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**Employer expectations of research skills provided in criminology undergraduate
education**

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Abstract

Studies show that undergraduate students in criminology-related degrees often receive sufficient information literacy training within the curriculum. Nevertheless, these degrees sometimes fail to equip graduates with the practical research methods skills required to produce and critically evaluate, quantitative and qualitative research. This is evidenced by the findings of research which show that some universities including those offering criminal justice and criminology degrees do not place enough emphasis on teaching students about research methods and the research process including sample recruitment, data collection, data analysis and research report writing. Furthermore, existing studies also show that at some universities do not teach students how to use data analysis programs required to conduct empirical research (such as SPSS for quantitative analysis and NVivo for qualitative analysis). We present findings from a small-scale study that examined research skills requirements from the perspectives of potential employers and postgraduate supervisors. We provide a description of the findings in relation to core components of the research process such as researching literature, designing research, and collecting and analysing data. We also then propose ways in which we might go about addressing these needs in future curriculum development.

Introduction

In recent decades, the number of universities offering courses in the study of criminology and/or criminal justice has grown rapidly (Bartels, McGovern & Richards, 2015; Hunter, 2011). In Australia, there are currently 42 individual criminology and/or criminal justice degrees currently on offer across Australian universities (Bartels et al., 2015). These degrees are taught within a range of schools, including those focusing on law, criminology, criminal justice, social sciences, policing, psychology, and humanities (Bartels et al., 2015). Along with this growth, it has been recognised that degrees in criminology and/or criminal justice need to be developed in a way that produce graduates that are employable across the government, private and academic sectors (Bates & Hayes, 2017). It has also been noted that one of the most effective methods of increasing student employability is to ensure that students have information literacy skills and an understanding of the research methods and analytical skills required to produce and critically evaluate quantitative and qualitative empirical research (Brown, 1982). Specifically, research suggests that a knowledge and understanding of research methods will increase employment opportunities and success for undergraduate students (Fritsch, Trulson & Blackburn, 2014; O'Donnell, Botelho, Brown, Gonzalez & Head, 2015). In this study we specifically examine the research skills requirements from the perspective of potential employers (including potential postgraduate supervisors) of graduates from undergraduate criminology and/or criminal justice degrees. Throughout this chapter we use the term 'criminology' to include various degrees of, and degrees with majors in, criminology and/or criminal justice.

Background

Importance of Information Literacy and Research Methods Training

While traditionally research methods have been considered important only for those students who are considering a research pathway career, there has been a shift toward the realisation that even students on a practitioner pathway need to be able to grasp the basics of research methods, including how to pose research questions and the most appropriate methods to answer them (Bushway & Flower, 2002). Indeed, evidence suggests that research methods are essential skills required in the criminology field (Meldrum & Stults, 2012; Rhineberger, 2006; Sundt, 2010). As such, it is important that students learn and develop these skills in order to be successful in this field. Bordt (1999) argues that research methods are fundamental to a student's ability to not only understand criminology and criminal justice literature but to critically evaluate it. Similarly, Fritsch et al. (2014) also argue that students must learn research methods in order to become informed consumers who can critically evaluate research.

The teaching of these skills is not strictly confined to the classroom, as textbooks act as an additional tool to assist students in their learning. However currently, criminology textbooks are lacking in their coverage of research methods (Rhineberger, 2006). Research methods provide key insights into crime and provide the foundations for empirical based findings and implications for theory and policy development (Meldrum & Stults, 2012; Rhineberger, 2006). A lack of coverage within course textbooks can lead students to believe that these topics or skills are not as important, relevant or useful as other topics covered within textbooks (Rhineberger, 2006). Consequently, it is important for criminology textbooks to include guidance on research methods and the ethical considerations for research, as

they are key components of the criminology field, and are important skills that will shape future of the field (Rhineberger, 2006).

What is clear is that that a failure to provide students with adequate research training also has a range of negative consequences. As Fritsch et al. (2014) argue, many criminal justice roles within government and private agencies frequently use and depend on data analysis. Therefore, if students are not equipped with these skills they may struggle to find employment or once employed, find it difficult to progress their careers within the workplace and succeed in roles that require these skills. Jenkins (2000) supports this contention, arguing that the employers require graduates that can not only locate new research but also ‘synthesise new knowledge’. In order to be a good consumer and communicator of research, students must have at least basic research methodology and analysis skills.

