RESEARCH EDUCATION IN CANADIAN PSYCHIATRY RESIDENCY PROGRAMS: A SURVEY

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Research Education in Canadian Psychiatry Residency Programs: A Survey

by

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Abstract

In response to growing concern for research education, the Royal College of Physicians and Surgeons of Canada (RCPSC) now emphasizes the value of research in specialty programs. However, there remains a wide variation in how programs implement this training. This study examines how psychiatry programs are incorporating research education into their curriculums and how residents perceive this education.

The questionnaires of Aguire[1] and Buschbacher[2] were combined and adapted for Canadian residency programs. The resulting survey consisted of 42 questions organized into 3 sections: demographics; opinions about resident research activity; and research curriculum. It was mailed to all 16 psychiatry program directors of the RCPSC and then to all 606 psychiatry residents.

A response rate of 100% (16/16) was obtained for the directors. Resident research was generally agreed to be important, but only 64% (9/14) reported having an organized research curriculum. In fact, 44% (7/16) stated that no mandatory research was required at all. The minimum expectation for research activity was mostly in the form of a systematic or non-systematic literature review; however, 58% (7/12) took no action as a consequence of failing to meet this minimum.

A response rate of only 35% was obtained for the residents. Residents felt that it was less important to participate in research and were less enthusiastic about it. Residents also felt that resident time and interest were the most important factors in making a research curriculum work, while directors believed the most important factors were role models, research director, and an organized research curriculum. Directors consistently reported the

importance of learning critical appraisal skills and performing analytical literature reviews. The residents also agreed with this. Both groups thought that critical appraisal was the most adequately taught research area and the area most often offered as mandatory teaching. Additional results of the survey are provided.

Most programs have in place the basic elements conducive to resident research but there remains a lack of emphasis placed on its implementation. Suggestions for improving and implementing resident research education are given.

1. Alguire PC, Anderson WA, Albrecht RR, Poland GA. Resident research in internal medicine training programs. *Ann Int Med.* 1996;124(3):321-328.

2. Buschbacher R, Braddon RL. Resident versus program director perceptions about RM&R research training. *Am J Physical Rehab.* 1995;74:90-100.

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Chapter 1

Introduction

1.1 Literature Review

In 1885, four years after completing medical school, Sigmund Freud was awarded a travel grant that he used to go to Paris and study neurology with Jean-Martin Charcot.[1] He then used his background in neurological research to formulate new theories in psychiatry. Since that time, the field of psychiatry has exploded due to the advances made through research. Numerous hypotheses as to the biochemical, physiological, and immunological basis of mental illness have been, and are continually being postulated.[2] While many of these have been disproved over time, others have become modern theories in psychiatry, and still others have yet to be questioned and tested. In order to ensure the continued evolution of this specialty, psychiatrists need to be educated in the area of research, not only to generate and test hypotheses themselves, but also to critically evaluate the work of others.[3]

Robert Maudsley, former Director of the Office of Training and Evaluation of the Royal College, wrote that:

> A thorough knowledge of the basic sciences that form the foundation of a specialty, a facility to appraise critically the medical and scientific literature, a spirit of inquiry, a thorough understanding of the role of basic and applied research in the evolution of the specialty, and a commitment to life-long education are essential attributes of a well educated physician.[4]

He argued that the use of the word "training" for the postgraduate preparation of physicians should be replaced by the word "education". He quoted several sources to

support his case, including one by John Millis, former Chancellor of Case Western Reserve University, in a presentation to the medical school faculty of McGill University, which read:

> ...the physicians needed for the practice of modern medicine require an education and not merely a training. To test the validity of my prejudice I consulted the dictionary and found the following definition of the root verbs: *train* (v) – to form by instruction, drill or discipline; *education* (sic) (v) – to develop and cultivate mentally or morally, to expand, strengthen, and discipline as the mind...[5]

Maudsley concluded that residency programs should be based on an education model, which is "...characterized by an appropriate balance between clinical activity and a thorough understanding of the scientific foundations of the specialty, combined with a pervasive spirit of enquiry and scholarship."[6] Throughout this thesis paper, the term "research education" is used, as opposed to "research training", as a way of encouraging the use of this model.

The value of learning research techniques has been questioned because, upon the completion of their training, few physicians will ever spend a substantial amount of their professional time actually doing research. In response, research provides necessary data that help guide clinical practice for all physicians.[7] The problem lies in the fact that not all research, even though published, is of high quality or applicable to every clinical situation.[8] It is, therefore, important that research education be a part of every physician's training so that they will, at the very least, become educated consumers of research.[9,10]

Being an educated consumer of research will not only help the physician update his/her medical knowledge and skills, but also improve teaching and patient care.[11,12] In an era of increasing litigation, these would be strong defensive strategies.[13] It is hoped that psychiatrists will not only find research education intellectually rewarding, but also promote the prestige of our specialty among the academic medical community.[14,15] Early exposure to research may lead residents to explore career opportunities in research[16] and help address the shortfall of research oriented academic psychiatrists.[17]

Since research education is being promoted as a life-long learning experience, it should be introduced as early as possible and continued throughout training and practice. Premedical undergraduate students interested in research should be encouraged with summer fellowships.[18] While the current trend is to accept students into medical schools from varied backgrounds, research experience might be considered an asset.

Just as medical schools train students in basic sciences, the concepts of basic research and critical appraisal should also be introduced. In addition, medical students should be encouraged to prepare/present a literature review on a relevant topic.[19]

In response to growing concern for research education, the Royal College of Physicians and Surgeons of Canada (RCPSC) and the College of Family Physicians of Canada (CFPC) now emphasize the value of research education in their specialty and sub-specialty programs. At present, research activity is not a mandatory component of the *Specialty Training Requirements in Psychiatry*, however, various aspects of

research are listed in the *Objectives of Training*.[20] In 2001, these were revised in the "CanMEDS" format and are now generally referred to as the CanMEDS objectives. One of the core objectives is to "demonstrate an ability to critically assess the relevance and significance of the literature and research as it applies to the practice and study of psychiatry."[21] Specifically, they state that residents should have an effective level of knowledge and understanding of epidemiology, medical statistics, and research methodology.[22] Residents will be required to:

- Demonstrate an ability to access and critically appraise sources of medical information.
- Demonstrate an ability to facilitate learning of patients, residents, students and other health professionals and to contribute to development of new knowledge.[23]

The success of implementing research into a training program depends largely upon its faculty mentors.[24] Clinical faculty members are role models for medical students, residents, and colleagues. The extent to which they read the current literature and apply research findings in their practices conveys messages about the importance of research.[25]

All Fellows of the RCPSC are now required to obtain 400 hours of continuing medical education credits per 5 years of active practice. This presents an excellent opportunity for physicians to continue their research education as time spent on research activity can be translated into credits. Such activities may include, but are not limited to, journal clubs, reading journals, MEDLINE searches, personal learning projects, practice audits, patient surveys, utilization studies, publications, grant proposals, and clinical trials.[26]

Research education implies a broad range of research knowledge. Lentle published a description of what he termed the "spectrum of analytical and research activities in medical practice" which he believed could provide a framework around which research education in residency training could be developed.[27] This spectrum is presented in Table 1.1 as a range from practice-oriented audit to basic research. Lentle felt that items (a) through (e) or (f) were tasks or obligations that arose from a professional commitment and that items (e) or (f) through (j) defined the role of a medical or clinical scientist.

Table 1.1
Lentle's Spectrum of Analytical and Research Activities in Medical Practice

(a) (b) (c) (d) (e) (f) (g) (h) (i) (j)
Professionalism----------Creative Science----------

(a) the ability to critically interpret the literature, claims of drug manufacturers

(b) the ability to use the tools of scholarship (for example library searches)

(c) a professional commitment to continuing education

(d) personal professional audit

(e) retrospective analysis of "experience" (non-protocol)

(f) participation in collective clinical studies prospectively designed and according to protocol

(g) origination of clinical studies and protocol design

(h) co-operation with basic scientists to share in answering research questions (multi-disciplinary research)

(i) addressing fundamental questions about health and disease in the laboratory or in the field

(j) leadership of independently funded groups in basic or applied medical research

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Currently, there is a wide variation in how residency training programs implement research education. Even though the Royal College is encouraging research, they do not provide specific guidelines, nor do they make it a mandatory requirement. The question remains whether residents are being trained enough about research in order to meet Lentle's criteria for "professionalism" once in practice and whether they are given the opportunity for "creative science".

1.2 Objectives

The objectives for this study were 1). to determine how psychiatry residency programs across Canada incorporate research education into their curricula and 2). to compare how psychiatry residents perceive this research education. These objectives were achieved by exploring opinions on the importance of research; factors important to the success of a research curriculum; outcomes and skills considered important; reasons for residents engaging in research; and whether residents are adequately taught in various research areas. Also, do programs already have an organized research curriculum? If so, what formal teaching is provided? What resources are available, including faculty members, research director, and availability of protected time?

Finally, what are the current consequences of failing to meet a research requirement should a program have a mandatory requirement in place?

This data, combined with information obtained in the literature, will be used to produce guidelines for what research education in residency programs should involve and how it can be implemented into a curriculum.

Chapter 2

Methods

2.1 Survey Design

The questionnaires of Alguire[28] and Buschbacher[29] were combined and adapted for RCPSC residency training programs. Alguire *et al.* surveyed program directors of all the ACGME (Accreditation Council of Graduate Medical Education) accredited internal medicine residency programs in the United States. They wanted to determine how well prepared these programs were to meet ACGME accreditation guidelines for resident scholarly activity. Program directors were asked to list scholarly activities and their programs' minimal expectations for resident research; available academic faculty, technical, and personnel support for resident research; and the desired educational and skill outcomes for resident research. The survey instrument was piloted in 6 different residency programs and the results of the pilot were included in the final results.

Buschbacher *et al.* surveyed all residents and residency program directors in physical medicine and rehabilitation in the United States. They wanted to assess what the programs perceived they were offering for research training compared to what residents themselves felt was being offered to them. They used this information to begin to identify specific areas in which a lack of communication was impeding residents' access to departmental resources. They developed 2 surveys, one for residency program directors and one for the residents. The surveys differed only in questions that were applicable to one group. The surveys were pre-tested on 5

program directors and 5 residents, and their suggestions were used to make minor adjustments.

For this study, Dr. Ian Bowmer (Chair of Credentials for the RCPSC), Dr. Nadia Mikhael (Director of Education to the RCPSC), and one resident from each residency program at Memorial University (who then used the same survey for directors in their own specialties, the overall results of which are still pending) reviewed the combined survey. They made recommendations that were used to make minor adjustments to it.

The final survey consisted of 42 questions organized into 3 sections: i). demographics, ii). opinions about resident research activity, and iii). research curricula. It was created in English (Appendix B) and translated into French (Appendix C). The French version was also back-translated into English to ensure the translation was accurate.

At Memorial University, psychiatry residents are provided with a program handbook that happens to provide many of the answers to the survey's questions. It was assumed that residents across the country would also have access to this information, but this proved to be an inaccurate assumption. Even the residents from Memorial University had difficulty answering questions on factual information. An attempt at testing intra-program reliability and test-re-test reliability was made with Memorial residents, but this proved to be impossible because many answers to factual information were left blank. Therefore, the data analysis focused on opinion data

which residents were much more likely to provide, but this type of data is not amenable to reliability checks.

2.2 Survey Methodology

The questionnaire was distributed in 2 phases. In May 1999, Phase I began with the mailing of survey packets to all 16 psychiatry residency program directors of the RCPSC (13 English and 3 French). Each survey packet contained an explanatory covering letter, a questionnaire, a supporting letter from the RCPSC to encourage completion, and a pre-addressed, postage-paid return envelope. A second, identical survey was faxed to the directors who did not respond within 1 month. After another month, any remaining non-responders were contacted by telephone until all directors had completed the survey.

It may be misleading to accept responses of residency program directors as accurate in reflecting how research education is provided in their institutions, however, it was decided that they were in an optimal position to share and comment on this information.

Once all the program directors responded, indicating the number of residents in their respective programs, Phase II was initiated. In November 1999, a package was mailed to each program director containing a number of survey packets to match the number of residents, plus a letter asking them to distribute the packets. It was necessary to mail the resident survey packets to the directors as most programs were unwilling to provide a list of their residents' mailing addresses. Each survey packet

contained a questionnaire identical to the one sent to the program directors plus an explanatory covering letter. One month later, a package of letters, encouraging residents to respond to the survey was sent for distribution. A subsequent mailing of survey packets was sent again two months after that, in the hope of improving the response rate.

Given the time constraints of residents, it was expected that the response rate would be quite low. Therefore, a third phase was attempted in which a "key informant" for each program would complete the questionnaire. Resident members of COPE (Canadian Organization of Psychiatric Education) were chosen as the "key informants" as COPE consists of one resident from each program. However, a current mailing list for this group of residents could not be obtained as most programs refused to give out this information. An attempt was made to write, e-mail and telephone these residents, but only 4 of the 16 "key informants" completed the survey, which was not enough for qualitative or statistical analysis.

2.3 Data Analysis

All data used in this study were collected and analyzed by the author using the statistical program Epi Info 6 [30] and the aid of a statistical consultant. The data generated by this survey fell into three main groups.

The first group includes Likert scale questions consisting of five-point scales. In Phase I, the median responses were reported since the maximum number of respondents was relatively small (i.e. there were only 16 program directors). In Phase

II, means and standard deviations were determined for both the residents and directors. A difference between these means (i.e. Phase I vs. Phase II) was tested using the Kruskall-Wallis test for two groups. This test is a non-parametric test, and was used instead of the parametric ANOVA test because this data consists of ranks[31] (i.e. scale of 1 to 5). The level of significance (α) was 0.05.

A difference in the mean resident response by level of training was tested. No particular postgraduate year (PGY) consistently rated questions differently than did other years. However, given the small sample sizes and multiple tests, this line is testing is not valid.

In addition, the number of programs in which residents gave a higher, equal, and lower mean response than their respective director was reported (after appropriate rounding). This was done in order to eliminate a possible skewing of results due to large vs. small programs. In this way, a mean resident response for each program was compared with a single answer by their program director. Any significant difference within each university was also tested. There were no consistent disagreements between the director and residents within any particular university. However, again, this is not valid due to the small sample sizes and multiple tests. A sample calculation of all responses to Likert scale questions is provided as *example #1* in Appendix C.

The second group of questions asked respondents to "circle one answer" from a list of possibilities. The percentage of directors and residents who circled each response was determined and a difference between them was tested using Chi-squared analysis. However, this gave relatively more weight, on the residents' side, to small

programs. That is, each director's response was counted once, whereas varying numbers of residents' responses from each program were used. In order to correct this possible skewing, the percentage of *programs* in which ≤ 50% of residents agreed with their director was reported. In this way, each director was compared only to residents in his/her program (instead of a more generic comparison of all directors with all residents). The total percentage of *residents* who agreed with their directors was also reported. Neither of these approaches differentiates whether more residents gave a positive or negative response to each item. Instead, they are meant to show which items are more reliably agreed upon, and indicate a trend of discrepancies. A sample calculation of all responses to "circle one answer" questions is provided as *example #2* in Appendix C.

The third group of questions asked respondents to "circle one answer" from a list of possibilities. This group also includes questions for which "yes" or "no" were possible answers. In fact, all the possibilities in this grouping were entered as "yes" or "no" into the data entry file (i.e. if a response was circled it was counted as a "yes"; if it was not circled it was counted as a "no"). For these questions, the percentage of respondents who answered "yes" to each question was reported and tested using Chi-square analyses.

In addition, the percentage of *programs* in which ≤ 50% of residents agreed with their program director and the total percentage of *residents* who agreed with their director were reported. A sample calculation of all responses to "circle all that apply" and "yes/no" questions is provided as *example #3* in Appendix C.

Also included in this survey were a limited number of questions asking respondents to fill in the blank by giving their "best estimate". Unfortunately, there was an extremely poor response to these questions, which were therefore not used in the analysis.

For some questions, there was < 50% response from the residents who returned a survey. These questions are indicated under the tables to which they apply. Data are presented as percentages of responders answering a question rather than a percentage of all respondents.

Chapter 3

Results

3.1 Phase I

All 16 program directors returned a completed survey, giving a response rate of 100%. However, not all questions were answered in every survey. Therefore, results are the total of responses for any particular question.

Figure 3.1 combines the median responses from six different questions (questions 1.9, 1.10, 2.1, 3.11, 3.16, and 3.17). While directors believe that their faculty is very accessible to residents interested in research (4.5/5), and that it is quite important for residents to participate in research activity (4/5), they also believe that residents only display neutral enthusiasm about research (3/5). The graph also illustrates that both faculty and resident research productivity is perceived to be at a neutral level (3/5 for both). Directors gave a neutral response as to the qualification of faculty to teach research principles (3/5).

Figure 3.2 illustrates some of the reasons why directors believe residents engage in research activity (question 2.2). Of the 15 respondents, directors thought the most important reasons were mandatory research activity, improving fellowship applications, improving curriculum vitae, and satisfying intellectual curiosity (4/5 for each). They gave only neutral importance to institutional requirements and incentives offered by the program (3/5 for both).

