

**IMPROVING THE EXPERIENCES OF SOCIAL SCIENCES & HUMANITIES (SSH)
POSTDOCTORAL FELLOWS IN CANADA**

*A report on the training, career development needs and administration of
postdoctoral fellows in the social sciences and humanities*

**Talent Program Architecture (PA) Renewal Exercise:
SSHRC Postdoctoral Fellowships (S-PDF)**

Prepared by the Canadian Association of Postdoctoral Scholars / l'Association Canadienne des
stagiaires postdoctoraux (CAPS-ACSP)

for the

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Executive Summary

The Social Sciences and Humanities Research Council of Canada / Conseil de recherches en sciences humaines du Canada (SSHRC/CRSH) is reviewing the training, career development needs, and administration of postdoctoral fellows ('postdocs') in the social sciences and humanities. Under consideration are proposals to shift SSHRC Postdoctoral Fellowships (S-PDF) to a model of co-delivery with universities and to require prospective host institutions to submit research training plans as part of the SSHRC PDF application process.

In 2013, SSHRC management invited the Canadian Association of Postdoctoral Scholars – l'Association Canadienne des stagiaires post-doctoraux (CAPS-ACSP, hereafter "CAPS") to participate in this discussion by reviewing current literature on postdoctoral fellows (PDF), soliciting feedback and suggestions from key stakeholders on how best to implement proposed changes, preparing a report for consultation by SSHRC in its decision making process, and co-organizing a workshop with key stakeholders. CAPS also analyzed a sample of data from 165 postdocs' final evaluation reports from 2009-2011 to help determine what the needs of SSHRC funded social sciences and humanities S-PDF were in relation to training.

Canadian and international literature on PDF and stakeholder feedback identified advantages and disadvantages of the proposed co-delivery model. Better institutional focus of resources, dedicated staff, greater consistency of PDF experiences among and within institutions, and more active engagement of the supervisor, the institution, and the postdoc as partners are potential benefits. Challenges include the burdens of increased monitoring and accountability, the potential imposition of standards that may not fit all situations, and differing institutional ability to implement co-delivery. This report provides recommendations regarding the establishment of expectations around communication, collaboration, and information sharing between postdocs, supervisors, administrators, and funders.

Stakeholder discussions and postdoc evaluation data reveal a gap between postdocs' aspirations for an academic career and the reality of a dwindling number of academic positions. Teaching experience remains an aspect of training most desired by S-PDF, despite the increasing reality that many will not secure an academic position. A 2013 survey of 1850 postdocs in Canada, including 250 social science and humanities postdocs (Mitchell et al, 2013) found that in this and other areas, training of postdocs is not adequately meeting needs and that more could be done to provide postdocs with training for both academic and non-academic employment.

Training may refer to specific skills development or more generally to professional career development. We recommend the term “career development,” which encompasses the development of career skills, knowledge, and abilities (where ability is defined as capacity to respond, initiate or lead). The career development objectives recommended in this report are meant to enhance opportunities consistent with SSHRC goals of supporting the development of careers in research excellence in a variety of environments. The provision of additional training during the postdoc period will better equip postdocs for academic and non-academic employment, consistent with the Talent program objective of developing “the next generation of researchers and leaders needed in academia and across the public, private and not-for-profit sectors” (SSHRC, 2010b, p. 7). Feedback from those who attended a workshop in November 2013 on improving postdoctoral experiences and the other information reviewed, converges on a focused set of recommendations which address proposed changes to research training plans and co-delivery. In making these recommendations for career development support, we recognize postdoctoral scholars as fully research prepared, yet at beginning stages of their careers. There are three main areas of recommendation, which are detailed in the body of the report.

