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Attitudes toward mixed methods research in psychology: The best of both worlds?

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Abstract

In psychology, there has been a growing interest in mixed methods approaches, however, only a minority of published research explicitly use this methodology. This study aimed to explore the full range of attitudes toward mixed methods research in psychology held by students and academics, using the model of attitudes by (Eagly & Chaiken, 1993, 2007) as a framework. Fourteen psychology students and seven academics (48% male, 52% female with ages ranging from 19 to 64 years old) were interviewed about their attitudes toward mixed methods research. Interviews were transcribed and analysed using thematic analysis. Findings indicate that while participants were generally open to the methodology, misunderstandings were common, most felt they lacked the skills and experience necessary to conduct this research and many were sceptical of mixed methods researchers' motivations and practices. Identifying attitudes towards mixed methods research has the potential to dispel myths, promote attitudinal change and increase both the use and teaching of this approach in psychology.

Keywords: mixed methods research, psychology, attitudes

Mixed methods research, “the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study” (Johnson & Onwuegbuzie, 2004, p.17) is emerging as a significant research methodology in social science research, but little is known about the attitudes toward mixed methods research held by academics and students that may facilitate or hinder its continued growth. In this article we briefly trace the adoption of mixed methods research in the social sciences, with a focus on the use of mixed methods research in

psychology. We then outline a model of attitudes that can be usefully applied to the exploration of attitudes toward mixed methods research, prior to presenting our research findings on the attitudes of psychology academics and students to mixed methods research.

In the last fifteen years, mixed methods research has emerged as the third methodological movement (Lopez-Fernandez & Molina-Azorin, 2011). Three significant events have been credited to facilitating this dramatic methodological movement. First, qualitative and quantitative communities began to engage in dialogues (Teddlie & Johnson, 2009). . Second, the publication of several formative works in the 1990s, particularly those by John Creswell, Abbas Tashakkori and Charles Teddlie, have established mixed methods research as a discrete approach with its own vocabulary, design typologies and epistemological assumptions (Johnson, Onwuegbuzie, & Turner, 2007). Finally, there has been a precipitous increase in the frequency of mixed methods articles, particularly in applied fields (Alise & Teddlie, 2010; Teddlie & Johnson).

Reflecting the trend in the social sciences generally, in the field of psychology mixed methods research is increasing in popularity. Although mixed methods research approaches are not routinely taught in undergraduate and postgraduate psychology degrees, encouraging signs are emerging. For example, in Australia the tradition of conducting quantitative psychological research within a positivist framework is being challenged, with calls made for the inclusion of the full range of methodologies within the undergraduate psychology curriculum (Breen & Darlaston-Jones, 2009). However, despite the growth in psychological research adopting mixed methods approaches, only a minority of published psychological research explicitly use mixed methods designs, ranging between 1.7% (Lopez-Fernandez & Molina-Azorin) and 6%(Alise & Teddlie, 2010).

A number of factors have been proposed to explain the general absence of mixed methods research in psychology. First, historically psychology has been dominated by

positivist and post-positivist research paradigms and associated quantitative and experimental methods (Ponterotto, 2005).. Second, conducting mixed methods research requires knowledge of both qualitative and quantitative methods. Hanson, Creswell, Plano Clark, Petska and Creswell (2005) suggest that it is difficult to learn and apply both methods in the field of applied psychology. Finally, despite recent improvements, there is a lack of formal education in mixed methods research in undergraduate and postgraduate psychology degrees (O'Cathain, Murphy, & Nicholl, 2010).

In order to increase the use and teaching of mixed methods research designs in psychology it is important to understand the current perceptions of mixed methods research held by psychology academics and students. To date, there is no published research examining the attitudes of psychologists, psychology academics and students toward mixed methods research in psychology. Attitudes impact judgements and behaviors (Petty, Wegener, & Fabrigar, 1997) and understanding the attitudes held toward mixed methods research in psychology may aid in identifying misperceptions and promoting attitude change toward mixed methods research. The aim of this study is explore the full range of attitudes toward mixed methods research in psychology held by psychology students and academics.