Figure 3.3 indicates which resources are available for residents to support their research endeavours (question 3.12). Most directors (14/15) indicated they had role

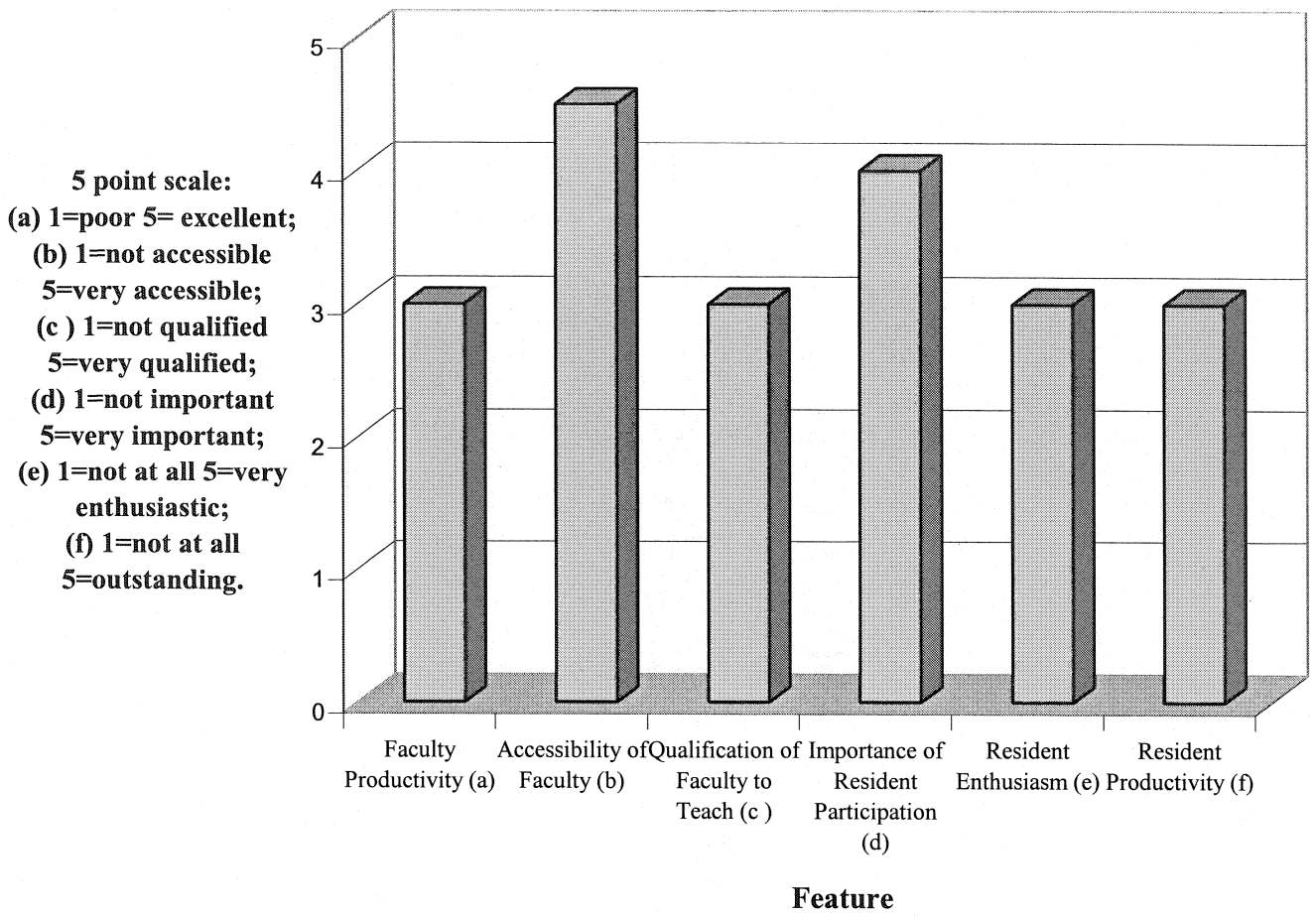

Figure 3.1 General Features Regarding Resident and Faculty Research (Program Directors' Perceptions)

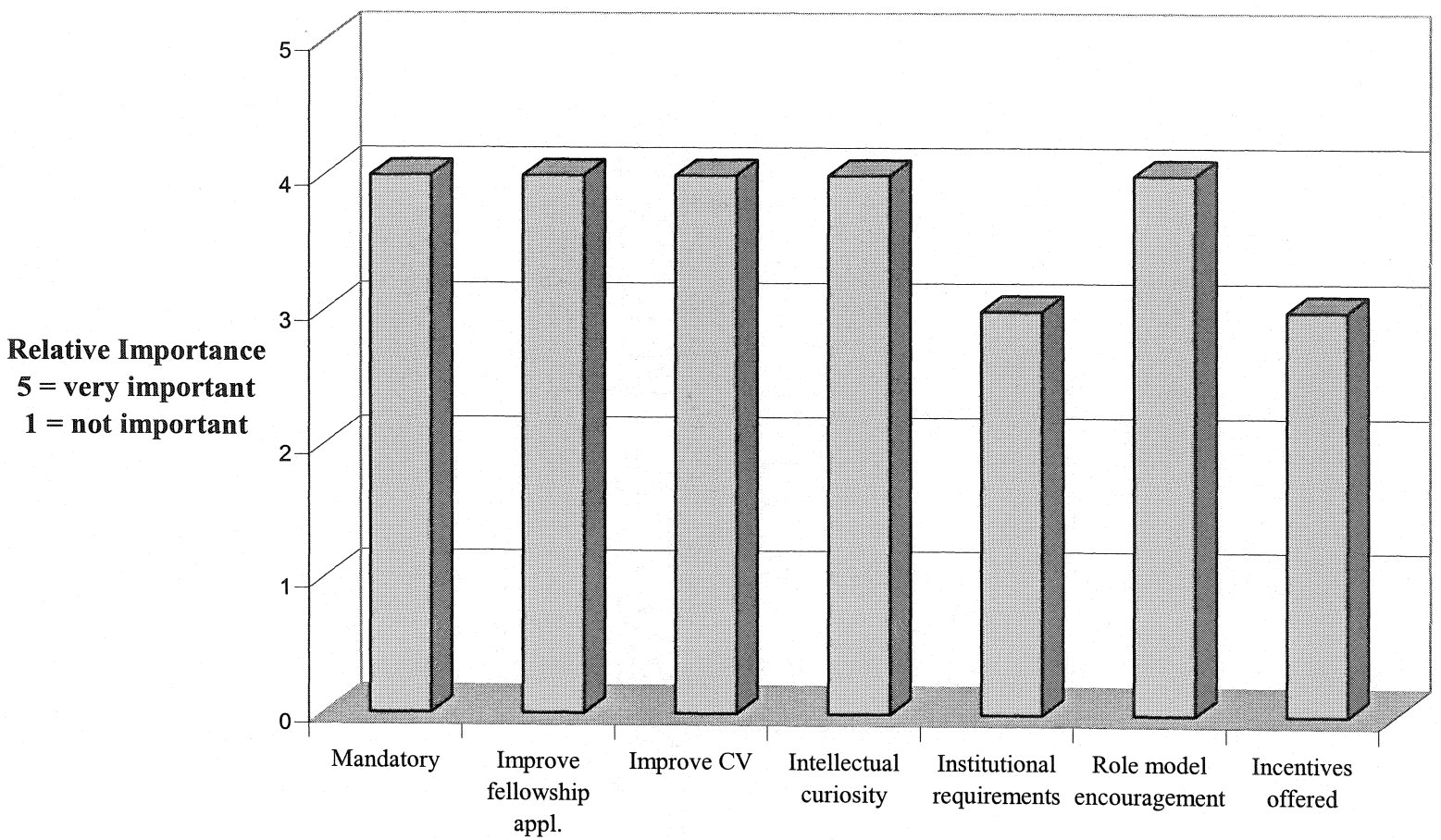

Figure 3.2 Why Residents Engage in Research Activity (Program Directors' Perceptions)

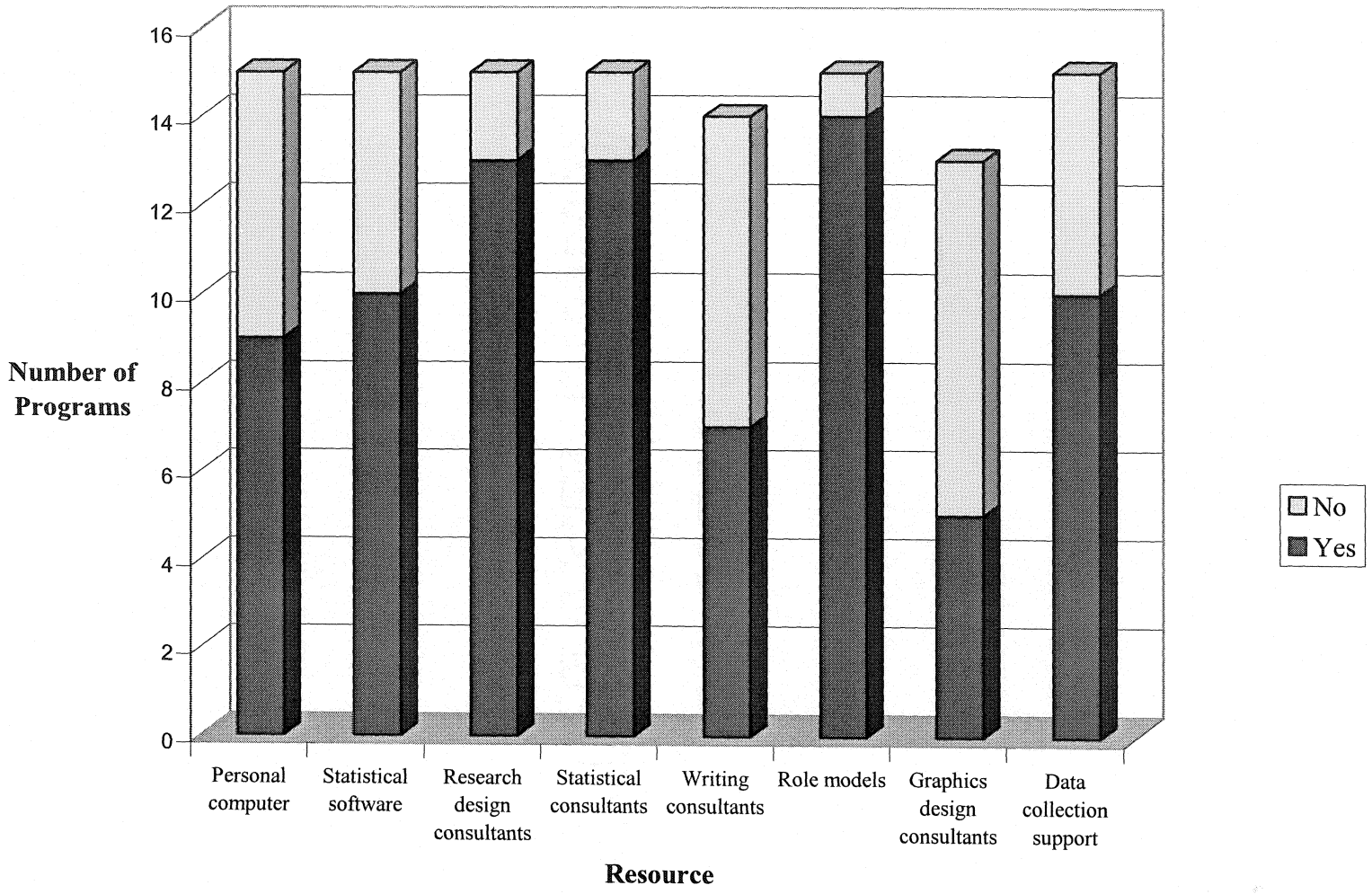

Figure 3.3 Resources Available to Residents (Program Director's Perceptions)

models or mentors to support and encourage residents in research. Many have research design consultants (13/15), statistical consultants (13/15), statistical software (10/15) and data collection support (10/15). These resources are in keeping with the importance which program directors placed on role models and statistical support for the success of a research curriculum. Fewer programs reported a personal computer for resident research (9/15); graphics design consultants (5/13), and writing consultants (7/14).

Figure 3.4 indicates directors' opinions on the importance of factors that contribute to the success of a research curriculum (question 2.3). All directors responded to this question. They believe that faculty role models/mentors, research director, faculty time, faculty interest, and resident interest are all very important for success (5/5 for each). In fact, directors claimed that faculty role models were already their biggest resource as seen in Figure 3.3 (14/15 programs had role models) and that the faculty were very accessible to residents interested in research as seen in Figure 3.1 (4.5/5). In contrast however, Figure 3.1 also showed a neutral level of faculty research productivity and a neutral qualification for teaching research. It is important to note that while they thought resident interest was very important to the success of a research curriculum; directors gave a neutral response as to how enthusiastic they perceived their residents to be with respect to research as seen in Figure 3.1 (3/5). They also thought that resident time, an organized research curriculum, funding, administrative support, library services, and statistical support were quite important factors (4/5 for each). Graphics support was considered somewhat important (3.5/5).

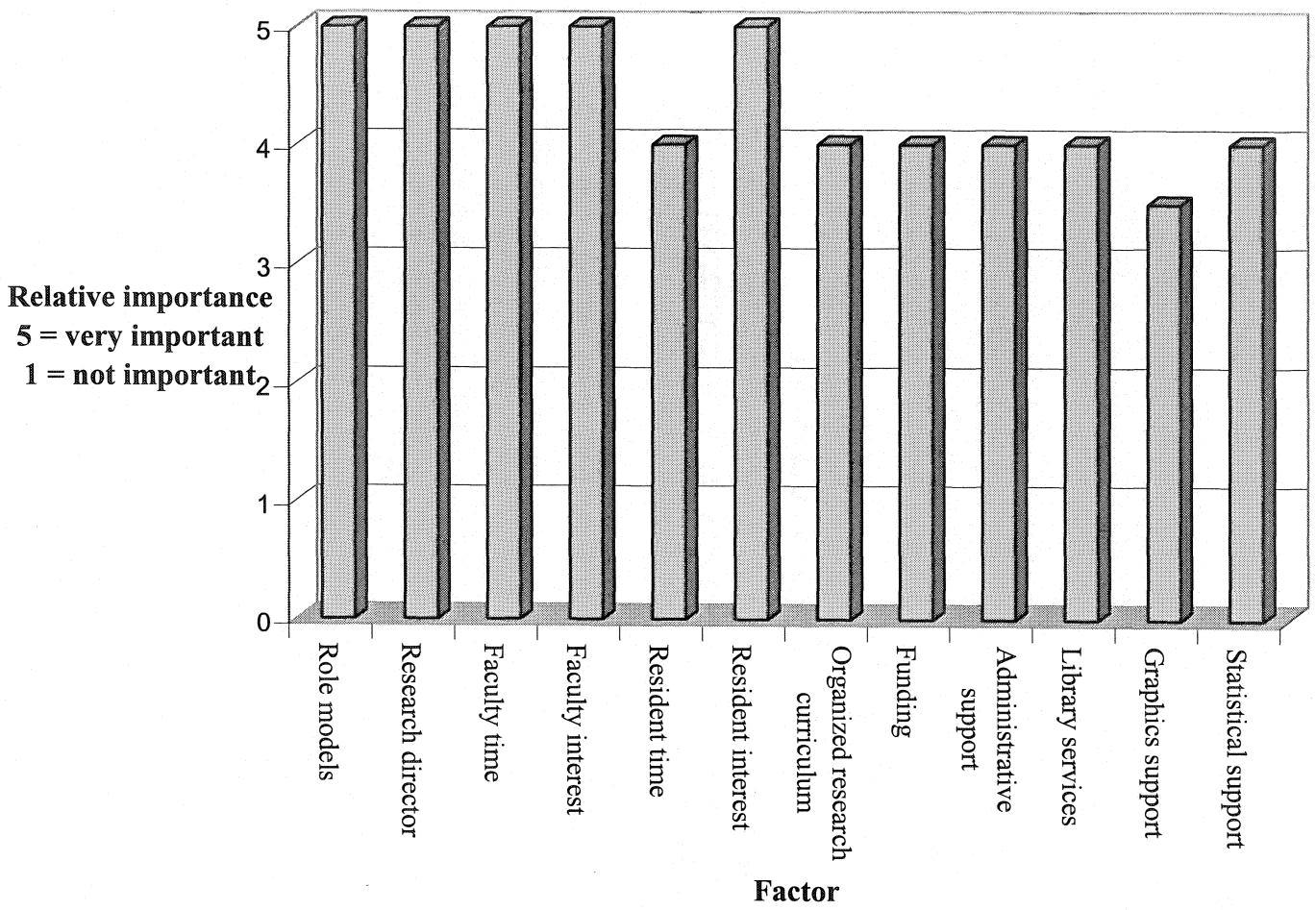

Figure 3.4 Factors in the Success of a Research Curriculum (Program Directors' Perceptions)

Figure 3.5 represents directors' viewpoints on the importance of residents acquiring skills in various research areas (question 2.5). All 16 directors answered this question. They felt that skills for performing analytic literature reviews were very important for residents to acquire (4.5/5). Directors also thought that skills for non-analytic literature reviews, describing a population/case report/case series were quite important (4/5 for each). Acquiring skills for performing hypothesis driven research was considered somewhat less important (3.5/5).

Figure 3.6 looks at the importance of final outcomes for residents during their training (question 2.4). There were 16/16 respondents. Directors thought that learning critical appraisal skills was a very important outcome for residents (5/5). This appears to be in agreement with the importance directors placed on learning analytic research skills in Figure 3.5 (4.5/5). They also felt that learning research skills was quite important (4/5). Contributing new knowledge and publishing/presenting research was considered somewhat important (3.5/5) and completing a research project received a neutral response (3/5). This seems to be in contrast to the importance directors placed on resident participation in research activity (4/5) in Figure 3.1.