1. Research and Training Plans

- A. As surveys of postdocs show, training tends to be implicit, on the job, or not available. In addition, S-PDF in Canada want more teaching and language training than other postdocs. However, more needs to be known about preparing S-PDF for a wide variety of advanced careers in the arts, education, business, law, the humanities and the social sciences. Training can then be made consistent with goals for excellent scholarly work. Plans should articulated with specific goals as this enables shared responsibilities for support.
 - 1. Develop a systematic approach to training consistent with goals of research excellence.
 - 2. Identify best practice guidelines for discipline specific career trajectories.
 - 3. Develop concrete plans for achieving goals linked to intermediate measureable objectives
 - 4. Develop common training plan areas that include: (a) teaching; (b) explicit training in grant writing and development; (c) explicit support for networking and collaboration opportunities; (d) development of presentation skills; (e) development of written and oral language skills; (f) publishing and writing training, and; (g) identification of a framework for evaluating results.
- B. The early career position of postdocs means that they occupy a critical juncture in the academic career trajectory. As the UK Vitae CROS survey demonstrates, equity can be tracked at this stage.
 - 1. Prepare a plan to identify core values, including equity, for S-PDF training supports.
- C. Roles and Responsibilities. Currently responsibility for training is not clear, although various approaches (U.K. and U.S.) emphasize the central role of the postdoc in implementing their own plans. In particular, a higher proportion of S-PDF compared to all postdocs report that their supervisors “neither encourage nor discourage” training. Since

postdocs on fellowships currently may only be administratively connected to their host institutions through their supervisor/mentor, it becomes very important to understand why a greater proportion of postdoc supervisors are passive on this issue. Postdoc supervisors, with their greater institutional knowledge, should support and encourage formal training. We recommend (a) Adoption of an IDP plan which is signed off will enable discussion around implementation and enable support and (b) clarification of roles as a starting point, as well as exploration of potentially effective mentoring practices for supervisors.

2. **Co-delivery.** At the time of the preparation of this report, co-delivery was a model under review. In anticipation of potential implementation, the Montreal workshop discussion focused on several key issues, including: (a) Identifying and clarifying roles and responsibilities; and (b) identifying whether or how residency would be a requirement. It is recommended that a national reference committee be established consisting of representatives of institutions, postdocs, funders, and supervisors. In addition, it is recommended that recognition of individual institutional variation be recognized, as the capacity to implement co-delivery will vary.

3. **Documentation and Evaluation.** No other focused reviews of S-PDF were found. Funders and institutions have the opportunity to continue to build a remarkable and unique font of information through the regular reporting structures that are already established. We recommend supplementing the reporting process by:
 - A. Establishing a goal to research current academic and non-academic career trajectories for S-PDF postdocs, as little is documented beyond general trends for all postdocs.
 - B. Establishing a scaled questionnaire linked to individual S-PDF career training plans which allows for annual automated tabulation of progress against goals in broad areas (suggested above). This will establish a data base which can be made available for trend analysis.
 - C. Establish a biannual reporting cycle for comparing postdoc progress against their own self-identified training objectives, linked to thresholds which might merit investigation about supports (for example, if a postdoc are is only achieving 20% of stated training goals). Require a scaled completion report.
 - D. If co-delivery is implemented, implement a satisfaction survey to assess progress and in each year, for five years, report out on results, application process best practices, roles and responsibilities, and satisfaction in relation to the development toward SSHRC goals of developing research excellence.

We recommend the development of training plans that will provide postdocs with the skills they need to succeed in diverse employment contexts. We appreciate the opportunity to contribute to this meaningful review and discussion on how to meet the needs of Canada's postdoctoral scholars and support the goal of excellence in research careers.

