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Citation:

Sparkes, AC (2015) Developing mixed methods research in sport and exercise psychology: Critical reflections on five points of controversy. *Psychology of Sport and Exercise*, 16 (P3). 49 - 59. ISSN 1469-0292 DOI: <https://doi.org/10.1016/j.psychsport.2014.08.014>

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Developing Mixed Methods Research in Sport and Exercise Psychology: Critical Reflections on Five Points of Controversy

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Abstract

Objectives: To stimulate debate in sport and exercise psychology about the nature of mixed methods research as currently practiced and how this approach might develop in the future.

Design: An exploration of five points of controversy relating to mixed methods research.

Method: A presentation of critical reflections on the following. (1) Mixing methods as a non-debate, (2) Purists, pragmatists and mixing paradigms, (3) Integrating findings and representational forms, (4) Judgement criteria and mixed methods research, and (5) Power, politics and what counts in mixed methods research.

Results: The examples provided of mixed methods research in action indicate that a number of problematic issues regarding both process and product have been neglected.

Conclusions. Mixed methods research offers a number of conceptual, practical and pedagogical challenges that need to be addressed if this form of inquiry is to develop its full potential in sport and exercise psychology.

Keywords: mixed methods, paradigms, integration, criteria, power.

Developing Mixed Methods Research in Sport and Exercise Psychology: Critical Reflections on Five Points of Controversy

In a decade review (2000-2009) of qualitative research in three leading sport psychology journals, that included *Psychology of Sport and Exercise*, Culver, Gilbert and Sparkes (2012) found that a total of 57 articles used mixed methods, which accounted for 31.1% of the articles classified as qualitative in their selected sample. Of these 57 mixed methods articles, '25 employed open-ended questions within a survey or test; 23 used tests and interviews; and 10 used systematic observation in conjunction with interviews' (p. 265). This suggests a growing acceptance of mixed methods research (MMR) in the field.

Moran, Matthews and Kirby (2011) propose that MMR 'has much to offer sport and exercise psychology researchers who believe that quantitative and qualitative methods may be combined effectively' (p. 367). The benefits proposed for undertaking a mixed methods study according to Doyle, Brady and Byrne (2009), Hagger and Chatzisarantis (2011), Hesse-Beber (2010), Horn (2011), and Moran et al., (2011), include the following. *Offsetting weaknesses and providing stronger inferences*: the respective weaknesses of quantitative and qualitative methods can be overcome and neutralized by drawing on the complementary strengths of each other to provide stronger and more accurate inferences. *Triangulation*: this allows for greater validity in a study by seeking corroboration between quantitative and qualitative data. *Completeness*: using a combination of methods allows for a more complete and comprehensive picture of the studied phenomenon to emerge and can also generate new insights. *Hypothesis development and testing*: qualitative methods can be used to develop hypotheses that can then be tested by quantitative methods. *Instrument development and testing*: complementing quantitative methods with qualitative methods can assist in the further (and quicker) development of theory, and the development, testing, and refinement of

psychometric instruments for use in subsequent quantitative studies. *Assisting sampling*: using quantitative survey methods can enhance purposeful sampling and case selection in qualitative studies whilst also helping to define a population of interest that was not anticipated. *Enhancing generalization*: Quantitative methods can be used to obtain a representative sample, with the goal of enhancing the generalizability or transferability of qualitative findings.

Despite these potential benefits, Mason (2006) makes the following comment in her review of strategies for MMR:

Yet mixing methods for no good reason other than the sake of it can produce disjointed and unfocussed research, and can severely test the capabilities of researchers. Researchers engaging in mixed methods research need to have a clear sense of the logic and purpose of their approach and of what they are trying to achieve, because this ultimately must underpin their practical strategy not only for choosing and deploying a particular mix of methods, but crucially also for linking their data analytically. (Mason, 2006, p. 3).

The views of Mason (2006) suggest that researchers in sport and exercise psychology are well advised to approach MMR with caution. Rich and critical debates within the social sciences about MMR show it is best viewed as a *contested* and *ambiguous* concept (Gill, 2011; Johnson, Onwuegbuzie & Turner, 2007; Whaley & Krane, 2011). Cresswell (2011), a leading advocate of MMR, highlights an extensive range of controversies in an emerging field that include the following: basic issues of the legitimacy and meaning, philosophical underpinnings, and the pragmatics of conducting a mixed methods study. These controversies, he argues, need to be squarely placed on the table for discussion and their presence honoured. In this article, therefore, I offer some critical reflections on five points of controversy with the aim of stimulating dialogue within the sport and exercise psychology

community about what MMR is, how it is currently practiced, how it might be developed in the future, and the pedagogical challenges that flow from all of this.

Gaining an understanding of MMR as an emerging field is difficult. The term ‘mixed methods’ has multiple meanings depending on the standpoint of the researcher (Cresswell, 2011; Johnson, Onwuegbuzie & Turner, 2007; McGannon & Schweinbenz, 2011), and how it is enacted within the diversity of options for designing mixed methods studies as described by Teddlie and Tashakkori (2011). The terminology used is also problematic. Sometimes the terms paradigm and methodology, and methodology and method, are used interchangeably but at other times they are used to refer to different aspects of the research process. This has made it difficult for me to make sense of, and weave various stands of the MMR debate together in a coherent and consistent fashion. To alleviate this problem, but without the ability to solve it, I offer the following working definitions of key terms as reference points for my critical reflections that follow.

Drawing on the work of Kuhn (1970), I take a paradigm to be a set of basic beliefs, and a worldview that defines, for its holder the nature of the world, our place in it, and the possible relationships we can have to this world and its parts. Denzin and Lincoln (2005) propose that paradigms are generated and characterized by how researchers respond to the following questions: What kind of being is the human being? What is the nature of reality? (*ontological* questions); How do we know the world, and what is the relationship between the knower (the inquirer) and the known (or knowable)? (*epistemological* questions).

How these philosophical questions are answered informs a theory of how inquiry should proceed in practice, and how researchers might go about gaining access to, and knowledge of the world. This is the *methodological* aspect or process of doing research that involves a general approach to studying a given topic or problem. Whaley and Krane (2011) locate methodology as the bridge between epistemology and methods. Methodology is the

framework guiding why specific methods or procedures are used in our research. In contrast, *methods* are best described as specific *techniques* or procedural tools for generating data (e.g., observation, interview, questionnaire), and then analyzing it (e.g., statistical analysis, narrative analysis, discourse analysis). Methodology, therefore, is much more than method

Having clarified key terms from my perspective, it should be noted that many mixed methods researchers do not necessarily do the same when writing on the topic. This has led Creswell (2011) to ask, ‘Why do mixed methods writers not clearly distinguish among methods, designs, and paradigms?’ (p. 273). In the sections that follow, therefore, the reader needs to be aware of terminological slippage in some of the articles that I refer to in offering my critical reflections about five points of controversy. This should be seen as an inherent dilemma within the emerging field of MMR that is beyond the scope of this article to resolve.