Figure 3.7 illustrates which research areas have formal structured teaching for residents and whether it is mandatory, voluntary, or not offered (question 3.9). Out of 15 programs, critical appraisal teaching is mandatory in 11, voluntary in 3, and not offered in 1. Consequently, the 1 program that did not offer critical appraisal teaching was also the program that reported the residents were not adequately trained in this area. Out of 15 programs, teaching in research methodology is mandatory in 9,

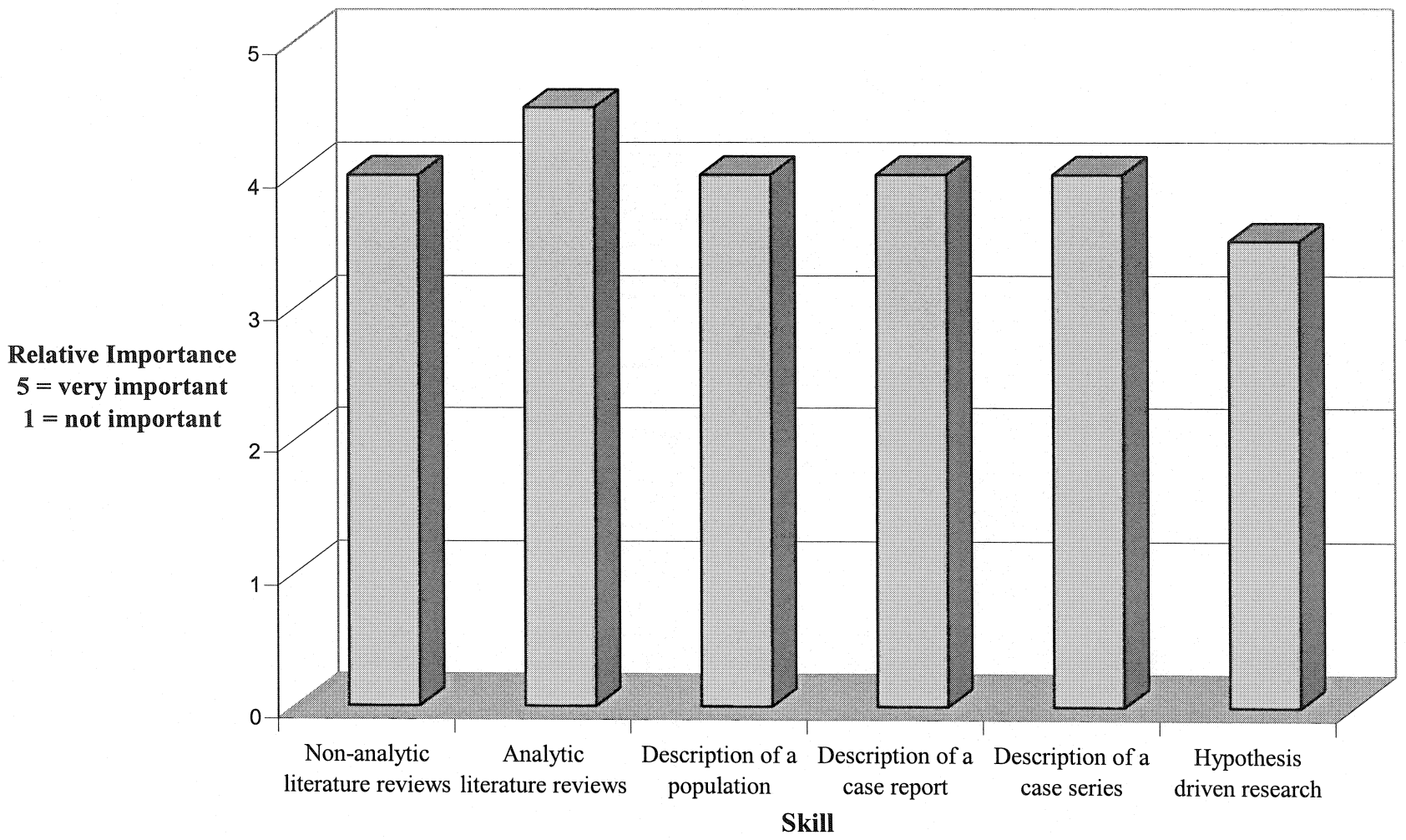

Figure 3.5 Importance of Skills for Residents to Acquire (Program Directors' Perceptions)

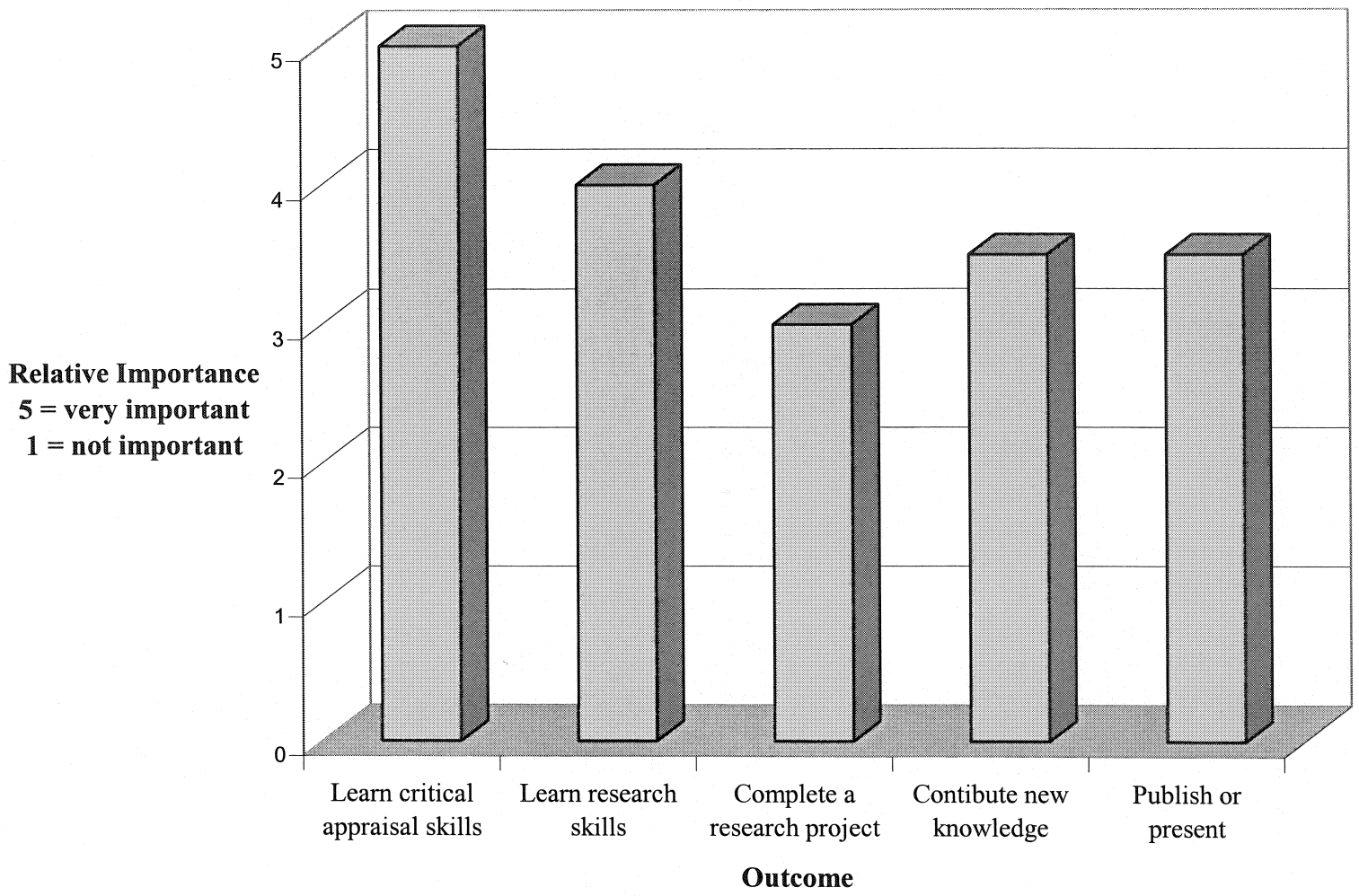

Figure 3.6 Importance of Outcomes for Residents (Program Directors' Perceptions)

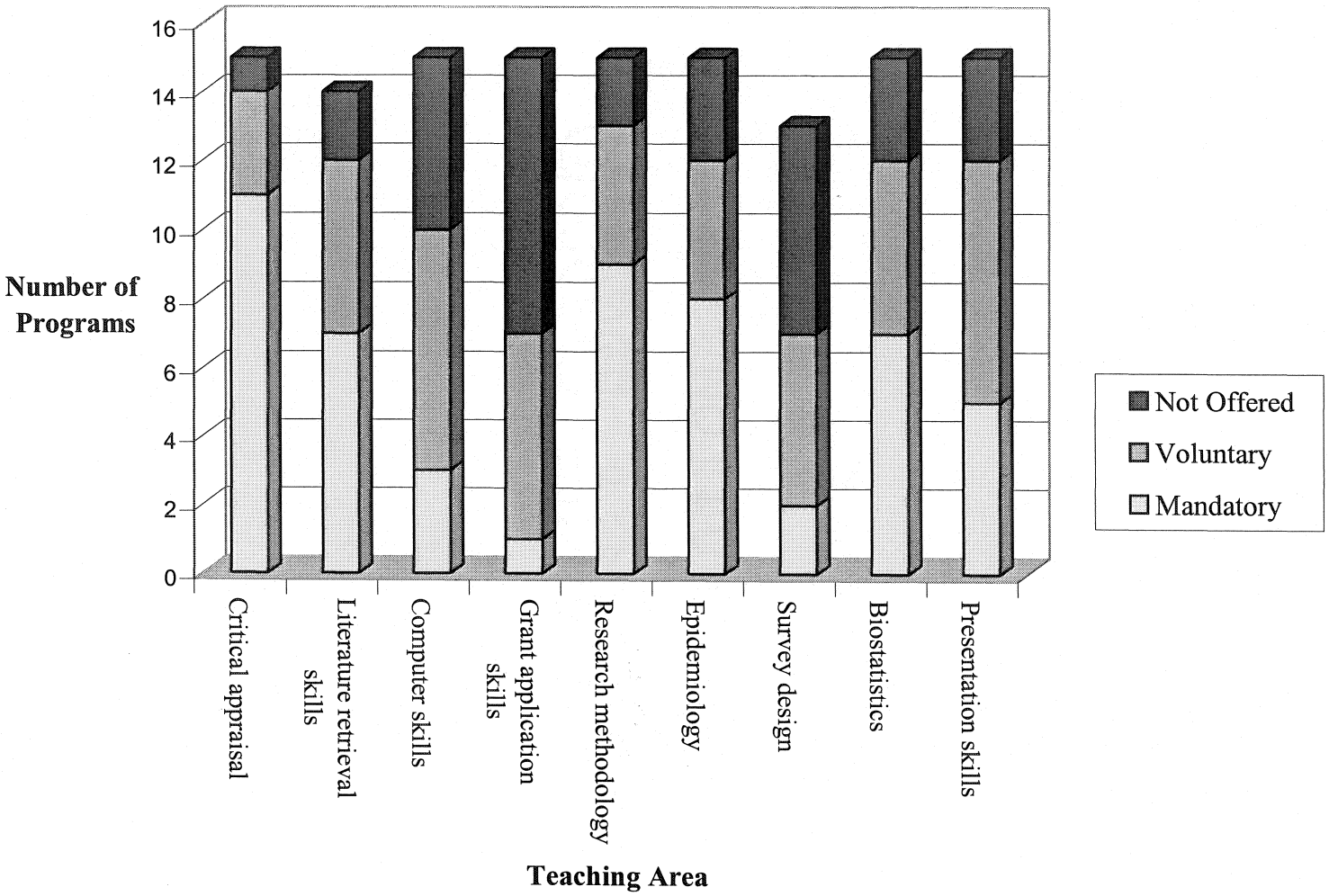

Figure 3.7 Formal and Structured Teaching for Residents (Program Directors' Perceptions)

voluntary in 4, and not offered in 2. Interestingly, of the 9 programs with mandatory teaching in research methodology, only 5 felt that it was adequately taught. Out of 15 programs, teaching in epidemiology is mandatory in 8, voluntary in 4, and not offered in 3. Of 14 programs, teaching in literature retrieval skills is mandatory in 7, voluntary in 5, and not offered in 2. Of the 7 programs with mandatory teaching in literature retrieval skills, all of them felt it was adequately taught. Of 15 programs, biostatistics is mandatory teaching in 7, voluntary in 5 and not offered in 3. Out of 15 programs, teaching in presentation skills is mandatory in 5, voluntary in 7, and not offered in 3. Whether teaching of presentation skills was mandatory or voluntary, it was always considered an area in which residents receive adequate training. In Figure 3.8 presentation skills also appears as one of the areas where residents are adequately trained. Of 15 programs, computer skills are mandatory teaching in only 3, voluntary in 7, and not offered in 5. Of 13 programs, teaching in survey design is mandatory in 2, voluntary in 5, and not offered in 6. Of 15 programs, grant application skills are mandatory teaching in only 1 program, voluntary in 6, and not offered at all in 8.

Figure 3.8 describes the research areas which directors believe residents get adequate training (question 2.6). A clear majority of programs (15/16) claim to provide adequate training in critical appraisal, which corresponds with the importance that directors placed on learning critical appraisal skills as an outcome for residents as seen in Figure 3.6 (5/5). In addition, this area is most often provided in mandatory teaching as found in Figure 3.7 (11/15 programs). Directors claim to provide adequate training in literature retrieval in 12/16 programs, presentation skills in 12/16 programs,

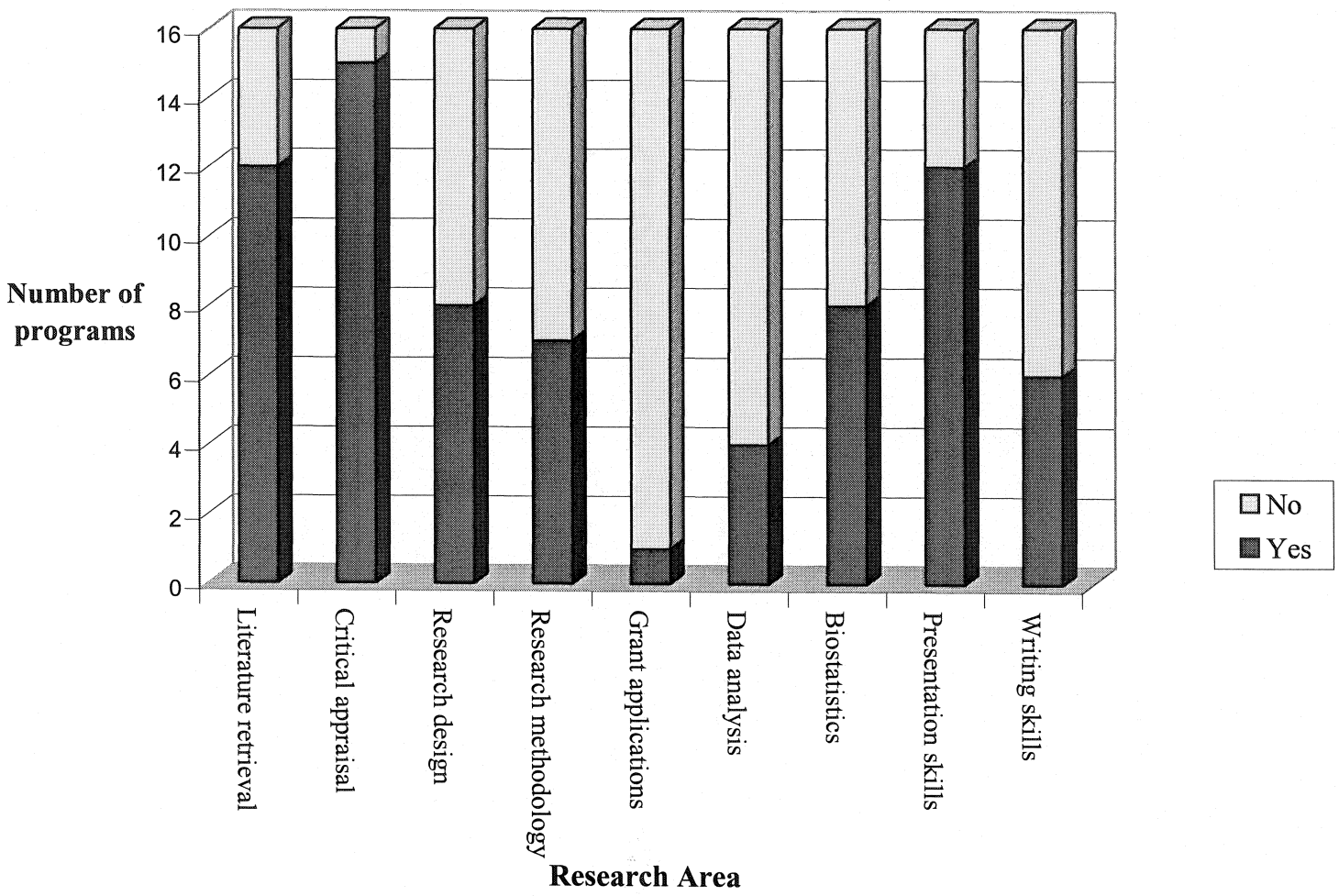

Figure 3.8. Areas in which Residents get Adequate Training (Program Directors' Perceptions)

biostatistics in 8/16 programs, research methodology in 7/16 programs, writing skills in 6/16 programs, and data analysis in 4/16 programs. As seen in Figure 3.7, only 1 program provided mandatory teaching in grant applications and, not surprisingly, it was the only program that felt it was adequately taught.

Figure 3.9 outlines the research areas that are considered a mandatory requirement for residents (question 3.1). Only 8/16 programs actually have a mandatory research requirement. This is surprising considering the importance that directors placed on resident participation in research activity (4/5) in Figure 3.1 and the importance of mandatory research activity as a reason for residents engaging in research (4/5) in Figure 3.2. All programs with a mandatory research component accepted more than one option for fulfilling their requirement. Of the programs having a mandatory research expectation, it is usually in the form of a systematic or non-systematic literature review (5/16 programs for both). In 4/15 programs, hypothesis driven research was mandatory, and in 4/15 programs, a single case report was accepted. 1/15 programs accepted a case series and 2/16 accepted a description of a population as a mandatory requirement.