Acknowledgements

It has been our great pleasure to work with the Research Training Portfolio division of SSHRC, under the professional leadership and extremely able direction of Craig McNaughton. We particularly applaud the foresight to convene a workshop between stakeholders in Montreal at the conjoint annual meetings of the Canadian Association of Postdoctoral Administrators (CAPA-ACAP) and the Canadian Association of Postdoctoral Scholars (CAPS-ACSP). Discussing issues in person provided invaluable insights and Melanie Drouin-Dion worked tirelessly to ensure the workshop was a great success. Claudie Gosselin, Division Manager, was a pleasure to work with and provided much assistance to the developing project. As others have noted, SSHRC has a long tradition of promoting world class excellence in research. The Research Training Portfolio division proved this reputation by taking the lead in exploring, first, the unique position of postdoctoral scholars and second, the unique experiences of social science and humanities (SSH) scholars.

All of the participants of the November workshop contributed their time generously to the discussion. Representatives of the Natural Sciences and Engineering Research Council of Canada (NSERC), SSHRC, the Banting Postdoctoral Fellowships ('Banting'), the Canadian Federation for the Humanities and Social Sciences, the Canadian Institutes of Health Research (CIHR) and the Canadian Association of Postdoctoral Administrators (CAPA) provided essential and thoughtful input from a variety of experienced perspectives. Regrettably, representatives of Mitacs were unable to attend at the last moment. Postdoctoral supervisors were represented by Mary Ellen Kelm (SFU), who was present, and Martin Kreiswirth (McGill), who gave feedback early in the development process. In addition, six postdocs of various disciplines (law, education, art history, sociology, psychology, and anthropology) were able to provide diverse postdoctoral perspectives, with some of the elected officers of CAPS providing further contributions.

Thanks are also due to those who made specific contributions to the preparation of this report. The entire executive council of CAPS, representing postdoc associations across Canada, and Canadian postdocs outside of Canada, provided input and review. Jeremy Mitchell, past chair of CAPS (2011/12), prepared the SSH data analysis which is presented as an appendix to the discussion paper. Shuhua Chen conducted an extensive literature review which provided the basis for the review presented here. Ariane Noel de Tilly, in addition to participating in the November workshop, provided a close review of the document and prepared supplementary postdoctoral supervisor questions. Silvia Vilches, current chair of CAPS, co-wrote the discussion paper for the November workshop and contributed to the writing of this report. In addition, Laurie Tallotte and Michaël Houle, both at the Université de Montréal, provided essential organizing assistance and note taking for the November workshop. Project oversight and completion of the report was provided by Silvia Vilches and Abdi Ghaffari, VP Finance.

We look forward to an ongoing dialogue focused on enhancing the experiences of S-PDF and contributing to excellence in scholarship within and outside of Canada.

Prepared by the Canadian Association of Postdoctoral Scholars l'Association Canadienne des stagiaires postdoctoraux (CAPS-ACSP)

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Background

Since 2010, SSHRC has been renewing its program architecture (PA) to create a simpler, more flexible and effective application and assessment system. The current focus in this renewal process is on SSHRC's Talent program, the mandate of which is to support graduate students and postdoctoral fellows in order to "develop the next generation of researchers and leaders needed *in academia and across the public, private and not-for-profit sectors" (SSHRC, 2010b, p. 7). Changes to SSHRC postdoctoral funding were developed taking into account recommendations identified in the 2012 SSHRC Postdoctoral Fellowships Evaluation. **Phase 1** of the SSHRC PDF (postdoctoral fellowship, or S-PDF) changes has already taken place, increasing the level of the award, reducing the span of time in which a candidate may apply after completing their doctorate, eliminating the research allowance, and aligning the evaluation criteria with other SSHRC funding opportunities (CAPS-SSHRC, 2013, p. 1). Two additional proposals are being considered as part of the **Phase 2** PA changes:

- Require prospective host institutions to submit research training plans as part of the SSHRC Postdoctoral Fellowship application; and
- Shift the SSHRC Postdoctoral Fellowships to the model of co-delivery with universities.

SSHRC management invited the Canadian Association of Postdoctoral Scholars – l'association Canadienne des stagiaires post-doctoraux (CAPS-ACSP, hereafter "CAPS") to solicit feedback and suggestions from key stakeholders on how best to implement these changes, and to prepare a report based on this feedback and other information for consultation by SSHRC's Research Training Portfolio (RTP) in its decision making process.

