

Evaluating psychology students' library skills and experiences

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Extensive engagement with current academic sources is expected of all psychology undergraduates. Thirty-eight undergraduate psychology students took part in a series of focus group discussions of their information-searching experiences and skills. The majority of students had not been required to engage with any form of information searching while studying at pre-degree level and were daunted by the sheer scale and complexity of the resources available in higher education. Following consideration of the issues raised by students in the discussions, a series of recommendations is presented to facilitate the transition into higher education and to enhance the library skills of psychology students.

Keywords: Library; information literacy; students, psychology, skills.

THE LEARNING EXPERIENCE of the psychology undergraduate is underpinned by the development of information-searching and specific information-literacy skills. The QAA (2007) subject benchmark statement for psychology includes the expectation that students should be able to 'retrieve and organise information effectively. Psychology graduates will be familiar with collecting and organising stored information found in library book and journal collections, and in computer and internet sources' and 'handle primary source material critically' (QAA, 2007, p.7). Placing this in the broader context, the QAA benchmark statement reflects the sets of skills and abilities that are encompassed by 'information literacy'. The Society of College, National and University Libraries (SCONUL) published a paper introducing the 'Seven Pillars of Information Skills' in 1999 (SCONUL, 1999). This was updated in 2011 to provide a clearer reflection of the range of terms and concepts that form the basis of 'information literacy'. SCONUL (2011) provides a detailed definition of each of the 'Seven Pillars of Information Literacy', dividing each one into elements of understanding and abilities. The headline definitions of the seven pillars are:

- Identify: Able to identify a personal need for information.
- Scope: Can assess current knowledge and identify gaps.
- Plan: Can construct strategies for locating information and data.
- Gather: Can locate and access the information and data they need.
- Evaluate: Can review the research process and compare and evaluate information and data.
- Manage: Can organise information professionally and ethically.
- Present: Can apply the knowledge gained: presenting the results of their research, synthesising new and old information and data to create new knowledge and disseminating it in a variety of ways.

The initial formulation of the seven pillars was that they were built upon the twin fundamental foundations of 'basic library skills' and 'IT skills' (SCONUL, 1999), so there is an assumption that 'basic' skills will have been acquired. The extensive definitions of the seven pillars give some flavour of the complexity of information literacy and the challenges facing students in higher education. The re-framing of the seven pillars by SCONUL in 2011 was intended to capture some of the changes that had taken place in

terms of the conceptualisation of information literacy in the years following the publication of the initial document in 1999. One of the key changes over the last decade has been the rapid growth of electronic sources of information and their availability to undergraduate students. These changes have led Hepworth and Walton (2009) to identify 'e-literacy' as a subset of information literacy and define it as 'the ability to access, use, manage and create information in an electronic environment... to use electronic networks to access resources, create resources and communicate with others' (p.16). It could be argued that much of the information literacy of the psychology undergraduate reflects 'e-literacy' as much as the more traditional notions of 'information literacy'.

It is often assumed that 18-year-old students entering HE will be IT-literate and will, therefore, have little difficulty with the subset of information literacy that Hepworth and Walton identify as 'e-literacy'. The typical student entering higher education in the 21st century has never experienced a world without the internet and Google (the so-called 'digital native'). It is also often assumed that the previous experiences of students entering higher education with using IT will easily and painlessly be extended to an ability to use a university library and all of its related electronic sources. However, in a report commissioned by the British Library and JISC, Rowlands et al. (2008) found that the so-called 'Google generation' (those born after 1993), far from being 'expert searchers' tend to rush information searches and spend very little, if any, time evaluating the quality of the sources that they have found. More recently, it has been found that UK university students from a range of academic disciplines do use Google, but tend not to look beyond the first couple of pages of results (Hampton-Reeves et al., 2009).

There is a growing body of research evidence suggesting that the digital natives of the Google generation use the internet to

search for information in a 'shallow, random and often passive' way (Bennett, Maton & Kervin, 2008, p.781), and that the general experience of using computers does not necessarily mean that young people entering higher education will be any better than their predecessors at the type of research and scholarship required at that level (Head, 2008).

The 'shallow, random and often passive' information searching referred to by Bennett et al. is captured within the framework of 'information behaviour' (Case, 2007). Information behaviour is a substantial area of research within the field of information science. This concept may be useful to help understand the behaviour of undergraduate students, as it encapsulates a broader range of behaviours than merely 'information searching' and 'information evaluation'. According to Case, information behaviour 'encompasses information seeking as well as the totality of other unintentional or passive behaviors (such as glimpsing or encountering information) as well as purposive behaviors that do not involve seeking, such as actively avoiding information' (Case, 2007, p.5). The reference to 'actively avoiding information' is an interesting one, as it may occur as part of an undergraduate's information behaviour when searches produce a very large number of results. This also acknowledges that information searching does not occur as a linear process. As Hepworth and Walton (2009) point out, the process of searching for information, particularly in an unfamiliar area, is likely to be highly exploratory and 'full of dead ends and backtracks' (p.52), as sources are rejected and later returned to, search terms modified, and so on.

One of the key points about the development of information literacy skills in higher education is that it must build on previous experience and knowledge (Hepworth & Walton, 2009). An understanding of the previous experiences of students entering higher education is, therefore, an essential part in developing effective training in infor-

mation literacy that meets the needs of learners and is offered within the appropriate context (i.e. the academic discipline). Given the importance of understanding students' existing skills and prior experiences, it is unfortunate, as Rowlands et al. (2008) reported, that 'there is little research in the UK into the information searching skills of young people in and entering higher education' (p.303). One study that has touched on this area is that reported by Whittle, Pell and Murdoch-Eaton (2010). Over a nine-year period from 2000 to 2008, first-year undergraduate medical students completed a questionnaire in which they self-assessed the opportunities that they had had to practise a range of 31 generic skills in the previous year, along with how confident they felt. Over the period of the study, Whittle et al. found that there had been an increase in the use of the internet to find information and an associated increase in confidence with this. There did, however, also seem to be a decrease in self-reported confidence in selecting information. Other information-handling skills showed a fall in self-reported experience for the first few years of the study, followed by a recovering pattern. The self-reported experiences of 'interpreting information', for example, declined between 2002 and 2006, but then increased in 2007 and 2008. It is interesting to note, though, that this was still below the levels reported in the period from 2000 to 2003.

While the Whittle et al. study revealed some interesting trends over an extended period of time, it did not aim to explore the absolute levels of experience that students had, or the nature of students' information literacy skills and experiences. Whittle et al. do suggest, however, that there is a need to monitor changes to information-handling skills in entrants to higher education, with an associated targeting of support to students.