Critical Reflection 1: Mixing Methods as a Non-Debate

Once the terms *method* and *methodology* are differentiated, then MMR in sport and exercise psychology is something of a non-debate. As Smith (1989) points out, if the question is narrowed down to whether or not researchers operating in different paradigms can borrow techniques from each other, or mix quantitative with qualitative methods, then the answer is an uninteresting *yes*. The question about mixing methods is of no great concern because the *logic of justification* for any given approach to inquiry, at the paradigmatic level, does not set detailed, rigid boundaries for the practical application or use of techniques. This view is supported by a number of recent paradigm reviews.

Lincoln, Lynham and Guba (2011), Sparkes and Smith (2014), and Whaley and Krane (2011) provide a review of the ontological and epistemological assumptions informing a range of paradigms that include the following: positivism, postpositivism, constructivist, phenomenological, critical theories, participatory, and poststructuralism. They illustrate how the different philosophical assumptions of each paradigm shape the goal of inquiry, the role

of values, the role of theory, the voice represented, the researcher role, and the legitimacy criteria called upon to judge the inquiry. For example, given its view of knowledge as observable, empirical, quantifiable and verifiable, positivism has prediction and explanation as its goal of inquiry with the role of the researcher being that of a disinterested and detached scientist. In contrast, given its view of knowledge as multiple, situated, and socially and historically bounded, then critical theory has empowerment and emancipation as the goal of inquiry. Here, the role of the researcher is that of transformative intellectual in the form of advocate or activist. Likewise, given its ontological and epistemological position, positivism adopts an experimental and manipulative methodology. In contrast, given its different positioning on these issues, constructivism adopts a hermeneutical/dialectical methodology.

Even though Lincoln et al. (2011), Sparkes and Smith (2014), and Whaley and Krane (2011) illustrate how the philosophical assumptions informing a paradigm influence its methodology, they make no claims that these determine the methods used in any given study. They are right not to do so because exactly how data are collected is not something that the researcher's ontological or epistemological position prescribes. Researchers of any paradigmatic persuasion are free to choose any methods they like. This is why, at a very basic level, I propose that MMR is a non-debate.

Moving beyond a basic level, things get more interesting and more debatable. As Willig (2001) reminds us, not *all* research methods are compatible with *all* paradigmatic assumptions and *all* methodologies. Having noted that there is some flexibility in relation to choosing methods, she argues that a researcher's ontological, epistemological and methodological commitments do constrain which methods can be used. As an example, Willig suggests that the philosophical assumptions and methodology of social constructivism are not compatible with methods that are designed to measure variables in a population. This is because social constructivism problematizes constructs such as 'psychological variables',

questions their validity, and seeks to explore the various ways in which they are ‘made real’. This, Willig argues, ‘cannot be achieved through an attempt to “measure” such constructs. According to a social constructionist viewpoint, the measurement of psychological variables is itself one more way of making them real, of constructing them’ (p. 8). This may help to explain why researchers of particular paradigmatic persuasions are drawn more to some methods than others from the range that are potentially available for use. In this sense, paradigmatic assumptions, along with methodological commitments, directly influence the choice of method at the practical level in a mutually reinforcing manner (Harrits, 2011; Sparkes & Smith, 2014). Therefore, postpositivists tend to use quantitative methods and social constructivists tend to use qualitative methods.

Both postpositivists and social constructivists can, of course, choose to use both quantitative and qualitative methods in a study. Just doing this, however, does not necessarily make it a ‘mixed methods’ study as opposed to what some might call a ‘multiple methods’ study (see Cresswell, 2011; Johnson, Onwuegbuzie & Turner, 2007; Morse and Maddox, 2014; Plano Clark, 2010). It also needs to be recognized that just borrowing a quantitative or qualitative data gathering technique does not make one a positivist, postpositivist, constructivist, critical or poststructural researcher. Given their different philosophical assumptions the same data gathering technique can be used in very different ways, and for very different purposes, by researchers operating within these different paradigms. For example, a constructivist researcher may use the technique of interviewing to generate qualitative data but will adopt a subjectivist epistemology in doing so, whereas a postpositivistic researcher who uses a post-experiment interview will do so using an objectivist epistemology.

Against this backdrop, Wolcott (1999) warns that the use of a technique in itself can be a meaningless exercise involving the mechanistic collection of data. For him, the

important issue is the intent and commitment of the person using the technique for a specific research purpose. This point is reinforced by Atkinson (2012) who points out that undertaking an ethnographic study totally encompasses and connects one's professional and personal lives. He states, 'When one chooses to study sport and physical culture worlds ethnographically, one's entire modality of living shifts' (p. 33). Such a shift in modality is not instigated by the simple adoption of any given technique.

The notion of modalities of living as a researcher takes us beyond basic questions about whether or not researchers in sport and exercise psychology can mix methods to study a given phenomenon towards questions of why, when, and how, they might do so in an informed and coherent manner given their ontological and epistemological assumptions, methodological commitments, and specific purposes. As Gill (2011) states, 'different methods (data collection, analysis strategies) may mix well, but different methodologies and research paradigms (underlying philosophies and epistemologies) do not mix so easily' (p. 309). This raises the issue of commensurability and the possibilities and problems of mixing different research paradigms in MMR.

Critical Reflection 2: Purists, pragmatists and mixing paradigms

The real debate in sport and exercise psychology about MMR, according to McGannon and Schweinbenz (2011), is not about methods but about issues of ontology and epistemology. For Whaley and Krane (2011), and Krane and Baird (2005), these cannot be intermingled capriciously. At this level, various paradigms (e.g., positivism and constructivism) as belief systems informed by very different ontological and epistemological assumptions are deemed by some to be incommensurable (Denzin, 2010; Hesse-Beber 2010; Lincoln, 2010; Lincoln, Lynham and Guba, 2011).

Advocates of MMR often argue, somewhat dismissively, that appealing to the basic philosophical assumptions of paradigms is a *purist* approach. This debate is most often

located within the frame of a quantitative paradigm *versus* a qualitative paradigm.

Onwuegbuzie and Leech (2005) suggest that purists exist at one end of a continuum and tend to focus on the differences between the paradigms rather than on similarities.

