THE EXTENT OF COACHING BEHAVIOUR AND PRACTICES IN SUPERVISION PROCESSES OF PhD STUDENTS

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ABSTRACT

The extent to which coaching behaviour is practiced in PhD supervision is unknown. Supervision and elements of supervision have been studied extensively but not coaching and supervision. The aim of this study was to assess the extent to which coaching behaviours were practiced by supervisors while engaging with PhD students during supervision.

A cross sectional survey using a self-administered structured questionnaire was used on an online platform (REDCap). Descriptive and correlational statistics were used to determine the extent to which each coaching and supervision phenomenon were practiced.

Three hundred and eighty students registered for a PhD for longer than six months in a Faculty of Health Sciences were invited to participate in the study and 76 participated. Low to moderate levels in coaching behaviour and practice, personal support, supervisor availability and research academic support are reported. Personal support and the level of satisfaction with supervision were significant predictors of coaching behaviour and practice.

This study established the extent of different supervisory behaviours and coaching behaviour and practice among supervisors. Coaching in this study was not practised largely with a third of the students interviewed experiencing coaching behaviour and practice.

Keywords: supervision, coaching, PhD students, supervision satisfaction, research, self-efficacy

BACKGROUND

There is a reported lack of supervision capacity with a resultant overload on experienced productive supervisors that impacts their availability for students (Mouton, Boshoff, and James 2015). Independent and rigorous research competency which gives the graduate more credibility is evident when supervision support is high (Geber 2010; Geber and Bentley 2012). Being accessible and helpful supervisors are attributes most appreciated by post graduate students and yield better results (Devos et al. 2015). There are contradictory studies on students'

satisfaction with supervision processes. As many as 20–25 per cent of students reported dissatisfaction with supervision processes (Moses 1984; Sidhu et al. 2013a). Three main factors identified by the students affecting them in the supervision process are the personality of the supervisor, professionalism, and organizational factors (Heath 2002; Lee 2008; McCallin and Nayar 2011; Boehe 2016). In doctoral supervision, competencies and roles of supervisors are cited as important attributes against the background of institutional culture, professional and discipline specific characteristics that will inevitably influence doctoral programmes (Baptista 2011). However, in the literature, roles and responsibilities of supervisors are not generically or specifically defined (Baptista 2011).

Literature illuminates problems in supervisors' communication and particularly reference to the lack of positive communication and poor expertise in content (Ismail, Majid, and Ismail 2013; Sidhu et al. 2013b). In a qualitative, study one student felt they were left to cope on their own and complained of the supervisor being away and difficult to get hold of (Russell 1996). The student felt the supervisor showed no interest in his work and seemingly read the thesis draft inadequately (Russell 1996).

Supervision has changed with increased demands and expectations and consequently competencies needed to meet these demands. Competencies required of doctoral students and supervisors in order for them to achieve good quality doctoral outcomes were examined (Baptista 2011). The range of competencies include soft, technical and research skills. Some of the elements that are assessed to determine supervision outcomes include academic, personal, autonomy support and coaching. Supervisor availability and student self-efficacy and satisfaction with supervision are seen as important outcomes (Overall, Deane, and Peterson 2011; Geber and Bentley 2012).

Training courses have been developed within universities to respond to reported supervision problems (McCallin and Nayar 2011; Nulty, Kiley, and Meyers 2009). Training of supervisors focused on the amount of supervision, process of topic selection, frequency of meetings, personal relationship with students, preparation of thesis, examination process, student selection, role of head of department/school and teaching and training required by students prior to embarking on their post graduate studies (Ismail et al. 2013; Sidhu et al. 2013b; Moses 1984). Not many of the studies focussed on the processes through which results were obtained for these various components of supervision. Supervision quality varies but one aspect that is clearly identified as contributing to the outcomes is the supervisors' attributes and consequent style (Boehe 2016). Throughput of students and the level of student satisfaction with supervision process have been key indicators of success.

