Hogg and Abrams 1988), in this case a specific discipline. In simple terms, we choose the group that we identify with easiest and best, and then reinforce our identity by adjusting our behaviours and appropriating the communalities of that group. Identity theorists, however, view identity as role-based and therefore dependent on contextual and social circumstances. By occupying a role we enact perceptions, expectations, and behaviours that we consider relevant to that specific role. We remain individuals with our unique outlooks and views, but are

connected to others through the performance and enactment of the same role (Stets and Burke 2000). So, through encountering colleagues with different epistemological and philosophical outlooks and through practically engaging with those in a project like the one described here, the individuals are faced with redefining specific characteristics and entire categories.

As has been shown, challenges of interdisciplinarity include the tacit norms that prevent interaction between disciplines, and challenges of interaction—that is communicating across disciplines. Communication can prove challenging, both during a project and throughout its dissemination (Moti 1997; Jeffrey 2003; Massey et al. 2006; Gewin 2014). Such difficulties are inherent in any collaborative exercise, but with interdisciplinary projects, the fundamental epistemological beliefs of the collaborators—the understandings that they hold true about knowledge and the ways to increase that knowledge may be in opposition (Klein 1990). Jeffrey (2003) argues that interdisciplinary work cannot merely be ‘bolted on’ to existing research paradigms, but requires substantial and rigorous preparation and training and consequently, appropriate allocation of resources. The allocation of time and money to the development of interdisciplinary research is also a factor discussed in Lingard et al. (2007). They stated that for an interdisciplinary team and group identities to develop effectively, individual members must be socialized into their community of practice accordingly, a process that ultimately requires time and money (Lingard et al. 2007). Massey et al. (2006) and O’Cathain, Murphy and Nicholl (2008) report on mixed-methods research and highlight the implications for methodological decisions and team working. What becomes clear in both reports is the necessity for clear communication and a deep commitment to the research cause in order to overcome superficiality and fragmentation that seem to underpin interdisciplinary research work. As a consequence, it makes sense to allow time and space within any interdisciplinary research design to allow for the ongoing communication necessary for successful research, and any evaluation of interdisciplinary research should look for such a measure. Further to this, we wonder whether reflection and reflexivity are the keys to achieving this, as reflexivity within teams has a positive impact (see Robinson 2008; Hedman-Phillips and Barge 2017; Tesler et al. 2018) and allows for adaptability, change, and resolution of problems.

5. Conclusion

This article highlights the importance of individual experiences of researchers at all levels of seniority within interdisciplinary research, and as such has potential implications for research design and evaluation. It is novel in its use of a phenomenological and autoethnographic perspective for research evaluation. Whilst there are many ways to evaluate research from metrics (Ma and Ladisch 2019) to concept hierarchies (Mårtensson et al 2016), our work seeks to humanize the evaluation of research and highlight the experiences of those involved in the practical implementation of research.

Our conclusions are that it is important that when designing or evaluating interdisciplinary research the PI, Co-Is, and all members of the wider research team are allowed sufficient space and time to reflect and communicate around disciplinary differences in understandings, and to allow for communications to happen throughout the team. Even if a project is conceived as interdisciplinary, and funded and designed as such, there may still be practical and

logistical challenges associated with implementing interdisciplinary research. If we can anticipate such challenges, then as we design and evaluate the design of such projects we can build into an interdisciplinary project the time and opportunity to clarify communication, reflect on experiences and adapt our research as needed, maximizing the potential of such a study. Setting up time and spaces for this in proposed research projects, for example, in the form of regular meetings to reflect on an ongoing project from personal perspectives rather than rushing through an agreed agenda, could be a mark for an awarding body to determine that the PI and Co-Is are aware of the challenges that particularly effect interdisciplinary projects. This approach would enable a mechanism by which funders could review potential research projects as well as enable them to be more successful on a practical level, and impact on individuals by allowing them to feel heard, supported, and to contribute to their full capacity.

Hindsight is an extremely valuable tool with respect to any research project, and an opportunity to take stock or debrief allows for reflection on experiences, to make sense of them, and to consider how things might change things moving forward. Researching the experiences of individuals within the larger interdisciplinary and smaller disciplinary groups allowed us to explore how group identity was felt and experienced. The elements of reflection and evaluation are necessary in order to work reflexively, that is to reflect and then to enact change. However, such time to reflect is not always allowed for in the busy academic schedule of working, applying for grants, reviewing grants, and disseminating results. In addition, the more challenging, and sometimes problematic aspects of research are often elided from the publications that share results and findings. The team members said in the interviews that they had not taken time to reflect directly on the fundamental differences between the two approaches to and of research before. This project allowed time for reflection, for understanding, and for all involved to reflect on what had been achieved and how they might improve on their work in the future. Only then did it become evident that interdisciplinarity needs to be formally planned (Jeffrey 2003) in order to genuinely assimilate disciplinary practices (Dervin et al. 2003).

Anyone proposing to work in an interdisciplinary capacity, therefore, has to remain open to change and to different ways of expressing and communicating to those that they are habitually comfortable with (Wurman 1991) and to design in opportunities for this to happen. This is vital not only for the participants of research, but the researchers themselves. Rubbing up against epistemological beliefs and practices contrary to those found within one’s own discipline can be uncomfortable, but these uncomfortable experiences are the places of liminality, where learning takes place (Meyer and Land 2005). In an interdisciplinary project, it is not just the results and the outcomes that matter, but the process of meaning-making, and the journey to how those meanings were made (Latour 1999). As such, interdisciplinarity is the process of synthesis of disciplines, not a subject matter or a body of content (Klein 1990), and for this integration to happen there needs to be regular and clear communication, and strong collaborative leadership (Gray 2008). But interdisciplinarity is also a project of self and identity, of belonging to a group, of sharing the same identifiers—or not. And it is this aspect of work that certainly needs to be developed further when it comes to the exploration of interdisciplinary research teams.

By foregrounding the lived experiences of those involved in carrying out the research, it is possible to learn from the evaluation and to take these lessons forward when designing new or further

research projects. For those involved in evaluating research applications, particularly interdisciplinary research projects, a key factor to consider is whether the plan incorporates a reflective element along with time and space for the interdisciplinary teams to communicate effectively.

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Notes

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