A SURVEY OF DOCTORAL SUPERVISORS IN SOUTH AFRICA

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ABSTRACT

South African universities receive a direct monetary reward for the number of doctoral graduates produced. As a result there has been a steady increase in numbers in recent years (from 977 in 2004 to 1 878 in 2012), with obvious implications for doctoral supervision. Against this background a web-based survey of 331 doctoral supervisors at South African universities was conducted in 2011. The findings are discussed with reference to four themes: the burden of numbers, the nature of the doctorate (PhD), screening and selection of doctoral

candidates, and supervisory styles. The main conclusion is that many doctoral supervisors in South Africa conduct their supervision under less-than-optimal conditions. Increasing student numbers, demands for constant monitoring and accountability, the pressure of throughput rates and efficient completion together with moderate-to-poor quality students, have resulted in a situation where doctoral supervision has become a challenging and highly stressful undertaking.

Keywords: doctoral, doctorate, postgraduate, supervisor, supervision

INTRODUCTION

The South African Research Funding Framework of 2003 introduced, for the first time, a direct reward (as a research output subsidy) to universities for the number of doctoral graduates produced (a monetary value equivalent to three articles in an accredited journal). Not surprisingly, universities saw the value of producing much larger numbers of doctoral graduates as an additional source of income, and began to put various measures to increase the doctoral 'production' into place. Now – more than ten years after the new funding framework came into effect – it seems as if some of these measures have been quite effective, as the statistics for doctoral output over the past years have shown a steady increase (977 in 2004; 1 100 in 2006; 1 182 in 2008; 1 421 in 2010; and 1 878 in 2012), and doctoral supervision is a key input to this increased graduate output.

Moreover, in a comprehensive series of studies on the doctorate (PhD) in South Africa commissioned by the Academy of Science of South Africa (ASSAf) in 2009, various aspects of doctoral education and training were addressed, including tracer studies on the employability of doctoral students, the study experiences of doctoral students, and doctoral completion and attrition rates. But surprisingly very little was included about doctoral supervision or the experiences of doctoral supervisors themselves in the final report of the ASSAf study (ASSAf 2010). In recent years a small number of articles on doctoral supervision and supervisors have been published by South African academics. In addition to more philosophical and normative papers (Strauss 2012) and studies that report on student experiences of their supervisors (Govender and Dhunpath 2011), a few studies focus on different models of doctoral supervision (Backhouse 2010; De Lange, Pillay and Chikoko 2011). The majority of empirical studies on the experiences and opinions of doctoral supervisors are qualitative and usually involve in-depth interviews with small samples of supervisors (Kiguwa and Langa 2009; Schulze 2012; Smit 2010). An exception is the quantitative study by Lessing (2011) but her survey includes only 50 PhD supervisors from the School of Education at the University of South Africa.

In previous articles (Mouton 2007, 2011) we pointed to the growing 'burden of supervision' in the South African system. Here it was argued that with the huge growth in doctoral enrolments (a doubling of enrolments between 2000 and 2009), it was inevitable that individual academics (those with doctoral degrees) would increasingly face larger and ultimately unmanageable numbers of students to supervise. At the time we calculated that the average staff member with a doctorate would have to concurrently supervise around five master's and three doctoral students each if the existing demand was to be met. Over the past few years, it has become clear that these estimates have to be revised. Not only has the number of doctoral enrolments continued to increase significantly but new targets (for example, as set by the National Development Plan of 2012 of the South African Government, that aim at 70 per cent of all academic staff having PhD degrees by 2030 compared with the current 40%) will further fuel the demand for doctoral supervision. These trends will put even more strain on the existing supervisory capacity in the system.

But the challenge of supervision is not only a matter of additional volumes of students to supervise. Evidence from various workshops on doctoral supervision clearly shows that supervisors are not only finding the increased numbers challenging, but – even more importantly – also the reality that a large number of prospective doctoral candidates are woefully underprepared for doctoral studies. Supervisors complain that many of their doctoral students cannot write scientifically, do not know how to search the literature, lack the required quantitative and qualitative skills to do proper data analysis, and so on. In cases where doctoral students are underprepared for the specific demands of doctoral studies, the doctoral supervisor has to devote more time to guiding the student through the doctoral research process. The 'burden of supervision' is therefore both a result of the substantial growth in the numbers of doctoral students as well as the large proportion of doctoral candidates who are ill-prepared for their doctoral studies.

It is also worth highlighting that doctoral students in South Africa, on average, take about five years to complete their degrees, according to figures for 2005 (CHE 2009, 21). Most South African doctoral candidates are also relatively mature at the time of graduation. In 2007, the average age of doctoral graduates was 41 years, ranging from 35 in Engineering and Mathematics to 45 in the Social Sciences and Humanities (ASSAf 2010, 51). In contrast, the median age of doctoral graduates in the United States (US) in 2012 was 32 years (NSF 2014). This underscores one of the huge differences between the South African system and that of other countries. In countries such as the US, Canada, the United Kingdom (UK) and other European countries, there is sufficient funding to support doctoral students to study full time. In fact, in countries such as Sweden doctoral candidates receive a salary from the government for the full duration of their studies (five years) and are allowed to teach while doing their studies. Graduating at an earlier age is therefore the norm. In the case of South Africa, the majority of doctoral students study part time (while

working). This, together with the interrupted nature of their studies, results in the average age being above 40 years at graduation.

In addition to these issues, anecdotal evidence suggests that supervisors also have concerns about their lack of autonomy in making decisions about the screening, allocation and final acceptance of doctoral candidates. They are also concerned about the ever-increasing pressure – often from their own university managers – to produce more doctoral graduates in less time (the obsession with throughput rather than quality).

In order to gather more systematic evidence about these and related issues, we designed and administered a web-based survey of doctoral supervisors at South African universities in 2011.