According to purists, distinctions exist between quantitative and qualitative researchers with respect to ontology, epistemology, axiology, rhetoric, logic, generalizations and causal linkages ... For purists, the assumptions associated with both paradigms are incompatible regarding how the world is viewed and what it is important to know. Purists contend that quantitative and qualitative approaches cannot and should not be mixed. As such, they advocate mono-method studies.

(Onwuegbuzie & Leech, 2005, p. 376)

At the other end of the continuum lie the *pragmatists*. They contend that a false dichotomy exists between the quantitative and qualitative paradigms and their associated methodologies, and so advocate integrating the methods associated with both in a single study.

Indeed, pragmatists ascribe to the philosophy that the research question should drive the method(s) used, believing that ‘epistemological purity doesn’t get research done’ ... In any case, researchers who ascribe to epistemological purity disregard the fact that research methodologies [sic] are merely tools designed to aid our understanding of the world. (Onwuegbuzie & Leech 2005, p. 377),

The kind of pragmatism that informs the arguments put forward by advocates of MMR, such as Teddlie and Tashakkori (2011), rejects the purist incommensurability of paradigms thesis. For them, the quantitative and qualitative paradigms and their associated methodologies are compatible and can fruitfully be used in conjunction with one another within a ‘what-works’ approach. This approach sees no necessary connection between knowing and how we know thereby redirecting our attention away from concerns to do with

ontology and epistemology and moving it towards method. Philosophical assumptions are defined as conceptual tools that should not take precedent over the practical, logistical, and material considerations that rightfully occupy the mind of the researcher (Gibson, 2012). This infers that research paradigms, their associated methodologies, and their characteristic methods can be delinked and the research process may proceed accordingly without the need for any philosophical debate.

The pragmatic approach and its impact on the research community is rightly a concern for purists. For example, Denzin (2010) worries that the uncoupling of ontological and epistemological assumptions with both methodologies and methods leads to ill-informed research in which the methods, or technical tail, ends up wagging the methodological dog. For him, the language of the pragmatists implies that anybody can use any method because methods are simply tools rather than forms of performative and interpretive practice. He concludes that while such poaching is not illegal, it does have some negative consequences.

Another purist, Lincoln (2010), notes how this term is often used in a pejorative sense to demean and marginalize those labelled as such. Lincoln states that although she is not against utilizing a variety of methods when appropriate to accomplish some purpose, and has done so countless times in her work, she does have concerns about mixing paradigms. This is particularly so, when mixed methods advocates declare that one's philosophical belief system is irrelevant to how research gets conducted. Her argument with the mixed methods theorists is not that they mix methods but that the form of pragmatism claimed by some rests at the enacted level only. Consequently, pragmatists are not required to tell us anything about their ontological or epistemological positions. This seems paradoxical given the claims made by some that pragmatism constitutes a 'third paradigm' (e.g., Giacobbi, Poczwadowski & Hagger, 2005; Moran et al., 2011). As Lincoln emphasizes, given that all research is always

and already theory laden, then paradigms and the ontological and epistemological assumptions that inform them *do* matter, and to argue otherwise is both naïve and fraudulent

They matter because they tell us something important about *researcher standpoint*.

They tell us something about the researcher's proposed *relationship to the Other(s)*.

They tell us something about what the researcher thinks *counts as knowledge*, and

who can deliver the most valuable slice of this knowledge. They tell us how the

researcher intends to *take account of multiple and contradictory values* she will

encounter. (Lincoln, 2010, p. 7. Emphasis in original)

Given the situation described above, Gibson (2012), and Whaley and Kane (2011), note that any mixing of methods should give due consideration to the core assumptions of those doing the mixing, and that we should be wary of any approach that seeks to dissolve philosophical issues. This dissolving, they suggest, would sell mixed methods short and present a problematic, and naïve, understanding of the complexities of both conceptualizing and conducting research.

Should psychology of sport and exercise researchers claim to adopt a non-paradigmatic stance towards MMR, they need to be aware of a number of issues. First, given that ontological and epistemological assumptions inescapably frame our methodologies and use of methods, then many will view a non-paradigmatic stance as simply untenable. Second, as Gibson (2012) states, any mixing of methods 'without thinking or acknowledging the underlying theoretical and methodological assumptions of mixing, limits the potential of your strategy for integration – regardless of the individual or cumulative analytical power of the methods mixed' (p. 218). Third, Mertens (2010) argues, even if researchers do not acknowledge (or know) the philosophical assumptions that underlie their work, 'this does not mean that they have no philosophical assumptions. It merely means that they are operating

with unexamined assumptions' (p. 9). Operating in such a way, as Lincoln (2010) suggests, opens up the researcher to the charges of naivety and fraudulence.

Mertens (2010) notes the dangers of holding unexamined positions given that the beliefs and assumptions of all researchers are reflected in the approaches they employ in practice, either knowingly or unknowingly. One such danger is that important paradigmatic and methodological questions, issues and controversies are neglected and placed beyond the reflexive awareness of researchers. This reduces their ability to make principled, informed and strategic decisions about both the process and products of both their own inquiries and that of others. All of which diminishes the role of the researcher to that of competent technician as opposed to that of a creative and innovative scholar.

Critical Reflection 3: Integrating findings and representational forms

Moran et al. (2011) state that in sport and exercise psychology, 'a key challenge for MMR investigators is that of optimally integrating quantitative and qualitative findings in a valid and effective manner' (p. 367). This challenge is also noted by Hesse-Biber and Burke Johnson (2013) who ask the question: Just what is meant by integration of difference in MMR, and where and how is it done? To date, this fundamental issue has received little attention within the field. Following Bryman (2007) we might, therefore, like to ask: 'How far do mixed methods researchers analyze, interpret and write up their research in such a way that the quantitative and qualitative components are mutually illuminating?' (p. 8). In terms of integration, this involves the extent to which the components of an MMR study are related to each other, or are either totally or largely independent of each other via a process of compartmentalization that makes them parallel in nature.

In his content analysis of articles using MMR, Bryman (2006), noted a tendency for authors to foreground the fact that they were using both quantitative and qualitative methods but to either report just the quantitative or the qualitative data, or to give much greater

attention to one rather than the other. He also discerned a tendency for the findings to be presented in parallel so that there was more or less no integration at all. Similar findings are evident in the systematic review of prehospital mixed methods research undertaken by McManammy, Sheen, Boyd and Jennings (2014). This suggests that often the quantitative and qualitative elements are barely integrated, or not integrated at all, in MMR studies.