For US based undergraduate degrees to be officially certified by the Academy of Criminal Justice Sciences, research methods and analytic skills need to be addressed substantively in the curriculum (Academy of Criminal Justice Sciences, 2016). There are no equivalent certification standards in Australia, although scholars have called for similar guidelines to be implemented to ensure criminology graduates are provided with sufficient research methods skills (Bartels et al., 2015). The criminology landscape is similar in Australia to countries like the US and UK but it also has its own unique historical landscape. Australia has seen rapid expansion of criminology degrees since the late 1990s but as Chappell (2017) has noted, Australia has had its own unique developments in criminology since the 1960s. Each university is able to teach whatever they collectively think constitutes a criminology degree. As Fishwick and Marmo (2018, p. 323) argue, this “lack of uniformity of curriculum allows for national fragmentation of basic skills”. The most common pathway from

undergraduate into postgraduate study in Australia is via an Honours degree that is offered as an extra full-time year of study on the end of a Bachelor degree (Fishwick and Marmo, 2018). This year is usually comprised of an independent research project written up as a research thesis and research methods and data analysis classes. This is often students' first opportunity to conduct independent research. Those not completing the extra honours year enter the workforce without these more advanced research skills.

Extent of Research Methods Training in Criminology Degrees

It has been argued that universities offering criminology degrees are often successful in providing students with basic information literacy skills, because skills such as writing, critical thinking and engaging with research literature are commonly included in curriculum learning objectives (Moriarty, 2006; Zimbardi & Myatt, 2014). A small amount of existing research shows that some courses within criminology degrees are providing students with the opportunity to learn and develop adequate information literacy training including instruction on how to locate scholarly literature, writing annotated bibliographies and literature reviews and the critical analysis of literature (Bates & Hayes, 2017). For example, one university in Australia requires students to complete a course ('Criminology Skills') that specifically involves students learning skills such as academic writing, referencing and critical thinking skills (Bates & Hayes, 2017). Similarly, a university in the United States requires students to complete a course ('Professional Studies in Criminal Justice') which teaches students academic writing and researching skills specific to the criminal justice field such as how to source and reference appropriate literature (Pfeifer & Ferree, 2006). Further afield, there are a number of other required courses within criminology degrees similar to the two outlined above. Some universities

believe that these degrees should offer courses specifically dedicated to developing these skills and subsequently have implemented (or trialled) degrees that specifically teach information literacy skills (see Ambery, Manners & Smith, 2005; Bouloukos, Benamati & Graeme, 1995; McCartin, Iannacchione & Evans, 2017). Despite these efforts to increase information literacy, there are much higher level skills expected of criminology graduates.

Research from the United States shows that despite an increase over the past few decades in the extent to which research methods and ethics are taught within the curriculum (Southerland, 2002), many undergraduate degrees nevertheless often fail to provide students with the practical skills required to produce and analyse quantitative and qualitative research (Bordt, 1999; Brown, 1982; Proctor, 2006). This is evidenced by the findings of research which show that some universities who offer criminology degrees do not place enough focus on teaching students about research methods and the research process including sample recruitment, data collection, data analysis and research report writing (see Brown, 1982; Taylor, Andersen & McConnell, 2003). For example, a recent examination of all criminology degrees in the United States shows that quantitative data analysis is only covered in 40 per cent of degrees, introduction to research methods is only covered in 76 per cent of degrees, and ethics is only covered in 38 per cent of degrees (Sloan & Buchwalter, 2017). Given the importance of research training for success both within criminology degrees (understanding the material being taught and written about in assignments) and beyond (having successful access to employment opportunities) the authors of the study expressed concern that US criminology students can graduate from such a degree without having completed courses that cover research methods, statistics or ethics (Sloan & Buchwalter, 2017).

Australian research of the teaching of research methods has shown that these types of courses are widely taught within undergraduate criminology degrees (Bartels et al., 2015) and that the vast majority (80%) of graduates self-report that their degree helped develop their research skills (Wimshurst & Allard, 2007). Nevertheless, while research methods are widely taught as core component of Australian criminology degrees, courses specifically educating students about data analysis (both quantitative and qualitative) are not taught as widely across all Australian degrees (Bartels et al., 2015). Of course, sometimes data analysis is embedded in more generic research methods courses, but for students to be proficient and highly skilled these types of skills more extensive training is desirable. This is currently missing in many criminology degrees both in Australia and abroad. Interestingly research conducted by Proctor (2006) shows that US students in criminal justice majors *believe* that they have better levels of understanding of statistics than non-criminal justice majors but achieve significantly lower grades in a summer school course on the topic. Also not explicitly taught in criminology degrees, is having an ethical orientation towards professional conduct and research. It is often embedded in many social sciences courses, but explicit consideration of ethics, particularly as it relates to research is not evident at the course level in criminology degrees in Australia (Bartels et al., 2015).