METHODOLOGY

A database of PhD supervisors was compiled from information obtained from South African universities during 2010. We identified the most 'research productive' supervisors on the basis of their publication output over the preceding ten years. This process produced a list of just over 3 000 names of possible respondents. All these academics were subsequently invited by e-mail to participate in the web survey. The first batch of e-mails was distributed through the online survey system of Stellenbosch University, on 31 October, 2011. The initial closing date of the survey was 14 November, 2011, giving the participants two weeks to complete the questionnaire. Although e-mails were sent to 3 042 supervisors, delivery failed to 924 recipients, indicating that the addresses were either no longer in use, invalid or that some mailboxes were full. At the time of the deadline of the survey (23 November, 2011) a total of 336 questionnaires had been received, of which five were incomplete. Out of 2 118 sent invitations (3 042 initial invitations minus 924 failed deliveries), a total of 331 valid responses were received, resulting in an overall response rate of 15 per cent.

The online questionnaire, apart from collecting demographic information, included various questions about PhD supervisory approaches and styles, as well as monitoring and feedback mechanisms in the supervisor-student relationship.

RESULTS

Sample profile

An analysis of the realised sample shows that 72 per cent of the 324 respondents who specified their gender were male. The mean age of respondents at the time of completing the survey was 55, but it is also interesting to note that a significant

number of respondents (36% of the sample) were over 60 and some even over 65 (16%). In general, it is fair to say that the sample represents a slightly older profile than the population characteristics. This is mainly because of the manner in which we defined our target population, that is, as the most research-productive academics in the country. The representation of PhD supervisors by scientific field was comparable with the production of doctoral graduates across scientific fields, based on figures for 2010 (Figure 1).
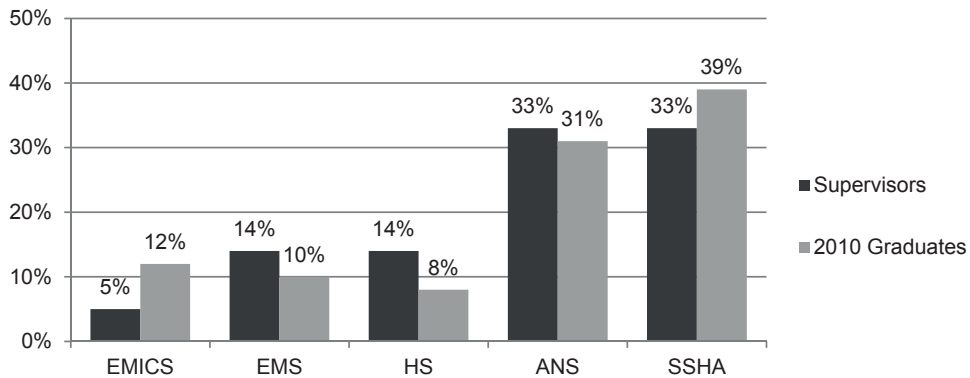

Note: ANS = Agricultural and Natural Sciences; EMICS = Engineering, Mathematical and Information and Computer Sciences; EMS = Economic and Management Sciences; HS = Health Sciences; and SSHA = Social Sciences, Humanities and Arts.

Source of 2010 statistics: Higher Education Management Information System (HEMIS) of the South African Department of Higher Education and Training.

Figure 1:   Scientific field distribution of the sample of PhD supervisors (*n* = 331), compared with the field distribution of PhD graduates in 2010 (*n* = 1 421)

We were also keen to get responses from the top research universities as these contribute most to the overall production of doctoral graduates in the country. As Figure 2 shows, this was the case. However, PhD supervisors from the University of KwaZulu-Natal (5%) were somewhat under-represented in the sample, considering the share of PhD graduates produced by that university in 2010 (11%).
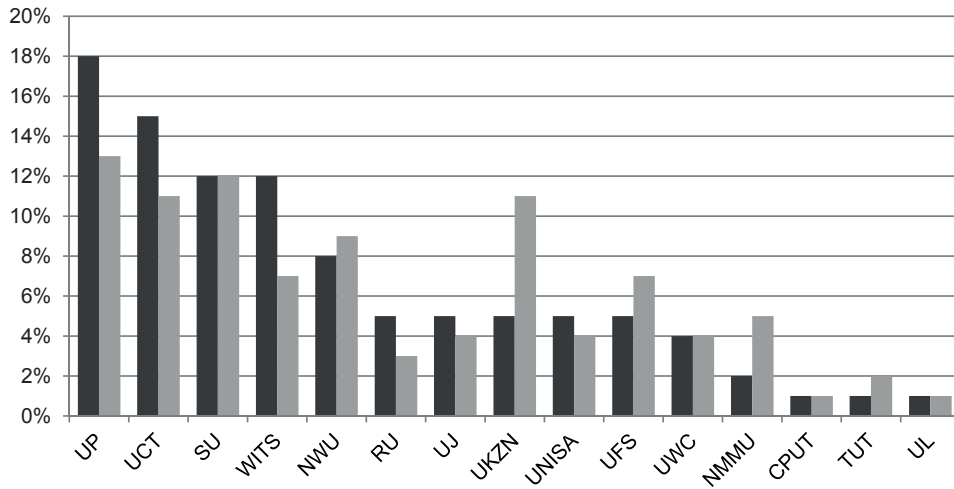
Note: Fifteen of the 23 public South African universities are presented here. The acronyms are: UP = University of Pretoria; UCT = University of Cape Town; SU = Stellenbosch University; WITS = University of the Witwatersrand; NWU = North West University; RU = Rhodes University; UJ = University of Johannesburg; UKZN = University of KwaZulu-Natal; UNISA = University of South Africa; UFS = University of the Free State; UWC = University of the Western Cape; NMMU = Nelson Mandela Metropolitan University; CPUT = Cape Peninsula University of Technology; TUT = Tshwane University of Technology; and UL = University of Limpopo.

Source of 2010 statistics: Higher Education Management Information System (HEMIS) of the South African Department of Higher Education and Training.