Students entering higher education will, of course, have had some experience of libraries in their secondary schools or

colleges. The approaches to teaching information literacy in UK secondary schools vary widely, with about 50 per cent of school libraries being run by staff with no formal qualifications in librarianship (Streatfield et al., 2011). The average secondary school library in the UK holds 10 to 15,000 volumes (Streatfield, Shaper & Rae-Scott, 2010) and is most commonly located in a single site (often in a single room). Few school libraries subscribe to academic journals. In contrast, figures for 2009–2010 showed that UK university libraries held, on average, 751,943 catalogued print books, 109,697 e-books and subscribed to an average of 16,670 journals (SCONUL, 2010). As Case (2007) points out, '...all but the smallest libraries can be complex and intimidating' (p.22), so it is important to understand how students experience the transition from using a small school or college library to a much larger university library.

The earlier reference to students searching in an often 'shallow, random and often passive' way (Bennett, Maton & Kervin, 2008, p.781) is evocative of the terminology arising from discussions of approaches to learning and learning styles. An understanding of the information literacy skills and the related experiences of students entering higher education would not be complete without a brief consideration of the ways in which people learn. Generally, approaches to learning have been characterised as 'deep', 'surface' (Marton, 1975, Marton & Saljo, 1984) or 'strategic' (Biggs, 1987). Deep learning involves the learner in trying to understand, seek meaning, and to relate new knowledge and information to existing knowledge. Surface learning is characterised by an intention to complete the task at hand and to memorise its components. The learning of a set of facts is surface learning, while the understanding and application of those facts would represent deep learning. The third type of approach, 'strategic' learning, is characterised by a focus on the final product of the learning process, such as a written assignment. In a

strategic approach, the student focuses on achieving a high mark, while retaining a very pragmatic engagement with the task. Some element of understanding and processing of meaning is involved but the main aim is to use information to produce a good outcome, rather than to develop new knowledge of the area. The 'shallow' searching referred to by Bennett, Maton and Kervin (2008) may reflect a 'surface' or 'strategic' approach to using information. In a similar vein, Hampton-Reeves et al. (2009) found that the main criterion that students used for judging the usefulness of a source was its relevance to an assignment rather than whether it had been peer-reviewed or recommended by a tutor or other students. This very much reflects a strategic approach.

Learning styles have been defined in a number of ways, with learners characterised, for example, as preferring convergent, divergent, assimilation or accommodative styles (Kolb, 1984), as 'Activists', 'Reflectors', 'Theorists' and 'Pragmatists' (Honey & Mumford, 1982), or as visual, auditory, read-write or kinaesthetic learners (Fleming, 2001). Gardner (1993) identified eight different styles of learning: linguistic, logical/mathematical, spatial, musical, kinaesthetic, naturalistic, interpersonal, and intrapersonal.

Riding and Cheema (1991) drew a simpler distinction between 'field-independent' and 'field-dependent' cognitive styles. According to Ford (2004), 'field-independent individuals tend to experience the components of a structured field analytically, as discrete from their background, and to impose structure on a relatively unstructured field. By contrast, relatively field-dependent individuals tend to be less good at such structuring and analytic activity, and to perceive a complex stimulus globally as a gestalt.' (p.190). In terms of information behaviour, according to Ford (2004), individuals who are more field-independent make more use of truncated search terms, Boolean ORs, and less use of natural language search terms. They also prefer to use keyword searches

rather than browse for information and are less likely to be distracted by irrelevant information. Generally, field-independent individuals experience less difficulty and confusion while searching the internet and greater engagement in 'differentiating' behaviour. According to Ellis (1989) differentiating behaviour is the stage during information searching at which the individual filters and selects from among the available sources by consideration of the nature and quality of the information offered by each source. This is clearly similar to the SCONUL 'evaluate' pillar of information literacy and represents a major aspect of developing information literacy. There does appear to be a link between field-independence and this element of information behaviour. For the purposes of the present study it may be, however, more useful to appreciate that students will display different approaches to information searching and evaluation rather than classify them as 'field independent' or 'field dependent'.

In a similar vein, a distinction has been drawn between holistic and serialist styles (Pask, 1976). A 'serialist' prefers step-by-step and highly structured learning, focuses on a topic in isolation, concentrates on details and evidence, and adopts a cautious and logical stance. The potential drawback of adopting this type of strategy is 'improvidence': a failure to seek analogies or to make connections with related ideas. A 'holist', on the other hand, takes a broad view and prefers personal organisation, tries to build up their own overview of a topic, makes extensive use of analogy and illustration, and seeks connections between ideas. As a potential drawback, 'globetrotting' involves giving insufficient attention to details and a tendency to generalise and reach conclusions too readily. Studies have found that 'holists' tended to look further ahead in the learning process while, for serialists, the 'overall picture' tended to emerge relatively late in the process (see Ford, 2004, for a review). The serialist/holist distinction can be applied fairly directly to information

behaviour, as the serialist will tend to focus on the details individual sources while, for the holist, the overall 'picture' will develop much earlier in the process and information sources be used to provide more 'colour' to the emerging picture.

The distinctions between different approaches to learning and different learning styles may help to understand the self-reported experiences of students when reflecting on their information-searching skills.

Students do seem to be aware that information skills are important. In a questionnaire study of biological sciences, chemistry and environmental management students and staff at an Australian university, Leggett et al. (2004) found that 'finding information' was rated as highly important as a skill by students in all disciplines and across all year groups. It is interesting, however, that the Leggett et al. study did not ask students or staff to consider the importance of evaluating or using information effectively, although the more general 'organising ideas' and 'critical thinking' were rated fairly highly by students and staff. Leggett et al. argue that, as discipline-related and generic skills are now considered to be explicit knowledge, rather than tacit knowledge that was acquired gradually, they need to be actively taught. They go further and suggest that 'it is impossible to teach skills in isolation and that an integrated, cross-curriculum approach is essential' (p.298).

Wang (2011) suggests that there are currently four main approaches to information literacy education in higher education: extra-curriculum (a course outside the academic curriculum), inter-curriculum (a session added to an academic course), intra-curriculum (integrated into a course), and stand-alone (an independent course within the curriculum). Wang presents a model of information literacy integration and argues that it is important to understand the academic curriculum and identify potential courses in each year for information literacy integration. In the current UK higher educa-

tion context, for the majority of institutions, Wang's use of the term 'course' is synonymous with 'module' rather than with 'programme of study'.

Lantz and Brage (2006) also make a strong argument for the integration of information literacy within the curriculum, including a focus on students learning to evaluate the information that they encounter and on identifying its usefulness for their goals. Kavanagh (2011) describes a successful implementation of an embedded information literacy module within an undergraduate marketing course.

Walton and Hepworth (2011) investigated the effects of online social network learning (OSNL) on the development of information literacy in a group of first-year sports and exercise undergraduates. Students in the intervention group were asked to judge the reliability of webpages and then post their thoughts to a discussion board. They then evaluated the contributions of other students and reflected on their own evaluations of the sources. Finally, the students produced a written assignment. Data from focus groups were analysed and coded using categories drawn from Hepworth's (2004) model of information behaviour. The active nature of the tasks (a *Style State*) was found to increase students' motivation (an *Affective State*) and to reduce uncertainty (*Affective State*). The part of the intervention that involved students evaluating the contributions and activities of other students produced a *Cognitive Questioning State* in which students reflected on their own evaluation skills. Students in the intervention group were judged to have used a better quality of sources in their written assignment and were found to use more evaluative terms and to be better at reflecting on their own information behaviour.