Another key finding to emerge from existing research is that even when research methods courses are taught within degrees, they are often taught in just one or two courses of a student's degree (Bordt, 1999; Pfeifer & Feree, 2006). As Welch and Panelli (2003) note, the problem with this piecemeal approach is that lecturers often only have enough contact time to teach students about the theory of research methods. The consequence is that students are provided with very little training on applied quantitative and qualitative data analysis and research reporting techniques.

Even if their future careers do not require data analysis skills, this deficit makes them poor consumers of research who are unable to critically evaluate the published research that they read or proposed research that may be under development in their workplaces.

Obstacles Preventing Adequate Research Methods Training

Given that understanding research methods, techniques of data analysis, and having an ethical orientation in research are all so important, consideration must be given to why these skills are not currently being taught. There are a range of obstacles preventing adequate delivery of research training to students (see Brown, 1982; Quarton, 2003). Some students report to universities via course feedback that they should not have to study research methods because it is overly difficult or stressful. These courses are often viewed unimportant other than as a requirement for graduation or alternatively viewed as an obstacle to completion or source of potential failure (Briggs, Brown, Gerdner & Davidson, 2009; Brown, 1982, Bushway & Flower, 2002; Sundt, 2010). In this context, it is important that universities do not treat students as ‘customers who know best’ and ensure adequate training and support for learning is provided. Briggs et al. (2009) found that students often experience math anxiety, disinterest, and relevance argumentation towards research methods and statistics courses. This consequently negatively influences their own performance and also negatively influence other students exposed to their negative attitudes. These attitudes and reservations often impede student learning and performance and also make it difficult for lecturers teaching these courses (Sundt, 2010). Indeed, Brown (1982) notes that some academic staff members find teaching research methods difficult because many students have a negative attitude towards studying these subjects.

Underpinning many of these negative attitudes is also the argument of relevance. Many students do not understand the value or relevance of these courses and some even perceive research methods, specifically numeracy skills such as conducting statistical analyses, to be irrelevant to their future careers (Briggs et al., 2009; Chamberlain, et al., 2014; Sundt, 2010). Some students take the view that courses should focus more on providing them with content knowledge and developing key transferable skills such as communication skills, comprehension skills, analytical skills and team working skills (Chamberlain et al., 2014). This suggests that university educators are not currently successful in communicating the relevance and importance of understanding research, data analysis, and ethical approaches to research in the likely careers of criminology and criminal justice graduates.

Aims of the Current Study

Building on this small body of literature on research methods pedagogy, this study explored the views of prospective employers and prospective postgraduate supervisors of graduates from undergraduate criminology degrees. The focus was on their perceived importance of research methods training for students completing criminology degrees. A range of agencies and organisations who employ criminology graduates were approached and although the research was conducted within one State of Australia, the types of employment and responsibilities of criminal justice system agencies are similar across the States and Territories of Australia. The study also aimed to investigate the expectations that prospective employers have regarding the research methods, data analysis, and ethics skills of graduates of criminology degrees. Investigation of these topics was carried out because the findings have important curriculum and pedagogical implications for how undergraduate criminology degrees should be designed, in order to increase student receptiveness and understanding of

the importance of obtaining research skills, and the implications for their future employability.

Methodology

Potential employers of criminology graduates

Given the interdisciplinary nature of criminology, graduates of criminology degrees enter into a wide variety of professional organisations upon graduation. Options include, but are not limited to, state and federal government agencies, non-government organisations, and academic research environments. In conducting this research, the research team was conscious of ensuring a broad representation of the possible employers and their organisations/agencies were included in the study.