Academic support may enhance research skills, but the balanced outcome required to

produce an independent researcher may need the skill of coaching. Based on their practical experience some institutions have already introduced coaching as part of their support package for post graduate students (Godskesen and Kobayashi 2015). The benefits of coaching in the other areas of practice like management, and the workplace have been outlined and some of the benefits include better problem solving, thinking strategies, improved motivation, increased self-awareness, achieving goals, decision-making and communication (Grant, Curtayne, and Burton 2009; Bresser and Wilson 2010; Cox, Bachkirova, and Clutterbuck 2014). Understanding the extent to which coaching is taking place in any post graduate programme is therefore important. Studies to test the effect of coaching within supervision have emerged. Geber (2010) conducted research on coaching in supervision by including a component of external coaching. Coaching is defined as "a process of equipping people with the tools, knowledge, and opportunities they need to develop themselves and become more effective" (Peterson 1996). Coaching as part of supervision yielded outcomes such as self-discovery, a sense of belonging, increased self-assertiveness, coping with negative feedback, self-management and being more productive (Geber 2010). It differs from mentoring in that it ensures a clearer sense of awareness for the individual and enhances the individual's ability to solve problems as opposed to mentoring which will attain the same goal by providing solutions and showing the individual how to do things. As an example, while both approaches strive to create a safe working environment for the students' supervision will attain it through hand-on-hand teaching while in coaching this will be done by facilitation of the process of self-discovery. This can be attained through incisive questioning and the use of different approaches to coaching (Cox et al. 2014). The coaching intervention used in Geber (2010) study was effective, but the model involved external coaching which may differ from coaching when embedded within supervision.

The literature on supervision focuses on what should be included in supervision models and less about supervision processes enacted (Mouton 2007a). The approaches to supervision through the use of mentoring and coaching influence the student's outcomes and the quality of supervision. Supervision quality has been given attention due to the increasing numbers of enrolling graduates (Askew et al. 2016).

No literature could be found that examines coaching as part of supervision except for the study by Geber and Bentley (2012). Supervisory processes can be enhanced by understanding the supervision constructs and their intersection with coaching practices and concepts. To measure the extent of coaching practices within supervision would involve examining how students experience supervision and further examination of how this experience aligns to being coached and coaching practices. It is especially important given that coaching is defined as a process that unlocks potential and involves a process of learning (Whitmore 2010). The

supervison constructs are academic, personal, autonomy support, supervisor availability, self-efficacy, satisfaction with supervision and coaching. There is little information on which specific coaching skills could be enhanced within the supervision process.

Understanding what the experiences of PhD students are with supervision and coaching constructs is an important starting point that could be used to evaluate the needs of PhD students and skills needed for enhancement of supervision practices. Enhancing skills that support supervision may assist universities in improving supervision outputs without the use of external coaches. Perhaps this situation calls for the supervisors to assess the current pedagogy and identify where current approaches may need adjustments.

Knowing what the experiences of supervisory practices are for PhD students in the Faculty of Health Sciences is an important starting point as no previous study has been undertaken. Once there is an understanding of experiences, there is potential to examine them for alignment to coaching practices. Supervision training may therefore include a raised awareness of the need to consciously include coaching practices and behaviours. This study assessed the experience of students in the Faculty of Health Sciences in terms of academic, personal, coaching and autonomy support. Supervisor availability, student self-efficacy and satisfaction with supervision were investigated.

AIM

This study examined the elements and extent of supervision and coaching engagement to which students in a Faculty of Health Sciences in terms of academic, personal, autonomy support and coaching. Supervisor availability and student self-efficacy and satisfaction with supervision were assessed.

METHODS

Sampling and procedure

A cross sectional and correlational survey using structured questionnaires were used in this study (Thomas 2013). Data were collected and managed using Research Electronic Data Capture (REDCap) electronic data capture tools (Harris et al. 2019; Harris et al. 2009). All 380 medical and healthcare PhD students registered for more than six months at the Faculty of Health Sciences of the University were recruited using a purpose sampling technique to complete an anonymous online survey. Informed consent was obtained from all the participants; permission to conduct the study was granted by the University Human Research Ethic Committee (H16/02/28) approved the study. The principles of the Declaration of Helsinki (World Health Organization 2001) were adhered to.