CAPS is a committee of postdoctoral scholars and representatives who discuss issues of concern to postdoctoral scholars ('postdocs') across the country. CAPS seeks to bring about changes that will benefit all postdocs nationally, and consequently benefit all parties interested in seeing scholarship flourish in Canada. CAPS aims to:

- provide a focal point for the expression of the views and needs of postdocs at national, regional, and institutional levels in matters concerning postdocs;
- facilitate the establishment of best practice policies for the postdoctoral training and work environment, and to encourage their implementation by institutions and postdocs;
- provide support to existing institutional postdoctoral associations as well as aid in the establishment of new postdoctoral associations at institutions that currently have no such association; and
- enter into meaningful dialogue with the appropriate institutional representatives, funding agencies, professional organizations, and government bodies to identify solutions and bring about improvements in the current postdoctoral situation at the national level.

Methodology and Key Questions

Three original sources of data, which were examined to answer the questions about training needs and delivery models. These included a separate analysis of the S-PDF experiences, excerpted from the 2013 Canadian survey of postdocs (CAPS-ACSP, 2013) and presented in Appendix D, Discussion Paper. Second, a stakeholder workshop was held in November 2013 in Montreal to discuss training and possible co-delivery (CAPS-SSHRC, 2013). A discussion paper was provided essential information to key stakeholders prior to the Montreal workshop (CAPS, 2013; see Appendix D), and a review of relevant literature for the discussion paper helped focus the analysis and develop a list of important questions to be addressed. Finally, data provided by SSHRC on postdocs' evaluations of their postdoctoral experience were also reviewed. This section describes these sources of data and the review undertaken for this report, presenting comments on the information before proceeding to two thematic sections which are focussed on of training and co-delivery.

Sources of Information

Literature review

A review was conducted of relevant Canadian and international literature published between 2000 and 2013 relating to SSHRC program architecture, the state of postdoctoral education in Canada and internationally, postdocs' needs, and models of co-delivery. A review of the literature was provided in a discussion paper, which was prepared in October 2013. This was distributed to key stakeholders who were invited to participate in a workshop in Montreal on November 2, 2013. Following the workshop, a more in-depth review was conducted, confirming the limited availability of information and the themes of the preliminary review. This report provides a brief summary of the most relevant points from the literature review.

CAPS-SSHRC workshop and focus groups

The Montreal workshop considered strategies for postdocs and solutions to address postdocs' professional development needs, and attendees were consulted about training plans and co-delivery in order to set common objectives. Key stakeholder groups were encouraged to consult colleagues prior to the workshop. Discussion points and feedback from the workshop are outlined in this report and reflected in the recommendations.

S-PDF evaluation data

Postdoc evaluation data for competition years 2009-2011 were supplied by SSHRC and have been reviewed and summarized for this report. These comprised the Form 10B "Final Report/Rapport final" submitted by the postdoc and, in most cases, a report on their activities and achievements during the tenure of the fellowship. A total of 165 evaluations (135 in English; 30 in French) were received from SSHRC, all but one including Form 10B. Form 10B includes a rating of the postdoc's

experience during the tenure of their fellowship according to five ratings, from “Poor” to “Outstanding.” Ratings data are tabulated later in this report.

This report provides an overview of the themes of the evaluation reports and the results of a purposive sampling of evaluations from the five rating categories. A close reading was done of four evaluations for each of the categories “Outstanding,” “Very Good,” and “Good,” and both evaluations in which the rating was “Fair.”