Sampling Strategy

Based on this goal, the sampling strategy was purposive. To recruit prospective employers, the researchers developed a list including a broad range of known employers of criminology graduates. Employees within those organisations were then contacted and asked to participate in the project. If they believed that they were not a suitable participant or if they were unwilling to participate, they were asked whether someone else in the agency would be more appropriate to contact. Additional participants (potential employers) were recruited into the study until saturation point was reached. Accordingly, the researchers ceased recruiting participants once it became apparent that participants were providing similar information in interviews to previous participants. The final sample consisted of 10 prospective employers across 9 government and tertiary education institutions. To maintain anonymity no individual agencies' names are reported in this study but to demonstrate the breadth of responses, the participants can be described in the

following manner: an analyst of policing practices, a researcher in a policing and criminal justice research and evaluation unit, an investigator of misconduct and criminal matters, a manager of policy evaluation, a statistical analyst of government data, a statistical liaison knowledge manager between government and universities, and both junior and senior university supervisors of postgraduate research.

Data Collection Procedures

The interviewers met with the participants, the potential employers and supervisors, at a time and place convenient to the participant. Frequently, the location was the participant's office or a coffee shop nearby. They were provided with an information sheet outlining the aim and structure of the research project and if they agreed to participate in the research, they were asked to sign a consent form.

Information was collected through semi-structured interviews, which lasted approximately 20 minutes on average (range: 13-39 minutes). The interviewers were guided by an interview schedule that included questions about the needs and expectations of graduates from undergraduate criminology degrees (see Appendix A). Given the focus on the research methods skills required of graduates, participants were specifically asked about the extent to which the organisation they worked for required particular research skills to carry out tasks related to employment within that organisation or where appropriate, skills required to undertake postgraduate study. A list of the skills that participants were asked to discuss is provided in Table 1.

In addition, the participants were also encouraged to identify any additional research methods skills necessary for their organisations that had not been mentioned in the interview, allowing for new ideas and themes to emerge. Most of the participants gave consent for their interview to be digitally audio recorded. These were later transcribed prior to analysis. Two of interviews were not audio recorded. In

the first instance the participant did not wish for the interview to be recorded and in the second instance the recorder malfunctioned. In these cases, detailed notes were taken during and after the interviews.

Table 1. List of research methods skills

Skill	Ability
Research the literature	<ul style="list-style-type: none"> • Conduct searches for scholarly literature both in libraries and online. • Critique approaches/conclusions made by other researchers.
Ethical conduct	<ul style="list-style-type: none"> • Identify and consider ethical issues involved with research.
Design research	<ul style="list-style-type: none"> • Plan research by constructing timelines and budgets. • Design and write research designs/methodologies that effectively outline data collection methods, sampling techniques, analysis strategies and the limitations of the research approach taken. • Write data collection instruments such as surveys, or interview schedules.
Design tools	<ul style="list-style-type: none"> • Write data collection instruments such as surveys, or interview schedules.
Collect data	<ul style="list-style-type: none"> • Collect data by for example administering surveys, interviews or observations.
Analyse data	<ul style="list-style-type: none"> • Construct data sets using programs such as SPSS in the case of quantitative research. • Conduct statistical analyses using programs such as SPSS. • Code qualitative data using programs such as NVivo.
Write reports	<ul style="list-style-type: none"> • Write literature reviews • Write reports detailing the results and findings of qualitative and quantitative research projects.

Analytic Procedure

The interviews were transcribed and the transcription entered into NVivo. The initial coding and analysis was deductive and thematic (see Boyatzis, 1998; Braun & Clarke, 2006) based on the research skills identified in Table 1. An iterative inductive coding approach was also used to allow for any new themes to emerge. The interview structure guided the initial coding and analysis of the interview transcripts but as the reader will note when reading the results, new information was obtained in the interview beyond the categories of investigation in the interview schedule.

Results

The focus of this study was to gain a better understanding of the perceived importance by potential employers and postgraduate research supervisors, of research methods (including data analysis and ethics) training for students completing criminology degrees. The findings in relation to each of the core areas of research methods training that were investigated, are presented below. While it would be good to be able to include lengthy quotations from the interview transcripts, space constraints mean that we have had to distil most of the findings down into summary statements about what was communicated in the interviews.