Figure 2:   University affiliation of the sample of PhD supervisors (*n* = 331), compared to the affiliation of PhD graduates in 2010 (*n* = 1 421)

In addition, we were specifically interested to establish how long the respondents had been supervising PhD students. Altogether 69 per cent of respondents said they had been doing so for at least ten years, and 29 per cent of these reported that they had been supervising PhD student for at least 20 years.

This short description of the demographics of our respondents reveals that our typical respondent was a male in the mid-fifties with significant experience in doctoral supervision. It is important to keep this in mind as we present the views and opinions of the respondents of the range of issues in the survey.

The burden of numbers

An often-asked question in workshops on supervision by new supervisors relates to the ideal – or even maximum – number of students that a single supervisor should supervise at any point in time. In order to get some indication of current practice

in this regard, we asked (in the survey) whether the respondents 'only accept[ed] a small number of PhD students at any given time'. The responses were nearly evenly split, with a small majority (53%) agreeing with the statement (Figure 3). There are, however, big differences in the responses by main scientific field. Larger percentages of respondents in the Health Sciences (67%) and Natural Sciences (64%) seem to be able to accept fewer students. However, supervisors in the Social Sciences, Humanities and Arts are seemingly not able to always limit the numbers. This may not reflect any methodological differences but simply that there is a much greater demand (per capita) for doctoral supervision in the Social Sciences.
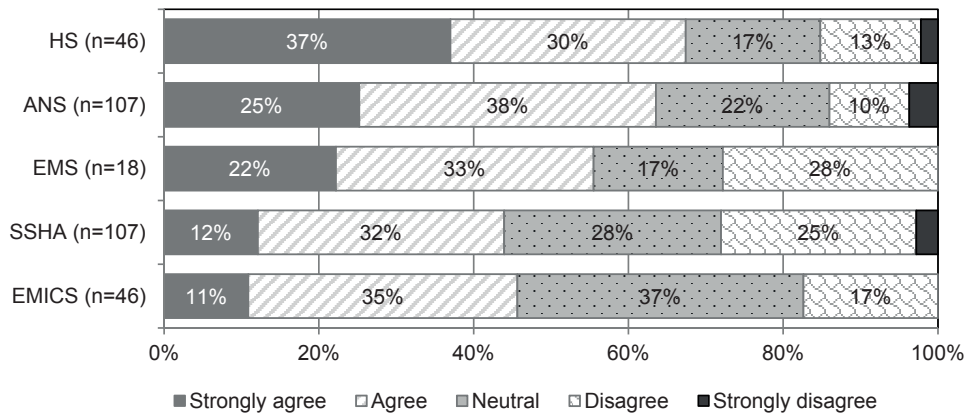

Figure 3: Extent of agreement with statement: 'I only accept a small number of PhD students at any given time', by scientific field

It is also obvious that other factors would determine what one regards as an optimal number of students to supervise. Novice supervisors should clearly not initially accept more than one or two students to supervise (and should preferably do so as co-supervisor to an experienced supervisor). In some laboratory-based disciplines, where it is possible to supervise doctoral students in groups, there may be a different ideal number compared with supervising single students. Our survey showed that the average supervisor supervises four doctoral students concurrently. However, these student numbers are not evenly distributed across supervisors (Figure 4). A significant number (about 20%) of supervisors at South African universities supervise more than six doctoral students at any given time. If one takes into consideration that many of these academics also supervise even larger numbers of master's students, at the same time, one gets a sense of the 'quantitative' burden of supervision.
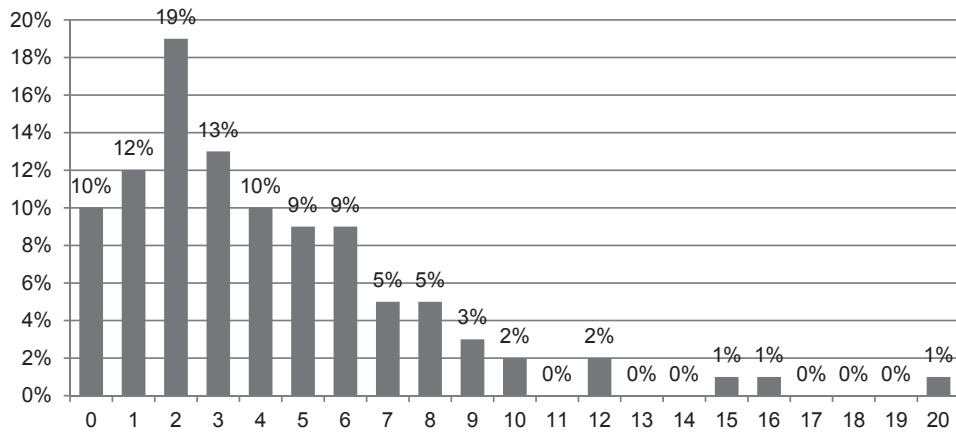
Note: A number of respondents indicated that they are retired, which may account for the 10% that are not currently supervising any students.

Figure 4:   Number of PhD students that respondents currently supervise at a
                South African university (% distribution, *n* = 327)

In addition to the number of students that respondents were supervising at the time of the survey, we also asked them to indicate how many doctoral students in total they had supervised to date. Again, the distribution was unequal with the biggest single proportion (40%) having supervised five or fewer students. At the other extreme, there were extremely productive supervisors (12% of the sample) who had supervised 20 or more doctoral students to date.

When we disaggregated the 'number of students supervised' by scientific field, we did not find, perhaps surprisingly, statistically significant differences in the mean number of students being supervised (Table 1). One may expect that differences in models of supervision, for example, between group supervision and individual supervision, may lead to differences in the actual number of students being supervised. However, the largest mean number of supervised students (4.6) was found for the Social Sciences, Humanities and Arts, where individual supervision is the preferred model. These fields also constitute the single biggest scientific 'field' for doctoral enrolments. This may suggest that these numbers simply reflect the differential demand for doctoral supervision across different fields, rather than differences in models of supervision or even deliberate decisions on the part of supervisors to 'cap' the numbers of students. As we will show below, responses from supervisors about the decision-making 'autonomy' when accepting prospective doctoral candidates tend to suggest that this is indeed the case.