This study uses the multicomponent model of attitudes by Eagly and Chaiken (1993; 2007) as an empirical framework to examine attitudes toward mixed methods research in psychology. In this model, attitude is defined as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly & Chaiken, 1993, p. 1). Attitudes do not exist until an individual perceives or is exposed to the entity (or object) directly or indirectly and responds in an implicit or explicit way (Eagly & Chaiken, 2007). Eagly and Chaiken (2007) proposed that this first encounter leaves a ‘mental residue’, which predisposes the individual to respond consistently to the entity in subsequent encounters. Central to the multicomponent model is the assumption that attitudes are formed

by affective, behavioral and cognitive experiences and may be expressed affectively, behaviorally or cognitively (Eagly & Chaiken, 2007). Each of these components may vary in their importance according to the entity evaluated.

In this study, the entity of interest is mixed methods research in psychology. The cognitive component consists of the thoughts, knowledge and associations (Eagly & Chaiken, 2007; Fishbein & Ajzen, 1975) ascribed to mixed methods research in psychology. The behavioral component encompasses overt actions toward mixed methods research in psychology and also intentions to act (Eagly & Chaiken, 2007). Finally, the affective component consists of the feelings and emotions (unmediated by thinking) associated with mixed methods research (Zajonc, 1984). Responses may represent positive, negative or neutral evaluations of mixed methods research in psychology, and may vary in strength from weak to strong (Maio & Haddock, 2010). Not all processes to be present during attitude formation and attitude responding. Depending on the attitude object, associations may reflect one or a mixture of the processes (Eagly & Chaiken, 2007).

Method

Research Design

This qualitative study based on semi-structured interviews forms part of a larger program research exploring attitudes of psychology students and academics toward qualitative and mixed methods research in psychology. In this article we report on findings pertaining to attitudes toward mixed methods research in psychology. For findings relating to attitudes toward qualitative research in psychology see Author and Author (2013).

Participants

The participants were 21 students and academics from a school of psychology in an Australian university. Traditionally, this school had a strong quantitative research focus, but is increasingly embracing the use of qualitative and mixed methods research. Participants in

this study were purposively sampled to achieve a diverse range of research knowledge, experience, and research preferences (see Table 1). Participants (48% male, 52% female) ranged from 19 to 64 years of age ($M= 33$ years, $SD= 14$ years).. The 14 psychology students comprised three second years, two third years, two fourth years, one Masters and six PhD students. The seven academic staff participants reported a mean of 18 years in academia ($SD= 13$ years, range= 4 to 40 years).

(Insert Table 1 here).

Interview Procedure

Prior to the research commencing, ethics approval was obtained from Curtin Human Research Ethics Committee. Psychology students and academics known to the first author were invited to participate. Participants were interviewed individually. Interviews were semi-structured and based on an interview schedule designed to elicit information from each component of the attitude model. Participants were asked about their feelings and emotional responses, their experience and intentions and their knowledge, thoughts and associations about qualitative and mixed methods research in psychology. The questions relating to mixed methods research are presented in Table 2 below. Data saturation was achieved at 21 participants. The duration of the interviews ranged from nine to 58 minutes ($M= 24$ minutes, $SD= 14$ minutes).

(Insert Table 2 here)

Analysis

The interviews were audio taped and transcribed in full. with names replaced with pseudonyms. Interview transcripts were imported into the QSR NVivo 10 for analysis. To

guide the thematic analysis, pre-existing nodes based on the multicomponent attitude model were created: 'affect' (with child nodes of feelings and emotional responses), 'behavior' (with child nodes of experience and intentions) and 'cognition' (with child nodes of knowledge, thoughts and associations). Thematic analysis was conducted using the method described by Braun and Clarke (2006). First, each interview transcript was read through multiple times and potential emergent codes noted. Each transcript was then coded systematically, producing 33 initial codes. Initial codes were then sorted into potential themes and sub-themes, each with accompanying extracts of data. Themes were reworked by both authors to ensure each theme had sufficient supporting data and data cohered meaningfully. To ensure the integrity of the data and analysis a reflexive journal was maintained by the first author t. The two authors met regularly to discuss the research and analysis, and to confirm agreement of the themes developed.