Outcome measures

Student demographic characteristics such as age, gender, academic department, and type of registration, number of supervisors, study type and PhD support and supervisors' characteristics such as gender, number of supervisors per student and type of supervision were collected. Measures of supervision were assessed using a questionnaire adapted from Overall et al. (2011). The questionnaire is a valid and reliable measure (α=0.84–0.95) assessing supervision components among doctoral students (Overall et al. 2011). Additionally, coaching behaviour components identified from the literature were added to the questionnaire (Grant et al. 2009; Cox et al. 2014; Fazel 2013; Langan, Blake, and Lonsdale 2013; Palmer and Whybrow 2018). These coaching behaviour components were validated (content and face) by three coaching and research experts. The internal reliability of the adapted questionnaire in our study for the categories ranged from 0.85–0.96 (Table 3).

The measures included academic support for research, supervisor availability, personal support, autonomy support, research self-efficacy, coaching and satisfaction with the supervisor. Participants were asked to complete the measures with respect to their primary supervisor. All the measures were rated in three Likert scales (1=strongly disagree, 4=neither agree nor disagree and 7=strongly agree).

Data analysis

Descriptive statistics, median and interquartile range were used to describe the population. Spearman correlation coefficient and Mann Whitney U tests were used to determine the associations between dependent and independent variables as appropriate while the Cronbach Alpha was used to measure the internal reliability of the questionnaire (Overall et al. 2011). The principal component analysis using a varimax rotation and the result for each of the domains is outlined as part of the main results. This association between the components and the original variables is called the component's eigenvalue. The line of best fit is measured by the percentage variance (Abdi and Williams 2010). P-value was set at 0.05.

RESULTS

The response rate for the cross-sectional study was 32 per cent (n=121) and only 20 per cent (n=76) of PhD students at this Faculty of Health Sciences who completed the survey fully, were included for analysis. The mean age of the participants was 40.6 (±10.3) years, 68.4 per cent were females and 63.2 per cent were part time students. The mean time of enrolment was 31.7 (±31) months. There was no significant correlation between age of the student (rs=-0.09; p-value=0.91) and duration of registration (rs=-0.01; p-value=0.91) with supervision outcomes. Table1 show the results of different constructs and their internal reliability.

Table 1: Descriptive statistics, internal reliability and correlations across all of measures

Domain	Mean (SD)	α	Academic support	Supervisor availability	Personal support	Autonomy Support	Research self-efficacy	Coaching Behaviour and practice	Supervisor satisfaction
Academic support	3.9 (2.1)	0.96	-						
Supervisor availability	3.6 (2.5)	0.95	0.72**	0.40**					
Personal support	3.8 (2.5)	0.98	0.73**	0.46**	0.81**	-			
Autonomy support	6.1 (1.3)	0.89	-0.11	-0.14	-0.18	-0.16	-		
Research self-efficacy	5.3 (1.4)	0.85	0.01	0.03	0.04	0.00	0.18	-	
Coaching behaviour and practice	3.7 (2.1)	0.96	0.71**	0.45**	0.76**	0.88**	-0.18	-0.03	-
Supervisor satisfaction	3.8 (2.2)	0.96	0.71**	0.42**	0.79**	0.86**	-0.17	-0.03	0.84**

**p<0.001

All the constructs showed good internal reliability (0.85–0.96). Academic support showed significant correlation with supervisor availability, personal support, coaching behaviour and supervisor satisfaction (Table 1).

Tables 2 and 3 shows the extent to which students experienced or were confident with supervisor behaviours in research academic and personal support, support for self-efficacy, availability, coaching behaviours and practice.

Research academic support

Eleven items assessed academic support. Principal component analysis with varimax rotation revealed two factors which are process related tasks and technical related tasks accounting for 93.2 per cent and 6.9 per cent of the research academic support concept respectively (Table 1). Only a third of participants felt confident that they received adequate academic support while suggestions on where to find resources were experienced by the highest number. Good writing skills received the least support.

Supervisor availability

Supervisor availability accounts for 86.8 per cent of variance. Four factors assessed for supervisor availability revealed that all four components contribute to supervisor availability. For purposes of analysis, questions that were worded in the negative (5, 7, 9 and 10) (Overall et al. 2011; Zhao et al. 2007). The normal coding for the study was 1, 4 and 7 (strongly disagree to strongly agree) and it was reversed into 7, 4 and 1 (strongly disagree to strongly agree). Half the participants experienced support in uninterrupted time and response to queries. Only 35 per cent felt supervisors were available.