Table 1: Mean number of PhD students that respondents currently supervise, by scientific field

Field	Number of supervisors in sample	Mean number of students	Median number of students	Standard deviation	Minimum number	Maximum number
SSHA	108	4.6	4.0	3.6	0	20
EMS	18	4.3	3.5	3.6	1	16
EMICS	47	4.0	3.0	2.5	0	9
NAS	108	3.7	3.0	3.2	0	16
HS	46	3.5	2.0	3.9	0	20
Total	327	4.0	3.0	3.4	0	20

Note: No statistically significant difference between means: $F_{(4, 322)} = 1.38$, $p > .05$.

The burden of increasingly large numbers of doctoral students to supervise will manifest in different ways. We decided to look for two results: Firstly, what would the effect of large numbers have on the alignment between the expertise of the supervisor and the expectations and demands of the student? Secondly, what effect would the large numbers have on the time and attention that the supervisor can devote to each student?

As to the first, we asked supervisors whether they sometimes have to accept students who work outside their own area of expertise. This is an important issue because it is generally accepted that there is a big difference in how supervision is conducted where the supervisor is supervising students in his/her area of expertise, as opposed to areas where the supervisor would not claim any expertise. When supervising students in his/her own area of expertise (areas where the supervisor has published, given presentations and is generally recognised as an expert by his/her peers), the supervisory process is much more straightforward. On the other hand, when a supervisor has to supervise a doctoral student in areas outside his/her own expertise, the supervisor needs to put in much more effort in keeping abreast with developments and trends in that field, and also with the student as the process unfolds.

It is, therefore, some cause for concern that a sizeable percentage (45%) of all respondents in our study indicated that they sometimes have to supervise students outside their main area of expertise. A breakdown by main scientific field (Figure 5) shows that this situation is slightly more common in the Social Sciences, Humanities and Arts, and in the Engineering and Mathematical Sciences.
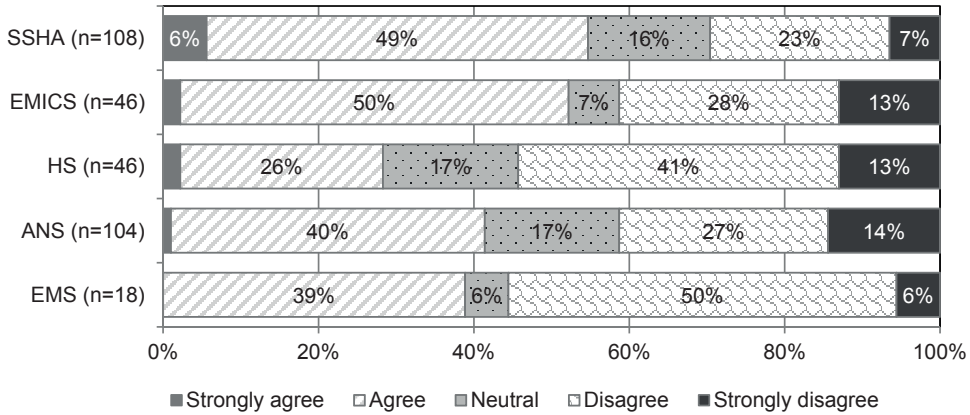
Figure 5: Extent of agreement with statement: 'I sometimes have to supervise
PhD work that lies outside my area of expertise', by scientific field

How does the increasing burden of supervision impact on the attention that supervisors
are able to give students? Our study showed that significant numbers of supervisors
(32%, nearly a third of the respondents) feel that they do not give sufficient attention
to their students. The disaggregation by main scientific field (Figure 6) shows that
this situation holds for all fields, with an even larger proportion (60%) of respondents
from the Economic and Management Sciences discipline agreeing with the statement
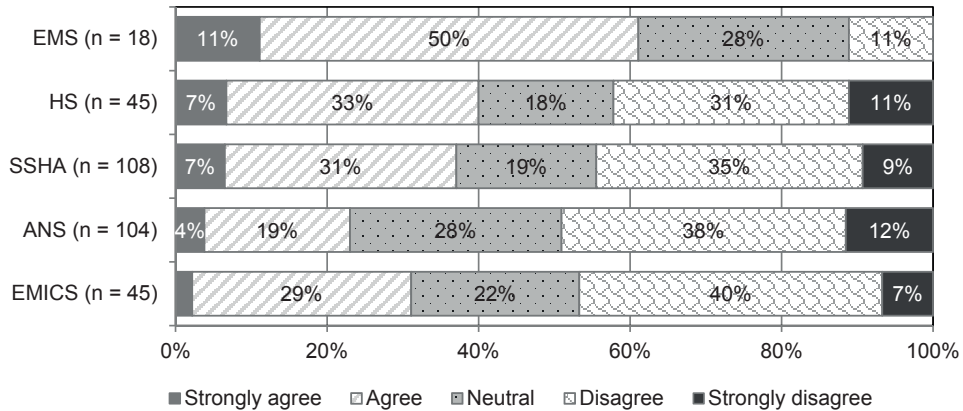(although the actual numbers are small).

Figure 6: Extent of agreement with statement: 'I lack sufficient time to give each
PhD student the attention that he/she deserves', by scientific field

The nature of the PhD

We have already alluded to the fact that there are differences in the nature of supervision related to different conceptions of the nature of the PhD. Some of these differences relate to the different research practices in different fields. Group supervision is the norm in the laboratory-based sciences, whereas individual one-on-one supervision is common practice in the Humanities and the Social Sciences. As far as the former is concerned, the results of our study confirmed that supervising students in groups is a practice more established in the Agricultural and Natural Sciences (41%, Table 2) and Health Sciences (38%). Somewhat surprisingly though, significant proportions of respondents indicated that they are involved in group supervision in other fields as well. Having said this, supervision of individual doctoral candidates is still by far the most prevalent model of supervision (between 86% and 96% in all fields).