Finally, Figure 3.10 gives the consequences of failing to meet the minimum research expectation. While fewer directors answered this line of questioning, it does show that in 6/12 programs no action is taken. If a non-response is considered a negative response, then it could be said that 10/16 programs take no action as a consequence of failing to meet the minimum research expectation. In fact, of the 8 program directors that indicated they had a mandatory research requirement, only 4

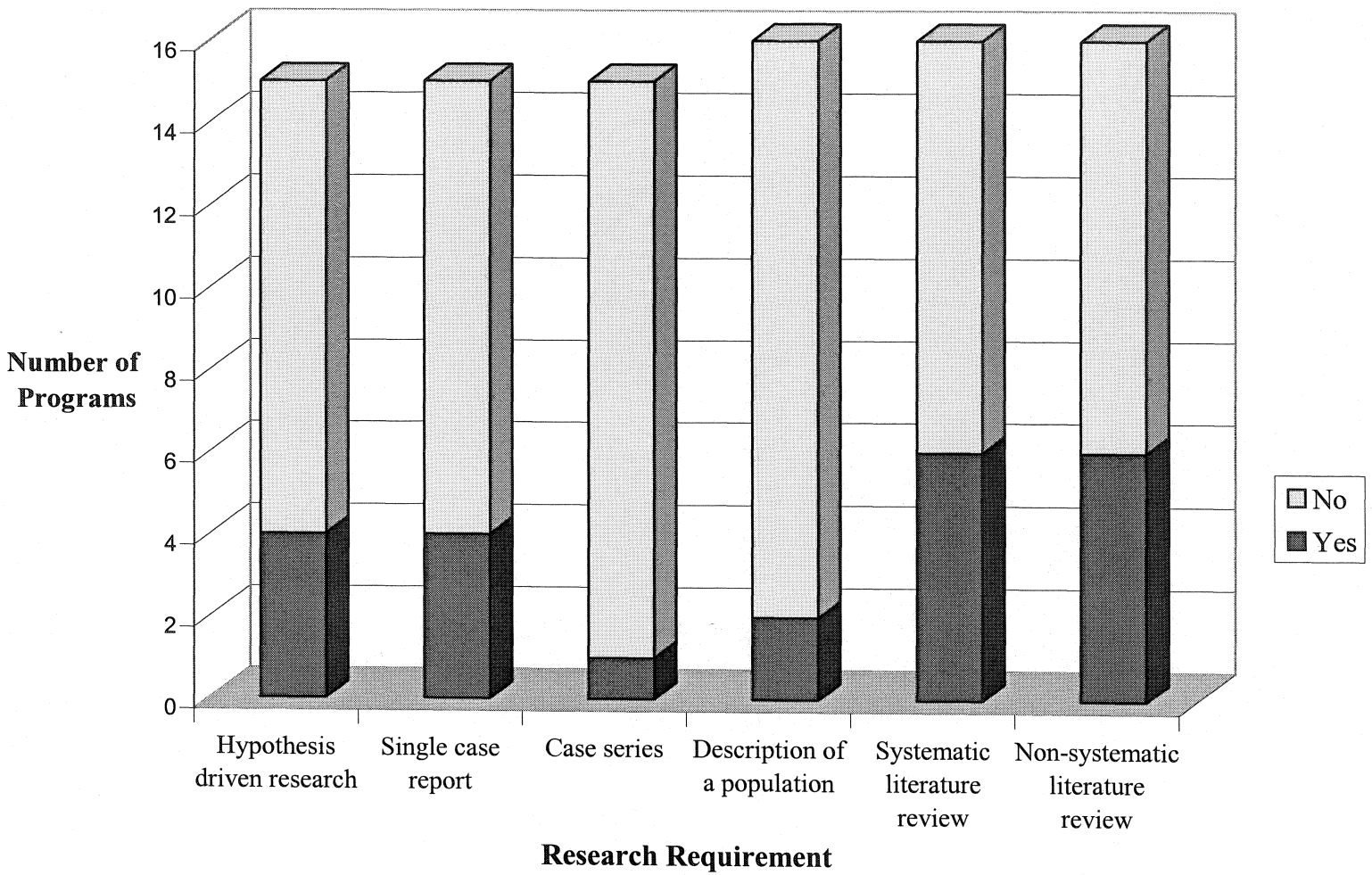

Figure 3.9 Mandatory Research Requirements for Residents (Program Directors' Perceptions)

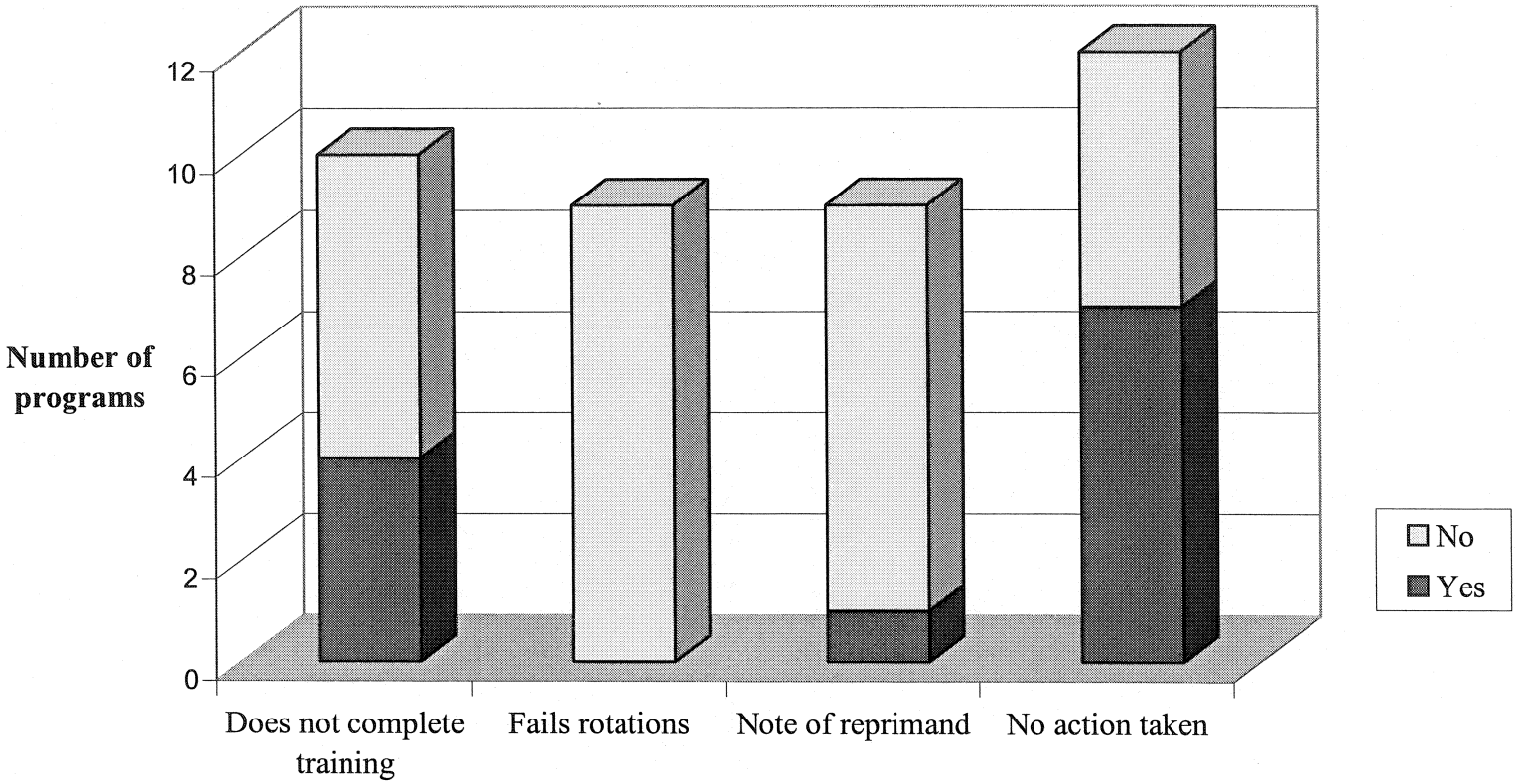

Figure 3.10 Consequences for Failing to Meet the Minimum Research Requirement (Program Directors' Perceptions)

take any action as a consequence of not meeting that requirement. In only 4/10 programs did a resident not complete his/her training and in 1/9 programs did a resident receive a note of reprimand. No programs indicated that a resident would fail his/her rotation.

3.2 Phase II

Of the 606 psychiatry residents, 213 returned the survey giving a response rate of only 35%. A comparison of response rates by University and level of training is given in Table 3.1. There was no correlation found between resident response rate for each university and the importance which individual directors placed on resident participation in research or whether these directors reported they had an organized research curriculum.

Table 3.1
Resident Response Rates

By University	Frequency	Percentage
Dalhousie	8/33	24.2
McGill	2/41	4.9
McMaster	7/33	21.2
Memorial	20/23	87.0
Queen's	4/14	28.6
Alberta	14/40	35.0
UBC	10/50	20.0
Calgary	11/24	45.8
Laval	6/47	12.8
Manitoba	14/27	51.9
Montreal	16/68	23.5
Ottawa	10/29	34.5
Saskatchewan	7/16	43.8
Sherbrooke	9/22	40.9
Toronto	56/124	45.2
Western Ontario	15/15	100.0
By level of training	**(out of 213)**	**Percentage**
PGY-1	23	10.8
PGY-2	37	17.4
PGY-3	51	23.9
PGY-4	45	21.1
PGY-5	57	26.8

Table 3.2 is a combination of six Likert scale questions (questions 1.9, 1.10, 2.1, 3.11, 3.16, 3.17). In general, residents' felt that is less important that they participate in research activities (mean response 3.2) than did the directors (mean response 3.9), with only 2 programs giving a mean response higher than did their own director. Similarly, residents report being less enthusiastic about research (mean response 2.6) than directors' thought they were (mean response 3.1), with only 1 program giving a higher mean response than its director.

Both residents and directors gave a neutral opinion regarding faculty and resident research productivity, however, residents frequently gave lower ratings compared to their respective directors. Residents and directors also gave neutral opinions as to the qualification of faculty to teach research principles. However, they both agreed that faculty were quite accessible to residents interested in research. Again, residents consistently gave lower ratings compared to their own directors for these questions.

Table 3.3 shows how residents' ranked factors in the success of a research curriculum compared to directors based on the mean responses shown in Table 3.4. Both groups ranked faculty role model/mentors high on the list at #2. However, there was a large discrepancy in the ranking of other factors. Residents placed resident interest and resident time as very important at #1 and #2 respectively, while a research director and an organized research curriculum were much lower at #6 and #7 respectively. Conversely, directors ranked an organized research curriculum as #1 and a research director as #2, while resident interest fell to #4 and resident time to #5.

Table 3.2 General Perceptions of Residents vs. Directors

(responses to Likert scale questions $p<0.05$)

Question	Mean Resident Response (SD)	Mean Director Response (SD)	p-value	Number of programs in which residents gave a higher/lower/equal response compared with their director Higher/Lower/Equal		
How important is it for residents to participate in research activities?	3.2 (1.0)	3.9 (0.9)	*0.008*	2	9	5
How accessible are the faculty within your program to residents interested in research?	3.7 (1.1)	4.1 (1.1)	0.21	2	8	4
How qualified are the faculty within your program to teach the principles of research?	3.2 (1.1)	3.5 (1.2)	0.37	5	7	3
How would you rate the research productivity of the faculty associated with your training program?	3.2 (1.1)	3.2 (1.0)	0.78	5	6	4
How would you rate the resident research productivity in your training program?	2.7 (0.9)	2.9 (1.1)	0.32	3	7	5

Table 3.2 (Cont.)

Question	Mean Resident Response (SD)	Mean Director Response (SD)	p-value	Number of programs in which residents gave a higher/lower/equal response compared with their director Higher/Lower/Equal
How enthusiastic are residents in your training program about research?	2.6 (0.8)	3.1 (1.0)	0.08	1 9 5

Table 3.3 Residents' and Directors' Ranking of the Factors in the Success of a Research Curriculum

Residents' rank order	Factor	Directors' rank order	Factor
1	Resident interest	1	Organized research curriculum
2	Faculty role models/mentors	2	Research director
2	Resident time	2	Faculty role models/mentors
3	Faculty interest	3	Faculty time
4	Faculty time	4	Faculty interest
4	Funding	4	Resident interest
5	Administrative support	5	Funding
5	Library services	5	Administrative support
5	Statistical support	5	Library services
6	Research director	5	Resident time
7	Organized research curriculum	6	Statistical support
8	Medical illustration/graphics support	7	Medical illustration/graphics

Table 3.4 provides the mean response of residents and directors to the question of the importance of certain factors to the success of a research curriculum (question 2.3) and also how residents in individual programs rated in relation to their own director. Significant differences occurred between directors and residents in the importance of a research director and faculty time. As seen in Table 3.3, directors gave more importance to a research director and faculty time than did the residents as a whole, and Table 3.4 shows that no individual program rated these features higher than did its own director. Conversely, residents gave more importance to resident time compared with directors, with only 1 program rating it lower than did its director.

Table 3.5 indicates how residents and directors ranked the importance of sufficient skills for residents to acquire based on the mean responses shown in Table 3.6. Both groups ranked analytical and non-analytical literature reviews within the top two places, while they both ranked hypothesis-driven research and a description of a population within the last two places (between 5^{th} and 6^{th}).

Table 3.6 gives the actual mean responses residents and directors gave to the importance of residents acquiring sufficient skills (question 2.5) while also providing a relative comparison of how residents within a program rated a particular skill with their own director. For all skills, the majority of programs gave a lower or equal rating compared to their director.

Table 3.7 lists the residents' and directors' rank order of the importance of outcomes for residents to achieve based on the mean responses shown in Table 3.8. Both groups felt that learning critical appraisal skills was the most important outcome

Table 3.4 Factors in the Success of a Research Curriculum

(responses to Likert scale questions)

Factor	Mean Resident Response (SD)	Mean Director Response (SD)	p-value	Number of programs in which residents gave a higher/lower/equal response compared with their director		
				Higher	Lower	Equal
Faculty role models/mentors	4.5 (0.7)	4.8 (0.4)	0.14	1	8	7
Research director	3.9 (0.9)	4.8 (0.5)	*0.002*	0	9	7
Faculty time	4.1 (0.8)	4.7 (0.5)	*0.001*	0	11	5
Faculty interest	4.4 (0.7)	4.6 (0.6)	0.18	2	8	6
Resident time	.5 (0.6)	4.2 (0.6)	0.08	8	1	7
Resident interest	4.6 (0.6)	4.6 (0.5)	0.75	4	3	9
Organized research curriculum	3.8 (0.9)	4.9 (0.8)	0.51	5	5	6
Funding	4.1 (0.8)	4.2 (0.8)	0.83	5	8	3
Administrative support	4.0 (0.9)	4.2 (0.8)	0.31	3	7	6
Library services	4.0 (0.9)	4.2 (0.8)	0.43	4	7	5
Medical illustration/ graphics support	3.2 (1.0)	3.3 (1.1)	0.76	6	7	3

Table 3.4 (cont.)

Factor	Mean Resident Response (SD)	Mean Director Response (SD)	p-value	Number of programs in which residents gave a higher/lower/equal response compared with their director		
				Higher	Lower	Equal
Statistical support	4.0 (0.9)	4.1 (0.6)	0.71	2	5	9

Table 3.5 Residents' and Directors' Rank Order of the Importance of Residents Acquiring Sufficient Skills in Areas of Research

Residents' rank order	Skill	Directors' rank order	Skill
1	Analytical literature reviews	1	Non-analytical literature reviews
2	Non-analytical literature reviews	2	Analytical literature reviews
3	Description of a case report	3	Description of a case report
4	Description of a case series	4	Description of a case series
5	Hypothesis driven research	5	Desciption of a population
6	Description of a population	6	Hypothesis driven research

Table 3.6 Importance of Residents Acquiring Sufficient Skills in Areas of Research

(responses to Likert scale questions)

Skill	Mean Resident Response (SD)	Mean Director Response (SD)	p-value	Number of programs in which residents gave a higher/lower/equal response compared with their director Higher	Lower	Equal
Non-analytical literature reviews	3.8 (1.0)	4.2 (0.8)	0.18	2	7	7
Analytical literature reviews	3.8 (1.0)	4.1 (1.0)	0.20	5	7	4
Description of a population	3.2 (0.9)	3.7 (0.9)	*0.03*	3	10	3
Description of a case report	3.5 (1.0)	4.1 (0.7)	*0.01*	1	10	5
Description of a case series	3.4 (0.9)	3.9 (0.8)	*0.03*	2	7	7
Hypothesis driven research	3.3 (1.0)	3.6 (1.0)	0.31	2	4	10

Table 3.7 Residents' and Directors' Rank Order of Importance of Outcomes for Residents

Residents' rank order	Outcome	Directors' rank order	Outcome
1	Learn critical appraisal skills	1	Learn critical appraisal skills
2	Learn research skills	2	Learn research skills
2	Publications/presentations	3	Publications/presentations
3	Contribute new knowledge	4	Complete a research project
4	Complete a research project	5	Contribute new knowledge

and that learning research skills was the second most important. Both groups ranked completing a research project and contributing new knowledge as least important.

Table 3.8 provides the mean resident and director responses to the importance of outcomes for residents (question 2.4) while, again, comparing the mean response within each program to their own director. Here it can be seen that while residents considered learning critical appraisal skills to be the most important outcome, 13/16 programs gave it a lower rating than did their directors, and there were no programs in which residents gave it a higher rating than did their director.

Table 3.9 gives residents' and directors' rank order of the areas where they feel residents already get adequate training based on the overall percentages shown in Table 3.10. Both residents and directors agree that critical appraisal is the most adequately taught area, with presentation skills as second and literature retrieval skills as 3rd. Both groups also feel that data analysis and grant application skills are the least adequately taught in 6th and 7th place respectively.