Regarding the integration of findings in MMR studies in sport and exercise psychology, it is interesting to note, as an example, that in the study conducted by Gucciardi et al. (2009a, 2009b) which examined the effectiveness of different psychological skills training packages in enhancing mental toughness among youth-aged Australian football teams, the data and findings from the quantitative and qualitative phases of study were presented in separate and discrete articles. A similar strategy is found in those single studies that combine mixed methods and published as one article. For example, in their study of successful transitions by athletes to an Olympic Training Center, Poczwadowski et al. (2013) present the qualitative and quantitative data and findings separately. Likewise, Readdy, Raabe and Harding (2014), in their mixed methods study of self-determination theory in the context of college football, also present the quantitative and qualitative findings separately. This is so, even though Readdy and his colleagues give specific attention to not reducing the status of the qualitative results as well as 'effectively integrating both types of results into a holistic and meaningful representation of the complexities related to how the external reward program influenced the motivation of the participants in this study' (p. 160). Pointing out that such scholars present their quantitative and qualitative findings in a parallel fashion is not to be critical of their work. Rather, it highlights the challenges of integration and the problems faced by researchers in attempting to do so. In facing this challenge, they are not alone.

In his study of social scientists that conducted MMR, Bryman (2007) notes how most of them expressed concerns about how far they and other researchers genuinely combined

quantitative and qualitative findings. A number of barriers were perceived to inhibit such integration. These were as follows: different audiences; methodological preferences; structure of research projects; role of timelines; skill specialisms (e.g., statistical analysis or dialogical narrative analysis); nature of data; bridging ontological divides; publication issues; and lack of exemplars. A number of these barriers are brought into sharp relief in a case study conducted by Lunde, Heggen and Strand (2013) who examined how a team of health science researchers worked together during a mixed methods study of athletes with knee injuries. Despite the ambitions stated in the project proposal and the efforts of those involved, there was little sign of the researchers involved actually integrating their findings. The results that were published were in the form of either quantitative or qualitative reports.

All our informants reported the experience of not being able to combine and integrate the qualitative and quantitative approaches. In this sense, they all expressed an experience of failure. For some, this was surprising: the team included what they deemed high-quality researchers, they were strongly motivated, and several had experience with interdisciplinary collaboration. (Lunde et al., 2013, p. 5)

This case study also reveals the tensions that arise when contradictory findings are produced by the different forms of inquiry. Here, the qualitative researchers produced findings that questioned the success of the rehabilitation process that had been indicated by the quantitative findings. In short, the qualitative data *contradicted* the quantitative data.

This was not only true from a bird-eye's view perspective, where the qualitative research problematized the entire context for the quantitative research. It was also true on the level of detail... The project as a whole did not succeed in using these contradictions as a resource - rather, they were mainly seen as a problem and an obstacle. (Lunde et al., 2013, p. 9)

In this project, the transformation of knowledge was almost absent, and the knowledge that did evolve typically returned back into the different research communities involved, staying uncontaminated by the other part. Seeking to explain this ‘failure’, Lunde et al. (2013) point to the many aspects of human interplay occurring between the researchers who represented different disciplines. They highlight the potential problems of researchers from different epistemic cultures collaborating when they live and work in fundamentally different ways, have different training, and experiences in reflecting and verbalizing methodological presuppositions, and have different theoretical foundations, collegial relations, and so on. At a more fundamental level Brannen (2005) recognizes that the demands of publishing in academic journals can often act against the integration of quantitative and qualitative findings.

For one thing academic journals tend to be organized around disciplines and may favour particular types of research. Moreover, different types of data analyses may sit awkwardly on the published page and may require a lot of space to justify their validity and credibility. Some researchers using mixed methods may for such reasons report their qualitative and quantitative research separately. (Brannen, 2005, p. 26)

Given these potential barriers, Bryman (2007) argues that greater attention needs to be given to how the findings in MMR might be genuinely integrated and best represented in publications. This is particularly so with regard to the genres used to represent findings. To date, MMR researchers in sport and exercise psychology have mostly drawn on the rhetorical conventions of the scientific tale (e.g., the use of a passive voice and the third person) for reporting the quantitative component of their study, and the conventions of the realist tale (e.g., experiential authority, the participant’s point of view, and interpretive omnipotence) for reporting the qualitative component (Sparkes, 2002).

In recent years, however, challenges have been mounted to the dominance of the realist tale for representing the findings of qualitative studies. Different genres are now available that draw on more narrative, arts-based, and performative approaches, such as, autoethnography, poetic representations, ethnodrama, ethnographic non-fictions, and musical performance (Sparkes & Smith, 2014). This raises questions about how each of these, as analytical practices, might be creatively integrated with, and intimately connected to, the scientific telling of the quantitative component of a mixed methods study and presented for public consumption. Indeed, is this desirable or even possible given the skills required and the different ways that these various representational forms operate to achieve their goals? Finally, how would journal editors, reviewers, or policy makers react to a mixed methods article that juxtaposed or tried to integrate numerical quantitative findings with a non-fiction short story, a poem based on interview data, or perhaps a dramatic script based on an ethnographic study?

Such questions take us into uncharted territory in MMR and crystallize the problems of genuinely integrating different kinds of data analysis and findings in a mutually informative manner. Bryman (2007) recognizes that the different analyses and findings will need to talk to each other with a view to constructing an over-all, or negotiated account, of what they mean together so that the end product becomes more than the sum of the parts. Without this kind of integration, as O’Cathain, Murphy and Nicholl (2010) argue, limits are placed on the amount of knowledge that MMR studies can generate because ‘the knowledge yield is equivalent to that from a qualitative study and a quantitative study undertaken independently, rather than achieving a “whole greater than the sum of its parts”’ (p. 1147).

This is not to say that we cannot learn a great deal from independent quantitative and qualitative studies of the same phenomenon. For example, there is much to be learned from the findings of a quantitative study using a variety of questionnaires to assess the impact of

serious injury on athletes, and then comparing these to the findings of a qualitative study that uses a life history approach with athletes to explore the same issue. This said, the notion of mixed methods suggests something more as part of its rationale. Just how mixed methods researchers in sport and exercise psychology might go about achieving this ‘something more,’ and ‘greater whole,’ in the future requires further debate as it is likely to remain both a serious challenge and a key controversy for those working in the field.

Critical Reflection 4: Judgement criteria and MMR

In research informed by the ontological and epistemological assumptions of a positivist and postpositivist paradigm the standard criteria used for judging the quality of a study are normally those of validity, reliability, and generalizability (Tenenbaum, Eklund, Kamata, 2012). As Sparkes and Smith (2014) point out, given the different philosophical assumptions that inform qualitative research informed by the assumptions of the constructivist, phenomenological, critical, and poststructural paradigms, these terms take on different meanings, if indeed, they have any meaning at all. Given such differences, they argue, that the processes and products of any paradigm should be judged using criteria that are consistent with and relevant to their internal meaning structures and purposes.