Table 2:   'Models of PhD supervision', by scientific field

	ANS (*n* = 109)	EMICS (*n* = 47)	EMS (*n* = 18)	HS (*n* = 47)	SSHA (*n* = 110)
PhD students who work on individual (stand-alone) research topics	86%	96%	83%	87%	96%
PhD students who work as a group on common research themes	41%	28%	17%	38%	24%
Master's students whose theses are upgraded to PhDs	30%	28%	0%	28%	6%
PhD students who submit a set of peer-reviewed research papers as a thesis equivalent	28%	17%	11%	32%	8%

Note: Totals do not add to 100%, as the table illustrates the percentage of respondents per field that selected the specified 'description'

In recent years, the PhD by paper has become increasingly popular – initially in the Natural Sciences, but more recently also in the Social Sciences. This model of the PhD has its origins in the UK and Europe, and involves presenting four or five peer-reviewed papers in reputable journals as the main core of the PhD. The findings presented in Table 2 show that this model is still very much confined to the Natural and Health Sciences, with only a small percentage (between 8 and 11%) of students in the Social Sciences and Humanities also using this model.

Screening and selection of doctoral candidates

It is generally accepted that rigorous screening and selection of doctoral candidates is an essential condition for effective and efficient supervision. Students with the

required academic abilities, dedication and passion for scholarship are less likely to discontinue their studies.

However, the possibility of screening – through validating prior academic performance, personal interviewing and even psychometric testing of prospective candidates – is not always an option. Anecdotal evidence gained from supervision workshops conducted by the first author at most South African universities over the past seven years suggests that different rules and practices for screening and selection are used. In some cases, academic departments may not have the right to turn prospective candidates away, due to institutional policies or directives. Within some academic departments, the individual supervisors may also not have this right on account of departmental policies or a lack of adequate supervisory capacity.

In the light of the above, we put three options to our sample (the percentage of responses in each category appears in brackets):

- Yes, I personally select the PhD students that I supervise, in all cases (60%)
- Yes, I personally select the PhD students that I supervise, but not in all cases (33%)
- No, I do not personally select the PhD students that I supervise (7%)

Although it is encouraging that the majority (60%) of respondents indicated that they are able to personally select all their doctoral students, it is cause for concern that the remaining 40 per cent indicated that they are not permitted or able to do so in all cases or at all. Surprisingly, especially younger supervisors (<40 years) reported that they have more choice in the matter (85% do so in all cases, Figure 7).
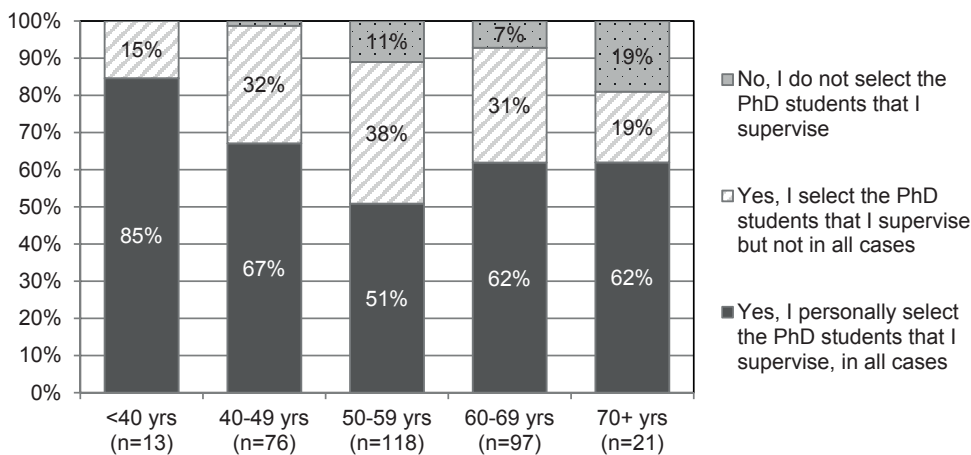
Note: Statistically significant relationship: χ2 = 17.54, p <.05.

Figure 7: Selection methods of PhD students supervised, by age of supervisor

Disaggregation by field revealed quite large and statistically significant differences (Figure 8). Supervisors in the Social Sciences, Humanities and Arts, as well as in the Economic and Management Sciences appear to have less choice in selecting their doctoral students than their colleagues in other fields. Again, this may, as we have argued above, simply be because of the greater demand for doctoral supervision in the former fields. But it may also relate to other factors, such as the availability of funding for doctoral students in particular fields.
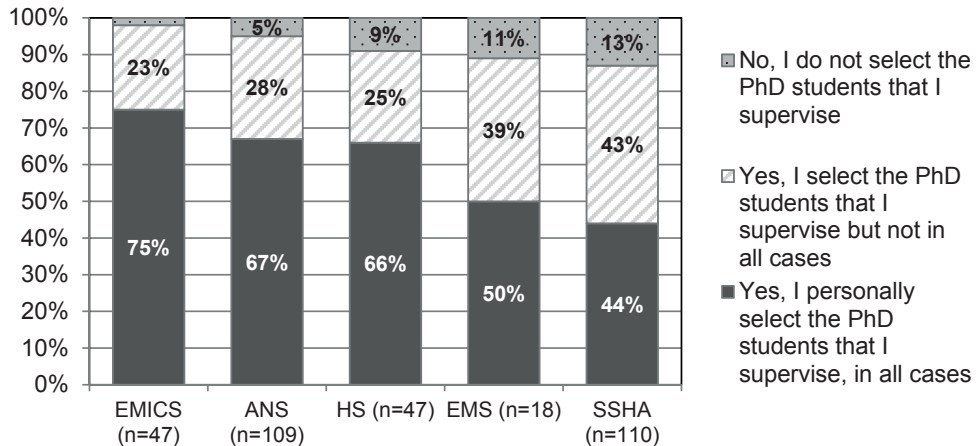
Note: Statistically significant relationship: χ2 = 20.76, p <.05.