Bachelor degrees and criminology careers

This study focused on the skills required of graduates, from *undergraduate* criminology degrees, by potential employers and supervisors. Unexpectedly, some of the participants emphasised that their organisation was only interested in employing graduates from Honours or PhD programs; Bachelor degrees in criminology are not viewed as sufficient. One participant noted that Honours and PhD graduates “*have got [the] research skills*” needed to work in a research based role in government. This is understandable because those who have graduated from an Honours or PhD program have demonstrated the capacity to undertake original research using primary or secondary data. In doing so they have applied their undergraduate research skills to ‘real research’ and also had the opportunity for additional research training. Furthermore, PhD graduates have met the criteria of making a significant contribution to knowledge in their area of expertise. It is noteworthy that Bachelor level graduates are not perceived to be provided with the skills necessary for some criminology jobs and this could be important information to impart to potential honours students, depending on their individual career aspirations.

Researching the literature

Being able to access and distil the key research in a particular area requires not only information literacy skills but also research methods and data analysis training in order to be able to correctly assess, interpret, and distil research findings. The majority of participants in this study considered researching existing literature to be a basic skill that is expected from all criminology graduates. The expectation is that they will be able to access information including traditional academic literature (journal articles and books) but beyond, to also make use of government reports and articles and legislation relevant to the roles being undertaken. It was interesting that one participant noted that their organisation outsources literature searching and literature review writing to other agencies due to time constraints around the key responsibilities of the tasks for which their agency was responsible. Another participant pointed out that graduates would need the ability to “*get on top of a subject quickly*”. This highlights the importance of not just teaching a particular curated content to criminology undergraduate students, but also teaching the skills that allow graduates to rapidly gain knowledge and expertise in new content areas, as needed.

Considering ethics

Collectively the participants of this study noted that a strong ethical orientation is an important attribute for all criminology graduates who are planning to work in criminology and criminal justice related careers. This is not surprising given: there are many opportunities for corruption in policing and other criminal justice agencies; the discretionary powers afforded to many who work in the criminal justice system; and the potential for dishonesty and other unethical behaviour when conducting research (to name but a few reasons). One participant noted that ethics

“should be a part of every degree and if it’s not then it should be worked in”. Some participants placed more emphasis on ethics than others. In particular, organisations that deal with vulnerable populations emphasised the importance of criminology graduates understanding ethical issues. Potential employers noted that organisations generally provide ethics training on the job, which suggests that only foundational knowledge is required as part of university education.

In contrast, other participants reported that while ethics is important employees are rarely expected to have research projects go through formal ethics reviews. While on the one hand this means that graduates going into positions such as these would not need to understand the processes of, and matters considered by human research ethics committees. On the other hand the absence of these makes a thorough understanding of ethical considerations when conducting research a crucial part of university education, as there are no external checks and balances in the organisation in which they’re employed. In the absence of human research ethics committees in government research organisations, employees are still expected to conduct themselves in an ethical manner. This is governed by legislation and the operational procedures of the organisations. A thorough understanding of ethical concerns in research, being taught as part of an undergraduate curriculum in criminology, would appear to be warranted. Irrespective of the particular procedures in place in each organisation, all participants stated that criminology graduates should have a thorough understanding of ethics.

Designing research

All participants reported that designing research is one of the most important skills that a criminology graduate could have. This was independent of whether the organisation collects primary data. Even in those instances where secondary data is

used, graduates would need to understand the principles of research design in order to help other agencies with research and to understand other studies. In particular, participants expected graduates to understand sampling procedures, be able to develop a project plan, and understand advantages and disadvantages of using different methodologies (which includes knowing the strengths and limitations of different methods). Some participants also pointed out that graduates should have hands-on experience with research design that goes beyond understanding the theoretical underpinnings of research. Many recommended that this be integrated into the undergraduate criminology curriculum. As noted earlier, most students do not have the opportunity to apply their knowledge of research design to conduct original research until they're enrolled in an Honours or PhD program.

Collectively the potential employers and postgraduate supervisors required that students could implement research methodologies that were both quantitative and qualitative in nature; criminology graduates possessing skills in both of these areas are preferred. Most participants did not prefer one over the other but emphasised that graduates need to understand both approaches. The breadth of their expectations are reflected in one potential employer's requirements: "*...good understanding of different research methods in terms of experimental research methods, quasi sort of experimental, just case studies, yep, I'd just across the board in that area*".