Table 2: Supervisor behaviours

Supervisor behaviours	n (%)		
Research academic support			
My supervisor	**Not at All**	**Somewhat Confident**	**Completely Confident**
* Provides/provided clear expectations ...	31 (40.8)	15 (19.7)	30 (39.5)
*Helps/helped me plan and manage the different research tasks ...	30 (39.5)	20 (26.3)	26 (34.2)
*Helps/helped me to construct timelines ...	21 (27.6)	30 (39.5)	25 (32.9)
*Gives/gave me good, practical advice ...	28 (36.8)	18 (23.7)	30 (39.5)
*Offers/offered suggestions about how to find the resources ...	27 (35.5)	17 (22.4)	32 (42.1)
*Gives/gave me guidance to find relevant literature ...	27 (37.5)	20 (27.5)	25 (34.7)
*Helps/helped me develop good writing skills	33 (43.4)	16 (21.1)	27 (35.5)
**Seeks/sought information ... thesis	26 (34.2)	26 (34.2)	24 (31.6)
**Teaches/taught me the technical knowledge ...	32 (42.1)	20 (26.3)	24 (31.6)
**Spends/spent time helping me learn the skills ...	30 (39.5)	21 (27.6)	25 (32.9)
**Provides/provided practical assistance ...	30 (39.5)	22 (28.9)	24 (31.6)
Supervisor availability			
My supervisor ...	**Strongly Disagree**	**Neither Agree nor Disagree**	**Strongly Agree**
Sets aside uninterrupted time ...	38 (50)	13 (17.1)	25 (32.9)
Is always available ...	35 (46.1)	10 (13.2)	31 (40.8)
Responds to my queries ...	38 (50)	13 (17.1)	25 (32.9)
Provides me with prompt feedback ...	36 (47.4)	17 (22.4)	23 (30.3)

*Process related factors, **Technical related factors

Table 3: Personal support, autonomy support, research self-efficacy and coaching behaviour and practice components

Personal support			
My supervisor ...	**Strongly Disagree**	**Neither Agree or Disagree**	**Strongly Agree**
Behaves warmly towards me ...	37 (48.7)	6 (7.9)	33 (43.4)
Expresses understanding and empathy ...	32 (42.1)	16 (21.1)	28 (36.8)
Listens and respond ...	34 (44.7)	10 (13.2)	32 (42.1)
Is friendly supportive and approachable	38 (55)	7 (9.2)	31 (40.8)
Comforts and reassures ...	32 (42.1)	18 (23.7)	26 (34.2)
Compliments me ...	35 (46.1)	15 (19.7)	26 (34.2)
Shows me that they respect ...	36 (47.4)	13 (171)	27 (35.5)
Reassures me ...	34 (44.7)	13 (17.1)	29 (38.2)
Makes me feel that I have the ability to do well	33 (43.4)	12 (15.8)	31 (40.8)
Autonomy Support			
My supervisor ...	**Not at all**	**Somewhat Confident**	**Completely Confident**
Encourages me to ask questions	4 (5.3)	19 (25)	53 (69.7)
Encourages me to be open about my own ideas ...	6 (7.9)	15 (19.7)	55 (72.4)
Listens to how I would like to do things	3 (3.9)	23 (30.3)	50 (65.8)
Welcomes my input ...	2 (2.6)	14 (18.4)	60 (78.9)
Provides me with choices ...	4 (5.3)	20 (26.3)	52 (68.4)
Encourages me to work independently	1 (1.3)	13 (17.1)	62 (81.6)

Research self-efficacy			
My supervisor ...	**Strongly disagree**	**Neither agree or disagree**	**Strongly agree**
Confident with research procedure to collect data	2 (2.6)	30 (39.5)	44 (57.9)
Confident with data analysis ...	9 (11.8)	39 (51.3)	28 (36.8)
Confident with my writing ...	2 (2.6)	40 (52.6)	34 (44.7)
Confident to write a research article	6 (7.9)	30 (39.5)	40 (52.6)
Confident to integrate my research ...	4 (5.3)	30 (9.5)	42 (55.3)
Coaching behaviour and practice			
My supervisor ...	**Strongly disagree**	**Neither agree or disagree**	**Strongly agree**
Gives/gave me non-directive guidance ...	30 (39.5)	24 (31.6)	22 (28.9)
Asks/asked questions to lead me to self-discovered answers ...	31 (40.8)	24 (31.6)	21 (27.6)
Targeted/target all efforts at obtaining defined goals	25 (32.9)	28 (36.8)	23 (30.3)
In collaboration with myself offer/offered constructive ways ...	31 (40.8)	20 (26.3)	25 (32.9)
Practices/practised listening skills ...	27 (35.5)	25 (32.9)	24 (31.6)
Encourages/encouraged thoughts ...	32 (42.1)	25 (32.9)	19 (25)
Facilitates/facilitated self-awareness of underlying barriers	25 (32.9)	31 (40.8)	20 (26.3)
Creates/created opportunities for performance ...	25 (32.9)	34 (44.7)	17 (22.4)
Directs/directed all efforts at defined goals	34 (44.7)	22 (28.9)	20 (26.3)
Works/worked with me to find solutions for my developmental needs	31 (40.8)	22 (28.9)	23 (30.3)
Listens/listened empathetically ...	33 (43.4)	20 (26.3)	23 (30.3)