Figure 8:   Selection methods of PhD students supervised, by scientific field

In a follow-up question, we asked the 42 respondents who indicated that they do not select their PhD students to explain how the doctoral students are selected and ultimately allocated to them. Most respondents ($n = 17$) stated that they are simply 'requested' to supervise prospective PhD students. They are either approached by the students themselves or referred/suggested by the department to the student. Two respondents stated that students approach them as they are the only possible supervisors in that field at their department. Students are also allocated to supervisors according to field by a departmental committee. A number of respondents ($n = 12$) stated that research committees, postgraduate committees or other figures, such as the dean or chair of the department allocate students to supervisors. Nine respondents stated that their students are allocated to them through a placement system. This is closely related to the departmental committee system, but is less official. Students are allocated to supervisors according to their field of interest, but in some cases students are assigned to supervisors simply because there are too few available mentors. Other placement methods that were mentioned include students who were inherited from other supervisors, collaborations with other supervisors or with other

universities, and departmental rules that assign scholarship students and students who are university staff members to certain supervisors.

We were also interested in establishing what criteria were being used for student selection. It is quite interesting (Figure 9) that the two academic criteria (independent thinking and excellence) in the survey were consistently rated as being the most important. Other criteria, such as the alignment of the student's interest with that of the supervisor and the degree of preparedness of the student were rated much lower.
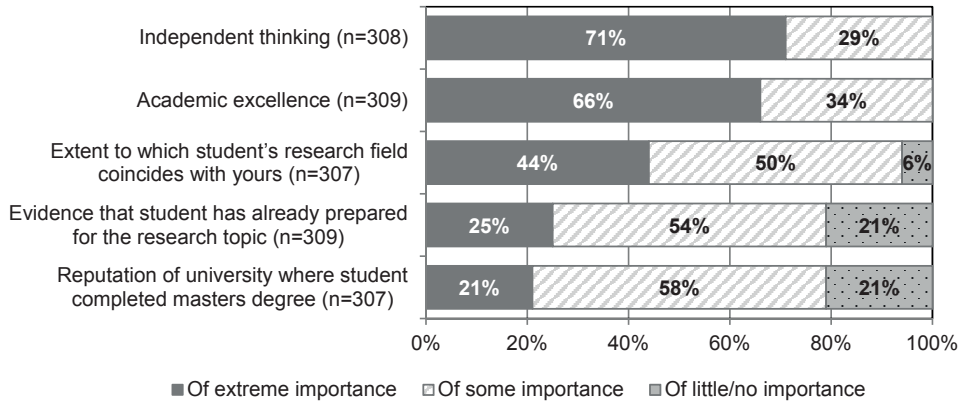

Figure 9: Perceived importance of specified criteria for the selection of PhD students

Selection and acceptance of prospective candidates is one side of the coin. But how many prospective doctoral candidates are turned away by supervisors? Those respondents ($n = 294$) who answered this question indicated that they turn approximately one-third (35%) of prospective students away. This estimate was approximately the same for all fields of science, except for the Economic and Management Sciences where respondents indicated that they turn approximately 54 per cent of students away. One possible explanation for this rather high percentage could be that many faculties of Management and Economic Sciences may have less supervisory capacity, meaning that academics with doctorates in these fields have to be even more selective in accepting prospective candidates. Of course, the greater selectivity could also be a consequence of the popularity of these disciplines, meaning that the demand for higher qualifications in Economic and Management Sciences significantly exceeds the PhD targets set by departments.

Supervisory style

There is now a sizeable body of scholarship on the differences in supervisory styles (Crossouard 2008; Deuchar 2008; Kam 1997; Lee 2008; Mainhard et al. 2009; Vilkinas 2002). But it is generally recognised that Gatfield (2005), based on an

extensive literature review, brought this topic to prominence by proposing a model consisting of a four-quadrant supervisory style management grid.

In the model, Gatfield (2005) identifies two main dimensions (structure and support) that, in combination, define different supervisory styles. The 'structural' factor is considered to be those elements supplied principally by the supervisor in negotiation with the PhD candidate. They are generally directive aspects and incorporate the variable groups of the organisational process, the accountability stages and skills provision. The elements of this factor assist in the management process of the candidate's thesis. The 'support' factor comprises the elements supplied by the institution and supervisor, and is non-directive, optional and discretionary. This support factor includes variables that can be grouped into clusters, such as pastoral care, material requirements, financial needs, and technical support.

By 'cross-tabulating' the dimensions of 'support' and 'structure' (high and low degree of each), a four-quadrant model of 'ideal-typical' supervisory styles results. Gatfield (2005) is at pains to emphasise that the four styles (laissez-faire, pastoral, directorial and contractual) are best-termed 'preferred operating styles'. It is suggested that although supervisors may have a propensity to prefer one style over another, it does not preclude movement, as needed, to other styles. Gatfield summarises the main characteristics of the different styles as follows:

- *Laissez-faire style, characterised by low structure and low support*. The supervisor is non-directive and not committed to high levels of personal interaction, and may appear uncaring and uninvolved. The PhD candidate, in turn, displays limited levels of motivation and management skills.

- *Pastoral style, characterised by low structure and high support*. The supervisor provides considerable personal care and support but not necessarily in a task-driven directive capacity. The PhD candidate has personal low management skills but takes advantage of all the support facilities that are on offer.

- *Directorial style, characterised by high structure and low support*. The supervisor has a close and regular interactive relationship with the PhD candidate, but avoids non-task issues. The candidate is highly motivated and sees the necessity to take advantage of engaging in high structural activities such as setting objectives and completing and submitting work on time on own initiative, but without taking advantage of institutional support.