Findings

A central theme emerging across interviews was that the design of study should be guided by the research question. Rather than being driven by methods or methodologies, most participants stated that they would select their approach to research based on the topic and the specific research questions they wanted to address: "The question always has to drive what you're doing" (2nd year student #3). Participants acknowledged that qualitative, quantitative and mixed methods approaches are suitable for different types of research questions, with each approach to research having its own value: "I don't really see them... as competing to answer the same topic or question. I see them as answering different types of questions and having different applications in different areas" (Masters student #1). Mixed methods research was seen as appropriate for certain types of research questions and situations, most commonly questionnaire development: "Collecting your qualitative research data and using that as your basis to actually produce a quantitative questionnaire... should be

how all the good questionnaires are made... perfectly, perfectly good way to actually use it in psychology” (PhD student #6). Mixed methods research was also predominantly seen in terms of quantitative research with a qualitative component of less importance. Many participants felt that the findings in the qualitative component were often able to aid in the interpretation of unexpected quantitative findings: “The qualitative does provide another layer that can help to explain perhaps why the quantitative results weren’t significant or perhaps why scores that were expected to decrease have increased or vice versa” (PhD student #1).

Within this overarching theme, ten themes were identified in the data (see Figure 1). These themes are presented using the multicomponent model of attitudes framework (Eagly & Chaiken, 2007). The domain ‘Behavior’ had three themes, the ‘Cognition’ domain seven themes, and no themes were identified for the ‘Affect’ domain. A possible explanation for the dominance of the cognitive domain and the absence of attitudes corresponding to the affective domain is that ‘mixed methods research in psychology’ is a cognitively based attitude object. The interview process also itself invites cognitive responses as participants are invited to share, and expand upon their views.

Behavior

The domain ‘Behavior’ encompasses the behavioral experiences involved in the formation of attitudes toward mixed methods research in psychology. This domain also includes overt actions toward the object or entity and intentions to act. Three themes were identified in this domain..

Expanding Research Capabilities. Some participants felt that mixed methods research provided a good opportunity for purely quantitative researchers and purely qualitative researchers to be introduced to other methods. Mixed methods research was

described as an avenue for broadening perspectives of research, sharing knowledge and learning:

I like that more and more that people are open to different methodologies and... the foundational underpinnings of them. I think that's a really good thing rather than being 'I only do experiments' or 'I only do this' or 'I only do that'.

(Academic #4)

Mixed methods research was also described as an intermediate 'stepping stone' which offered an acceptable way for quantitative researchers to explore qualitative research methods, without conducting a purely qualitative study. According to Eagly and Chaiken's (2007) model, this particular attitude could influence individuals' intentions to conduct mixed methods research in the future (behavior). As one PhD student explains:

Some models (of mixed methods research) help people to gradually move towards a more qualitative research by having a little bit of a qualitative aspect. For example, you do a quantitative study and then you verify the data maybe with some qualitative to see if it matches with what you got from the survey... that's one way of doing it that most people wouldn't have too much trouble with that because you've got your quantitative data that you can hold on to (laughs).

(PhD student #3)

The role of mixed methods research in introducing researchers to alternative methods and broadening research capacities has also been proposed in the literature. The mixed methods approach to psychological inquiry requires the researcher to become well versed in both qualitative and quantitative methods of sampling, data collection and data analysis and the underlying epistemological assumptions and knowledge claims of each method (Bergman, 2011). Through this process of learning, the strengths and limitations of each

research method may be reassessed and reformulated (Bergman). Indeed, mixed methods research may have an important role in dislodging polarised positions.