Walton and Hepworth argue that the collaborative working and discussion involved in their intervention helped students to identify gaps in their own knowledge and that undertaking the shared task online led to deeper learning, and to the

development of the skills of *analysis*, *synthesis* and *evaluation*, as defined in Bloom's Taxonomy (Bloom et al., 1956). They also argue that it is important that the higher levels of uncertainty experienced by students as they begin to develop information literacy skills in higher education need to be recognised and, importantly, that students are aware of this.

This shift away from more traditional 'library inductions' reflected in the studies outlined above reflects the view that introductory instruction sessions for library use tend to be ineffective (e.g. Paglia & Donahue, 2003), and that 'one-shot' library instruction sessions are not ideal (Martin, 2008).

As the use of electronic books and journals increases in the teaching of psychology in HE there is a need to develop an in-depth understanding of how psychology students approach their studies, how effectively they are able to use a combination of electronic and traditional sources, and the expectations that they have of the resources to be provided for their studies of psychology.

By encouraging students to actively reflect on their strategies, successes, failures, positive and negative experiences, we can learn how to help students to maximise the benefits that they derive from the available resources. An in-depth understanding of how psychology students interact with electronic and traditional library resources is key in enabling students to utilise and value available resources and to develop information literacy skills.

As noted earlier, the development of information literacy at undergraduate level must build on the existing skills, experiences, and knowledge of students entering higher education. It is, therefore, vital to understand the skills and knowledge that students have developed from their pre-degree studies, particularly in light of the demands placed on them as they enter higher education.

Project aims

The aims of the project are to develop an in-depth understanding of:

1. The information literacy skills that psychology students bring with them into HE.
2. The strategies that psychology students adopt when searching for information.
3. How psychology students use the range of sources available to them.
4. How psychology students evaluate information sources.
5. The specific problems and successes that psychology students encounter with library resources.
6. What students do in response to the difficulties that they encounter.
7. The views of psychology students on how best to increase their academic information literacy.
8. How best to respond to issues that arise from students' use of library resources.

An incidental, but valuable, outcome of the project will, hopefully, be an insight into how psychology students think about library resources, and how their experiences colour their responses to library-user surveys.

Method

Participants

A total of 38 psychology students, from two UK HEIs, took part in focus group discussions. Participants were invited to participate by one of the researchers announcing and explaining the study in a psychology lecture. Students were told that the study was aimed at understanding their use and experience of library resources, including how they used information in their studies prior to going to university. Students volunteered by emailing the research assistant for the study, who arranged the sessions. In total, there were 14 focus groups, each lasting about 45 minutes. The sizes of the focus groups ranged from two to six participants. The initial aim was for each group to be comprised of six participants. Some students volunteered to participate, but did not attend the scheduled session. It was decided to undertake the session with the students who had attended

rather than cancel it. Consequently, the focus group sizes were uneven and, in one case, consisted of just two participants.

Procedure

The focus groups were run by a research assistant employed specifically for this project. It was felt that students may be more reticent about discussing their own abilities, skills and experiences with one of their lecturers, so the employment of an individual with no connection to any higher education institution was made to overcome this. The research assistant was familiar with the types of information sources that were available and appropriate for students of psychology to use in their studies.

The focus group schedule was designed to explore students' experiences of searching for and using sources of information to support their studies. A key element of this was to explore the transition from pre-degree study to undergraduate work, so students were asked about their experiences with information searching while they were at school, college, or elsewhere prior to beginning their degree.

The key areas of exploration, with some examples of the questions used, were:

- Pre-degree studies, including previous experience of studying psychology.
- Sources of information used in previous studies and methods of obtaining it. 'In your previous studies, what types of information did you use, and how did you get hold of it?'
- Guidance provided on how to find sources and how to judge their usefulness and reliability. 'How much guidance were you given about what to use and how to find it?' 'How did you tell whether a source was reliable or not?'
- Comparison of tutor expectations and types of sources between pre-degree study and undergraduate study. 'What were the main differences, if any, that you found when you started your degree in terms of the types or amounts of sources available or the expectations of tutors?'

- Challenges and difficulties faced in finding and using information at degree level. 'What would you say are the main problems that you face in finding and using information for your studies?' 'Can you give me an example of a time when you had a particular problem?'
- Strategies used to overcome difficulties. 'What did you do to try and overcome that problem? What help was available?'
- General approaches to collecting information in order to prepare for an essay. 'Generally, when you are given an essay to write for a particular psychology module, what do you do to collect the information that you need?'
- Factors influencing students' perceptions and ratings of available library and information services. 'When you're asked to rate the library sources on various surveys such as module evaluation questionnaires, learning and teaching surveys or the NSS, what would you say is the main factor that influences your rating?'
- Reflections on how psychology students could be helped to make the best use of available resources. 'What do you think would help psychology students to make best use of the available resources?'

Each focus group session was audio-recorded and transcribed.

Analysis and discussion

A thematic analysis approach (e.g. Braun & Clarke, 2006) was taken to the analysis of the data. The transcripts of the focus groups were read through carefully in order for the researchers to develop an overall impression of the main points and issues that students were raising. These were then coded into themes and all relevant extracts for each theme were collated. Themes were checked against each other to ensure that they were distinctive and that the data had been organised in the most coherent and consistent way.

The themes that were drawn from the data are:

- The prescriptive nature of pre-degree learning.
- Evaluating the reliability of sources
 - Wikipedia: A case in point.
- The transition to higher education: Overwhelmed by resources and expectations.
- Books vs. journal articles.
- Searching for journal articles.
- Complexity of sources.
- Importance of practice.
- Misconceptions and unreasonable expectations.

In the analysis and discussion that follows, representative examples are given of the extracts that led to each theme being developed.

The prescriptive nature of pre-degree learning

Exploration of the typical student experience of studying pre-degree revealed a remarkably consistent pattern of reliance on learning materials provided by the teacher. This took the form of handouts and class notes, sometimes incorporating photocopied sections of a textbook. Where a textbook was used, students were often directed to read specific chapters. The following extracts from the focus groups exemplify the experiences of the majority of the participants.

1. *Mostly handouts. Occasionally a text book. I didn't use the internet, we were given everything you needed.*
2. *For me it was just what the teachers put in front of us really. There wasn't really that much stuff in the library that was useable because you went to a text book and it was the same one that they give you in the class.*
3. *Everything was on a plate for us at my College. Everything was given to us or we were told which text books were relevant.*
4. *I don't think our books ever came out the cupboard we just watched videos all the time. You used to get the teacher doing a handout and you'd read that or she'd photocopy it out of a book that she had and you'd just highlight stuff and dig points out of it and then write practice essays for the exams.*

Interestingly, use of the internet was not widely cited as a method of gathering information, so it does not seem to be the case that students were, as is often assumed, 'getting by with Google' or other internet browsers to support their studies. In fact, only one or two students made reference to searching for information on the internet during their pre-degree studies.