Key Questions

The literature review revealed that little is systematically documented about SSH postdocs, in spite of the 2013 survey of Canadian postdocs and dedicated attention by SSHRC and other funding bodies. In October 2013, CAPS developed discussion questions on the needs of postdocs, the opportunities available within our current structure, and the future context, which is increasingly interdisciplinary and international. These questions were the focus of the workshop held in Montreal in November 2013 (CAPS-SSHRC, 2013). Discussion questions focused on the development of a research training plan and the proposed co-delivery model.

Research Training Plan

Training related information suggests that there may be a mismatch between the training provided to S-PDF and the training that is desired (CAPS-SSHRC, 2013, p. 8). The key question CAPS addressed in relation to research training was: What would be included/covered in the ideal Research Training Plan? Is training the correct word? Related questions included:

- What are the needs of SSHRC postdocs?
- Is there a mismatch between the modes of delivery of training to S-PDF and the types of training made available?
- What training will support the development of excellence in research, including exploration of knowledge, development of impacts, and development of career trajectories in research?
- Would a broader approach to training inclusive of a variety of career outcomes be more useful to the application of research skills in a variety of public, private and not-for-profit settings?
- What resources and information are available to supervisors/mentors as well as postdocs themselves about training, career opportunities, and research development? Are supervisors sufficiently equipped?
- How does Canada benefit from the international exchange of postdocs, and do Canadian postdocs benefit from this international exchange?
- Does the term “Research Training Plan” reflect the desired concept? Would “Individual Training and Development Plan” be more appropriate/accurate?
- Are there specific gendered experiences that would impact career development and training support needs?

Co-delivery Model

As this consultation was evolving, co-delivery was being focused on as the possible means of delivery. The discussion paper (CAPS-SSHRC, 2013) identified the following as important questions for consideration regarding the proposed co-delivery model:

- What strengths and opportunities for improvements and/or challenges exist in the current administrative structure of postdoctoral appointments?
- Which elements of the life cycle of a post-doctoral fellowship should be co-delivered: Adjudication (in terms of pre-selection)? Post-award administration? Or would providing training and professional development to postdocs as well as setting up postdoctoral offices constitute sufficient co-delivery, on the universities' part?
- How would co-delivery be implemented in the cases of fellowships held overseas or in other sectors (NGOs, public sector, etc)? What is realistic and desirable?
- Taking into account the issues raised in the questions above, and looking at the different models presented – Banting, provincial models, and the current SSHRC status quo model – what would be the ideal co-delivery model and why?

S-PDF Career Development and Training Needs

The Status of S-PDF in Canada

The most direct information about the current situation of postdoctoral training in Canada comes from the 2013 survey of Canadian postdocs. The survey included 250 S-PDF, 13.7% of the self-selected sample of 1830. If the sample represents approximately 20-25% of all Canadian postdocs, then there are approximately 1000 to 1250 S-PDF in Canada. The survey identifies several issues of concern about the status of S-PDF and access to benefits, which set the context for training. First, there are a plethora of institutional arrangements. Postdocs may be appointed or referred to as employees, trainees/students (primarily in Quebec), visiting scholars, or teaching fellows, among other statuses. There is a relatively low level of access to benefits for S-PDF and a relatively high level of dissatisfaction with compensation levels. Fellowships dominated as the primary source of funding for S-PDF (48.8% vs. 19.8% for all postdocs). Since the pre-2013 SSHRC compensation was lower than for fellowships from the other federal granting agencies' fellowships, the greater reliance on fellowships meant that S-PDF compensation was also lower at between \$35,000 and \$40,000 compared to \$40,000 to \$45,000 for all postdocs in the sample. In contrast, the proportion of S-PDF postdocs who relied on their supervisor's research grants was 22.4%, compared to 48.5% of all postdocs. The survey showed that those receiving funding through research grants tended to be appointed as employees and paid through university payroll. Employee status is connected to access to benefits; consequently, S-PDF report lower levels of access to benefits (CAPS-SSHRC, 2013; Mitchell et al., 2013).