If this is the case then what criteria are appropriate for judging an MMR study? Cresswell (2011) states that this is an overlooked but critical controversy and wonders why it is that mixed methods researchers have not pursued this issue more vigorously. Bryman, Becker and Sempik (2008) also note that this question has not received much attention in the MMR literature. In their study of social policy researchers in the UK that explored the quality criteria they deemed appropriate for quantitative research, qualitative research, and MMR, they found that most respondents felt that a combination of traditional and alternative criteria should be employed in relation to MMR. It was also evident that the respondents favoured

employing different criteria for the quantitative and the qualitative components of an MMR study.

The separation of criteria seems to be the one currently favoured by sport and exercise psychologists. For example, in their quantitative study of mental toughness, the reliability and validity of the instruments used along with the ‘objectivity’ of the researchers are assumed by Gucciardi et al. (2009a) rather than commented on directly. In their follow-up qualitative study of the same topic, however, Gucciardi et al.(2009b) devote a separate section to ‘trustworthiness’ and the three techniques used by them to achieve the elements of this in their study are outlined (independent analysis of data by the primary and secondary researcher; participant-member checks; and data triangulation). In contrast, in their study of the successful transition by athletes to an Olympic Training Center, Poczwadowski et al. (2014) comment directly on the validity and reliability of the psychometric tests they used in terms of internal consistency, test re-retest reliability, consensual validity, and convergent validity. With regard to the qualitative aspect of their study they also appeal to the notion of ‘trustworthiness’ prior to outlining the various techniques they used to achieve this (training in qualitative research and interview techniques for those involved in the study; the pilot study was used to refine the interview protocol; triangulation of data collection and analysis; rich description of the participants’ transition experiences; and member checking).

Judging a quantitative study using qualitative criteria and vice versa is wholly inappropriate. Any form of inquiry needs to be judged using criteria that are consistent with its ontology, epistemology, methodology, and use of methods for specific purposes. Choosing to consider separately the quality criteria for the quantitative and qualitative aspects of a study, as Gucciardi et al. (2009a, 2009b) and Poczwadowski et al. (2014) have done, would, therefore, seem sensible if each are seen as discrete and bounded. This might also seem a sensible tactic if each is given equal emphasis and status throughout the project (i.e., a

QUANT+QUAL study). But what if one approach is dominant in the MMR study (i.e., a QUANT+qual, or a QUAL+quant study)? In this instance, as Brannen (2005) suggests, might it not be more appropriate to judge the study using those associated with the dominant component? In contrast, Heyvert, Hannes, Maes and Onghena (2013) argue that simply assessing the individual qualitative and quantitative strands when critically appraising MMR studies is too limited, because such studies are meant to be more than just the sum of its qualitative or quantitative elements.

An additional problem involves the consequences should the trustworthiness criteria of credibility, dependability, transferability and confirmability becoming the *only* ones used for judging the qualitative component of MMR studies in sport and exercise psychology. If this happens, then a 'parallel' perspective on judgement criteria, along with its weaknesses as described by Sparkes and Smith (2009, 2014) would prevail at the expense of other perspectives, such as, the diversification and letting-go perspectives that draw on different criteria. As a consequence, those forms of qualitative research that draw on these perspectives and their criteria to judge their work would be excluded. This would have a detrimental effect on the future development of MMR by restricting what can be mixed in the first place to that which can be judged by the criteria associated with the parallel perspective.

As part of their challenge to the parallel perspective, and with a view to expanding the range of criteria used to judge different kinds of qualitative research, Sparkes and Smith (2009, 2014) suggest that researchers consider creating novel combinations of judgement criteria in the form of lists. An example of this approach in action is provided by Readdy et al. (2014), in their mixed methods study of self-determination theory in the context of college football. While the validity and reliability of the questionnaires they used (the Sport Motivation Scale, and the Basic Need Satisfaction at Work Scale) are assumed in a brief statement that both 'have been used in various sports contexts and demonstrated adequate

psychometric properties' (p. 161), they are more explicit about the criteria for judging the qualitative part of the study. Using the suggestions of Sparkes and Smith, Readdy and his colleagues construct the following list of criteria that they feel are appropriate for judging their study given its particular purposes. These are as follows: worthy topic, rich rigor, credibility, resonance, significant contribution, ethical, and meaningful coherence. Such an approach, that begins to expand the range of judgement criteria used by mixed methods researchers in sport and exercise psychology is to be welcomed and encouraged in the future.

Reflecting on the judgement criteria appropriate for judging the qualitative and the quantitative components of a mixed methods study, begs the question as to whether or not there are any criteria that might be *specific* to MMR given the claims made by some that it constitutes a separate 'third paradigm'. The social scientists interviewed in Bryman et al.'s. (2008) study named the following criteria as being specific to MMR: relevance to research questions; transparency; a rationale for using mixed methods research; and the need for integration of mixed methods findings (also see Heyvaert et al., 2013). The first three of these are not necessarily specific to MMR and can be applicable to a broad swathe of research approaches. Bryman et al. (2008), however, argue that the criterion regarding the need for the findings to be *integrated* is more specific to MMR.

In their editorial in the *Journal of Mixed Methods Research* on developing publishable mixed methods manuscripts, Cresswell and Tashakkori (2007) suggest that authors might consider several attributes of good, empirical, mixed methods articles, one of which is the integration of findings.

Mixed methods research is simply more than reporting two distinct 'strands' of quantitative and qualitative research; these studies must also integrate, link, or connect these 'strands' in some way. The expectation is that by the end of the manuscript, conclusions gleaned from the two strands are integrated to provide a

fuller understanding of the phenomenon under study. Integration might be in the form of comparing, contrasting, building on, or embedding one type of conclusion with the other. (Cresswell & Tashakkori, 2007, p. 108).

In emphasizing the criterion of integration, Cresswell and Tashakkori (2007) support the views of Bryman (2006) and Bryman et al. (2008), that certain judgment criteria might be more specific to MMR studies than others. According to Creswell (2011), without some kind of integration, the dominant assumption of MMR that the combination of methods provides a better understanding than either quantitative or qualitative methods on their own becomes difficult to sustain. This is because, as discussed earlier in Critical Reflection 3, without integration there can be little ‘value added’ to our understanding beyond that produced by the separate components of an MMR study. He suggests that, even though this issue is central to justifying MMR and giving it legitimacy, it has not been given due attention by the mixed methods community. If this is the case, then is it essential that greater attention is given to just what these bespoke criteria might be, and the role these will take, in the development of MMR. Even if this is not the case, the issue of judgment criteria in MMR remains a critical controversy that needs thoughtful consideration in the future by researchers in sport and exercise psychology.