Limited Exposure. Some participants stated that they had limited or no training in mixed methods research: “I don’t think I have had any mixed methods research training. Maybe a few subjects on it... in my undergraduate course but I’ve never... done any practical work in terms of mixed methods” (PhD student #2). According to the multicomponent model of attitudes, participants exposure to mixed methods research can be viewed as attitude antecedent. For some participants, limited training in mixed methods research was a barrier preventing them from undertaking such research: “My knowledge. My time. My expertise (laughs) they’d be the barriers” (Academic #3). According to the literature, few psychologists are well versed in both qualitative and quantitative methodologies, which can complicate conducting mixed methods research (Bartholomew & Brown, 2012; Todd, Nerlich, McKeown, & Clarke, 2004).

Time and Resource Intensive. Most participants felt that mixed methods research would be time consuming, in particular, participants were concerned about having to conduct and transcribe interviews for large samples. As one 4th year student states: “I think it would be too difficult to have a sample of... 100, 150 plus and do quantitative and qualitative for both” (4th year student #2). While this comment suggests a misunderstanding of what is involved in mixed methods research, it was a widely held view amongst the undergraduate students interviewed. The qualitative component of mixed methods studies was described as particularly time and labour intensive:

It’s much easier to just give people questionnaires and get them to fill it out. To even have... (an) open qualitative-type questions in a questionnaire then means that someone has to code those answers and if you’ve got a big sample size that’s really

time intensive... So it's much easier. Throw a questionnaire at people and just don't worry about it.

(PhD student #4)

Some participants also felt that mixed methods research would be more expensive to conduct than purely qualitative or purely quantitative research: "A lot of time and a lot of money to do staged research where you're using both simultaneously or one after the other" (PhD student #5). This direct or indirect behavioral experience of mixed methods research being time consuming and expensive to conduct may influence students and academics willingness to conduct this type of research in the future.

The large investments in both time and resources necessary to conduct mixed methods research are also reflected in the literature. Bartholomew and Brown (2012) note that collecting data for mixed methods research projects is lengthier and often requires multiple data collection phases. In addition, integrating the two data sets can be complicated and time consuming (Bartholomew & Brown). Wolf (2010) agrees that mixed methods is a particularly demanding research strategy, and urges would-be mixed methods researchers to contemplate whether they have the time necessary to engage with both qualitative and quantitative methods and fulfil the quality standards of each method. Cognition

The domain 'Cognition' refers to the cognitive experience underlying attitudes. This domain includes beliefs about mixed methods research in psychology and the specific attributes or characteristics participants associate with the method. The domain 'Cognition' had seven themes.

Flexibility. Many participants described mixed methods research as a flexible approach to psychological inquiry that could be tailored to suit the specific research question. According to Eagly and Chaiken's (2007) model, mixed methods research (the attitude

object) has been associated with being flexible (an attribute). Most participants felt that the qualitative and quantitative components could be combined in a number of different ways to address the aims of the research: “I think that there’s lots of different ways that they qualitative and quantitative research can be combined within a program of research” (Academic #4). The attitudes expressed by participants in this study reflect calls by Howe (1988) to “resist the tyranny of methodological dogma” (p. 15) and embrace a pragmatic approach to mixed methods research. The mixed methods approach to psychological inquiry is considered expansive and creative (Johnson & Onwuegbuzie, 2004).

(in)Compatibility. Most participants believed that the use of both qualitative and quantitative methodologies in the one research project was complimentary. The mixed methods researcher was described as having the “best of both worlds”, where the strengths of one approach counteracted the weakness of the other approach and vice versa. In this instance, mixed methods research was evaluated positively: “I think you can get the in-depth bit with a bit of the scientific rigor and objectivity and... you can get to play around with the stats a bit and it gives you more to talk about” (Academic #3). Combining qualitative and quantitative methods was also described as enabling the depth of psychological phenomenon to be captured. A PhD student describes:

They come from different paradigms and from approaching the reality from different points of view or angles, but I think that’s precisely why they should be brought together. It’s because they give you a different view of the same thing... The more angles you can look at it from the more you get a good grasp of it.