2013 Survey Results: Career Development and Training Opportunities for S-PDF

The most current and complete source of information about S-PDF access to career supports and training was through the 2013 CAPS-ACSP survey. The results showed that S-PDF have less access to a range of training supports than the survey average, but differed in interesting ways. For example, S-PDF had greater access to informal research ethics training (18.3%), informal teaching training (16.2%), and informal negotiating skills training (9.2%). However S-PDF had less access to formal training opportunities, except in the area of teaching training, which was equal for all the postdocs. The gap between available training and uptake was also smaller for S-PDF. However, the overall level of training was low for all postdocs; even the most commonly accessed training, which was to informal opportunities for presentation skills training, only included 25.6% of all postdocs. Overall, the majority of responses in all categories indicated that training was either not available or not known to be available, including for S-PDF (CAPS-SSHRC, 2013).

The literature review, which provided background information for the CAPS-SSHRC Montreal workshop, confirmed that few publications have focused on the state of postdoctoral education or training, and fewer still have any comment on S-PDF career preparation or training needs. Most reports focus on the experiences of postdocs in the natural sciences, engineering, and/or life sciences due to the quantitative dominance of these research areas (see: Black & Stephan, 2010; EKOS Research Associates, 2013; National Academy of Sciences, 2000; National Science Foundation, 2009). Even though most reports do not focus on S-PDF experiences, additional information is available from reviews of the internationalization of research training and education (Black & Stephan, 2010) and the experiences of career and term instructors (American Federation of Teachers, 2010). The most comprehensive and systematic information, though, is

available from the UK Vitae association which has established an agreement including training and career development between institutions of higher education in the U.S. (Vitae, 2013).

To provide continuity and comparability, the questions on training asked in the 2013 survey were based on the 2009 survey of Canadian postdocs and the questions asked in the U.S. Sigma Xi survey (see Figure 1 Training Categories) (CAPS-ACSP, 2009; Davis, 2005). The latter survey, conducted by Sigma Xi Scientific Research Society in partnership with the American National Postdoctoral Association, focused on postdocs in natural and health sciences and engineering, but nevertheless, provided a comprehensive foundation for developing questions. The list of questions can be compared to the UK Vitae association CROS survey list (Vitae, 2013), though the Canadian list is somewhat narrower, as the CROS survey also surveys career development opportunities for staff,

<u>Postdoc Training Options</u>
<ul style="list-style-type: none">• Career development• Research ethics• Teaching skills• Presentation skills• Grant or proposal writing• Project management• Writing skills• Intellectual property• Group or lab management• English language skills• Conflict resolution skills• Negotiating skills• French language skills

Figure 1 Training Categories listed in the 2013 CAPS-ACSP / Mitacs Survey

such as collaboration with colleagues. In the CAPS-ACSP 2013 survey, though, a distinction is made between formal and informal opportunities, and between training taken, training available, and training desired.

The main results are reported in the 2013 report (Mitchell, et al, 2013) and show that across all domains, more informal than formal training is available, availability of any training is low, and there are unexplained gaps between availability and uptake. There are differences in training preferences between S-PDF and all postdocs (see Appendix D), which are reflected in training taken and not taken. For example, 70.2% of S-PDF wanted grant writing training. However, 53.2% reported that it was either not available or not known to be available. Of those who indicated training was available, 28.9% were accessed informal or formal opportunities, but an additional 17.9% who had access to training opportunities, did not take advantage of them (CAPS-SSHRC, 2013). The 2013 report also indicated a higher proportion of women S-PDF compared to all postdocs, and while gender differences in post-graduate training and career development experiences are well documented in the sciences, they remain to be assessed for S-PDF. Finally, we also note that according to the 2013 survey of Canadian postdocs, a lower proportion of S-PDF desired English language training, and a greater proportion preferred French language training (CAPS-SSHRC, 2013; Mitchell et al., 2013). The differences raise questions about the suitability of training, the support for it within the institutional environment (is training accessible, for example) and priorities.