- *Contractual style, characterised by high structure and high support*. The supervisor administers direction and exercises good management skills and interpersonal relationships. The PhD candidate is highly motivated and able to take direction and to act on own initiative. This style is most demanding in terms of supervisor time.

Through in-depth interviews with 12 experienced supervisors, Gatfield (2005) further established, among other things, that the contractual style seems to be the most

preferred style. But, more importantly, what also emerged from these interviews is that there was 'a transition to different styles at different times during the supervision period' (Gatfield 2005, 321). This was seen in two main areas. The first was indicated in abnormal conditions, such as a candidate being in crisis and in need of pastoral care, or a significant change in thesis direction. The second was indicated when the candidate makes a transition through the various phases of thesis research, such as the literature review or problem identification, through to the research design and data collection.

It was not an explicit aim of our supervisory study to subject Gatfield's grid to an empirical test. However, we did attempt to 'validate' the main dimensions and categories of his grid by generating a number of statements submitted to our respondents (and to which they had to indicate agreement or disagreement). In this process we elaborated on Gatfield's grid by distinguishing between two sub-dimensions of the main 'structure' dimension. We argued that the 'structure' given to the supervisory process by the supervisor (what Gatfield also refers to as the 'directive' aspect of supervision) involves two separate, but related, aspects: the locus of decision-making and the degree of monitoring. 'Locus of decision-making' refers to the extent that the supervisor allows the student to set deadlines and set the pace of the PhD process. 'Degree of monitoring' is self-explanatory and refers to the extent that the supervisor believes that he/she should keep a close watch on every aspect of the student's work. We have also formulated a number of statements to measure the 'support' dimension of Gatfield's grid (Table 3).

Table 3:   Statements testing dimensions of Gatfield's grid of supervisory styles

Elaboration on dimension		Statements	Agree
Structure: Locus of decision-making	Locus of decision-making: Student − Low	The student sets tasks to be completed at her/his own pace.	18%
	Locus of decision-making: Student – Low	The student sets tasks to be completed by a specific time.	18%
	Locus of decision-making: Supervisor – Low	I set concrete tasks to be completed by the student at her/his own pace.	18%
	Locus of decision-making: Supervisor – Low	I set concrete tasks to be completed by the student by a specific time.	16%
	Locus of decision-making: Collaborative	We both set tasks to be completed by the student at her/his own pace.	46%
	Locus of decision-making: Collaborative	We both set tasks to be completed by the student by a specific time.	54%
	Independence – High	My PhD students work independently without having to account for how they spend their time.	53%

Structure: Monitoring	Monitoring contact – High	I have regular timeslots set aside for my PhD students.	58%
	Monitoring problems – Low	I only intervene in a PhD student's work if there are serious problems.	39%
	Monitoring contact – High	I insist on frequent meetings with my PhD students.	64%
	Monitoring contact – High	I follow up if a PhD student does not show up for a meeting.	89%
	Monitoring progress – High	I keep a close watch on the progress of every PhD student.	81%
	Monitoring completion – Low	As long as my PhD students work steadily, they can take as long as is needed to finish the thesis.	26%
	Monitoring completion – Moderate	I believe that constant pressure for the speedy completion of a PhD undermines quality.	40%
Support	Interpersonal relations	I have close personal relations with my PhD students.	58%
	Collegiality	I sometimes publish articles with my PhD students.	87%
	Financial support	My PhD students are funded with money for which I am accountable.	52%
	Equipment	I make sure my PhD students have access to all necessary facilities/equipment.	88%
	Writing	I assist in the actual writing of the thesis if a PhD student has difficulties.	34%

Locus of decision-making

Table 3 includes seven statements measuring the views of supervisors on the 'locus of decision-making' dimension. The results are quite clear: Most supervisors prefer collaborative or joint decision-making. Small percentages indicated that either the student or the supervisor should set timelines and tasks on their own, whereas nearly 50 per cent of supervisors indicated that they prefer to set specific tasks and time frames jointly with the student.

Degree of monitoring

Seven related statements were formulated to gauge the extent of the supervisors' approach to monitoring doctoral students (Table 3). Monitoring typically consists

of different activities: setting meetings, setting deadlines and exerting pressure on students to keep to these deadlines, keeping a close watch on student progress (a kind of surveillance) and intervening when it is deemed necessary. The responses of the sample are quite revealing. All the responses point to supervisors engaging in close monitoring of their students. Given the prevailing national and institutional climate in South Africa, these responses do not come as a surprise. National and institutional target-setting together with a pervasive accountability regime that emphasises throughput over quality and completion over excellence, all contribute to a culture of doctoral education where close monitoring is assumed and even demanded.

Degree of support

The nature of support given to doctoral students ranges from academic support (co-publishing of papers and assistance in formulation and writing) to material support (funding and equipment) and emotional support (relationship management). There are differences of opinion on whether supervisors should get involved in all these support measures to the same degree. For example, it is not obvious that supervisors should assist students in writing parts of their theses. That just over one-third of the respondents (34%, Table 3) indicated that they provide assistance in scientific writing is probably more an indication of the general unpreparedness of some doctoral candidates than of the preferences of supervisors. Many supervisors would argue that they do not have a choice in this matter. If they do not assist their students in writing parts of their chapters, the theses will simply not get finished. In general, it is clear that the respondents in our sample are committed to high degrees of material, academic and emotional support of their students.

Monitoring and feedback

A critical aspect of the monitoring role of the supervisor is to provide feedback to students. One could argue that feedback is at the core of the quality-assurance responsibility of the supervisor. Supervisors give feedback to students on their initial doctoral proposals, to the first chapters on the literature review, on the proposed research design, methodology and instrumentation and, finally, to the results and conclusions of the study.

Given the prevalence of high degrees of monitoring, we probed further on the nature and extent of feedback that supervisors give to students. We wanted to find out how frequently supervisors meet with students and/or provide feedback. There are, of course, different ways in which supervisors can interact with students in order to provide feedback: through face-to-face meetings, telephone calls and e-mail feedback.