Personal support

Personal support accounts for 85.2 per cent of variance. All nine factors contribute to personal support. Only half of participants did not experience personal support (Table 2). Autonomy support accounts for 61 per cent of variance. All six components contribute to autonomy support. Autonomy support was experienced by majority of the students.

Research self-efficacy

Self-efficacy accounts for 62.3 per cent of variance. All five components of self-efficacy included contribute to autonomy support. Majority of the students were confident with research procedure to collect data followed by the ability to integrate research and writing an article. Fewer were confident with data analysis and the ability to write (Table 2).

Coaching behaviour and practice

Coaching behaviour and practice account for 70.3 per cent of variance. All eleven behaviours of coaching contribute to the coaching behaviour concept. Between 32.9 per cent and 44.7 per cent of the students disagreed with their supervisor's coaching behaviour and practice.

Supervisors' satisfaction

Supervisor satisfaction accounts for 73.47 per cent of variance. All eleven components contribute to the concept of supervisor satisfaction. Majority of the respondents were not satisfied with their supervisor. The results showed 66 per cent (50) to 81 per cent (62) of the participants were confident that they were experiencing autonomy support behaviours from their supervisors.

With satisfaction with the supervisor and coaching as the outcome variables the unadjusted regression model showed that research academic support, supervisor availability and personal support were associated with supervisor satisfaction and coaching behaviours and practices (Table 4).

Table 4: Stepwise linear regression model

	Coaching behaviour			Supervisor satisfaction		
	B	95%CI	p-value	B	95%CI	p- value
Process related task academic support	0.11	-	0.17	0.17	0.03–0.31	0.02
Technical related tasks academic	0.07	-	0.18	0.09	-	0.13
Supervisor availability	0.07	-	0.53	0.15	-	0.15
Personal support	0.54	0.31–0.77	<0.001	0.52	0.31–0.73	<0.001
Autonomy	-0.01	-	0.88	-0.02	-	0.73
Self-efficacy	-0.03	-	0.62	-0.06		0.24
Supervisor satisfaction	0.39	0.16–0.61	<0.001	-	-	-
Coaching behaviour	-	-	-	0.29	0.08–0.50	0.01

DISCUSSION

The overall aim of this study was to establish the PhD student experience of supervision and coaching in the Faculty of Health Sciences. The students' experiences did not reflect a satisfactory situation. Satisfactory results would have reflected high mean and percentage score in each of the measured concepts and behaviours. The mean scores in all but two concepts were lower than those found in the study in which the design of the supervision questionnaire used in this study was reported (Overall et al. 2011). It is important to examine what each concept and subcomponent means for supervisor satisfaction and how coaching could possibly be linked and enhance these supervision practices. Areas that should be considered for improvement that were lacking from the results of this study are supervisor availability, academic support, students' perceived support for developing autonomy.

An important part of this study was to identify the elements / domains of supervisor behaviours in our population and further to assess the experience of doctoral students with these domains. The results of the principal component analysis revealed similar domains as reported

by Overall et al. (2011) which are – research academic support, supervisor availability, personal support, autonomy support and research self-efficacy. We further identified two elements within the research academic support, which are process, and technical related support. All the behaviour elements named under the concepts namely supervisor availability, personal support, autonomy support, self-efficacy and supervisor satisfaction were assessed for their contribution to each concept.