Demonstrating that participants believe graduates should have an understanding of both qualitative and quantitative methodologies, one participant said that they should have a "*...good understanding of what is robust research methodology plus the supporting qualitative and quantitative statistical skills, they're all pretty integral, I wouldn't rate one above the other*". This highlights the importance of ensuring that students are not disadvantaged in their education by selective teaching biased by

philosophical arguments in relation to the production of knowledge and ways of knowing. Students should be well versed in all research skills so that they have a complete tool kit for conducting criminological research and the knowledge of when to apply particular research techniques. This applies even more so in evaluation research.

The topic of evaluation research emerged spontaneously in nearly all of the interviews. We suspect that this is because many of the organisations from which participants come, conduct a great deal of evaluation research. It was noted by participants that in order to conduct evaluation research, criminology graduates need a good mix of both quantitative and qualitative research methods skills. One participant pointed out that although many universities cover basic quantitative and qualitative skills in courses, they do not teach students about evaluation research. This participant further argued that graduates should understand “*the need for outcomes and recommendations*”. This highlights the importance for government research to go beyond the generation of knowledge, which is the goal of a great deal of academic research. In these more applied situations, criminologists need to be able to make recommendations for policy and procedures based on findings. While evaluation research skills are widely used by potential employers’ organisations, another participant pointed out that although evaluation skills are important, their organisation is looking more for those “*core, solid research skills*” which can then be applied to evaluations.

Participants also highlighted that it is important for criminology graduates to be able to design data collection tools (such as questionnaires and interview schedules). Related to this was the importance of being able to design the wording of questionnaire items and interview questions so that there were no “*leading questions*”

that could lead to biased responses. Other participants highlighted the importance of understanding the role of piloting data collection instruments and the role that this had in the research design process. Designing questionnaires, particularly scales with good measurement properties and the subsequent statistical testing required to establish their validity and reliability, is probably a skill that is beyond most graduates of criminology bachelor-level degrees. In this context, the importance of giving students a thorough understanding of the principles of validity and reliability, how they're established and how they're maintained becomes very important. In addition to this, it highlights the importance of teaching students how to access, assess, and use existing measurement scales in the data collection tools that they design.

The participants had no expectations of criminology graduates to be able to construct research budgets, although some noted that assisting in this might sometimes be required, which suggests a basic familiarity would be optimal. In many of the organisations that were included in this study, there is a 'budget section' that takes care of research budgeting using programs and methods that graduates are not expected to be familiar with. Some participants noted that graduates need the ability to design timelines for a project. Quite importantly graduates need to understand the requirement of meeting project milestones. The timeframes in government organisations can be quite short and research needs to be conducted swiftly.

Collecting data

The previous section highlighted how important it is for criminology graduates to be able to design data collection instruments. Related to this, they also need to have the ability to collect data when employed by organisations that conduct primary research. This includes distributing surveys and conducting interviews, as well as conducting "*consultations with people in the field*". When conducting

interviews, participants noted that it is vital for graduates to have good interpersonal skills in order to discuss sensitive topics with sometimes vulnerable populations. This highlights the importance of incorporating interpersonal skills and cultural sensitivity training as an integral part of research methods training in criminology degrees.

Strong interpersonal skills are also necessary in order to build rapport with research participants or as one participant said, “*win them over*” in terms of building trust and ensuring that research participants’ view the project as worthwhile.

Analysing data

While data entry skills were included as part of the interview schedule, they were not highlighted by any of the participants as a vital skill that criminology graduates should have. This is not surprising given that many surveys are now conducted on online platforms such as Survey Monkey and Qualtrics which skip out the data entry process by having collected responses going straight into downloadable datasets. Some of the participants identified that being able to spot inconsistencies in a data set was important. Again, in the context of online data collection platforms this makes sense. Skills around cleaning and screening of data before analysis become of even greater concern when the data have not been cleaned or coded prior to entry into a dataset as they would have been with traditional paper based surveys.

Most participants state that while graduates are not expected to perform complex statistical analyses, they do need to understand the basics of univariate and multivariate statistics. One participant noted that: “*we need what I would consider a medium level skills in research and stats in that because we don’t actually have to do it ourselves, you don’t know how, you don’t even know how to do multivariate statistics but you need to understand the concepts behind them for when you’re*

reading other people's studies and for when you're trying to explain those studies back into laymen terms for our audience...".