Table 3.10 lists the actual percentage of residents and directors who answered "yes" to whether a particular research area was adequately taught (question 2.6), plus it shows the percentage of programs in which half or less of residents agreed with their own director and the overall percentage of residents who agreed with their director. From this table, one can see that residents generally reported having adequate training less often when compared to the directors. At least half of the residents in 9/16 programs disagreed with their director's rating of research methodology and 8/16 programs disagreed with biostatistics. The greatest overall agreement was in the area

Table 3.8 Perceptions on the Importance of Outcomes for Residents

(responses to Likert scale questions)

Outcome	Mean Resident Response (SD)	Mean Director Response (SD)	p-value	Number of programs in which residents gave a higher/lower/equal response compared with their director Higher/Lower/Equal		
Learn critical appraisal skills	4.2 (0.8)	4.8 (0.4)	*0.003*	0	13	3
Learn research skills	3.3 (1.0)	3.6 (1.0)	0.27	2	7	7
Complete a research project	2.9 (1.1)	3.2 (1.1)	0.24	2	5	9
Contribute new knowledge	3.0 (1.1)	3.1 (1.2)	0.84	6	7	3
Publications/presentations presentations	3.3 (1.0)	3.4 (1.0)	0.55	3	5	8

Table 3.9 Residents' and Directors' Rank Order of Research Areas with Adequate Training

Residents' rank order	Research area	Directors' rank order	Research area
1	Critical appraisal	1	Critical appraisal
2	Presentation skills	2	Presentation skills
3	Literature retrieval	2	Literature retrieval
4	Research design	3	Research design
4	Research methodology	3	Biostatistics
4	Writing skills	4	Research methodology
5	Biostatistics	5	Writing skills
6	Data analysis	6	Data analysis
7	Grant application	7	Grant application

Table 3.10 Perceptions of which Research Areas have Adequate Training
(responses to "yes/no" questions)

Area of Training	%Residents yes"	% Directors "yes"	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
Literature retrieval	53	75 (12/16)	0.09	25 (4/16)	64
Critical appraisal	62	94 (15/16)	0.01	25 (4/16)	60
Research design	23	50 (8/16)	0.02	44 (7/16)	65
Research methodology	23	44 (7/16)	0.07	56 (9/16)	56
Grant application	9	6 (1/16)	0.71	6 (1/16)	89
Data analysis	20	25 (4/16)	0.40	25 (4/16)	71
Biostatistics	22	50 (8/16)	0.02	50 (8/16)	61
Presentation skills	56	75 (12/16)	0.13	44 (7/16)	56
Writing skills	23	38 (6/16)	0.15	31 (5/16)	58

of grant application skills where 89% of residents overall agreed with their director. This is also the area where both groups felt they had/provided the least amount of adequate teaching.

Table 3.11 gives a rank order of resources that residents and directors believe are available to their program based on the percentages provided in Table 3.12. Both groups listed role models/mentors as the #1 available resource. This corresponds well with Table 3.3 in which role models/mentors were also listed as the #1 factor in the success of a research curriculum. Statistical consultants were the 2nd most available resource, which is appropriate considering residents did not think biostatistics was as adequately taught as other areas (as seen in Table 3.9).

Table 3.12 lists the absolute percentages of residents and directors who answered "yes" to whether a particular resource was available (question 3.12). It also gives the percentage of programs where at least half of their residents agreed with their director, plus the percentage of residents overall who agreed with their director. Not only did residents and directors list role models/mentors as the most available resource, but there was also 91% of residents who agreed with their director and no programs in which less than half the residents agreed with their director. The biggest discrepancy was with writing consultants. Directors reported having them available more often than did residents, with 8/14 programs having half or less of residents agree with their director.

Table 3.13 shows how residents and directors ranked the reasons why residents engage in research activity based on the mean responses given in Table 3.14. Both

Table 3.11 Residents' and Directors' Rank Order of Available Resources for Research

Residents' rank order	Resource	Directors' rank order	Resource
1	Role models/mentors	1	Role models/mentors
2	Statistical consultants	2	Statistical consultants
3	Personal computer	2	Research design consultants
4	Research design consultants	3	Statistical software
4	Statistical software	3	Data collection support
5	Data collection support	4	Personal computer
6	Graphics design consultants	5	Writing consultants
7	Writing consutants	6	Graphics design consultants

Table 3.12 Perceptions of the Available Resources for Research
(responses to "yes/no" questions)

Resource	% Residents "yes"	% Directors "yes"	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
Personal computer	53	60 (9/15)	0.58	27 (4/15)	59
Statistical software	48	67 (10/15)	0.18	40 (6/15)	51
Research design consultants	48	87 (13/15)	0.004	40 (6/15)	53
Statistical consultants	62	87 (13/15)	0.06	33 (5/15)	63
Writing consultants	21	50 (7/14)	0.02	57 (8/14)	47
Role models/mentors	87	93 (14/15)	0.42	0 (0/15)	91
Graphics design consultants	26	38 (5/13)	0.24	38 (5/13)	54
Data collection support	39	67 (10/15)	0.04	40 (6/15)	54

Table 3.13 Residents' and Directors' Rank Order of Reasons Why Residents Engage in Research

Residents' rank order	Reason	Directors' rank order	Reason
1	Role model/mentor encouragement	1	Role model/mentor encouragement
1	Satisfy intellectural curiosity	2	Satisfy intellectual curiosity
2	Improve curriculum vitae	3	Improve curriculum vitae
3	Improve fellowship application	4	Improve fellowship application
4	Meet institutional requirements	4	Research activity is mandatory
5	Research activity is mandatory	5	Meet institutional requirements
6	Incentives offered by program	6	Incentives offered by program

groups ranked the most important reason as role model/mentor encouragement. This category was also ranked highly as a factor in the success of a research curriculum (Table3.3) and is already seen as the most valuable resource (Table 3.12). Satisfying intellectual curiosity was also considered a very important reason, whereas, incentives offered by the program were thought to have little influence on residents.

Table 3.14 gives the mean responses of residents and directors as to why residents engage in research activity (question 2.2) plus a comparison of the mean resident response within each program to their director's response. While residents reported the #1 reason they engage in research was role model encouragement, 9/16 programs gave it a lower rating than did their director and only 3/16 programs gave it a higher rating.

Table 3.15 presents the percentage of respondents who reported by whom they thought research was initiated (question 3.15). Residents thought that they, themselves, initiated most of the research, but directors' responses indicate that research was initiated equally between faculty and residents. There appears to be little agreement between residents and their own directors in this category as 11/14 programs had half or less of residents agree with their director. Overall, only 30% of residents agreed with their director on this question.

Table 3.16 lists the percentage of respondents who reported from whom residents get their research advice (question 3.13) plus the percentage of programs where half or less of residents agreed with their director and the overall percentage of residents who agreed with their director. Both groups reported that residents get most

Table 3.14 Perceptions of Why Residents Engage in Research Activities

(responses to Likert scale questions)

Reason	Mean Resident Response (SD)	Mean Director Response (SD)	p-value	Number of programs in which residents gave a higher/lower/equal response compared with their director		
				Higher	Lower	Equal
Research activity is mandatory	2.9 (1.5)	3.5 (1.5)	0.11	4	8	3
Improve fellowship application	3.2 (1.2)	3.5 (1.0)	0.49	5	8	2
Improve curriculum vitae	3.5 (1.0)	3.6 (1.0)	0.72	3	7	5
Satisfy intellectual curiosity	3.8 (1.0)	3.8 (0.9)	0.84	5	4	6
Meet institutional requirements	3.1 (1.2)	3.0 (1.3)	0.88	3	6	6
Role model/mentor encouragement	3.8 (1.0)	4.1 (0.7)	0.18	3	9	3
Incentives offered by program	2.7 (1.2)	2.9 (1.0)	0.44	3	5	7

Table 3.15 Perceptions of Who Initiates Resident Research
(responses to "circle one answer" question)

Initiator	% Residents	% Directors (out of 14 responses)	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
>50% Resident initiated	57	36 (5)			
>50% Faculty initiated	22	29 (4)	0.28	79 (11/14)	30
Equally initiated	21	36 (5)			

Table 3.16 Perceptions of Where Residents get Research Advice
(responses to "circle all that apply" questions)

Advisor	% Residents	%Directors	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
Individual faculty members/mentors	79	81 (13/16)	0.05	19 (3/16)	72
Research director	41	69 (11/16)	*<0.001*	75 (12/16)	49
Faculty from other departments	28	6 (1/16)	*<0.001*	44 (7/16)	48
Don't know	21	6 (1/16)	0.38	NA	NA

of their advice from individual faculty members or mentors and there was 79% of residents who agreed with their own director. Residents reported receiving less advice from the research director than the program directors reported, with 12/16 programs having at least half of their residents disagree with their own director. Residents also reported getting advice more often from faculty in other departments than the directors thought they did, with 7/16 programs having at least half of their residents disagree with their own director.

Table 3.17 outlines the percentage of respondents who reported when residents do their research (question 3.20). While directors think that residents conduct research equally between working and after hours, the residents felt that more research was conducted after hours. There was less agreement between residents and their own director specifically concerning the amount of research done during working hours.

Table 3.18 shows the percentage of respondents who report the availability of protected time for residents' research (questions 3.18 and 3.19). Both residents and directors agree that there is protected time for research and that it is usually in the form of an elective rotation. Mandatory rotations in research were reported as rare by both groups.

Table 3.19 gives the percentage of respondents who reported whether there was an organized research curriculum and director (questions 3.8, 3.10, and 3.3). While 64% of programs (9/14) have a research curriculum in place, only 26% of residents were aware of their existence. There were only 34% of residents who agreed with their own director on this point and 9/14 programs had half or less of their

Table 3.17 Perceptions of When Residents do Research
(responses to "circle all that apply" questions")

When	% Residents	% Directors	p-value	% Programs in which </=50% agreed with their director	% Residents who agree with their director
After hours	70	75 (12/16)	*0.02*	31 (5/16)	65
During working hours	59	75 (12/16)	*0.002*	44 (7/16)	61
Don't know	24	0	1.0	NA	NA

Table 3.18 Perceptions of the Availability of Protected Time for Research
(responses to "yes/no" questions)

Availability	% Residents "yes"	% Directors "yes"	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
Elective rotation	92	86 (12/14)	0.33	14 (2/14)	88
In some form	78	86 (12/14)	0.38	29 (4/14)	74
Few hours each week	65	69 (9/13)	0.49	46 (6/13)	67
During certain rotations	45	50 (6/12)	0.57	33 (4/12)	67
Mandatory rotation	9	8 (1/12)	0.70	8 (1/12)	63

Table 3.19 Perceptions of a Research Curriculum and a Research Director
(responses to "yes/no" and "circle all that apply" questions)

Question	% Residents "yes"	% Directors "yes"	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
Do you have an organized research curriculum?	26	64 (9/14)	*0.004*	64 (9/14)	34
What format is used to teach the research curriculum?					
Longitudinal seminar series	43	75 (12/16)	*0.001*	38 (6/16)	60
Journal clubs	68	63 (10/16)	*0.02*	31 (5/16)	55
Lecture series	59	44 (7/16)	*0.03*	50 (8/16)	58
Does you program have a Research director?	69	94 (15/16)	*0.03*	25 (4/16)	74

residents agree with their director. Residents and directors also disagreed on the format used to teach the research curriculum. Directors most often reported that a longitudinal seminar series was used, but residents predominantly cited journal clubs as the way they obtain research teaching. Also, 15/16 programs reported they had a research director, but only 69% of residents knew they had one.

Table 3.20 lists the percentage of respondents who reported whether various research areas were offered as formal or structured teaching, and whether this training was mandatory or voluntary (question 3.9). Overall, residents and directors agreed that critical appraisal skills were most often offered as mandatory teaching. The greatest disagreement was in the area of teaching research methodology; 40% of residents said it was not offered, but 9/15 programs said it was mandatory. There were 11/15 programs in which half or less of residents agreed with their directors in this regard.

Table 3.21 gives the percentage of respondents who reported which research areas were a mandatory requirement in their program (question 3.1). While none of the options received an overly positive response, both residents and directors agreed that mandatory requirements were most often in the form of systematic or non-systematic literature reviews.

Table 3.22 shows the percentage of respondents who report to which authority residents were most accountable for their research (question 3.14). Both groups reported that residents were most accountable to their research mentors. There was a

Table 3.20 Perceptions of which Research Areas have Formal Teaching

(responses to "circle one answer" questions)

Teaching area	Attendance M=mandatory V=voluntary X=not offered	% Residents	% Directors	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
Critical appraisal	M	49	73 (11/15)			
	V	34	20 (3/15)	0.19	40 (6/15)	51
	X	17	7 (1/15)			
Literature retrieval skills	M	19	50 (7/14)			
	V	53	36 (5/14)	*0.02*	64 (9/14)	40
	X	28	14 (2/14)			
Computer skills	M	4	20 (3/15)			
	V	45	47 (7/15)	*0.01*	67 (10/15)	49
	X	51	33 (5/15)			
Grant application skills	M	1	7 (1/15)			
	V	30	40 (6/15)	*0.04*	33 (5/15)	58
	X	69	53 (8/15)			
Research methodology	M	21	60 (9/15)			
	V	39	27 (4/15)	*0.002*	73 (11/15)	45
	X	40	13 (2/15)			
Epidemiology	M	31	53 (8/15)			
	V	35	27 (4/15)	0.20	40 (6/15)	52
	X	34	20 (3/15)			

Table 3.20 (cont.)

Teaching area	Attendance M=mandatory V=voluntary X=not offered	% Residents	% Directors	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
Survey design	M	11	15 (2/13)			
	V	32	39 (5/13)	0.71	54 (7/13)	50
	X	57	46 (6/13)			
Biostatistics	M	20	47 (7/15)			
	V	35	33 (5/15)	*0.04*	67 (10/15)	42
	X	45	20 (3/15)			
Medical Informatics	M	7	21 (3/14)			
	V	34	43 (6/14)	0.08	64 (9/14)	42
	X	59	36 (5/14)			
Presentation	M	22	33 (5/15)			
	V	47	47 (7/15)	0.52	73 (11/15)	50
	X	31	20 (3/15)			

Table 3.21 Perceptions of Mandatory Research Requirements
(responses to "yes/no" questions)

Scholarly activity	% Residents "yes"	% Directors "yes"	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
Hypothesis driven research	7	27 (4/15)	*0.03*	33 (5/15)	75
Single case report	19	27 (4/15)	0.33	27 (4/15)	73
Case Series	4	7 (1/15)	0.44	7 (1/15)	91
Description of a population	3	13 (2/16)	0.11	13 (2/16)	83
Systematic literature review	29	38 (6/16)	0.31	25 (4/16)	71
Non-systematic literature review	35	38 (6/16)	0.86	25 (4/16)	66

Table 3.22 Perceptions of to Whom Residents are most Accountable for Research
(response to" circle one answer" question)

Authority	% Residents	% Directors (out of 14 responses)	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
Research mentor	54	71 (10)			
Research director	5	0			
Residency program Director	11	14 (2)			
Chairman of the Discipline	0	0	0.67	50	50
No one in particular	6	7 (1)			
Don't know	23	7 (1)			
Other	1	0			

50% agreement between residents and their own directors, which is very good considering the number of options they had to choose from.

Table 3.23 gives the percentage of respondents who reported a minimum expectation for research (question 3.2). Again, residents and directors agree that the minimum is usually in the form of a systematic or non-systematic literature review. However, there appears to be some uncertainty regarding this. Eight out of thirteen programs had half or less of residents agree with their director for systematic literature reviews, and 6/14 for non-systematic literature reviews.

Finally, Table 3.24 illustrates the percentage of respondents who reported on the consequences for failing to meet the minimum research requirement (question 3.25). Although a smaller number of residents and directors answered this question, it appears that they agree that most often no action is taken. However, 7/12 programs had half or less of residents agree with their own director on this point. There appears to be a lot of uncertainty about what, if any, action is taken when residents fail to meet a program's minimum research requirement.

Table 3.23 Perceptions of a Minimum Research Expectation

(responses to "yes/no" questions)

Research activity	% Residents "yes"	% Directors "yes"	p-value	% Programs in which </= 50% agreed with their director	% Residents who agreed with their director
Hypothesis driven research	23	46 (6/13)	0.07	62 (8/13)	35
Single case report	32	50 (6/12)	0.17	67 (8/12)	40
Case series	17	33 (4/12)	0.15	33 (4/12)	41
Description of a population	13	42 (5/12)	0.02	42 (5/12)	35
Systematic literature review	40	69 (9/13)	0.04	62 (8/13)	43
Non-systematic literature review	43	64 (9/14)	0.88	43 (6/14)	45

Table 3.24 Perceptions of the Consequences for Failing to Meet the Minimum Research Requirement

(responses to "yes/no" questions)

Consequence	% Residents "yes"	% Director "yes"	p-value	% Programs in which </=50% agreed with their director	% Residents who agreed with their director
No action is taken	75	58 (7/12)	0.18	58 (7/12)	48
Does not satisfactorily complete training program	20	40 (4/10)	0.13	30 (3/10)	80
Receives a note of reprimand in the evaluation file*	10	11 (1/9)	0.62	22 (2/9)	80
Receives a failing grade for this rotation*	7	0 (0/9)	0.56	0 (0/9)	94

*< 50% of residents who returned a survey responded to this question

Chapter 4

Discussion

4.1 Phase I Conclusions

During phase I, only the program directors' responses were elicited, and it was assumed that the information they provided was correct.

All programs agreed that it is important for residents to learn about and participate in research. Program directors identified having good role models to encourage resident research as a very important factor in the success of a research curriculum and stated that this is already one of the most available resources for residents conducting research. The program directors also indicated that faculty time and interest are very important, but that resident time is slightly less important than resident interest.

Program directors consistently reported the importance of learning critical appraisal skills and performing analytic literature reviews. Appropriately then, critical appraisal is most often provided in formal teaching and is also cited as the area where residents most often get adequate training. However, the results indicate that teaching could be broadened to incorporate more research design and methodology.