This contrasts with a recent study of US university students (Mizrachi, 2010) in which the majority of participants reported that they began their research by using some form of search engine, typically Google. It also contrasts with what may be a common assumption amongst psychology lecturers that students will have used Google to support their academic studies prior to commencing their psychology degree.

The picture that emerges from students' experiences of studying at A-level is one of reliance on 'spoon-fed' materials. Students did not search for information because, in all but a very small minority of cases, they were simply not required or encouraged to do so.

The use of a limited range of materials is brought into sharper focus by the ways in which students made use of sources in preparing for assignments. The approach to learning in order to 'pass' comes to the fore in a number of comments, as exemplified below:

5. *We did essay plans before every essay so she found the points for us and told us where in the essay they should go.*
6. *We wrote what we was given so everyone's essay was exactly the same.*
7. *They basically gave you the answer at college.*

This is consistent with a shallow (Marton, 1975; Marton & Saljo, 1984) or strategic (Biggs, 1987) approach to learning. It is not entirely clear from the accounts of participants how the preparation of essays in this way ('we wrote what we was given') relates to the learning process. It does seem, however, that the main concern was to be strategic in the use of the provided information in order to achieve the best outcome in terms of the mark for the essay.

This 'spoon-fed' approach to learning is not consistent with the 'deep' learning expected in higher education.

Evaluating the reliability of sources

The heavy reliance on teacher-provided materials meant that few students in the study had been encouraged to consider the reliability and value of different types of source, although the students who had been encouraged to search for their own sources were more likely to have given this aspect of information literacy some thought. At the pre-degree level of study, a broadly held assumption is that books were reliable sources of information, with no apparent appreciation that books can contain errors or be written from a particular viewpoint:

8. *Books are generally reliable because they were obviously written by psychologists most of the time.*
9. *I think before university what you think is that all books are a good source and you're aware that some books are better than others.*

Only one or two participants seemed to have a clear understanding of the reliability of sources prior to beginning their undergraduate studies, but this seemed to focus on the relative usefulness of materials found on the internet:

10. *Depending on where they come from – from websites it was often the end, for example, dot gov, org – that kind of stuff.*
11. *Some other things weren't as reliable because they always had a bias to them but you could always try to figure out the bias and work with it in whatever you were doing.*

It seems that there was an emphasis on the using of sources that were provided by the tutor, rather than a consideration of their academic provenance.

12. *You assume that what you're given by a tutor is a reputable source. Some of it was journal articles and some of it was newspaper articles but at that stage there was no emphasis on reliability of sources, more you digest what you're given.*
13. *I didn't give it a lot of thought, it's information, I don't care where it's from.*

The consideration of the reliability or credibility of sources is not, it seems, an issue that is at the forefront of pre-degree studies. Students do not appear to have had to make these types of judgment, or even to have really given the issue much thought.

The statements made by participants in this study do, however, appear to be similar to the findings reported by Hampton-Reeves et al. (2009) in their study of undergraduate students in a range of disciplines. They found that the main criterion that students used for judging the usefulness of a source was its relevance to their assignment rather than whether it had been peer-reviewed or recommended by a tutor or other students. The relevance of the material to their assignment was also used as the main criterion for judging the academic quality of a source, with other criteria such as currency, whether the source was peer-reviewed or whether the source had been referenced by other researchers being considered less important.

Mizrachi (2010) found some similar findings to those reported here, in interviews with 41 university students in the US. Similarly to the example in the extract above, Mizrachi found that students judged that websites with 'edu' or 'gov' designations were credible sources of information. While, of course, 'gov' websites may well be more accurate, it does not necessarily follow that their content will unbiased and objective. Hepworth and Walton (2009) associate government web pages and university web pages with what they term the 'deeper web', which lies at a shallower level than the 'mother lode' of peer-reviewed content.

Wikipedia: A case in point

Wikipedia merits a section of its own here, because it was repeatedly singled out by students as a source that should not be used, although they were not always entirely certain about why this should be the case. An interesting contrast arose between students' perceptions of Wikipedia and material available elsewhere on the internet:

14. *I always knew not to use Wikipedia, always, and that was just overhearing a conversation, a couple of tutors had said that, but other than that, especially the internet stuff, you would think that it's pretty reliable.*

15. *We were always told to stay away from Wikipedia but I don't know why.*

Since its launch in 2001, Wikipedia has grown from 20,000 articles at the end of its first year of operation, to, as of February 2012, over 3.8 million articles in English (Wikipedia, 2012). The perceived lack of academic credibility of Wikipedia has long been a concern and recent years have seen a burgeoning of research scrutinising the accuracy and reliability of Wikipedia and exploring how students perceive and make use of it (see Rand, 2010, for an overview). For example, Giles (2005) compared Wikipedia articles to those in the *Encyclopaedia Britannica*. Experts rated a selection of articles and found that, on average, Wikipedia articles contained four inaccurate points, compared to three in the average *Encyclopaedia Britannica* article. In total, just four serious errors were found in each of the two encyclopaedias. This evidence does not seem to support the widely held view that Wikipedia articles are entirely inaccurate and unreliable. However, Rector (2008) compared nine historical articles on Wikipedia with their equivalent articles in *Encyclopaedia Britannica*, the *Dictionary of American History* and *American National Biography Online*. Rector found that Wikipedia's accuracy rate was 80 per cent compared with 95 to 96 per cent in the other sources. Wikipedia's main areas of weakness were the inclusion of unattributable quotations, the appearance of plagiarised content, and a lack of reference to credible sources. Although this study was based on a small sample of articles, Rector concludes that 'Academics may question students' or colleagues' use of Wikipedia as a scholarly resource' (p.20).

Consistent with these findings, Kubiszewski, Noordewier and Costanza (2011) found that articles in Wikipedia were

still considered to be significantly less credible than those in the online version of the *Encyclopaedia Britannica*.

Wikipedia is often held up as the prime example of an inappropriate source of information for study in higher education, with some extreme reactions of the part of academics: 'Use Wikipedia and the paper would receive a grade of zero, no questions asked' (Chandler & Gregory, 2010, p.249). While such an extreme response is probably rare, it is not uncommon to hear lecturers in UK higher education tell students that they must not use Wikipedia because it is not a credible academic source.