(PhD student #3)

In contrast, some participants argued that qualitative and quantitative methods are incompatible and should not be combined in a research project. In particular, it was argued that it would be difficult for both qualitative and quantitative components to be assigned

equal weighting in a research project; one approach (or paradigm) must dominate the other.

For example:

I don't see how you could design a study with separate components in it... both equally... qualitative and quantitative... have completely different assumptions, epistemologically, ontologically, methodologically, and with the role of language and relationships with the participants and so on. I don't see how you could do that... It would just be a big mess, in my opinion.

(Academic #4)

The attitude expressed by the some participants in this study that qualitative and quantitative methodologies are complimentary, reflects the dialectical thesis that the use of multiple paradigms contributes to a greater understanding of the phenomenon under scrutiny (Greene & Caracelli, 1997).. In contrast, the 'incompatibility thesis' posits that qualitative and quantitative methods cannot and should not be combined because of inherent differences in the paradigms that underlie each method (Johnson & Onwuegbuzie). Although the body of literature presents reasoning for the use of both quantitative and qualitative methods in psychology (Bartholomew & Brown; Creswell, 1994), the battle between the differing philosophical assumptions that fuel design choices are still exemplified in the attitudes expressed by psychology students and staff in this study.

Validity. Related to the attitude that qualitative and quantitative methods are complimentary and contribute to a great understanding of the phenomenon is the concept of validity. Many participants associated this approach to research with being "robust" and "in-depth": "Personally would probably consider to have a little bit more substance and validity compared to... the same study but done only qualitatively or quantitatively" (3rd year student #1). A number of participants felt that a major strength of the mixed method approach was that the findings of one component could aid in the interpretation of unexpected or unusual

findings in the other component: “I definitely think it adds depth to how you can interpret the findings. Instead of just saying ‘there was some kind of change, we’re not sure what that was about’... we speculate on what that was about” (PhD student #4). A further strength of the mixed methods approach to research identified by participants was the triangulation of findings. Converging evidence was seen as strengthening the claims that could be made about a particular psychological phenomenon:

“If your quantitative results point to that answer and the qualitative results point to that answer then that’s probably what it is.... I think it adds to the research” (PhD student #4).

In contrast, a number of participants expressed concern if findings of the qualitative component and findings of the quantitative component were incongruent. This scenario was described by a number of participants as a dilemma and an “ethical problem”. Some participants questioned how researchers would “choose” which component offered the “correct” findings: “If they’re not consistent or they’re contradictory then... that really poses some ethical... problem. I mean, what are you going to do with that information and that discrepancy?” (PhD student #2). Some participants described incongruent or conflicting findings as “scary”. In contrast, some participants considered conflicting findings to be a strength of the mixed methods approach to psychological inquiry, reflecting a more holistic and representative view of the psychological phenomenon under scrutiny. Participants argued that researchers could be confident that their research was conducted with methodological rigor and integrity. As one academic explains:

If they don’t converge, well I mean that’s saying something. It can be two things. It could be... a function of ‘well actually we haven’t come to a conclusion’, or it could be a function of something in the methods you’ve employed ... It’s better to triangulate and find that rather than to start publishing information that’s not... actually appropriate... it’s all about the integrity of the work at the end of the day.

(Academic #5)

As mentioned by many of the participants in this study, the main aim of triangulation is to achieve the convergence and corroboration of findings obtained through qualitative and quantitative methods (Jick, 1979; Lopez-Fernandez & Molina-Azorin, 2011). The convergence of the qualitative and quantitative results enhances confidence in the research findings (Bryman, 2006). Triangulation is a strength and common reason for combining qualitative and quantitative methods in a single study. Bryman (2006) conducted a content analysis of 232 social science articles to determine the function of integrating methods. Of the articles reviewed, triangulation was the stated rationale for 12.5% of articles.