In general, research is not a mandatory requirement for most programs. In those programs that do have a minimum research expectation, it can usually be fulfilled by a systematic or non-systematic literature review. This is in keeping with

the importance directors placed on critical appraisal skills. However, few programs take any action for failing to meet a minimum research expectation.

4.2 Phase II Conclusions

While residents generally gave lower overall ratings on a Likert scale than did program directors, some general trends have emerged. On average, residents felt that it is less important for them to participate in research and are less enthusiastic about research than directors believed they were. This is supported by the findings that resident time, and especially, resident interest are the most important factors in making a research curriculum work.

On the other hand, directors believe that the most important factors are role models, research director, and an organized research curriculum. When questioned about a research curriculum, many residents disagreed with their director and indicated that they did not even have a research curriculum. This suggests that while directors believe they are providing a research education, it has not been emphasized enough for residents to realize it.

As we learned in phase I, program directors consistently reported the importance of learning critical appraisal skills and performing analytic literature reviews. The residents also supported this assessment. Residents' perceived critical appraisal to be the component most often adequately taught and most often offered as mandatory teaching.

There was overwhelming agreement that role models were available to residents who were interested in research. This role model encouragement, along with satisfying their own intellectual curiosity, were among the top reasons given by residents for engaging in research. These role models and mentors were also the sources most often used by residents for their research advice, and also to whom they are most accountable for their research.

In agreement with their program directors, residents also perceive that research is generally not a mandatory requirement of their residency programs. They also believe that no action is taken as a consequence of failing to meet a research expectation. This was confirmed by the directors' responses. Both directors and residents responded poorly to this line of questioning, indicating some confusion in this area or, possibly, a lack of policy.

In summary, most programs have a research environment and available resources in place, but there remains a lack of emphasis on its implementation. This has likely contributed to the low level of resident research activity. This fundamental difference between knowing what should be done and what actually is being done is a possible explanation for differences between perceptions of residents and program directors found throughout this study.

4.3 Response Rates (Study Limitations)

The greatest difficulty with the use of mail surveys is getting an adequate response rate. The obvious benefits of a high response rate include an increased

sample size, reduced costs and labour associated with follow-up contacts, and reduced concern over non-response bias.[32] The following includes some of the suggested means to increase response rates:[33]

1. Pre-notification by letter: This alerts people that the survey is coming, and hopefully will prevent them from inadvertently discarding it.

2. Repeat Mailings: This can be a postcard or letter to show appreciation for completing the survey or a gentle reminder to complete it. It can also consist of another survey in case the previous one was misplaced.

3. Outgoing postage: First class mail is perceived as more important and stamps more personal.

4. Notification of cut-off date: This is in hope of preventing people from setting aside the survey and forgetting to complete it.

5. University sponsorship: Again, this is perceived as more important.

6. Color of questionnaire: A colored questionnaire (usually green) is noticed more than a white one.

7. Post-script asking for cooperation: A handwritten letter is seen as more personalized.

8. Monetary incentives: May be helpful as positive reinforcement.

In this survey, the overall resident response rate of 35% was much less than desired. Unfortunately, most programs were unwilling to give out a mailing list for their residents and, therefore, non-responders could not be contacted individually.

Instead, every resident was sent a second survey with a request to complete it. The mailings, themselves, were dependent on the program directors distributing survey packets to their residents and giving the study their endorsement. Other contributing factors to the low response were that the survey may have taken too much time to complete and that it asked for a lot of information that residents may not have known. It became obvious in the data analysis that questions related to factual information had the lowest responses, indicating that residents did not know these answers. Therefore, the results were focused more on the opinions of residents rather than their knowledge of factual information.

The high response rate from Memorial residents was expected given that the study originated at this university. There was a very poor representation from McGill University, which is an English University, but perhaps the fact they were sent English surveys only precluded some of their French residents from responding. Conversely, the 100% response from the University of Western Ontario was unexpected and may be related to the letter of encouragement sent out by the program director. PGY-1's were noted to have the lowest response rate and this was probably because they were so new to their programs that they did not know a lot of the information asked.

4.4 Reliability

Reliability is a statistical measure of the reproducibility or repeatability of a survey instrument's data. It is an indicator of the stability and consistency of the

information gathered and is analogous to the "...marksman's capacity to hit the same spot each time he fires, irrespective of how close he comes to the bulls eye."[34]

There are generally four ways to assess reliability.

1. Test-Retest Reliability is the most common indicator of reliability. A group of respondents is asked to complete a survey at 2 different points in time. The two sets of responses are compared by calculating the correlation coefficients or "r-values" ("r" is considered good if >/= 0.7).[35] This is similar to Intraobserver Reliability, where the responses in the same individual, over a specified time, are correlated.[36]

2. Alternate-Form Reliability involves asking the same question again, in different wording, elsewhere within the same survey. It can also include changing the order of a response set. The correlation coefficients are again calculated for these items.[37]

3. Internal Consistency Reliability is an indicator of how well different items measure the same issue. It is applied to groups of items that are thought to measure different aspects of the same concept (i.e. groups of items combined to form a single "scale").[38] Internal consistency is measured by calculating a statistic known as Cronbach's coefficient alpha, which reflects the homogeneity of the scale.[39]

4. Interobserver Reliability is a measure of how well 2 or more respondents rate the same phenomenon (using a correlation coefficient "r").[40]

In this particular survey, reliability could not be tested. As mentioned earlier, in chapter 2, analysis was focused on questions asking for the respondent's opinions rather than questions asking factual information. This type of opinion data would not be constant over time nor would it be consistent between residents at the same university. Alternate-Form reliability could have been tested had the survey incorporated differently worded questions on the same topic. However, this was not feasible due to the length of the survey. Interobserver reliability would also be limited again due to opinion data.

4.5 Validity

Validity is how well the survey instrument measures the characteristic it is supposed to measure. It is "...equivalent to a marksman's capacity to hit the bull's eye."[41] It makes sense that if a measurement is not reliable, it cannot be valid. For example, "...if the shots are scattered they cannot all hit the bull's eye."[42]

There are generally four ways to assess validity.

1. Face Validity is also known as "logical validity". It can be appraised by anyone looking at the appropriateness of the items in the survey to see if they make logical sense. Do the questions seem likely to yield information of real relevance to what the investigator wants to measure?[43]
2. Content Validity is a subjective measure of how appropriate the items seem to a set of reviewers who have some knowledge of the subject matter. They

are able to assess whether all the component variables they know have been asked.[44]

3. Criterion Validity is a measure of how well one instrument stacks up against another instrument or predictor. It can be measured in two ways:

a. Concurrent Validity is when the instrument is measured against a "gold standard", and a correlation coefficient is calculated.[45]

b. Predictive Validity is the survey instrument's ability to forecast future events, behaviors, attitudes, or outcomes. It is also calculated as a correlation coefficient between the initial test and the secondary outcome.[46]

4. Construct Validity is a theoretical measure of how meaningful the survey instrument is when in practical use. It is usually determined after years of experience by numerous investigators.[47]

This particular survey was appraised for Face and Content Validity by selected members of the RCPSC and residents from other programs as previously described in the methodology. All programs are required to complete an accreditation survey for the RCPSC, which may have included some of this data. However, the RCPSC is unwilling to release this information as it has been deemed confidential. This is unfortunate as it would have been an ideal way to externally verify this data and test this survey's predictive validity.

4.6 Sources of Bias (Study Limitation)

There were various sources of possible bias in this study. First, the program directors may have answered questions so as to make their programs look better. As discussed earlier, their responses were assumed to be accurate, because it was believed they were in the best position to comment on this information. Conversely, knowing that residents generally feel that their service to education ratio is too high, they could have been biased in answering questions, so as to make their programs appear worse. Also, as evident from this survey, residents are not that enthusiastic about research and this may have influenced their perception of research education being provided.

Second, the responders may differ from the non-responders in ways that influenced the data received. It could be that residents who were more interested in research completed the survey.

Third, all of the data was collected and analyzed by the writer, which could have, unknowingly, biased the results. I, myself, am a resident in psychiatry and I initially embarked on this project in hopes of improving research education in my own program. This may have influenced my interpretation of the results to show a need for improved research education and an emphasis on its implementation.

It is important to remember that when interpreting the results, one must look at the number of programs that had a substantial number of residents disagree with their director and the total number of residents who agreed with their director. This

is important because large programs may have biased the overall resident to director comparison.

4.7 Pilot Testing (Study Limitation)

A small-scale pre-test of a survey is a useful way to improve the survey instrument and to work out any details prior to testing the study population. It is usually performed on 10 to 30 subjects that have similar characteristics, but do not include, the study population. Pre-test respondents are also encouraged to be critical so as to elicit potential difficulties with the survey.[48]

A pilot test can help eliminate the following potential problems:[49]

1. Typographical errors or misspelled words
2. Confusion caused by the numbering of items
3. Difficulty reading due to small print size
4. Inappropriate vocabulary or insensitive wording
5. Too much time required to complete
6. Monotonous questioning
7. Questions that do not flow well into the next question
8. Skip patterns that are too difficult to follow

A pilot test was not conducted in this study. In hindsight, this could have proven helpful in identifying weaker questions in the survey so that they could have been modified or deleted. It would have been especially helpful in identifying problems residents had answering factual information. In one question, there was a

typographical error that precluded it from being used in the analysis. Also, the questionnaire was very long (consisting of 43 questions) which discouraged some residents from answering it. There may have been other suggestions regarding the readability and format that could have increased the response rate.

Chapter 5

Study Implications: Implementing Research Education

The main objective for this study was to use the data on program directors' and residents' perceptions of the current level of research education and combine it with information obtained in the literature to produce guidelines for implementing research education into residency training. This chapter provides a summary of recommendations to help provide a more standardized approach to research education. These recommendations are purposefully broad based so that programs have some flexibility in how they incorporate them to suit their individual environments and residents' needs.

5.1 Setting Curricular/Educational Goals

Each program sets their own curricular and educational goals using the training objectives and requirements set out by the RCPSC as a guide. The RCPSC has recently instituted new training objectives and requirements. As a core objective, Psychiatry residents need to be able to access the medical literature and to critically assess it. They need to be knowledgeable in epidemiology, medical statistics, research methodology, bioethics, and quality assurance principles, while also contributing new knowledge.[50] From this survey, it appears that psychiatry residents are being adequately trained in literature retrieval and critical appraisal, but there needs to be an improvement in research methodology, and biostatistics. Contributing

new knowledge was not considered an important outcome, and this attitude must change in order to fulfill the new requirements.

5.2 Resident Expectations

Clear definitions of resident expectations should be communicated early in the residency program and include a reasonable timetable. This survey clearly showed that many residents were not aware of the existence of an organized research curriculum. Residents need to know if research activity is mandatory or voluntary, and whether attendance at lectures, seminars, and journal clubs are compulsory. Many authors have recommended that a research project be included as a way of cementing research fundamentals. Generally, they recommend one long term project and one short term project.[51-53] However, it has not been proven that actually performing research is required to become an educated consumer of research.[54] Regardless, the RCPSC now expects residents to contribute to the development of new knowledge, and this could easily be accomplished by participating in a research project.

5.3 Research Director and Committee

Appointment of a research director was considered an important factor in the success of a research curriculum according to the program directors in this survey. It was also found that most programs already have a research director in place. A director is needed to motivate, mentor, monitor resident progress, and develop

curricular content.[55-57] One suggestion was that the research director should spend at least 50% of his/her time performing research and teaching research techniques.[58] A research committee can help provide a constructive evaluation process as well as the above duties.

5.4 Structured Curricular Content

Directors viewed an organized research curriculum as the most important factor in the success of a research curriculum, however, only 9/14 programs claimed to have an organized research curriculum already in place. A research curriculum must include, at the very least, teaching in critical appraisal skills, literature retrieval, epidemiology, research methodology, medical statistics, bioethics, and quality assurance principles in order to meet the Royal College's minimum training objectives. Several authors noted the importance of learning the above listed skills and have also suggested that presentation skills, computer skills, MEDLINE searches, writing skills, and grant application skills be included.[59-66] Many of these areas could be introduced gradually and in conjunction with ongoing research projects. They can be taught in didactic lectures, problem based learning seminars, journal clubs, ongoing research projects, grand rounds, and even in daily clinical rounds.

Paniagua *et al.* used programmed instruction manuals or "booklets" with clinically relevant articles to illustrate important points to their child psychiatry residents. They made four key recommendations in their paper. First, to emphasize

clinical or treatment research to maintain resident interest. Second, to translate complex materials into easily understandable language. Third, principles should be taught by clinician-researcher faculty so that the language used by the instructor resembles the language used by the resident, and this would also allow for clinical examples to naturally emerge. Fourth, emphasis should be placed on the idea that research is a fundamental need to the survival and development of any discipline and that you don't have to become a full-time researcher to use and appreciate research principles.[67]

Gibson *et al.* at the University of Calgary have suggested using a series of 5 papers in the CMAJ to introduce critical appraisal skills. Between sessions each resident selects his or her own article for critical evaluation.[68]

5.5 Periodic Research Meetings

Periodic research meetings on a weekly or monthly basis is a good way to foster enthusiasm and motivate residents.[69,70] It provides an opportunity to discuss any research in progress, plus share insights, ideas, and information.[71-73]

5.6 Protected Time

Lack of time is often perceived as a barrier to participation in research activities for both residents and faculty.[74-77] They believe that since they are already too busy, it will take away from their clinical responsibilities while also eroding any leisure or family time.[78,79] Residents in this survey perceived that most residents

conduct research after hours. Protected time could be used as an incentive for both residents and faculty. For residents, the option of a research elective or a half day per week would provide this much needed time.[80] This survey has shown that protected time is often available to residents in the form of an elective should they choose to use it, however, few programs offer a half day per week as an option.

5.7 Research Forum

A formal "Research Day" provides a forum for residents to present their findings and generate interest and enthusiasm within the program. Some suggestions include inviting a guest reviewer to judge and present a "best presentation/paper" award, inviting other guests and spouses, and complete the day with a banquet or picnic.[81,82] The purpose would be to reward faculty and residents in a supportive environment that emphasized participation, not just the results. It could be used to motivate residents to complete their projects by a specific date and also to build morale.[83,84]

5.8 Incentives

While our survey did not find that incentives offered by the program were very important to residents engaging in research activity, they may still serve as motivation for those already conducting research. It has already been noted in this survey that residents are not particularly enthusiastic about research, so resident motivation remains a challenging impediment. Research activity does not offer the

immediate gratification that clinical activity can provide, so incentives may still be useful.[85] Incentives might include such things as travel support, extra conference time, protected time, and a monetary prize for "best project".

5.9 Role Models and Mentors

During this survey, faculty role models and mentors were consistently identified as important to the success of a research curriculum and as the most important reason why residents engage in research. This finding was also supported in a survey of psychiatry faculty in Canada by el Guebaly *et al.* They found that the role of the mentor is consistently perceived as the most significant factor to the enticement to research.[86] Mentors were also recognized in this survey as the most available resource to residents interested in research. Having identified this, faculty role models need to be aware of their strong influence and be encouraged to continue their involvement in resident research. Faculty can be instrumental in reinforcing formal teaching in research by debating the current published research.

Faculty mentors should be given guidelines about mentor responsibility to aid their advising efforts and to assist in the development of resident research projects.[87-89]

5.10 Support Staff

This survey found that the second most available resource was statistical consultants, which is very important as residents often do not receive adequate

training in this area. Residents also require the help of writing consultants, and graphics design consultants, but these were not often seen to be an available resource. Library services are important in aiding the retrieval of medical literature and often provide information sessions on such. Administrative and secretarial supports are also important to aiding residents.

By incorporating these recommendations, residency programs will not only be able to train their residents to meet the RCPSC training objectives and requirements, but also provide residents with an education in research that will hopefully continue to guide their clinical practices.

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Appendix A

Sample Calculations

Table A.1 University Codes

University #	University name
1	Dalhousie
2	McGill
3	McMaster
4	Memorial
5	Queen's
6	Alberta
7	British Columbia
8	Calgary
9	Laval
10	Manitoba
11	Montreal
12	Ottawa
13	Saskatchewan
14	Sherbrooke
15	Toronto
16	Western Ontario

Each question was analysed within each university to compare resident responses with their own director. The data generated by the survey were grouped into 3 categories, therefore, the sample calculations contain one example from each category.

Example #1. Likert scale analysis

1.9 How would you rate the research productivity of the faculty associated with your residency training program?
(5= excellent, 1= poor)

	Mean director response (SD)	Mean resident response (SD)	response after approp. rounding	p - value Kruskal-Wallis	Higher/ Lower/ Equal than director
Overall	3.200(1.014)	3.234(1.128)	NA	0.785	NA
by Univ. #					
1	3	4.000(1.155)	4	0.365	H
2	5	3.500(0.707)	4	-	L
3	3	4.167(0.983)	4	0.280	H
4	3	2.158(1.119)	2	0.319	L
5	DNA	2.750 0.500	3	1.000	-
6	4	3.692 0.855	4	0.687	E
7	2	3.111 0.782	3	0.197	H
8	3	2.700 0.675	3	0.595	E
9	4	2.833 1.169	3	0.295	L
10	2	2.714 0.611	3	0.241	H
11	4	2.643 0.929	3	0.135	L
12	3	3.143 0.378	3	0.705	E
13	2	3.000 1.000	3	0.232	H
14	2	1.444 0.726	1	0.319	L
15	5	4.192 0.658	4	0.179	L
16	3	3.133 0.915	3	0.802	E

NA = Not Applicable
DNA = Did Not Answer
(–) = Analysis could not be done due to insufficient data

Note:

- The mean resident response was rounded to the nearest whole number in order to compare it to the director's response. Numbers that fell exactly on the half (i.e. 0.5) were rounded to the nearest even number.