The results compared well with the results reported by Overall et al. (2011). Similar to Overall et al. (2011), research academic support demonstrated a split in behaviours depicting two distinct behaviour categories. Coaching behaviour and practice which were included in this study were not part of Gu, He, and Liu (2015) or Overall et al. (2011) study and could therefore not be compared. All elements of the chosen behaviours for coaching contributed equally to the concept of coaching. Interestingly non -directive guidance allowing for growth, control and responsibility accounted for 70.3 per cent of the variance (accounts for as much of the variability in the data) suggesting that this is an important aspect of coaching and contributes to its achievement. The coaching questions from this study could therefore be used for future studies that assess or test coaching interventions.

The first part of supervision is simply supervisor availability to students and our results point to the need for improvement in this area. Previous literature has alluded to the supervisor's difficulty in finding adequate time (Mouton 2007b). South Africa has a shortage of supervisors in comparison to the number of students taking up PhD studies (Mouton et al. 2015). If a supervisor is unavailable, it is unsurprising that students report inadequate support for academic research. In this study academic support activities which include coaching, facilitating mentoring and reflective practice in areas of research tasks, literature approach, technical knowledge and skills, development in areas such as writing were reported as lacking by 30 per cent of the cohort and an equal number finding only partial confidence with only a further 30 per cent complete confidence. Academic support can be linked to both student completion rates and the abilities that students develop in self-efficacy and the related skill of autonomy (Mouton et al. 2015; Pearson and Brew 2002).

A PhD student should develop autonomy both as an outcome of doing a PhD and as an important ingredient to help accelerate student completion. Autonomy support and self-efficacy scored highly in this study. The behaviours measured related to data collection, analysis and writing the thesis article. It is interesting that autonomy support and self-efficacy scored highly in spite of all other areas scoring low. It is therefore not clear if the high support for autonomy was inadvertently achieved from a non-directive approach (implied by the low scores) thus forcing students to find their own way. Alternatively, one would need to explore the experience

of students further to identify which type of support was enhancing autonomy. Three particular types of support are proposed as enhancing autonomy support (Devos et al. 2015). The first is the creation of opportunities for students to make their own choices within proposed activities. A second form of support is the use of informational and non-controlling language and finally understanding that they value the students' perspectives and state of mind (Devos et al. 2015). All three of these behaviours align with coaching competencies and principles such as listening, valuing the client and allowing for choice (Wales 2002).

A further contrast that would potentially negate that autonomy support and self-efficacy emanated predominantly from supervisor behaviours is the result of low personal support experienced by PhD students. From this study, personal support was also associated with supervisor satisfaction, availability, coaching behaviour and academic support all of which scored low. Personal support for doctoral students is important and contributes to motivation, clarity of thought and self-direction (Ives and Rowley 2005; Woolderink et al. 2015). Often personal support is enhanced by coaching practices and may be attributed to coaching offering a space to identify potential and opportunity to resolve problems experienced thus increased self-efficacy. Problems experienced by PhD students are seen as ill defined (Godskesen and Kobayashi 2015) and require specific behaviours from supervisors outlined as contributing to coaching behaviour and practice.

When the regression model was used with both coaching behaviour and supervisor satisfaction as outcome variables, personal support remained as a predictor for both. The need for personal support points to the necessity for a thoughtful combination of effective supervision that combines rigorous feedback on different aspects of research as well as provision of support, empathy and encouragement (Manathunga 2005a). Personal issues are difficult to handle for both the student and the supervisor. Students often see discussion of personal issues as a sign of weakness and having an attitude of complaining (Manathunga 2005b). A coaching environment would be an appropriate and safe environment to facilitate tackling personal issues. One can therefore see how tackling personal issues may influence supervisor satisfaction. It follows that a greater balance of supervision behaviours is required as personal support is associated with supervisor satisfaction and may be associated with other important outcomes such as self-efficacy, motivation, a positive research experience and ultimately research skills. In this study, high personal support when tested for association interacted with academic support, but not supervisor availability and correlated with supervisor satisfaction. Interaction with autonomy support was not tested in this study as was done in Overall et al. (2011) study as autonomy in this study showed no relationship with any of the other behaviours assessed.