It is interesting that participants in the present study had very little to say about Wikipedia other than that it was not a source that they should use. This contrasts with a Swedish study by Sundin and Francke (2009) in which 17- and 18-year-old students were found to be aware of some of the potential weaknesses of Wikipedia as a source, but were conscious of the fact that Wikipedia could serve as a useful starting point, especially if the article contained appropriate academic references that could be followed up to verify information and access further sources. As Chandler and Gregory (2010) point out, Wikipedia has the advantage of being constantly updated, and errors are typically very quickly spotted and corrected. Each article has an editing history, so the Wikipedia user can see how the article has evolved and been improved over time. Mizrachi's (2010) participants also considered Wikipedia a good place to start.

Finally, there did not appear, amongst participants in the present study, to be a broader understanding that the type of criticism levelled at Wikipedia (lack of academic credibility, lack of accuracy) may also apply to other internet-sourced materials that are regarded as 'pretty reliable' (Extract 14). There appears to be a need to address the issues around the use of Wikipedia and the internet by psychology students in the UK in a more sophisticated way than by simply banning the use of Wikipedia.

The Association for Psychological Sciences (APS) has begun a Wikipedia Initiative, 'calling on its Members to support the Association's mission to deploy the power of Wikipedia to represent scientific psychology as fully and as accurately as possible and thereby to promote the free teaching of psychology worldwide' (Banaji, 2011). This is in its early days, but it may be that, in the longer term, Wikipedia will become a more credible source of information about psychological topics as a result of academic psychologists taking ownership of the content.

The transition to higher education: Overwhelmed by resources and expectations

Participants were asked about the differences that they experienced when beginning their degree course, in terms of the types and amounts of information sources available and the expectations of tutors. There were different views on the comparison between pre-degree and HE studies in terms of the amount of support available, with some students suggesting that the level of support at degree-level is very high, with others saying that there was less support available at university. The prevailing view was, however, exemplified by the following:

16. *You're an adult here really, aren't you? So you're treated like an adult in the sense that you've got to do it yourself, whereas in college you're more used to having everything done for you and told what you need to do and everything set for you.*

In the main, students recognise that they are very much more on their own, in contrast with their previous studies in which they were very heavily guided in their learning, to the point, in some cases, of being told what to write in an essay and how to structure the content.

On entering higher education, students very quickly learn that there are substantially more, and different, resources available to them than the often extremely restricted resources provided for, and required by, study at pre-degree level. In order to fully

appreciate students' perceptions of the scale of resources available, it is worth noting that the majority of participants were studying at a modestly sized HEI which, while providing extensive resources for students, is served by a library which, in relation to other HEIs would be considered fairly small in terms of its physical size. This is worth bearing in mind when considering the students' reflections on the size of the library and the resources available:

17. *There's a lot more resources in the library than the library I had at sixth form. I didn't realise that a library could be that big.*
18. *Yeah, the library's so big and especially for my course I have to go through all three floors depending on what I'm doing.*

Students appeared surprised by the sheer scale of the resources available to them at what were relatively small universities. They used words such as 'overwhelming', 'scary' and 'stressful' to describe their feelings when confronted with the scale of the task ahead of them to make use of the available resources. The feeling of being overwhelmed may be significant one because, as Case (2007) points out, one aspect of information behaviour is the active avoidance of information. This may be a result of being overwhelmed by the number of results returned from a search or, more basically, by a more general feeling of being overwhelmed by the sheer scale of the resources available, as in this case. This may also explain the findings of Hampton-Reeves et al. (2009) that students tended to look at only the first few pages on search results when using Google.

Students were also very aware that the expectations of them were very different from their pre-degree studies and it was clear that they understood the need to make extensive use of credible academic information when writing essays.

19. *They expect a lot more reading, a lot more referencing, a lot more searching in resources and they expect the evidence to be in the work and that so it's not a case of pretending.*

There was also a significant challenge for students as they took the first steps to using 'proper' sources to help them to prepare their assignments:

20. *It's like the first few essays, I struggled on things like 'go find some sources' they said 'use that' so I went and got a book, assuming that would be OK and it wasn't. It's not that they didn't like say but it's just that there's a big difference that I didn't expect.*

21. *They expect a lot more referencing, a lot more books used, you can't just use one book and get all your information from there you have to look for journals, books, loads.*

The use of books and journal articles is an issue that will be returned to briefly later but, for the moment, it is clear that students are aware that there are different types of sources and that using a single source is not going to be sufficient for studying psychology at undergraduate level.

When faced with the comparatively huge information resources of an HEI, students, quite understandably, find it difficult to judge precisely how many different sources they are expected to use, as well as how to use the specific resources in an effective way:

22. *It's a bit stressful because there's so much information and you think 'am I using enough?' Because you think there's all this information – am I wasting it, but then I think I've put too much in. It's just hard to get the balance right.*

23. *You're taught from a very early age that you read a book cover to cover but text books aren't used like that and I think that is the key of realising that yeah, you're working from this big book but you're not expected to know everything that's in it and you're not expected to understand everything that's in it.*

24. *It's quite overwhelming... you don't know where to start... it's scary actually.*

The extracts presented above really sum up the experiences of students new to higher education. They are suddenly confronted by learning resources that far exceed their experience or expectations and required to be able to make use of them in their studies. Extract 23 presents an interesting example

of reflection on the use of information in the new context of higher education.

It is, perhaps, easy for psychology lecturers in HE to over-estimate the experiences that students will have had in using information, but, as has been discussed, many students will not have had experience of making selective use of material from a single textbook, let alone having been faced with the prospect of searching a database containing hundreds of thousands of journal articles and selecting appropriate sources from amongst the myriads available. This does, of course, lead students into difficulty and there was, again, a real sense amongst the participants of being overwhelmed by the resources available:

25. *I know the first time you start looking on the library database you get absolutely overwhelmed with books and journals and you just think 'oh my gosh, what do I use?' It's like a needle in a haystack, there's so much you don't know where to start or what's your best starting point. So that was a bit daunting.*

This reflects an interesting example of 'information anxiety' (Wurman, 2001) or 'library anxiety' (Mellon, 1986). The student feels a sense of being overwhelmed and a sense of powerlessness when beginning an information search in a library. Not having a clear starting point can lead to a feeling of being lost and unable to find the way around, either in the physical library or within the virtual library. This also ties in with Hepworth's (2004) concept of 'uncertainty' as an affective state associated with information behaviour. Walton and Hepworth (2011) suggested that uncertainty should be acknowledged, and it is possible that the student in Extract 25 might feel reassured by knowing that feelings of uncertainty are quite understandable and to be expected.

So how do psychology students get to grips with the new experience of searching for and selecting information from amongst a huge available selection? When set an assignment, the first ports of call for almost all of the participants in the study were lecture notes followed by books:

26. *So even if you've never come across it before you can get an idea from the title to go and look. I'd go and look for a book just to get a bit of background reading on what I am actually looking for first before I go online.*
27. *I look through text books first and then after I've looked through text books I look at journals and different sources of information then put them all together and write my essay.*

This approach is similar to the overall pattern reported by Hampton-Reeves et al. (2009). They found that the first avenue of investigation when students prepared for an assignment was the library catalogue, followed by an internet search engine. For 70 per cent of their participants, the process began by inputting keywords into a search engine of some kind. However, only 20 per cent of participants in the Hampton-Reeves et al. study reported that they would begin with the reading list provided for the course. Participants in the present study were more likely to begin with a recommended text from the reading list, and work from there, as the extracts exemplify.