Interestingly, triangulation was even more likely to occur in practice, rather than as a rationale (34.5%). Bryman suggested that while triangulation may not always be a stated rationale for combining qualitative and quantitative approaches, mixed methods researchers find it difficult to resist making references to the corroboration or otherwise between their findings.

The situation in which qualitative and quantitative findings are incongruent in a single study has been examined extensively in the mixed methods research literature. It has been suggested that mixed methods researchers are uncomfortable in identifying and discussing contradictions in their work (Freshwater, 2007) and are more motivated to reconcile apparent contradictions (Kidder & Fine, 1987). However, Teddlie and Tashakkori (2009) argue that the situation whereby two sets of inferences are incongruent is precisely when mixed methods research comes into its own. Incongruent findings can offer a valuable insight into multiple aspects of the same phenomenon, allowing the researcher to develop a more complete understanding (Gestalt) of the psychological phenomenon under investigation (Teddlie & Tashakkori). Further, incongruent findings hold promise for greater discovery as

researchers develop alternative theoretical explanations to account for the phenomenon (Kidder & Fine).

Scepticism of Motivation. Some participants were suspicious of the reasoning behind utilising a mixed methods approach to psychological research. Participants suggested that some people may undertake mixed methods research to satisfy quantitatively-oriented academics or researchers, impress thesis markers or to appear like they have conducted their research more thoroughly. As one academic explains: “It really exists as a way of appeasing qualitative people. Say well ‘we’ll do our fundamental science and then throw in a few questions and ask people how they feel about it’ and so on” (Academic #2). Some participants felt that mixed methods approaches are often used in unethical ways to obtain the desired research results:

Sometimes you get the feeling that people do the quantitative and not get anything that they were hoping to get and then they’ll have some qualitative information and go ‘Oh yeah we are just going to interpret it like this to make sense of our results that didn’t give us what we were looking for’.

(PhD student #5)

Relating these findings to the multicomponent model of attitudes, participants have associated ‘mixed methods research’ with the attribute ‘untrustworthy’.

Reflecting the cynicism apparent in the interviews, the motivations for conducting and reporting of mixed methods research have been questioned in the literature. Todd et al. (2004) suggest that mixed methods may be used to make the research more appealing to a hostile audience. They offer the example of trying to have a qualitative PhD project approved by a largely quantitative panel (Todd et al.). Similarly, Bergman (2011) expresses concern that PhD students often undertake mixed methods projects for “dubious reasons” (p. 274). The integration of qualitative and quantitative data within a mixed methods study is also

influenced by the motivations of the researcher. Depending on the audience (or stakeholders such as academic journals and funding bodies), one set of data may be highlighted or used more or less exclusively. (Bryman, 2007).

Tokenistic Qualitative Component. Many participants considered the inclusion of a qualitative component in a mixed methods study to be tokenistic. The qualitative component was described by some participants as being “tacked on” to a quantitative study and as an “afterthought”. Some participants questioned what constitutes a ‘mixed methods’ study, as one PhD student explains:

It seems like we’re taught to do quantitative stuff and chuck in the qualitative component at the end as an afterthought. Like ‘Oh you’ve got this questionnaire just add on a question at the end that just says ‘do you have any other comments?’ then you’ve got a mixed methods and that’s probably not quite the way.

(PhD student #4)

Some participants believed that researchers and students had a limited understanding of the mixed methods approach and that there are a number of misperceptions about this approach: “An experimental design or a survey design where you’ve got a couple of open ended questions or something like that. So you’ve got some data that is qualitative, its text based, but it’s not really a qualitative study” (Academic #4). Furthermore, some participants felt that the qualitative component of mixed methods studies is often not subjected to the same methodological rigor as the quantitative component:

I just hope that the qualitative method has been done in a legitimate way so that the people that are involved understand what they’re doing and they recognise its contribution. What I don’t like seeing is... qualitative methods... used as a token exercise to inform the project. I’m all for mixed methods provided that... both

components or all component are... adopted and employed and respected and in the way they should be... the way they've been theoretically designed to.