Example #2. Analyses of questions that asked "circle one answer" from a list of mutually exclusive answers.

3.14 To whom is the resident most accountable in regards to research projects? (Circle one answer)

Overall	**Directors (%)**	**Residents (%)**
Research Mentor	10 (71)	112 (54)
Research director	0 (0)	11 (5)
Residency program director	2 (14)	23 (11)
Chairman of the discipline	0 (0)	0 (0)
No one in particular	1 (7)	13 (6)
Don't know	1 (7)	47 (23)
Other	0 (0)	2 (1)
	14	208

p–value (Chi-squared analyses) = 0.67

by Univ. #	Director response	residents who agree	% Residents who agree with their director	Programs in which </=50% residents agree with their director
1	mentor	6/8	75	
2	mentor	0/2	0	X
3	no one	0/7	0	X
4	mentor	6/20	30	X
5	mentor	4/4	100	
6	mentor	8/14	57	
7	mentor	7/10	70	
8	program director	4/11	36	X
9	DKA			
10	mentor	9/14	64	
11	mentor	2/15	13	X
12	program director	0/10	0	X
13	mentor	2/7	29	X
14	don't know	6/9	67	
15	mentor	38/53	72	
16	DKA			
		92/184 **50%** of all residents agree with their director		7/14 **50%** of programs have </=50% residents agree with their director

DKA = Did Not Answer

Note:

- Fisher exact results were used when an expected value was less than 5.

Example #3. Analysis of questions which asked "circle all that apply" or answer "yes/no".

2.6 In your opinion, do the residents in your training program get adequate training in: a) Literature retrieval

Overall
Directors "yes" = 12/16 = 75%
Residents "yes" = 109/206 = 53%
p – value (Chi-square analysis) = 0.09

by Univ. #	Director response	residents who agree	% Residents who agree with their director	Programs in which </=50% residents agree with their director
1	Y	6/8	75	
2	Y	½	50	X
3	Y	7/7	100	
4	N	9/20	45	X
5	Y	2/3	67	
6	Y	8/14	57	
7	N	8/9	89	
8	Y	7/10	70	
9	Y	3/6	50	X
10	Y	10/14	71	
11	Y	9/16	56	
12	Y	3/10	30	X
13	Y	6/7	86	
14	N	8/9	89	
15	Y	30/53	57	
16	N	12/15	80	
		129/203		4/16
		64% of all residents agree with their director		**25%** of programs have </=50% residents agree with their director

Note:

- Questions in which respondents were asked to "circle all that apply", a circled answer was considered a "yes" and an uncircled answer was considered a "no".
- Fisher exact results were used when an expected value was less than 5.

Appendix B

English Survey

Research Training in Post-Graduate Medical Education**

In order to provide a common understanding of the basic concepts central to this survey, the following definitions of terms will be used:

Hypothesis driven research refers to the *a-priori* establishment of a hypothesis, the collection of, and analysis of data with inferential or descriptive statistics.

Descriptive studies are observations not driven by a specific hypothesis, and may consist of a single case report, case series, or a description of a population.

Literature reviews do not involve the collection of original data or observations. They may be analytical reviews, which provide a comprehensive, critical assessment of the available published data on a particular subject. The data may be subject to meta-analytical techniques. The goal of the analytical review is to publish the "state of the art" of some important issue or practice.

Non-analytical reviews meet few or none of these criteria, but simply report on findings published in past and current literature without a critical, pre-designed framework of appraisal or statistical analysis.

INSTRUCTIONS

1. This questionnaire is divided into several sections. Please read the information at the beginning of each section carefully.

2. Please read each question carefully. Some questions ask you to "circle one answer," while others ask you to "circle all that apply" or to write a short answer. Please print as clearly as possible for the short answer questions.

3. When finished, please return your questionnaire in the postage-paid envelope.

Thank you for your participation.

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Section 1

This section asks specific questions about the demographics of your residency training program

1.1 What is the name of the University associated with your residency training program?

University: _____

1.2 What is your post-graduate training specialty? (please circle one response)

a). RCPSC

01). Anatomical Pathology
02). Anesthesia
03). Cardiac Surgery
04). Cardiology
05). Cardiothoracic Surgery
06). Clinical Immunology and Allergy
07). Clinical Pharmacology
08). Clinician Investigator Program
09). Colorectal Surgery
10). Community Medicine
11). Critical Care Medicine
12). Dermatology
13). Diagnostic Radiology
14). Emergency Medicine
15). Endocrinology and Metabolism
28). Medical Biochemistry
29). Medical Genetics
30). Medical Microbiology
31). Medical Oncology
32). Neonatal-Perinatal Medicine
33). Nephrology
34). Neurology
35). Neuropathology
36). Neuroradiology
37). Neurosurgery
38). Nuclear Medicine
39). Obstetrics and Gynecology
40). Occupational Medicine
41). Ophthalmology
42). Orthopedic Surgery

16). Gastroenterology
17). General Pathology
18). General Surgery
19). General Surgical Oncology
20). Geriatric Medicine
21). Gynecologic Oncology
22). Gynecologic Reproductive Endocrinology & Infertility
23). Hematological Pathology
24). Hematology
25). Infectious Diseases
26). Internal Medicine
27). Maternal-Fetal Medicine
43). Otolaryngology
44). Pediatrics
45). Pediatric General Surgery
46). Pediatric Radiology
47). Physical Medicine and Rehabilitation
48). Plastic Surgery
49). Psychiatry
50). Radiation Oncology
51). Respirology
52). Rheumatology
53). Thoracic Surgery
54). Urology
55). Vascular Surgery

b). CFPC

56). Family Practice

1.3 What is your current level of training/experience? (circle one answer)

a) Still in training:

PGY_1 PGY_2 PGY_3 PGY_4 PGY_5

b) Completed training:

1 year 2 years 3 years 4 years ≥ 5 yrs

1.4 Which of the following best describes the hospital(s) affiliated with your residency training program? (circle all that apply)

99

a) University	yes	no
b) Community (university affiliated)	yes	no
c) Community (not university affiliated)	yes	no
d) Other (please specify)	_____	

1.5 How many residents are in your training program?

a) PGY_1 _____
b) PGY_2 _____
c) PGY_3 _____
d) PGY_4 _____
e) PGY_5 _____
f) Total: _____

1.6 How many full-time faculty members are associated with your residency training program?

a) MD _____
b) PhD _____
c) Other (please specify) _____

1.7 How many part-time faculty members are associated with your residency training program?

a) MD _____
b) PhD _____
c) Other (please specify) _____

1.8 What percentage of faculty members are actively involved in research? (please indicate your best estimate)

a) MD _____

b) PhD _____

c) Other (please specify) _____

1.9 How would you rate the research productivity of the faculty associated with your residency training program? (circle one response)

Poor				Excellent
1	2	3	4	5

1.10 Overall, how qualified are the faculty within your program to teach the principles of research? (circle one response)

Not Qualified				Very Qualified
1	2	3	4	5

1.11 How many papers (average) do you know of that are/were published within the last year by faculty associated with your residency training program? (please indicate your best estimate)

_____

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Section 2

The following questions ask for your OPINION about resident research activity.

2.1 In your opinion, how important is it for residents to participate in research activities during their residency training ? (circle one response)

not important				very important
1	2	3	4	5

2.2 In your opinion, what is the relative importance of each of the following reasons why residents engage in research activity? (circle one response per line)

	not important				very important
a) Research activity is mandatory	1	2	3	4	5
b) Improve fellowship application	1	2	3	4	5
c) Improve curriculum vitae	1	2	3	4	5
d) Satisfy intellectual curiosity	1	2	3	4	5
e) Meet institutional requirements	1	2	3	4	5
f) Role Model/Mentor Encouragement	1	2	3	4	5
g) Incentives offered by program (travel, time off, etc.)	1	2	3	4	5

h) Other (please specify) _____

2.3 In your opinion, what is the relative importance of each of the following factors in the success of a research curriculum for residents? (circle one response per line)

	not important				very important
a) Faculty Role Models/Mentors	1	2	3	4	5

b) Research Director	1	2	3	4	5
c) Faculty Time	1	2	3	4	5
d) Faculty Interest	1	2	3	4	5
e) Resident Time	1	2	3	4	5
f) Resident Interest	1	2	3	4	5
g) Organized Research Curriculum	1	2	3	4	5
h) Funding	1	2	3	4	5
i) Administrative Support (computers, secretarial, research technicians)	1	2	3	4	5
j) Library Services	1	2	3	4	5
k) Medical Illustration/Graphics Support	1	2	3	4	5
l) Statistical Support	1	2	3	4	5

2.4 In your opinion, how important are each of the following outcomes for the residents in your training program? (circle one response for each line)

	not important				very important
a) Learn critical appraisal skills	1	2	3	4	5
b) Learn research skills	1	2	3	4	5
c) Complete a research project	1	2	3	4	5
d) Contribute new knowledge	1	2	3	4	5
e) Publications/presentations	1	2	3	4	5
f) Other	1	2	3	4	5

*(Please specify)*_____

2.5 In your opinion, how important is it for residents to acquire sufficient skills to perform any/all of the following? (circle one response for each line)

	not important				very important
a) Non-analytical literature reviews	1	2	3	4	5
b) Analytical literature reviews	1	2	3	4	5
c) Description of a population	1	2	3	4	5
d) Description of a case report	1	2	3	4	5
e) Description of a case series	1	2	3	4	5
f) Hypothesis driven research	1	2	3	4	5

2.6 In your opinion, do the residents in your training program get adequate training in: (please respond to each question)

a) Literature retrieval	yes	no
b) Critical appraisal	yes	no
c) Research design	yes	no
d) Research methodology	yes	no
e) Grant application	yes	no
f) Data Analysis	yes	no
g) Biostatistics	yes	no
h) Presentation skills	yes	no
i) Writing skills	yes	no

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Section 3

The following section asks questions about the research curriculum in your training program.

3.1 Are any of the following types of scholarly activities listed below MANDATORY requirements for residents in your training program? (circle all that apply)

a) Hypothesis driven research	yes	no
b) Single case report	yes	no
c) Case series	yes	no
d) Description of a population	yes	no
e) Systematic literature review	yes	no
f) Non-systematic literature review	yes	no
g) Other (please specify) _____		

3.2 Which of the following scholarly activities fulfill the MINIMUM expectations for resident research activity in your training program? (circle all that apply)

a) Hypothesis driven research	yes	no
b) Single case report	yes	no
c) Case series	yes	no
d) Description of a population	yes	no
e) Systematic literature review	yes	no
f) Non-systematic literature review	yes	no
g) Other (please specify) _____		

3.3 Does your training program have a Research Director to teach, coordinate, or direct resident research activities? (circle one answer)

yes (go to question 3.4) no (go to question 3.7)

3.4 Which of the following degrees is/are held by the Research Director? (circle one answer)

MD

Ph.D., Ed.D., Sc.D., M.P.H., or M.Sc.

MD + (Ph.D., Ed.D., Sc.D., M.P.H., or M.Sc.)

Other (please specify) _____

3.5 Is the Research Director also the Program Director? (circle one answer)

yes no

3.6 What is your best estimate of the percentage of time spent by the Research Director in the role of teaching, coordinating, or directing resident research activities in your training program? (circle one answer)

0-10% 11-20% 21-40% 41-60% 61-80% 81-100%

3.7 Do you have an organized research curriculum for the residents in your training program? (circle one answer)

yes (go to question 3.8) no (go to question 3.9)

3.8 How many years have you had an organized research curriculum for the residents in your training program?

_____ years

3.9 Does your training program provide formal, structured teaching for residents in any of the following areas? Please indicate if Mandatory, Voluntary, of Not Offered. (please circle one response for each line)

a) Critical appraisal	Mandatory	Voluntary	Not Offered
b) Literature retrieval skills *(ie MEDLINE, Grateful Med etc...)*	Mandatory	Voluntary	Not Offered
c) Computer skills *(ie word processing, graphics etc...)*	Mandatory	Voluntary	Not Offered
d) Grant application skills	Mandatory	Voluntary	Not Offered
e) Research methodology	Mandatory	Voluntary	Not Offered
f) Epidemiology	Mandatory	Voluntary	Not Offered
g) Survey design	Mandatory	Voluntary	Not Offered
h) Biostatistics	Mandatory	Voluntary	Not Offered
i) Medical informatics	Mandatory	Voluntary	Not Offered
j) Presentations skills *(ie writing, poster design, oral presentation skills)*	Mandatory	Voluntary	Not Offered

3.10 What format is used to present the research curriculum to the residents? (circle all that apply)

Longitudinal seminar series

Journal clubs

Lecture series

Other (please specify) _____

3.11 Overall, how accessible are the faculty within your program to residents interested in research? (circle one response)

Not Accessible				Very Accessible
1	2	3	4	5

3.12 Which of the following resources are available to residents within your program to support research? (circle one response for each line)

a) Personal computer	yes	no
b) Statistical software	yes	no
c) Research design consultants	yes	no
d) Statistical consultants	yes	no
e) Writing consultants	yes	no
f) Role models/mentors	yes	no
g) Graphics design consultants	yes	no
h) Data collection support *(ie research technician, research nurse, students etc...)*	yes	no

3.13 In general, the residents in your training program get research advice from: (circle all that apply)

The research director

Individual faculty members/mentors

Faculty from other departments

Don't know

Other (please specify) _____

3.14 To whom is the resident most accountable in regards to research projects? (circle one answer)

Research Mentor

Research Director

Residency Program Director

Chairman of the Discipline

No one in particular

Don't know

Other (please specify)

3.15 Which of the following statements best characterizes the resident research activity in your training program (circle one answer)

a). More than 50% of resident research activity is **RESIDENT** initiated

b). More than 50% of resident research activity is **FACULTY** initiated

c). Resident research activity in initiated **EQUALLY** as often by resident and faculty

3.16 Overall, how enthusiastic are residents in your training program about research? (circle one response)

Not at all				Very Enthusiastic
1	2	3	4	5

3.17 Overall, how would you rate the resident research productivity in your training program? (circle one response)

Not at all				Outstanding
1	2	3	4	5

3.18 Is protected time available for residents engaged in research activity? (circle one answer)

yes no

3.19 Which of the following statements best describes the availability of protected time for your residents? (circle all that apply)

a) Protected time is available as a mandatory rotation yes no

if "yes", please indicate the number of weeks/rotation _____

b) Protected time is available as an elective rotation yes no

if "yes", please indicate the number of weeks/elective _____

c) Protected time is available a few hours each week yes no

if "yes", please indicate the number of hours/week _____

d) Protected time is available during certain rotations yes no

if "yes", please indicate the number of hours/week _____

if "yes", please indicate the number weeks/year _____

e) Other (Please specify) _____

3.20 When do residents in your training program do research? (circle all that apply)

During working hours

After hours

Don't know

Other (please specify) _____

3.21 For the current academic year, in what types of research are the residents in your training program involved? (Please list your best estimate of the percentage)

a) Hypothesis driven research _____

b) Single case report _____

c) Series of cases _____

d) Description of a population _____

e) Systematic literature review _____

f) Non-systematic literature review _____

g) Unknown type of research _____

h) No resident participation _____

100%

3.22 For each year of training, what percentage of residents in your training program are involved in research activity? (please provide your best estimate)

a) PGY 1 _____%

b) PGY 2 _____%

d) PGY 4 _____%

c) PGY 3 _____%

3.23 By the end of their training, what percentage of residents in your training program have completed an acceptable research project?

_____%

3.24 What percentage of residents in your training program will publish/present their work within the next 2 years?

a) Local presentation _____ %

b) Regional presentation _____ %

c) National presentation _____ %

d) Non-peer reviewed publication _____ %

e) Peer reviewed publication _____ %

3.25 What are the consequences of a resident failing to meet the minimum research expectations in your training program? (circle all that apply)

a) Does not satisfactorily complete training program	yes	no
b) Receives a failing grade for this rotation	yes	no
c) Receives a note of reprimand in the evaluation file	yes	no
d) No action is taken	yes	no

e) Other (please specify) _____

Thank You

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Appendix C

French Survey

La formation en recherche dans le cadre de l'éducation médicale postdoctorale**

Afin d'assurer une même compréhension des concepts fondamentaux sur lesquels s'appuie le sondage, nous vous présentons ci-après la définition de la terminologie utilisée:

La recherche guidée par les hypothèses signifie l'élaboration a priori d'une hypothèse, puis la collecte et l'analyse de données, accompagnées de statistiques déductives ou descriptives.

Les études descriptives consistent en des observations qui ne sont pas guidées par une hypothèse précise et peuvent se traduire par un rapport sur un cas unique, des séries de cas ou la description d'une population.

Les études d'ouvrages scientifiques ne comportent pas de collectes de données ou d'observations inédites. Il peut s'agir d'études analytiques, qui présentent une évaluation critique exhaustive des données disponibles publiées sur un sujet particulier. Les données peuvent avoir fait l'objet de techniques méta-analytiques. Le but de l'étude analytique est de publier un ouvrage portant sur les données les plus récentes entourant un enjeu ou une pratique d'importance.

Les études non analytiques répondent à seulement certains ou aucun de ces critères, et se limitent à rapporter les conclusions publiées dans les ouvrages scientifiques antérieurs ou d'actualité, sans paramètres critiques préalables d'évaluation ou d'analyse statistique.

INSTRUCTIONS

1. Ce questionnaire comporte plusieurs volets. Veuillez lire attentivement les renseignements qui précèdent chaque section.

2. Veuillez lire attentivement chaque question. Certaines vous demandent de n'encercler qu'une seule réponse, tandis que d'autres vous demandent d'encercler toutes les réponses qui s'appliquent ou encore d'écrire une courte réponse. Dans ce dernier cas, nous vous prions d'écrire aussi lisiblement que possible.

3. Une fois le questionnaire rempli, veuillez nous le faire parvenir dans l'enveloppe pré-affranchie à cette fin.

Nous vous remercions de votre participation.
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Section 1

Les questions de la présente section concernent spécifiquement la démographie de votre programme de formation médicale postdoctorale.