The statement in Extract 27 seems to be reflective of a 'serialist' style of learning (Pask, 1976) in which the student collects various individual pieces of information and then combines them at the end of the process. Contrastingly, Extract 26 may represent a more holistic approach, in which the student attempts to get an overview of the area before starting to search for individual information sources. Different learning styles do, in this way, appear to manifest themselves in the information behaviour of the students in this study.

Information literacy training: Library staff, lecturers and fellow students

All of the students in the study had received some kind of introduction to the library service at their institution as well as guidance on how to access the resources appropriate for psychology. Students had, however, different experiences in terms of the timing and duration of the introductory session and whether it was delivered by subject tutors or

by the library staff. In Wang's (2011) terms, the experience of the majority was that the introduction had been partly 'intra-curriculum' and partly 'stand-alone', although this tended to be one or two fairly informal sessions rather than a 'course'. Some students had been offered the 'stand-alone' library session during freshers' week, which was not felt to be particularly effective in terms of its timing:

28. *Within the first week you were doing one thing and doing another thing and then they tried to throw in a kind of 'We'll show you how to use the resources in that' and it was like 'No, there's too much else going on, I'm not worried about that'.*
29. *Maybe they should have integrated that more into the course rather than it was quite a voluntary thing, wasn't it? I don't think a lot of people will have gone and you will have got people a month or two later going 'I don't know how to do it' so you should maybe have had that as a compulsory session then it might have made it easier for everyone to then know how to use it.*

It is, of course, a challenge to ensure that students are properly inducted into higher education and that they are fully prepared for the academic challenges that lie ahead. Library induction sessions that are perceived as optional are not taken up by all students and those who do attend find it difficult to retain all that they have been told. In fact, the significance of this type of information is not always appreciated by students, as they do not yet comprehend the enormity of the differences between a university library service and the types of library that they may have encountered previously.

It should be pointed out, though, that when students had also received some level of instruction in information searching within individual modules, they tended to find this more useful as the information was presented in a specific context rather than as a general introduction. This is consistent with the findings of many research studies (e.g. Lantz & Brage, 2006; Kavanagh 2011; Walton & Hepworth, 2011) and with the

views of Paglia and Donahue (2003) and Martin (2008) that one-off library induction sessions are ineffective.

Interestingly, though, students felt that they might have benefited from the shared experience of other students, rather than just receiving instruction from library staff or even from lecturers:

30. I think it would have helped if, perhaps, another student said 'this is how you do it', because if they can explain to you how they've done it or how they went about it, it might be more relatable than one of the library staff telling you when they don't really have any affiliation with you.

The advantages of this type of approach are that students are able to address directly the issues involved in searching for and using information, including the pitfalls, in order to achieve what other students will be expected to achieve. Students develop their own ways of working with source material and they quickly establish different strategies that prove successful. Rather than wait for each cohort of students to develop their own strategies through painful trial-and-error it seems sensible that some shortcuts through the process could be provided through the sharing of experiences between students on the course. Further, the value of collaborative learning has been demonstrated by Walton and Hepworth (2011) and it may be that a combination of the type of active shared learning advocated by Walton and Hepworth, coupled with the shared experiences of other students may be effective in overcoming the initial uncertainty that students have about information searching.

Finally, students suggested that they would benefit from more ongoing direction and instruction from lecturers:

31. More probing from the lecturers, say like various stuff in the library, 'go and use it' would help you. Because most of the time students think 'Oh no I'll just use the things I've already got at home' [A-level notes, etc.] whereas if lecturers said to you you may need to use other sources then I think more people would be more likely to use the library.

In some ways, this statement seems to be reminiscent of the prescriptive learning that many students will have experienced in their pre-degree studies. Although students do seem to develop an appreciation of the need to find and use appropriate sources, this extract does seem to suggest that they may be waiting for the lecturer to direct them to do what they, essentially, already know is necessary.

Books vs. journal articles

From the outset, students are made aware of the existence of journals, the importance of using these as sources and of not over-relying on books. Students seem to understand that journal articles are more likely to offer an avenue of exploration of more recent research than textbooks, and that these are the types of sources that tutors expect them to use:

32. I think if it was research our first point of call would be journals because those tend to be the more recent. It depends what it is, if you're writing an essay it depends on the context of the essay. If they're wanting really up to date stuff then I think the best point would be journals because they tend to be more up to date. So yeah, depends what it is really.

33. Lecturers are definitely very keen on journal articles – they do like journals a lot... but they don't like the internet. If you can find books and relevant sources like the journals they much prefer them, and have a long reference list.

These are good examples of the development of information evaluation, as reflected in the SCONUL (2011) Seven Pillars of Information Literacy and of the differentiating behaviour referred to by Ellis (1989). Students are learning to make broad evaluations of sources on the basis of the type of source, with journals being given preference over books, and websites being seen as less valuable because lecturers 'don't like the internet'. The comment about the need to 'have a long reference list' raises some interesting points about the amount of information available and how students decide that they have 'enough'. The point at which the

decision is made that just enough data have been collected to feel satisfied is termed 'satisficing' (Case, 2007). Students seem aware of the need to use a number of references but also of the need to be selective and evaluative about the types of sources being used. It appears that students feel satisfied that they have done enough when they have generated a 'long' references list consisting predominantly of journal articles.

In order to be effective in their information behaviour, students must plan searches and gather, evaluate and manage information (SCONUL, 2011). How students actually engage with the resources available to them to achieve this was discussed extensively, particularly with regard to the use of electronic databases to search for journal articles.

Searching for journal articles

Two of the major issues spoken about by many students in the study involved the use of online databases (e.g. EbscoHost, Science Direct) to search for and select journal articles. The two key issues were the effective use of search terms to find articles and the availability of articles in full-text versions.