In Figure 10 we separated the responses according to whether the majority of students that a respondent supervises are: (1) in residence on campus or close to

campus, or (2) quite removed from campus (including students in other countries). When giving feedback to students in residence or close to campus, supervisors utilise all modes of feedback, but face-to-face meetings and e-mail communications are clearly preferred. It is also noteworthy how frequent supervisors meet with their students. Face-to-face meetings occur nearly every second week or at least monthly.
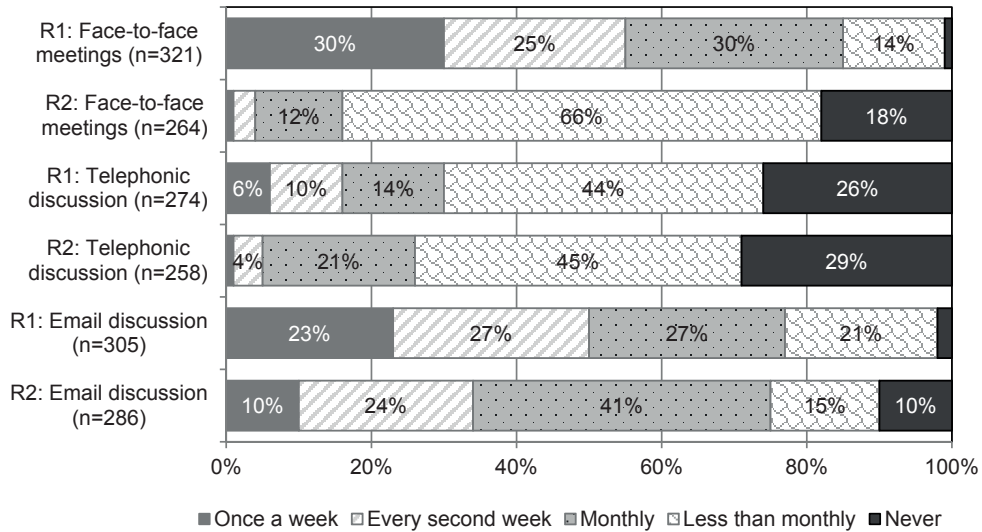
Note: R1 = reside on/close to campus; R2 = reside away from campus.

Figure 10: Manner of interaction with PhD students who reside on or close to campus and students who reside far away from campus (either abroad or in a distant South African location)

It comes as no surprise that supervisors have to engage with their 'distant' students quite differently (Figure 10). E-mail communications have now become the preferred mode and most supervisors indicated that they communicate with their doctoral students via e-mail at least monthly, if not more frequently. Face-to-face meetings occur very infrequently (less than every month) and in 18 per cent of cases never at all. Many supervisors have doctoral students in other African countries who do not have the financial means to travel to South Africa for meetings. Although it is not surprising that such a high percentage of supervisors never see their doctoral students, it adds to the challenge (and burden) of doing supervision.

CONCLUSION

Doctoral supervisors at South African universities face many challenges. They increasingly have to take on larger numbers of students to supervise, and this is especially true of supervisors in the broad fields of the Social Sciences and Humanities where the demand is greatest. But the increasing burden of supervision is not merely a matter of numbers. Supervisors are emphatic that the greatest challenges relate to the generally poor quality and unpreparedness of many of their students, and the fact that they often have to accept students they do not want (under pressure from their university or faculty). The burden of supervision is also a qualitative one. In many supervision workshops supervisors remark that they often feel guilty that they do not devote enough time to their students. The 'burden' of supervision very quickly translates into the 'stress of supervision'.

These experiences are aggravated by an unhealthy culture of undue accountability and compliance. In a system where universities compete for doctoral candidates as an additional source of revenue, it is not surprising that setting targets and benchmarks for better completion rates and quicker throughput rates are the norm. This adds to the burden of supervision. Supervisors are under huge pressure to complete the doctoral study process as quickly as possible. This translates into a high degree of monitoring and surveillance of students and – in some cases – intervening to help students to write parts of their theses. Although supervisors typically provide high degrees of support to their students, the emphasis is more on providing structure and direction.

The study also confirmed what we know about differences in models of supervision by field. One-on-one supervision is still the most common form of supervision across all fields of science, although group supervision is most common in laboratory-based fields. The PhD by paper seems to be gaining ground, but requires different skills from the supervisor. Supervisors in many fields, but mostly in the Social and Economic and Management Sciences, also have to consider the peculiar requirements of doctoral candidates who are not doing a PhD for a career in science and scholarship, but rather for a profession or advancement of a career in industry or government. All of these 'permutations of the doctorate' impact on what is expected from supervisors.

Finally, the majority (approximately 70%) of doctoral supervisors in South Africa have to supervise students who do not live on campus and do not study full-time. Most doctoral students do their doctoral work while engaged in other employment. For them, pursuing doctoral studies is a part-time activity that they fit into evenings and weekends, and occasionally on days off work, which also explains why the average doctoral student in South Africa takes about five years to complete his/her studies. But the implications of this for doctoral supervision are far-reaching. Regular face-to-face meetings are not possible and contact with students is mostly

via e-mail, telephone and Skype. Close monitoring and checking of the progress of students under these conditions are not straightforward.

The main finding of our survey of doctoral supervisors is that many doctoral supervisors in South Africa conduct their supervision under less than optimal conditions. Increasing numbers, demands for constant monitoring and accountability, the pressure of throughput rates and efficient completion, together with moderate to poor-quality students make for very challenging work. Perhaps the time has come to emphasise quality support over structure and accountability, and to emphasise quality and excellence in the end product rather than efficiency and speed of the process. Ultimately, the successful doctoral graduate is one who will produce a work of excellence that will make an original and novel contribution to the body of knowledge. This is the best contribution that universities can make to the knowledge economy.

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