1.1_ Quel est le nom de l'université associée à votre programme de formation médicale postdoctorale

Université: _____

1.2 Dans quelle spécialité se situe votre formation médicale postdoctorale? (Veuillez n'encercler qu'une seule réponse.)

a) CRMCC

01). Anatomo-pathologie
02). Anesthésie
03). Chirurgie cardiaque
04). Cardiologie
05). Chirurgie cardiothoracique
06). Immunologie clinique et allergies
07). Pharmacologie clinique
08). Programme des cliniciens chercheurs
09). Chirurgie colo-rectale
10). Médecine communautaire
11). Médecine des soins intensifs
12). Dermatologie
13). Radiologie diagnostique
14). Médecine d'urgence
15). Endocrinologie et métabolisme
16). Gastroentérologie
17). Pathologie générale
28). Biochimie médicale
29). Génétique médicale
30). Microbiologie médicale
31). Oncologie médicale
32). Médecine néonatale et périnatale
33). Néphrologie
34). Neurologie
35). Neuropathologie
36). Neuroradiologie
37). Neurochirurgie
38). Médecine nucléaire
38). Obstétrique et gynécologie
39). Médecine du travail
41). Ophtalmologie
42). Chirurgie orthopédique
43). Oto-rhino-laryngologie
44). Pédiatrie

18). Chirurgie générale

19). Chirurgie générale oncologique

20). Gériatrie

21). Oncologie gynécologique

22). Endocrinologie gynécologique de la reproduction et de l'infertilité

23). Pathologie hématologique

24). Hématologie

25). Maladies infectieuses

26). Médecine interne

27). Médecine maternelle et fœtale

45). Chirurgie générale pédiatrique

46). Radiologie pédiatrique

47). Médecine physique et réadaptation

48). Chirurgie plastique

49). Psychiatrie

50). Oncoradiologie

51). Pneumologie

52). Rhumatologie

53). Chirurgie thoracique

54). Urologie

55). Chirurgie vasculaire

b). CMFC

56). Exercice de la médecine familiale

1.3 Quel est votre niveau actuel de formation ou d'expérience ? (N'encerclez qu'une seule réponse)

a) Toujours en formation de résidence:

1e année 2e année 3e année 4e année 5e année

b) Formation complétée depuis:

1 an 2 ans 3 ans 4 ans $5 ans

1.4 Quelle description correspond le mieux à celle de l'hôpital ou des hôpitaux affiliés à votre programme de résidence? (Encerclez toutes les réponses qui s'appliquent.)

a) Universitaire oui non

b) Communautaire (affilié à une université) oui non

b) Communautaire (non affilié à une université) oui non

d) Autre (veuillez préciser.) _____

1.5 Combien y a-t-il de résidents dans votre programme de formation?

a) en 1e année _____

b) en 2e année _____

c) en 3e année _____

d) en 4e année _____

e) en 5e année _____

f) Total : _____

1.6 Combien y a-t-il de membres du corps professoral universitaire à temps plein associés à votre programme de résidence?

a) M.D. _____

b) Ph.D. _____

c) Autre (veuillez préciser.) _____

1.7 Combien y a-t-il de membres du corps professoral universitaire à temps partiel associés à votre programme de résidence?

a) M.D. _____

b) Ph.D. _____

c) Autre (veuillez préciser.) _____

1.8 Quel pourcentage du corps professoral participe activement à la recherche? (Veuillez donner votre meilleure estimation.)

a) M.D. _____

b) Ph.D. _____

c) Autre (veuillez préciser.) _____

1.9 Quelle cote accorderiez-vous à la productivité en recherche du corps professoral associé à votre programme de formation médicale postdoctorale?

Faible				Excellente
1	2	3	4	5

1.10 Dans l'ensemble, dans quelle mesure le corps professoral au sein de votre programme a-t-il les qualifications nécessaires pour enseigner les principes de la recherche? (N'encerclez qu'une seule réponse.)

Aucunement qualifié				Très qualifié
1	2	3	4	5

1.11 Combien de travaux scientifiques (en moyenne), à votre connaissance, sont ou ont été publiés au cours de la dernière année par les membres du corps professoral associés à votre programme de résidence? (Veuillez donner votre meilleure estimation.)

_____

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Section 2

Les questions suivantes sollicitent votre OPINION au sujet des activités des résidents en recherche.

2.1 À votre avis, quelle importance revêt la participation des résidents à des activités de recherche durant leur formation médicale postdoctorale? (N'encerclez qu'une seule réponse.)

Aucune importance				Beaucoup d'importance
1	2	3	4	5

2.2 Selon vous, quelle importance relative a chacune des raisons suivantes dans la motivation des résidents à entreprendre des activités de recherche? (N'encerclez qu'une réponse par ligne.)

	Aucune importance				Très importante
a) Le caractère obligatoire des activités de recherche	1	2	3	4	5
b) Pour appuyer la demande de bourse de recherche	1	2	3	4	5
c) Pour étoffer le curriculum vitae	1	2	3	4	5
d) Pour satisfaire la curiosité intellectuelle	1	2	3	4	5
e) Pour répondre aux exigences institutionnelles	1	2	3	4	5
f) L'encouragement prodigué par un modèle à suivre/un mentor	1	2	3	4	5
g) Les mesures incitatives offertes par le programme (voyages, congé, etc.)	1	2	3	4	5
h) Autres motifs (veuillez préciser) _____					

2.3 À votre avis, quelle importance relative a chacun des facteurs suivants dans la réussite d'un programme pédagogique en recherche à l'intention des résidents? (N'encerclez qu'une réponse par ligne.)

	Aucune importance				Très important
a) Le rôle de modèle à suivre ou de mentor des professeurs	1	2	3	4	5

b) Le directeur ou la directrice de la recherche		1	2	3	4	5
c) Le temps consacré par le corps professoral		1	2	3	4	5
d) L'intérêt manifesté par le corps professoral	1	2	3	4	5	
e) Le temps consacré par les résidents		1	2	3	4	5
f) L'intérêt manifesté par les résidents		1	2	3	4	5
g) Le programme pédagogique structuré en recherche		1	2	3	4	5
h) Le financement		1	2	3	4	5
i) Le soutien administratif (les ordinateurs, le secrétariat, les techniciens en recherche)	1	2	3	4	5	
j) Les services de bibliothèque		1	2	3	4	5
k) Les services en illustrations et en graphiques médicaux		1	2	3	4	5
l) Les services de soutien en statistique	1	2	3	4	5	

2.4 Selon vous, quelle importance revêt pour les résidents de votre programme de formation chacun des résultats suivants? (N'encerclez qu'une réponse par ligne.)

	Aucune importance				Très important
a) Acquérir des compétences en évaluation critique	1	2	3	4	5
b) Acquérir des compétences en recherche	1	2	3	4	5
c) Réaliser un projet de recherche	1	2	3	4	5
d) Contribuer à l'évolution du savoir	1	2	3	4	5
e) Les publications/les présentations	1	2	3	4	5

f) Autres résultats
(Veuillez préciser.) _____

2.5 À votre avis, dans quelle mesure est-ce important pour les résidents d'acquérir les compétences voulues pour effectuer une ou l'ensemble des activités suivantes? (N'encerclez qu'une réponse par ligne.)

	Aucune importance				Très important
a) Les études non analytiques des ouvrages scientifiques	1	2	3	4	5
b) Les études analytiques des ouvrages scientifiques	1	2	3	4	5
c) La description d'une population	1	2	3	4	5
d) La description d'un cas unique	1	2	3	4	5
e) La description d'une série de cas	1	2	3	4	5
f) Une recherche guidée par les hypothèses	1	2	3	4	5

2.6 Selon vous, les résidents dans votre programme de résidence reçoivent-ils suffisamment de formation dans les domaines suivants: (Veuillez répondre à chacune des questions.)

a) La recherche documentaire scientifique	oui	non
b) L'évaluation critique	oui	non
c) La conception de la recherche	oui	non
d) La méthodologie de la recherche	oui	non
e) Les demandes de subventions	oui	non
f) L'analyse des données	oui	non
g) La biostatistique	oui	non
h) L'art des présentations	oui	non
i) L'art de la rédaction	oui	non

Section 3

Les questions de la section suivante portent sur le programme pédagogique en recherche dans votre programme de formation médicale postdoctorale.

3.1 Les genres d'activités scientifiques énoncés ci-après sont-ils OBLIGATOIRES dans le cadre de votre programme de résidence? (Veuillez encercler les réponses qui s'appliquent.)

a) La recherche guidée par les hypothèses oui non

b) Les rapports sur un cas unique oui non

1) Les séries de cas oui non

2) La description d'une population oui non

3) L'étude systématique des ouvrages scientifiques oui non

4) L'étude non systématique des ouvrages scientifiques oui non

5) Autres activités (veuillez préciser)_____

3.2 Quelles activités, au nombre de celles indiquées ci-après, satisfont aux attentes MINIMALES en matière d'activités de recherche par les résidents, dans votre programme de formation? (Encerclez toutes les réponses qui s'appliquent.)

a) La recherche guidée par les hypothèses oui non

b) Les rapports sur un cas unique oui non

6) Les séries de cas oui non

7) La description d'une population oui non

8) L'étude systématique des ouvrages scientifiques oui non

9) L'étude non systématique des ouvrages scientifiques oui non

10) Autres activités (veuillez préciser.)_____

3.3 Votre programme de formation compte-t-il un directeur de la recherche pour enseigner aux résidents, coordonner et diriger leurs activités de recherche? (N'encerclez qu'une seule réponse.)

oui (passez à la question 3.4) non (passez à la question 3.7)

3.4 Quels diplômes détient le directeur ou la directrice de la recherche? (N'encerclez qu'une réponse.)

M.D.

Ph.D., Ed.D., Sc.D, M.P.H., ou M.Sc.

M.D. + (Ed.D., Sc.D, M.P.H., ou M.Sc.)

Autres diplômes (veuillez préciser.)_____

3.5 La personne titulaire du poste de directeur de la recherche assume-t-elle également le poste de directeur du programme? (N'encerclez qu'une réponse.)

oui non

3.6 Selon votre meilleure estimation, quel pourcentage de son temps consacre le directeur de la recherche aux activités d'enseignement, de coordination ou de direction des activités de recherche des résidents dans votre programme de formation? (N'encerclez qu'une réponse.)

0 -10 % 11 - 20 % 21 - 40 % 41 - 60 % 61 - 80 % 81 - 100 %

3.7 Disposez-vous d'un programme de recherche structuré à l'intention des résidents dans votre programme de formation? (N'encerclez qu'une réponse.)

oui (passez à la question 3.8) non (passez à la question 3.9)

3.8 Depuis combien d'années avez-vous un programme de recherche structuré à l'intention des résidents dans votre programme de formation?

_____ ans

3.9 Votre programme de résidence offre-t-il de l'enseignement formel et structuré aux résidents dans les domaines suivants? Veuillez indiquer s'il s'agit d'un sujet obligatoire, volontaire ou non offert. (Encerclez une réponse par ligne.)

a)	Évaluation critique	Obligatoire	Volontaire	Non offert
b)	Aptitudes en recherche documentaire scientifique (Par ex. Medline, Grateful Med, etc.)	Obligatoire	Volontaire	Non offert
c)	Compétences en informatique (Par ex. Traitement de textes, graphiques, etc.)	Obligatoire	Volontaire	Non offert
d)	Compétences en demande de subventions	Obligatoire	Volontaire	Non offert
e)	Méthodologie de la recherche	Obligatoire	Volontaire	Non offert
f)	Épidémiologie	Obligatoire	Volontaire	Non offert
g)	Conception d'enquêtes	Obligatoire	Volontaire	Non offert
h)	Biostatistique	Obligatoire	Volontaire	Non offert
i)	Informatique médicale	Obligatoire	Volontaire	Non offert
j)	Art de la présentation (Par ex. Rédaction, conception d'affiches, art oratoire)	Obligatoire	Volontaire	Non offert

3.10 À quels modes de présentation a-t-on recours pour dispenser le programme de recherche aux résidents? (Encerclez toutes les réponses qui s'appliquent.)

Une série longitudinale de séminaires

Des clubs de lecture

Une série de cours magistraux

Autres modes (Veuillez préciser.) _____

3.11 En général, dans quelle mesure le corps professoral est-il accessible aux résidents qui s'intéressent à la recherche dans votre programme de résidence? (N'encerclez qu'une réponse.)

Aucunement accessible				Très accessible
1	2	3	4	5

3.12 Au nombre des ressources suivantes, lesquelles sont disponibles aux résidents dans votre programme de formation à l'appui de la recherche? (Encerclez une réponse par ligne.)

a)	Ordinateur personnel	oui	non
b)	Logiciels statistiques	oui	non
c)	Consultants en conception de la recherche	oui	non
d)	Consultants en statistique	oui	non
e)	Consultants en rédaction	oui	non
f)	Modèles à suivre/mentors	oui	non
g)	Consultants en conception graphique	oui	non
h)	Soutien à la collecte de données (Par ex. des techniciens, des infirmières en recherche, des étudiants, etc.)	oui	non

3.13 En règle générale, les résidents dans votre programme de formation obtiennent des conseils en matière de recherche auprès des personnes suivantes : (Encerclez toutes les réponses qui s'appliquent.)

Le directeur ou la directrice de la recherche

Des membres du corps professoral / des mentors sur une base individuelle

Des professeurs d'autres départements

Je ne sais pas

Autres sources (Veuillez préciser.) _____

3.14 À qui le résident doit-il d'abord rendre compte de ses projets de recherche? (N'encerclez qu'une réponse.)

Le mentor en recherche

Le directeur de la recherche

Le directeur du programme de résidence

Le directeur de la discipline en question

Personne en particulier

Je ne sais pas

Autres personnes (Veuillez préciser) _____

3.15 Quel énoncé parmi les suivants décrit le mieux les activités de recherche des résidents dans votre programme de formation? (N'encerclez qu'une réponse.)

a) Plus de 50 % des activités des résidents en recherche sont initiées par le RÉSIDENT.

b) Plus de 50 % des activités des résidents en recherche sont initiées par le CORPS PROFESSORAL.

c) Les activités des résidents en recherche sont AUSSI SOUVENT initiées par les résidents que par les professeurs.

3.16 Dans l'ensemble, dans quelle mesure les résidents dans votre programme de résidence sont-ils enthousiastes à l'égard de la recherche? (N'encerclez qu'une réponse.)

Sans enthousiasme — Très enthousiastes

1 2 3 4 5

3.17 Dans l'ensemble, quelle cote accorderiez-vous à la productivité des résidents en recherche dans votre programme de formation? (N'encerclez qu'une réponse.)

Nulle — Exceptionnelle

1 2 3 4 5

3.18 Offre-t-on du temps protégé aux résidents qui participent à une activité de recherche? (N'encerclez qu'une réponse.)

oui non

3.19 Lequel des énoncés suivants décrit le mieux la disponibilité de temps protégé pour vos résidents? (Encerclez toutes les réponses qui s'appliquent.)

a) Du temps protégé est offert dans le contexte d'un stage obligatoire. oui non

Dans l'affirmative, veuillez indiquer le nombre de semaines par stage. ____

b) Du temps protégé est offert dans le contexte d'un stage optionnel. oui non

Dans l'affirmative, veuillez indiquer le nombre de semaines par stage optionnel. ____

c) Du temps protégé est offert sous forme de quelques heures par semaine. oui non

Dans l'affirmative, veuillez indiquer le nombre d'heures par semaine. ____

d) Du temps protégé est offert durant certains stages. oui non

Dans l'affirmative, veuillez indiquer le nombre d'heures par semaine. ____

Dans l'affirmative, veuillez indiquer le nombre de semaines par année. _____

e) Autre (Veuillez préciser.) _____

3.20 Quand les résidents dans votre programme de formation font-ils de la recherche? (Encerclez toutes les réponses qui s'appliquent.)

Durant les heures de travail

Après les heures de travail

Je ne sais pas

Autre (Veuillez préciser.) _____

3.21 Durant la présente année universitaire, dans quels genres d'activités de recherche participent les résidents de votre programme de formation? (Veuillez indiquer votre meilleure estimation des pourcentages.)

1) Recherche guidée par les hypothèses _____
2) Rapport sur un cas unique _____
3) Série de cas _____
4) Description d'une population _____
5) Étude systématique des ouvrages scientifiques _____
6) Étude non systématique des ouvrages scientifiques _____
7) Genre de recherche inconnu _____
8) Aucune participation des résidents _____

100 %

3.22 Pour chaque année de formation, quel pourcentage des résidents dans votre programme de résidence participent à des activités de recherche? (Veuillez donner votre meilleure estimation.)

a) Résidents de 1e année _____%
b) Résidents de 2e année _____%
c) Résidents de 3e année _____%
d) Résidents de 4e année _____%
e) Résidents de 5e année _____%

3.23 Au terme de leur résidence, quel pourcentage des résidents dans votre programme de formation ont complété un projet de recherche acceptable?

_____%

3.24 Quel pourcentage des résidents dans votre programme de formation publieront ou présenteront leurs travaux de recherche au cours des deux prochaines années?

a) Présentation locale ____%
b) Présentation régionale ____%
c) Présentation nationale ____%
d) Publication non révisée par des pairs ____%
e) Publication révisée par des pairs ____%

3.25 Quelles conséquences entraîne le défaut de satisfaire aux exigences minimales en recherche dans votre programme de résidence? (Encerclez toutes les réponses qui s'appliquent.)

a) Ne complète pas le programme de résidence de manière satisfaisante. oui non

b) Reçoit une note d'échec pour ce stage. oui non

c) Reçoit une note de réprimande dans son dossier d'évaluation. oui non

d) Aucune mesure n'est prise. ui non

e) Autre (Veuillez préciser.) _____

Merci

Merci d'envoyer votre reponse par telecopier au:

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