Critical Reflection 5: Power, politics and what counts in MMR

Teddlie and Tashakkori (2011) ‘unambiguously’ and ‘equivocally’ express their regard for the powerful contributions that qualitative methods can make in MMR studies. They note, however, that a salient criticism has been that ‘MMR subordinates QUAL methods to a secondary position to QUAN methods’ (p. 295). Cresswell (2011) also acknowledges that, in certain approaches, mixed methods researchers have relegated qualitative inquiry to a secondary role. This being particularly so in embedded MMR designs where qualitative methods are often used in a supportive role in experimental, intervention

studies. On the other hand, Creswell points out that mixed methods studies can be found that give priority to qualitative over quantitative methods.

In his content analysis of MMR articles, Bryman (2006) highlights the dominance of the quantitative component in most MMR designs. In his interviews with researchers regarding their motivations for conducting MMR, Bryman (2007) found that most tended to lean towards a positivistic methodology which made it difficult to see both sets of findings in dialogue with one another on an equal footing. The overall picture, according to the typology developed by Johnson, Onwuegbuzie and Turner (2007) is that of *quantitative dominant* MMR which is symbolized as QUANT+qual. This would fit with quantitative researchers who rely on a positivist or postpositivistic view of the research process, but believe it is important to include qualitative data in their otherwise quantitative studies.

Hesse-Biber (2010) believes that a ‘methodological orthodoxy’ prevails in MMR in which quantitative methods are afforded higher status than qualitative methods. This point is emphasized specifically in relation to sport and exercise psychology by McGannon and Schweinbenz (2011). They note that debates about MMR have been framed primarily within a postpositivistic discourse which holds that qualitative research is only valuable as long as it can be integrated into quantitative lines of inquiry. This relegates the former to a supporting and subsidiary role in the overall process. The regular subordination of qualitative research in MMR creates a power hierarchy. Indeed, they suggest that the mixed methods discourse of inclusiveness and pragmatism as well as paradigmatic pluralism, ‘may actually serve as a cover for the continuing dominance of post-positivism, marginalizing non-positivist research methodologies’ (p. 377). Any notion of the dominance of one approach signals that differential *power* resources are involved.

Mason (2006) notes that MMR is influenced by practical, political and resource issues that establish certain constraints and contexts as well as creating inequalities and difference between researchers and approaches. These include the following:

Power, status and inequalities within and between teams, and for individual researchers, and between disciplines and fields of interest. We know that not all methods and approaches are universally perceived as being equally valid, rigorous or meaningful, and that research involves power relations and struggles (often between people with very different kinds of employment contract) and is conducted in different political and economic contexts. (Mason, 2006, 11-12).

Many of issues mentioned by Mason (2006) are highlighted by O’Cathain, Murphy and Nicholl (2008) in their interview based study of researchers who worked on MMR projects in the health services. With regard to the facilitators of, and barriers to, exploiting the potential of this approach, they found that qualitative researchers often described how quantitative researchers made judgments about the quality of their work based on the strengths and purposes of quantitative research, in particular the use of large random samples to ensure generalizability. They felt, therefore, that some quantitative researchers did not respect qualitative research which led to the qualitative researchers constantly being asked to justify their , or fight for space to talk about their work, within team meetings. This lack of respect for ontological, epistemological and methodological difference was communicated both explicitly and implicitly and often led to team meetings being perceived as places of battle rather than integration.

Respect was described as team members being open to different approaches to research, understanding different approaches, and being willing to be involved in the ‘other’ approach. This required that qualitative research be treated as equal to

quantitative research within a study; that is, valued rather than seen as a second-class component of a project. (O’Cathain et al., 2008, p. 1581)

O’Cathain et al. (2008) also point out that some quantitative researchers in the project felt that qualitative researchers did not respect their work and this had negative consequences for those involved. Mutual respect between team members needs to be emphasized in MMR studies if their potential is to be fully exploited. This view is supported by Lunde et al. (2013) who, in their case study of a team of health science researchers doing MMR on athletes with knee injuries, raise the often overlooked, but crucial issue of power in the relationships between researchers in such studies

For Lunde et al. (2013), power issues and relationships were articulated by the members of the project team along a number of axes, and were often accompanied by an expression of their disempowerment or inferiority in a hierarchy. Of interest here, is the way that the historical genesis of the project led to an asymmetry in ownership that led to the qualitative researchers not feeling entirely included in the overall project design, nor in the overall presentation of the project in various arenas. In part, Lunde et al. suggest, this was because the project was covertly or perhaps subconsciously quantitative dominant, and so gave higher scientific value to the postpositivist, experimental, methodology that was used rather than to qualitative observations. In view of this, the qualitative researchers suffered under forms of paradigmatic, methodological, and method *disrespect* in spite of the plans and intents of symmetry. In this perceived discrepancy between plans, good intentions, and real dominance, Lund et al. illuminate the connections between the philosophical, collegial, and personal in the project and how differences in these can lead to experiences of disrespect and personal disappointment.

Lunde et al. (2013) conclude that the outcome of the knee project was one of *tolerant ambivalence* between the researchers working in two different paradigms. Of course, the

project as described by Lunde et al. may be an extreme case in terms of how MMR research teams operate and should not be taken to represent all such ventures. It does, however, draw attention to the difficulties of bringing together teams made up of researchers who hold different positions with regard to ontology, epistemology, methodology and how various techniques should be used for specific purposes. Simply bringing researchers from different backgrounds together does not guarantee a successful mixed methods project. A great deal of hard work needs to be invested throughout an MMR project to develop and maintain mutual respect across difference for all those involved so that their specific strengths, rather than their weaknesses, are valued and celebrated within a flexible and dynamic process of inquiry.

The amount of work and on-going negotiation required to enable a successful, collaborative, and mutually respectful, mixed methods research team to develop is evident in the case study provided by Hemmings, Beckett, Kennerly, and Yap (2013). They examined the intragroup social dynamics of a nursing and education research team that conducted a mixed methods study into organizational cultures and occupational subcultures. Their findings suggest that, for successful interdisciplinary border crossings in MMR to take place, a community of research practice needs to be developed. This involves the re-education of those involved and their socialization into different disciplines, paradigms, methodologies and methods in such a way that a group social identity is formed that augments rather than supplants members' discipline-bordered identities. Importantly, this re-education and socialization needs to be accomplished by the concerted efforts of those involved in the team taking turns to act as collegial instructors who support conjointly enterprising literature reviews and discussions throughout the length of the study. These processes, as Hemmings et al. acknowledge, are very time-consuming and often frustrating. They are, however, a vital and necessary part of teamwork and are crucial for creating a supportive and safe environment for successful interdisciplinary MMR to take place within.