34. *It's difficult to know how to word it sometimes to get what you're looking for because you can understand it in your head but the database might not necessarily understand what you mean and what you're looking for.*

35. *I find it interesting how if you type it in one way it comes up with certain stuff but if you phrase it slightly differently it comes up with different type of things.*

When searching for articles generally, rather than trying to find a specific one, there are difficulties for students in knowing what key words to use. This can lead to failure to find appropriate source materials and a great deal of frustration. Another major and very common source of frustration for students is the fact that they do not have full-text access to every journal article. Students have some major misconceptions about the reasons for this, which will be returned to later. For the moment, though, it is useful to examine

student experiences with attempting to find journal articles:

36. *Yeah, EBSCO [database], when you search, you can search full text but the results are only on articles that you can get access to. But if you untick that box you can do a full search of everything and it searches articles that you don't necessarily have access to, which I think is pointless, by the way.*

37. *It can be annoying sometimes with EBSCO Host if you find a journal that looks really good, you've got the title, you've got the abstract but that's it, there's no journal for it, it's just the title and the abstract. You can't actually get in so you can't realistically reference it because you haven't really read it.*

38. *We've been told 'use more journals', we go into the library and try to get the information and it's not available.*

The first of the extracts above reveals that the student has learned how to use the system but does not understand its limitations or the reasons for them. The comment that 'it searches articles that you don't necessarily have access to, which I think is pointless, by the way' suggests that the student does not understand that, firstly, not all journals are available in electronic format and, secondly, that it might be useful to know about the full range of publications in a particular area, regardless of whether one wishes to read them all. This is, however, a thorny issue and there is clearly a need to balance student expectations about what they will be able to access electronically with the expectations of tutors about the extent and depth of material that undergraduate students should reasonably access in order to produce work of an appropriate standard. There is clearly a need to address with students the nature of electronic databases and the expectations that students should have. It is quite understandable that students will become frustrated by not being able to have direct access to every journal article, but it is important to ensure that they understand that this would be an unrealistic expectation. This will be returned to later in a broader discussion of the types of miscon-

ceptions that students have about the accessibility and availability of sources, particularly full-text electronic journals.

The complexity of sources

Students inevitably face some difficulties in accessing and making effective use of the types of sources that are appropriate for higher education. Knowing where to start may be daunting for students but overcoming that particular issue and beginning to explore the available literature produces challenges of its own. As students search for information they very commonly face the problem of selecting the most useful sources from amongst the several thousand (sometimes hundreds of thousands) that a search has produced. This, of course, ties in very closely with the difficulties that students face in using the most effective combinations of search terms, but it can be very off-putting for students, especially in their first year in higher education to be faced with a huge number of 'relevant' articles following a search.

39. *Until you actually go and search for something you don't realise how much of it there is. And then trying to figure out what's relevant and what's not, that's a totally different task in itself rather than just searching for information.*

40. *I think just knowing if it's relevant or not, especially if you've only had a lecture on it and you weren't quite sure you try and find it yourself before you went and asked the lecturer 'what are you actually going on about?' Because 9 times out of 10 they'll say, well have you tried to read around it and you're like 'Well no, because I don't even know what that means'.*

Students are very commonly encouraged by their university tutors to 'read around' a subject in psychology, but this does not acknowledge that students will sometimes not know where to start with this. In fact, the comment above suggests that students might not even understand what the phrase 'read around a subject' actually means. This is further compounded by the problems of selecting appropriate sources from amongst

the huge numbers on offer. The concept of 'information overload' is not a new one (see Bawden & Robinson, 2009). If information is potentially useful, and is accessible, then it becomes increasingly difficult for the individual to make efficient use of it as the amount of information increases. Bawden and Robinson (2009) refer to a number of 'pathologies of information', which include information overload, information anxiety and 'infobesity'. One way in which these can be overcome is by the simple strategy of 'information avoidance' (Case et al., 2005). This particular information behaviour, coupled with satisficing, may help students to avoid becoming overloaded and 'infobese'. Bawden and Robinson point out, however, that while satisficing may be a sensible option, given the large variety of choices on offer, it is important that satisficing must have a rational basis. Without this basis, Bawden and Robinson argue, the sensible strategy of satisficing become reduced to information avoidance, which they refer to as 'bad satisficing'.

It is also apparent that the advice to 'read around' a subject might also produce difficulties. Students appear to be confused by this, as they might not know where to start or, just as importantly, where and when to stop.

Another factor that provides a barrier to students in selecting and using sources effectively is that they simply do not understand what they are reading, whether it be in a book or a journal article:

41. *I find that sometimes when you're looking through books you think they're going to be useful and relevant and then they're either too complicated or they don't say what you want them to say.*

42. *I think, like particularly with journal articles, some of them can be really long especially in psychology as well when you've got your results section, like F numbers and things like that, they're really hard to understand and try and find a point that you're looking at.*

43. *Some journals you pull up, they're so complex, they're really difficult.*

Most students entering higher education are not familiar with reading these types of publication. Engagement with psychological journal articles is the experience of a small minority of students before they start their degree. When students are introduced to the need to read 'widely' (whatever that means) and to focus more on primary sources, it is easy to assume that, because they have taken A-levels, they will have had to undertake a lot of reading and that this will have been of the 'right type' and level. This, as we have shown, is an unwarranted assumption.

The statements presented in this section are very similar to some of the examples reported by Hampton-Reeves et al. (2009). They also found that students found difficulty with the complexity and style of journal articles, and suggest that 'students are not always equipped with the skills to read and understand complex research language' (p.22). This presents a barrier to students in making effective use of academic sources. Leggett et al. (2004) point out that lecturers and students may have different understanding of what it meant by 'reading': 'Students know that they can read and have been reading for years, whereas staff know that students often lack the skills to engage meaningfully with texts' (p.309).

Students do realise, however, that some of the difficulties that they face with reading journal articles can only be overcome through persevering and gaining more experience and familiarity with the sources:

44. I think maybe a bit of inexperience as well. The more you practise reading these things and trying to interpret them I think the better you get at it.

This student has reflected on their difficulties and thought about how those difficulties might be overcome. This particular reflective statement, that the task will become easier with practice and experience, was raised by a number of students and largely formed the basis of the type of advice they would offer to other psychology students.

The importance of practice

Students were asked what advice they would offer to other psychology students to help them develop their library skills. Reassuringly, they focused very much on the need to 'get stuck in' with using the library resources:

45. I would just say for them to get used to searching for things, especially the use of all the databases, the journals on the library web. It takes a while to get used to. And if you don't do it straight away then you come to do it and you think 'I haven't got a clue what I'm doing here'

46. I would tell them to use more journals instead because it's more updated and recent instead of books. Journals are more of fact and it's more evident that books are just the author's opinion. So I would advise new students to focus more on journals.

47. Don't be afraid to use the resources that are available in the library. They're there to be used.

The message seems to be clear that students appreciate the importance of searching for information and, critically, that there is a real need to learn how to use the available information sources effectively. As one student put it: 'Because once you get used to it it's fine, isn't it?'

Misconceptions and unreasonable expectations

During the discussions, a number of students revealed some misunderstandings and misconceptions about the sources that are available and how to use them. These provide an interesting insight into students' perceptions of the available information sources and their provision. They also identify issues that could be addressed directly while introducing students to the library resources and using them during the delivery of modules.

1. Tutors have greater access to electronic resources than their students.

Students suspect that they, as students, are provided with 'student-level' access to sources and that their tutors have wider access to a greater range of 'secret' sources.