(Academic #5).

The qualitative component of a mixed methods study was also described as not being as informative and consequently ignored: "They still think that the quantitative part is the part that is the more meatier bit" (Academic #4).

The devaluation of the qualitative component in mixed methods research has been examined extensively in the literature (for example, Kidder & Fine, 1987; Wiggins, 2011). Kidder and Fine (1987) differentiate between 'big Q' and 'small q' qualitative research and argue that adding qualitative measures to a survey or experiment does not transform the overall nature of the study.. Given the dominance of the positivist worldview in psychology, the qualitative component in mixed methods research is often treated as subservient to the quantitative component (Wiggins). Qualitative research is considered only useful and appropriate for developing hypotheses or generating questionnaire items for subsequent quantitative analysis (Wiggins). . Wiggins suggests that mixing qualitative and quantitative components hierarchically further contributes to the devaluation of qualitative methods by severely limiting the nature and scope of qualitative methods considered by mixed methods researchers. Bartholomew and Brown (2012) propose that in psychology, exploratory mixed methods designs where the qualitative component precedes the quantitative component need to be promoted.

Related to the issue of the qualitative component being "tacked on" in mixed methods research, as expressed by participants in this study, is the integration of qualitative and quantitative findings in mixed methods research. Bryman (2006) conducted a meta-analysis of 232 mixed methods studies published between 1994 and 2003 in the social sciences and reported that only 18% genuinely integrated the qualitative and quantitative findings. Quasi-

mixed refers to designs where qualitative and quantitative data are collected, but there is little or no integration of in the conceptualisation of the research or the inference process (Alise & Teddlie; Teddlie & Tashakkori, 2009). The concept of quasi-mixed research is important as it allows the reader to differentiate between studies that are technically mixed and truly mixed. Alise and Teddlie argue that mixed methods researchers need to describe their methods more clearly and completely so that other researchers can replicate their studies and readers can evaluate the inferences and knowledge claims derived from their results.

Rationale for Mixing. A number of participants felt that much care and consideration is required when combining qualitative and quantitative methodologies in the one research project. Participants cautioned that it is not always appropriate to combine methodologies:

It's not a case of 'I have a catalogue of different methods, oh yeah this will match this' and go ahead with it. I think it has to be very carefully thought out to be effective... I think you have to be careful to use the right approach. Poorly conducted, poorly planned research is going to be poor whatever approach you use.

(PhD student #3)

Most participants believed that researchers must carefully consider their research aims and research questions before adopting the mixed methods approach: "There has to be some kind of rationale for attempting to combine those two approaches and... they can't always be combined. It depends on the research question. It depends on exactly what you're trying to demonstrate" (Academic #7). Some participants were disappointed that qualitative and quantitative approaches were often combined in mixed methods studies in the same, narrow ways. Participants believed that a mixed methods approach was typically used for questionnaire development and the full potential of this approach is often not realised. As an academic explains:

I think that there's lots of different ways that they can be combined within a program of research, but what I wouldn't like to see people only using it in... very narrow ways... of course it can be really useful in designing... a measure but... it would be a shame if that was the only way people were ever mixing it.

(Academic #4).

Reflecting the concerns apparent in the interviews, the ways in which qualitative and quantitative methods are combined in mixed methods research have been raised in the academic literature. Researchers frequently combine qualitative and quantitative methods without providing a clear rationale. Of the 232 mixed methods research studies reviewed by Bryman (2006) only ten clearly stated that qualitative and quantitative methodologies were employed to address specific and distinct research questions. Hanson et al. (2005) recommended that researchers state the rationale for mixing qualitative and quantitative methods and data. This allows the reader to judge whether the two methods were mixed intentionally and for defensible purposes.