There are a number of statistical packages that are used for teaching statistics to criminology students; the most commonly used programs are SPSS and STATA but also SAS. Participants reported that the most commonly used software in the workplace was SPSS. Despite this many of the organisations that were represented in this study do not have access to this type of software due to its high licence costs. Instead, many participants use Microsoft Excel to generate basic descriptive statistics. Most participants in this study expected that criminology graduates would have Excel proficiency combined with basic SPSS skills. However according to some participants, many criminology graduates were lacking in the ability to proficiently use Excel.

Qualitative research skills were less frequently identified as a graduate requirement but one participant said they're extremely important. Case studies and focus groups were mentioned by a couple of participants as example of qualitative research design and data collection which graduates would need to understand. Qualitative programs were not often mentioned, when prompted only one participant noted that their organisation uses NVivo, but proficiency in this program was not expected of graduates.

Writing reports

The type of writing that is required for a typical written assignment for an undergraduate course and the type of writing required in many of the occupations that criminology graduates enter, is vastly different. The majority of participants emphasised that graduates will need to write in "*government-speak*" which they noted is very different to academic writing. This, for example, includes the ability to

condense material in a very succinct manner, make it evidence-based, and write in dot points. Many participants pointed out that the ability to write reports for government is also something that is learnt on the job. Graduates are not expected to know this when they arrive at the job, but they are expected to be able to write clearly and succinctly. A couple of participants noted that if graduates could learn to write reports for government, at university, this would be an “*added bonus*” but it is not a necessity. This highlights a skill that could be taught to increase graduate employability.

Discussion

The purpose of this project was to gain further insight into the expectations of potential employers and postgraduate supervisors regarding the research skills of graduates from criminology degrees at the bachelor level. This research has shown that potential employers think research skills are important graduate attributes. From this research and other sources (Sloan et al, 2017) we also know that not all criminology students are graduating with strong research skills. There is great scope to improve research methods training in our bachelor degrees in criminology. To do this, we need to move past philosophical debates about ways of knowing and revise curriculums so that research methods are embedded across all areas of teaching.

The philosophical divisions that underpin differences between qualitative and quantitative approaches to research are important to both acknowledge and also to ensure students understand. However this should not lead to the exclusion of one particular approach. The importance of both of these ways of ‘knowing’ and conducting research, to potential employers and postgraduate supervisors, means that degree programs should be designed so that one particular approach is not favoured. Similarly it is important to ensure that qualitative approaches are taught well in

degrees where academics are more commonly engaging in quantitative research and vice versa. Students should be provided with the skills to determine the appropriate research approach for the problem or research questions under investigation.

Many undergraduate degree programs could also do a better job of ensuring that bachelor level students, graduate with some applied research experience. For many Australian universities, this does not occur until the honours year. Brown (1982) argues that research methods curricula need to be not only theoretical but also applied by providing students with hands-on experience conducting research (e.g. collecting data, entering data into statistical programs, and running analyses). There are demonstrated benefits by 'learning by doing' for students future careers; and not just those who go on to have research based careers (Takata, 1991). This is ideal for a number of reasons, including many students will end up doing applied research in their career; it reduces anxiety around research methods; and it increases knowledge retention. It is important to remember that students are not customers and research methods should not be excluded from degrees because students do not like it. It needs to be embedded across degrees as a core component of learning.

Bordt (1999) has similarly argued that research methods need to be taught in a hands-on manner and incorporated into other courses, not just as a stand-alone non-applied course. Students need to be shown the relevance of research methods for issues in the real world. One way to achieve this would be to review criminology curricula to embed learning about research in every course. This would ensure that the curriculum provides a more comprehensive understanding of the role of research in criminology and would progressively develop the students' research skills making them more employable on graduating from their degree. The teaching of skills across all years of the degree would reduce overlap, ensure scaffolding of learning, provide

appropriate chunking of information, and support the learning of new/difficult tasks.

Ultimately graduates with this applied skills will be much more attractive to employers.

In the US, these issues are also being considered by those who teach criminology degrees. Sloan et al (2017) highlighted the high proportion of criminology degrees do not require course in research methods for degree completion. This stands in stark contrast to similar social science disciplines such as psychology. One attempt at dealing with the gaps in training in the US, is the accreditation process introduced by the Academy of Criminal Justice Sciences (ACJS). Similar calls for standardisation of teaching criminology have been called for in Australia (Bartels et al, 2015). Research methods training would be part of that. This research can contribute to the conversation regarding what constitutes suitable research methods, data analysis, and ethics training for criminology undergraduate students in Australia and also more generally.