48. *I searched for a couple of them [articles] and they weren't PDF files and they weren't on Ebsco Host, they weren't on Google Scholar either – you kind of get the abstract. But obviously you can because (named tutor) can because (named tutor)'s got the provision to go on everything.*

In most institutions, including the ones in which the participants of the present study were studying, staff and students have the same access to the sources to which the institution subscribes. Occasionally, tutors will, of course, inadvertently provide a reading list which may contain articles to which they do not, or no longer, have electronic access. This can apparently lead students to erroneously suspect that their own access is restricted and that tutors might not be aware of the differences between their own level of privilege and that of their students:

49. *But maybe they're not aware of the fact that we can't get access to all the journal articles. I think it's definitely a factor.*

2. All journals should be available in full-text versions.

Students seemed to believe that where a journal was searchable via a particular database (e.g. PsycLit or Science Direct) it should always be available in full-text. The perception was that the journal being abstract-only reflected a shortcoming of the institution and that students of other institutions would probably be able to access it on that database. Of course, no institution has full-text electronic access to every psychological journal.

These considerations also impact on student evaluations of the library services (e.g. when competing surveys such as the National Student Survey). The key factor that students cited as determining their rating of their institution's library was the accessibility of the resources. Clearly, if students have unrealistic expectations or feel that they cannot access resources which they feel should be available this may lead to more negative evaluations than if they have more realistic expectations and a better understanding of the provision available to

them. It is possible that students' ratings of library resources in the NSS may be improved through the simple expedient of addressing these misconceptions. This is addressed in the recommendations in the next section.

Concluding remarks and recommendations

The findings provide an interesting overview of the information skills that psychology students bring with them into higher education and the challenges that they face in making the transition into degree-level study. Students' accounts produced a number of themes which, together, shed light on the experiences and library skills of psychology students. They described a very prescriptive learning experience in their pre-degree studies, where learning tended to be very strategic and assessment-related. A narrow range of sources had been used and there was little evidence that students at that level of study had been expected or required to undertake independent information searching or wide reading. Concomitant with this, students had little experience of considering the reliability of sources, although they had some awareness of some of the potential problems of using the internet. Wikipedia was singled out as an unreliable source, and students' arguably unsophisticated understanding of this contrasted with findings from other studies.

Students reported feelings of being surprised and overwhelmed by the scale and complexity of their university library and its resources and this was discussed in relation to information overload, information avoidance and satisficing behaviour. Searching for journal articles was discussed as a case in point. Advice from tutors to 'use journal articles' and to 'read around' can be a source of confusion as students might not always be able to identify for themselves what constitutes something worth reading or how much to read.

The experience of being introduced to the library resources was mainly in terms of a

single library-based induction, although some students had experienced a more embedded and integrated introduction within their programme modules. Students preferred a more integrated approach with input from their lecturer and this is consistent with previous findings as well as studies that have shown that a more embedded approach is more effective. Students also suggested that receiving advice from other, more experienced, students may be useful in providing an introduction from a more relevant perspective.

Students understood the distinction between books and journal articles and recognised that journal articles were a more valuable source, due in part to the currency of the research reported. An unfamiliarity with the complexity of sources led to difficulties in reading and making effective use of them, although students reflected that experience and practice may be important in developing the requisite skills.

Finally, some common misconceptions and unreasonable expectations about the availability and accessibility of library resources were identified, which may have a negative impact on student ratings of the library resources in surveys such as the NSS.

There are, consequently, a number of considerations that can be made when ensuring that students make a successful transition into higher education. The enhancement of psychology students' library skills can be addressed in a number of ways, beginning with a full appreciation of the state of knowledge, experience and expertise that students bring with them from their pre-degree studies. Recommendations to address the issues raised by students during the study are presented below.

Firstly, it is important for HE tutors to understand what skills and experiences students are bringing with them when they begin to study psychology at undergraduate level. As has been shown, a basic level of information-searching experience to support academic work is far from being the norm. Supporting students in making the

transition to higher education necessarily involves understanding what that transition entails for them. The first recommendation to enhance psychology students' library skills is to begin at the beginning and explore with them their previous experience:

Recommendation 1: Gain an understanding of the types of information that students used in their pre-degree studies.

Having an appreciation of the (limited) experience that most students will have had of having to source any type of information will help to make the process of transition less daunting, and will eliminate any unrealistic expectations or assumptions that tutors may make about the 'Google generation'.

Clearly, understanding where students are 'coming from' with regard to their information-searching experiences is just the start. The next step is to ensure that the introduction to the available learning resources and information systems is effective and that it enables students to begin their studies and facilitates a shared understanding of student and tutor expectations. The findings of the present study reinforce the view that the development of information literacy is preferred (and more effective) if embedded within a programme. As has been discussed, an active learning process can be useful here. A new suggestion is that existing students should be involved to provide an understanding of the resources and how to use them from the student perspective:

Recommendation 2: Embed library skills within the curriculum and, if possible, recruit an existing student to speak to new students about the practicalities and their everyday experiences of information-searching.

The findings of the present study show that psychology students beginning their studies in higher education feel overwhelmed and daunted by the scale of the resources available to them. It is important to acknowledge this in order to reassure

students, so an important element of the student induction and ongoing development of their information literacy may be to seek feedback from them about their concerns. As has been discussed, feelings of uncertainty should be acknowledged. A third recommendation is, therefore:

Recommendation 3: Ask students how they feel about the resources to which they have been introduced and provide acknowledgement of and reassurances about any feelings of being 'overwhelmed' and 'uncertain', either in general terms or in the context of specific tasks.

Once students become engaged with searching for journal articles using electronic databases, it is clearly important to manage their expectations and provide them with the specific skills that they need. The misconceptions that students have about the nature of electronic journal provision need to be tackled head-on. This can help students to become more information literate and can help the institution by increasing student satisfaction and the ratings of library services on surveys, including the NSS. The evidence from the present study, particularly as outlined in the 'Misconceptions and Misunderstandings' themes, suggests that the following issues will be particularly important to address:

Recommendation 4: (a) Make sure that students are provided with a full explanation of the nature of electronic journal databases, including why many journals will not be available in full-text versions; (b) Make it clear that tutors are aware that students will not have access to everything and that they, the tutors, also experience restrictions.

There was clear student concern about the complexity of some of the sources that they were expected to read, especially research articles. As discussed earlier, there may be a mismatch between the expectations of lecturers and the experiences of students in terms of their ability to 'read' at the appropriate level.

Recommendation 5: Forewarn students that some journal articles may be highly technical, and provide them with practical guidance on how to read journal articles (including how to deal with the results of statistical tests). As with information literacy, generally, integrating this learning within a module and making it interactive and collaborative is likely to maximise its effectiveness.

The challenges faced by students when studying psychology at undergraduate level should not be under-estimated. Advances in technology have made academic sources much more accessible than ever before, but the flipside of this is that students may become overwhelmed by the sheer scale of the task confronting them in searching for, identifying and making use of appropriate sources. Hopefully, the outcomes of the present study go some small way to understanding the student experience a little more and preparing to assist a new generation of students to develop the academic skills that are necessary for the successful study of psychology.

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