Researcher Bias. Some participants associated mixed methods research with being untrustworthy and believed that this approach was more susceptible to researcher bias than qualitative or quantitative research studies. In particular, some participants believed that researchers often do not apply the same level of methodological rigor to the qualitative component as they do the quantitative component.. As one PhD student explains:

Because it (qualitative component) is just an add-on they don't subject it to as rigorous analysis as they do with the quantitative or as they would if they were doing a purely qualitative project... They don't think about the effect of all the other research they've been doing has had on the person's answers... they (the participant) probably know exactly what you want them to say and they're probably going to tell you.

(PhD student #5)

Some participants also believed that there was the potential for mixed methods researchers to ‘match’ the findings in the qualitative and quantitative components or to interpret one set of data in light of the other set of data:

‘I think a lot of times qualitative data can be... prone to being manipulated being interpreted in a way that wasn’t intended by the original participant.

(PhD student #5).

Reflecting the concerns raised by participants in this study, the potential for researcher bias in mixed methods research has also been raised in the academic literature (Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 2003). Mixed methods researchers must be aware of the differing criteria used to assess the quality of qualitative and quantitative data (Creswell & Plano Clark). Onwuegbuzie and Johnson (2006) developed a model for evaluating the credibility of mixed methods research by examining specific legitimization issues. One such issue identified by the participants in this study is ‘sequential legitimization’ (Onwuegbuzie & Johnson). Sequential legitimization refers to the influence of the sequencing of the qualitative and quantitative components on the interpretation of the data and the inferences drawn (Onwuegbuzie & Johnson). That is, would the meta-inferences of the study be different if the ordering of the qualitative and quantitative components originally presented were reversed? (Onwuegbuzie & Johnson).

Conclusion

This study has identified the range of attitudes that exist toward mixed methods research in psychology within one school of psychology. The dominance of cognition based attitudes and absence of affect based attitudes may reflect the growing awareness of mixed methods research within psychology. The findings indicate that while both academics and

students were generally open to the concept of mixed methods research, some misunderstandings of the methodology were common, most felt they lacked the skills and experience necessary to conduct mixed methods research and many were somewhat sceptical about mixed methods researchers' motivations and practices. Of particular concern, the expressed devaluation of the qualitative component of mixed methods studies in psychology indicates that positivist sentiments that have dominated the field of psychology linger. While some of the academics and students interviewed objected to the tokenistic inclusion and/or interpretation of the qualitative component in mixed methods research, others clearly considered the qualitative component to be secondary to the quantitative component. Greater awareness and use of models that have been developed for legitimizing, validating and evaluating mixed methods research (e.g., Collins, Onwuegbuzie, & Johnson, 2012; Leech, Dellinger, Brannagan, & Tanaka, 2010) is required.

Mixed methods research is still in its adolescence with many unresolved issues (Tashakkori & Creswell, 2007). As the field matures, it is expected that knowledge about mixed methods research will increase, scepticism surrounding mixed methods research will decline and this approach will be accepted as a valuable methodology in psychology. The development of 'how to' guides and a common vocabulary will aid in this process. However, for large scale change to occur within the field psychology, mixed methods research needs to be included within the undergraduate curriculum with further experiential training provided for postgraduate and post-doctoral students. We noted that our interviews with undergraduate students, in comparison to interviews with graduate students and academics, were markedly shorter, reflecting limited (and in some cases incorrect) knowledge about mixed methods research. While undergraduate students tended to view quantitative and qualitative research in terms of a dichotomy, PhD students and academics expressed less polarised views. This suggests that with further education in research generally, and

education in mixed methods research in particular, misperceptions and myths surrounding this approach can be dispelled. Further training and experience is required to increase the confidence and competence of students in conducting mixed methods research.

A limitation of this study is that the attitudes of psychology academic staff and students at only one university were explored. It is recommended that future research examine the attitudes of psychology academic staff and students from a cross-section of universities. A future direction of our own research is the development of a brief measure of attitudes toward mixed methods research in psychology to enable comparisons of attitudes between universities and across time. This will also aid in the evaluation of the effectiveness of mixed methods training in changing attitudes to mixed methods research in psychology.

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