It needs to be kept in mind, when designing curriculum that we don't know where these students will go in their criminology careers. It is unlikely that even the students themselves will know at the time they're studying, even though they may have some specific career ambitions. Criminology degrees needs to prepare graduates for many career options. It could be argued for those whose career ambitions are more applied that they don't need to understand research methods therefore one option would be to have a tailored research pathway that not all students study. While this has positive aspects in terms of satisfying those who are resistant to studying research methods, while challenging and providing strong graduate skills to others, it would serve to weaken the employability and future career prospects in terms of career advancement for those who wanted to work in criminology and criminal justice and

did not have those skills. Given the importance that potential employers place on the research skills of criminology graduates, a better option would be to embed skills across the degree in a structured and progressive learning approach.

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Appendix A: Interview schedule for potential employers and academic supervisors¹

1. INTRODUCTIONS AND PARTICIPANT INFORMATION SHEET

After introductions, the following points which must be made clear to participants before the interview begins.

As you know from your consent letter, I will be interviewing you today about the **research skills that you as a potential employer / academic supervisor need and expect** from graduates of criminology degrees².

We are conducting this research in order to **ensure that courses are adapted to the needs and expectations of potential employers and academic supervisors, and adequately prepare students for employment and postgraduate research-related studies.**

You can **withdraw** your consent to participate in this interview at any time. Also, if you do not wish to answer a particular question please feel free to ask me to **move on to the next question.**

All of your responses will remain **anonymous** and all transcripts of interviews and publications of results will **contain no information which could be used to identify** yourself or your place of employment.

Now, may I please have your consent to electronically record this interview? (The recording is being done in order to assist in the transcription process.)

¹ Note: Different interview schedules were developed for potential employers and academic supervisors. In the interests of space, these have been combined here.

² All identifying information about the university in which this study was conducted has been removed.

- NOTE IF THE PARTICIPANT DOES NOT WISH TO BE INTERVIEWED
SAY- If you do not wish to be interviewed, may I take notes of what you say.
- IF THE PARTICIPANT DOES NOT WISH YOU TO TAKE NOTES- You will need to take field notes after the interview.

2. INTERVIEW SCHEDULE

SECTION A: PARTICIPANT AND ORGANISATION BACKGROUND

Ask the following questions:

Question 1: What organisation do you work for?

Question 2: What is your position within this organisation?

Question 3: When did you first start working at this organisation?

Question 4: (for supervisors) How many Honours and/or PhD students have you supervised throughout your career?

Question 5: (for supervisors) How many students do you currently supervise?

Question 6: Could you please briefly describe to me your role in this organisation?

Question 7: Have you worked with / supervised criminology graduates?

SECTION B: EMPLOYER NEEDS AND EXPECTATIONS

Make the interviewee aware of the following:

Now I'm going to ask you some questions about **your organisation's needs and expectations** from criminology graduates.

With regards to this, could you please **provide a summary of the research methods skills that your organisation needs and expects from the criminology graduates it employs**? The aim here is to gain an understanding of the research-related roles that students perform in your organisation and the skills which they need to adequately perform these roles.

If needed, assist or probe the interviewee to identify the skills which their organisation needs from employers. Such skills may include the ability to:

- **Literature search:** Conduct searches for scholarly literature both online and in libraries.
- **Write literature reviews:** on what is known about a particular topic and critiquing approaches/conclusions made by other researchers working in particular fields.
- **Ethics:** Identify and consider **Ethical Issues** involved with Research.
- Plan research by constructing **timelines and budgets**.
- **Design and write research designs/Methodologies** which effectively outline: Data collection methods; Sampling techniques; Coding/Analysis; and Limitations of Data and Reliability and validity of findings.
- The ability to **construct data collection instruments** such as surveys, interview schedules etc.
- **Collect data** by administering surveys, interviews, observations, focus groups etc.
- **Data entry** using programs like SPSS in the case of Quantitative Research.
- **Analyse data:** The ability to **analyse quantitative data** using programs like SPSS in the case of Quantitative research.
- The ability to **code qualitative data** using programs like NVivo.
- **Write reports:** The ability to write reports detailing the Results/Findings of Research Projects of both a quantitative and/or qualitative nature.

3. CONCLUSION

Do you have any additional comments that you would like to add? Is there anything you feel I have missed? Thank you for your participation.