The views of Hemmings et al. (2103) are supported by the work of Krane et al. (2012) who draw upon personal journals and reflexive group interviews to provide a behind-the-scenes account of the inner workings of a multidisciplinary feminist research group, with very different academic experiences and interests, as they navigated and coalesced into a productive, interdisciplinary collaboration. While sharing a common research goal, each member negotiated her personal, conceptual, and epistemological stances as they produced an effective, interdisciplinary pastiche. As part of this process, the members of the group worked to create a non-hierarchical, safe, and trusting atmosphere. They continuously and ethically questioned their methods, and incorporated reflexivity throughout their engagement with each other.

As the account by Krane et al. illustrates, this is a time-consuming and complex task that requires a high degree of sustained commitment. For example, in their substantial introductions that took place over several months at the start of the project, they were able to learn about and understand each other's sport background, epistemological and theoretical grounding, academic backgrounds and interests. Through respectful and unhurried deliberation the members of the group became adept at explaining ideas, using examples and educating each other. In so doing, they were able to find common ground and a common language, as well as recognize the unique strengths and perspectives that each person brought to the research as they solidified the study design and evolved into an interdisciplinary unit. This is not to say that the members of the group did not face challenges along the way. As Krane et al. state, 'It was not always easy; there were sticking points, snags, and differences of opinion ... At times the process seemed arduous; examining a concept from so many perspective seemed excessive' (p. 265). Working through these challenges in a collaborative manner was, however, an integral part of working together across differences so that members of the group grew as scholars and individuals.

As Mason (2006) notes, mixed methods researchers require a safe environment in which they feel they can share ideas and differences, take intellectual risks, and be interested in alternative approaches without fear of immediate reprisal (for having sold out), contradiction (by those who favor alternative approaches) or annihilation. For her, all this, ‘requires considerable skill and commitment from researchers and teams, who need to have the capacity and inclination to see beyond disciplinary, epistemological and ontological distinctions, without simply wishing to critique all others from the perspective of only one, or to subsume all others into one’ (p. 10).

Creating the environmental conditions for a flourishing of difference and mutual respect in MMR is likely to become increasingly problematic in the prevailing academic culture described by Smith and Brown (2011). They point out that government research policies in the United Kingdom are harming the development of qualitative research by not just privileging science, technology, engineering and mathematics (STEM) subjects over the social sciences, ‘but also telling us that post-positivistic inquiry is the way we should all do funded research’ (p. 263). Even where funding bodies do encourage mixed methods applications, the clear message seems to be that the study should be quantitative dominant with qualitative research playing a subservient and supporting role to add some flesh to the dry bones of statistical data.

The challenges of celebrating difference and developing mutual respect when academic subjectivities are being shaped by neoliberalism, the audit culture and New Managerial Practices, are further highlighted by Sparkes (2013). He notes how the neoconservative backlash to qualitative research in recent years has led to a resurgent scientism and a form of methodological fundamentalism that promotes positivist, and postpositivist, experimental design studies as the ‘gold standard’ for producing knowledge that is ‘worthwhile’. In so doing, governments around the world have attempted to regulate

scientific inquiry by defining what ‘good’ science is by using a very narrow set of criteria that, by definition, excludes or marginalizes qualitative research. The effects of this are felt at the national level in terms of funding opportunities and at the faculty level in the recruitment of staff. All of which provides an environment that exacerbates the power differentials that exist between different forms of inquiry and the inequitable distribution of resources between them. Given that such power differentials do exist and operate at multiple levels from the macro to the micro, then researchers in sport and exercise psychology need to be aware of the dynamics of this process in action as part of their engagement in MMR if it is to develop within the field in ways that give mutual respect and status to those involved.

Future challenges for MMR

In this article I have offered some critical reflections on five points of controversy in MMR with a view to stimulating debate amongst researchers in sport and exercise psychology. Each point of controversy deals with complex issues that become cumulative in the challenges they offer when they are connected to each other. Given that no easy answers are available it would be understandable if they were glossed over and attention focused on getting on with using MMR in the technical sense to ‘get the job done’ at the practical level. This would be an unfortunate reaction as it could limit the long-term development of MMR in the field. For example, it might foster a reliance on a few relatively ‘safe’ MMR strategies (e.g., triangulation design) and the mixing of a few ‘safe’ data gathering techniques (e.g., questionnaires and structured or semi-structured interviews) at the expense of developing a wider range of ‘riskier’ possibilities over time. This point is made by Mason (2006) in her review of various strategies for mixing methods and linking data in social science research.

Speaking of the most commonly used logic in MMR, where researchers wish to add some breadth or depth to their analysis and how it is implemented in studies, Mason (2006) notes that the ambitions of this kind of approach are, methodologically speaking, extremely

modest because there is no real attempt at multi-method explanation or dialogue, and the research design and strategy is governed by an either/or, 'quant-or-qual', methodological logic. For this reason, she suggests, this kind of approach raises few challenges.

It is not difficult for a skilled quantitative researcher to work out for themselves how to include a few qualitative examples, or for a qualitative researcher to include a bit of quantitative background taken from published sources for example. Neither has to get to grips with how exactly one might sample, or generate data systematically and creatively, from a perspective other than the one with which they are familiar. Neither has to work out what a mixed methods explanation or interpretation might look like.

(Mason, 2006, p.4)

With this approach the opportunities are just as limited as the risks. Mason's (2006) verdict is that this is MMR with a rhetorical logic that is easy to do, low risk, but doesn't take us very far. Likewise, in giving her verdict on the approach that mixes methods using a parallel logic to ask and answer differently conceived or separate questions, she states that it is fairly easy to do, has medium risks, but limited benefits even though there is some potential for exploiting the multiple methods used, especially later in the study. Against this, Mason contrasts the mixing of methods driven by a multi-dimensional logic to ask distinctive but intersecting questions about a phenomenon.