Further analysis into the interactions between different supervisory behaviours using stepwise regression, placed emphasis on supervisory behaviours influencing outcomes that are different to what was outlined in the literature (Overall et al. 2011; Gu et al. 2015). For example, when the impact on supervisor satisfaction was assessed through regression analysis, only academic support, personal and coaching behaviour and practice remained as interacting to influence supervisor satisfaction. When coaching was used as an outcome only personal support and supervisor satisfaction remained as interacting to influence coaching behaviours and practice. This finding is in contrast to the position put forward by Gu et al. (2015) and Overall et al. (2011) who report that provision of high personal support, but low autonomy support produced students that were less confident in their research abilities.

The lack of interaction between all these supervisory behaviours and research self-efficacy and autonomy support is an interesting finding and may suggest that students in the Faculty of Health Sciences are obtaining their assistance from the wider network and not from the supervisors alone. They could also be obtaining their support from faculty coursework and peer coaching. Obtaining support from other sources is not a negative situation and has even been encouraged in the literature as it moves away from pedagogy where the supervisor and student operate in what Manathunga (2005a) and Cribb and Gewirtz (2006) refers to as the private space and a pedagogy of colonial engagement. However, it is also evident in studies seeking student experiences that supervisors do not necessarily encourage this collaborative approach (McCallin and Nayar 2011; Mouton et al. 2015). Further examination will illuminate important inputs into supervision capacity building efforts.

Both Gu et al. (2015) and Overall et al. (2011) propose that supervisors need to find a balance in supervision that encourages students to think and act autonomously while providing some guidance on how to complete research tasks. Gu et al. (2015) focussed on what he termed creative self-efficacy and proposed that supervisors should reflect on their supervisory style. He proposed improving graduate self-efficacy first through a more directive supervisory style then focus on intrinsic motivation in a non-directive manner. An approach that is concomitant with coaching. The current and new approach that promotes support of students would be helpful especially where students are new to the environment and unfamiliar with existing systems (Lee and Green 2009).

Of interest is that the PhD student body is mostly female (68%) undertaking part time studies and the mean age is 40 (±10.5). The mean age was much older than the students cited in the literature (Devos et al. 2015) whose average age was 28 (±-5) but was similar to another South African study on doctoral students with an average age of 41(35–45) years (Mouton et al. 2015). A 32 per cent response rate was attained, non-response is a known trend among

postgraduate students in this Faculty of Health Sciences. One of the indicators of PhD study success is the time taken to completion (Mouton 2007a; Mouton et al. 2015). Among the study participants, the mean duration of enrolment was within the university's ideal time to completion of four years. A few students had exceeded the four-year limit for completion.

CONCLUSION AND RECOMMENDATIONS

This study established the extent of different supervisory behaviours and coaching behaviour and practice among supervisors. The results show that only a third of the students reported academic support, supervisor availability, support coaching behaviour and practice and overall all satisfaction with their supervision experience. Coaching in this study was not practised largely with a third of the students who reported experiencing coaching behaviours and practice and some of the closely related behaviours were not at an optimal level. Behaviours closely related to coaching that could be enhanced in future programmes were personal support and academic support, which included research processes as well as technical related processes. Personal support stood out as a behaviour that influenced coaching behaviour and supervisor satisfaction. For effective supervision, it may be prudent for supervisors to be capacitated in how to provide personal support in a balanced and effective manner while providing rigorous feedback in research supervision.

The level of perceived student self-efficacy and autonomy support is encouragingly high. The processes that result in high self-efficacy and autonomy support may not be as a result of supervision in this Faculty of Health Sciences but may be a product of both student ability and institutional support. This may indicate that the doctoral student is navigating their way through the doctoral journey not fully supported by the supervisor. There may be potential for improved student outcomes, through - put rates, research outcomes and skills development if coaching was deliberately included. Coaching would enhance the ability to provide a balanced supervisory style that includes both the students' ability to navigate their research environment as well as taking advantage of the opportunity to provide a supportive supervisory style.

LIMITATIONS OF STUDY

Difficulty with response rate and use of purposive sampling reduced the integrity of the study and resulted in a smaller sample size. Therefore, influencing the generalisability of the results as well as limiting the extent to which inferential statistics can be performed. All efforts were made by the researchers to recruit participants by reminders, attendance of meetings and organised workshops through different coordinators to no avail. It is unfortunately the nature of research fatigue and apathy among students (Cleary et al. 2016).

DECLARATIONS

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