This kind of approach is hugely challenging because by definition it pushes at the boundaries of social science philosophy, knowledge and practice ...Such an approach, like no other, can facilitate the researcher in asking new kinds of questions, 'thinking outside the box', developing multi-dimensional ways of understanding, and deploying a creative range of methods in the process. (Mason, 2006, p. 10)

If sport and exercise psychologists wish to be part of this future then serious consideration needs to be given to how research in general, and MMR in particular, are

taught to those entering the field. McGannon and Schweinbenz (2011) warn that it is no easy task for neophyte researchers to learn a ‘bilingual language that combines qualitative and quantitative terms as well as a new language with unique terms that cross epistemological and methodological lines’ (p. 375). For Butryn (2011), therefore, if MMR is to have any real meaning in practice, then graduate students and established researchers are in dire need of more rigorous training, and moderate to heavy retooling when it comes to the variety of paradigmatic positions, methodological approaches, and range of methods that are now available for use whether in combination or not.

Teaching mixed methods, according to Bazeley (2003), offers a high level of challenge that is demanding of both teachers and students. He notes that few graduate students are prepared for the specific demands of MMR, and that the ‘opportunities for training in the issues and techniques involved are rare’ (p. 117). A decade on, Hess-Biber and Burke Johnson (2013) also point out the paucity of MMR course offerings available in universities. Despite this relative lack, Frels, Onwuegbuzie, Leech and Collins (2012) argue that, in recent years, the number of mixed methods courses being taught worldwide has increased significantly been supported by the emergence of journals devoted to MMR (e.g., *Journal of mixed Methods Research*), and specialist books on this topic (e.g., Cresswell and Plano Clark, 2010). Despite this increase, Frels and her colleagues acknowledge that those who teach MMR courses face a number of specific challenges that revolve around the themes of time, diversity, format/life situations, and preconceived bias. For example, with regard to the challenges of diversity, which was the dominant theme in their interview based study of teachers of mixed methods courses, this involves the following: addressing on one course students who are stronger in one research approach (e.g., qualitative) versus the other approach (e.g., quantitative); teaching research language pertaining to research in general and terms specific to mixed methods (e.g., convergent parallel design, pragmatism); and

developing a course that meets the needs of students from various department within the university.

The range of pedagogical challenges associated with MMR, as both a concept and a practice, are accentuated as we move from the low-risk to the high-risk approaches described by Mason (2006). At one level, MMR can be conceptualized in a non-paradigmatic manner which holds that inquiry decisions be made by the practical demands of the particular situation rather than by 'abstract' philosophical assumptions. In this scenario, MMR is a technical affair and all students need to be taught is how to efficiently use various data gathering techniques with a view to mixing them as required in any given study. While pedagogically this might be appealing as it sidesteps issues of ontology and epistemology, it is in danger of producing non-reflexive technicians rather than reflexive, critical and conceptually well-rounded researchers. Against this, Bazeley (2003) suggests, that one of the learning objectives for students taking a mixed methods course should be that they have 'sufficient understanding of the philosophical bases of research to determine if and how paradigmatic differences in approach might influence their work and be resolved' (p. 120). Mertens (2010) further argues that teachers of mixed methods have a responsibility to nurture their students' abilities to think through their choices in terms of MMR based on a critically examined understanding of their philosophical assumptions.

As teachers of mixed methods research, we have a responsibility to present the major paradigmatic perspectives that are salient in the research community: postpositivism, constructivism, transformative, and pragmatic. We also have a responsibility to make visible the tensions that exist amongst these paradigms and the implications of accepting one paradigm over another in a way that allows students to situate themselves with the belief system that most closely aligns with their own. (Mertens, 2010, p. 16)

This view is supported by Cameron (2011) who notes that not only do mixed methods researchers need to be proficient, competent, versatile and innovative with a repertoire of research skills that exceed those required by a singular form of inquiry, they also need to ‘explicitly state their philosophical foundations and paradigmatic stance before rigorously defending their methodological choices and demonstrate a sound knowledge base of mixed methods research designs and methodological considerations’ (p. 106). For Cameron, the pedagogical implications of this are that students need to become not only bilingual in terms of the depth of knowledge required to understand the ontological and epistemological assumptions informing different paradigms and their associated methodologies, but *trilingual* if they are to engage with and develop fully as mixed methods researchers. Perhaps, more than most, such students need to develop the art of appreciation, or connoisseurship, as described by Sparkes and Smith (2009, 2014) that involves the ability to make fine-grained distinctions among complex and subtle qualities, and a willingness to risk one’s prejudices when encountering something new or unfamiliar in the research domain. All of which raises the questions about how best to teach mixed methods to students.

According to Brannen (2005), the organization of research methods teaching in most universities tends to separate quantitative and qualitative ‘methods’. The process of learning tends to be sequential in that the student is first introduced to quantitative research and then to qualitative research or vice versa. It could be argued that students be exposed from the start of their studies to MMR. Brannen points out, however, that this may actually prevent the student from developing a firm grounding and set of competencies in either. For her, at the very least, a mixed methods training course as opposed to a multi-methods course, will directly address issues arising from the combination of methods within a single study as signalled in the critical reflections provided earlier, rather than cover a number of separate methods. As part of this process the students will be exposed to a range of paradigmatic

stances and methodologies whilst also achieving proficiency in the different methods they can choose from. Given the rather different exigencies of quantitative and qualitative methods, however, she warns against sacrificing depth for breadth. Brannen notes that courses that introduce students to new methods ‘should not constitute substitutes for proper apprenticeships in the relevant method and approach. Mixed methods courses should not be short cuts to training researchers fully in particular methods and should allow for extended training and apprenticeship’ (p. 26).

Bazeley (2003) also guards against rushing students through a MMR course as this would prevent them from gaining the breadth and the depth of knowledge, as well as the practical experience required to develop the ‘deep learning’ that this approach needs if a full integration of methods is desired. Given the pedagogical complexities involved, McGannon and Schweinbenz (2011) suggest that it may be beyond the abilities of one teacher, department, or programme to provide all that is required to produce an in-depth and coherent MMR course, and that a cross disciplinary and multi-faculty approach may be better suited to this task. Whatever strategy is adopted it remains that new teachers of mixed methods courses have a number of challenges to address that are specific to the field of MMR. Unfortunately, as Fels et al. (2012), and Hesse-Biber and Burke Johnson (2013) point out, there remains a lack of pedagogical literature on the complex nature of these challenges and how they might successfully be addressed in the future.

If MMR in sport and exercise psychology research is to develop its full potential in the future then this mode of inquiry requires greater attention and further debate. Likewise, so do the pedagogical implications and challenges that come with this development. I hope that those already conducting MMR in sport and exercise psychology as well as those wishing to do so, be they experienced scholars or graduate students, will consider my critical reflections

on the five points of controversy as worthy of attention and will use them as a resource for further discussions on this topic.

Acknowledgements

My thanks to the two anonymous referees for their critical, insightful and supportive comments on earlier drafts of this article.

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