Discussion of Training and Development at the the CAPS-SSHRC Montreal Workshop

The main focus of the CAPS-SSHRC workshop was on training and career development. Discussion focused on what kinds of training would be beneficial and how training could be achieved, given the constraints on funding, staffing, and employment opportunities. The workshop referred to a model promoted by the National Postdoctoral Association (NPA) of the U.S., which includes both an individual development plan (IDP) and a mentoring plan (see Appendix C).

Workshop participants identified the importance of collaboration and coordination in achieving high quality, consistent training. The following suggestions were put forward:

Collaboration between all faculties on campus.

Collaboration at the institutional level and among different faculties.

Consistency between institutions.

Sharing of data between different universities to learn about postdocs' opportunities and needs.

Coordination between graduate, postgraduate and research offices so as to overcome silos which exclude postdocs from both graduate student supports and faculty supports offered through institutional research support offices.

The relevance of training to the broader employment context was an important area of discussion. The discussion opened the question of whether there is a need to research postdocs' job opportunities. It was recognized that the employment context has changed, though it is less clear how it has changed in the SSH-related fields. Many postdocs report that they are unable to find employment in academic contexts. Relevant training and exposure to non-academic opportunities is therefore crucial. The 2013 Canadian postdoc survey revealed that the majority of postdocs reported little to no exposure to such opportunities, 50.9% reporting that they received no exposure at all, 41.4% reporting that they were "somewhat exposed," and only 7.7% reporting "a lot of exposure" (Mitchell et al., 2013, p. vii).

Non-Academic Career Plans

The responses to the CAPS survey mentioned the necessity for postdocs to have a "Plan B" (alternative career path) in mind in the event that an academic position was not forthcoming. Alternative career paths, such as in the public or private sectors, are frequently overlooked in academic preparation. However, evidence from prior studies shows that a considerable percentage of Ph.D.s do not enter academic positions, and in the present employment climate they should be considered both by the postdocs themselves and by the institutions engaged in their training. Workshop participants noted that "training should be relevant for 'Plan B,'" and the "institutional culture needs to shift: 'Plan B' is as good as academia." Training must focus "on skills that would increase the postdoc's opportunities to work across academia and the job market." About the benefits resulting from additional training once the postdoc entered the job market, workshop participants wondered, "Will they be better equipped?" However, the hope is that provision of additional training during the PDF supports development of skills that will better equip the postdoc for both academic and non-academic employment, consistent with the Talent program objective of developing "the next generation of researchers and leaders needed in academia and across the public, private and not-for-profit sectors" (SSHRC, 2010b, p. 7).

Comments about training focused on the importance of training and the need for formal training as well as collaboration such as in the following comments:

Training needs to provide new tools for entering the job market.

Training needs to prepare the postdoc for non-academic research.

Large research collaboration is important, as is learning in a multidisciplinary context.

Customized workshops are needed to address specific individual needs.

Formal vs. informal training: mentoring is important in addition to formal training programs.

One person who talked about the need for career development support suggested that one way it could be developed would be through collaboration that provides public recognition for the research and the work done by postdocs as a group. This person encouraged support for opportunities for professional networking and development of relationships in and also outside of academia. Other respondents raised questions and made suggestions, exploring possible solutions such as ICT¹. In addition, respondents wondered how training could be made attractive, given that there is a gap between availability and uptake, and whether training should have an end or should be ongoing. One person thought that providing certificates might make the skills and preparation of postdocs clearer to non-academic employers.

Mentoring

Mentoring was raised both as a valued aspect of training and as a challenge. As was pointed out earlier, postdocs are focused on the supervisor they are working with. Workshop participants recognized the importance of the training provided in supervisor mentoring but asked who was mentoring the mentor and whether mentors “have the toolkit for the kind of training that will be developed.” Supervisors may or may not have the tools to provide the broader training that is needed.

Teaching

Teaching experience is an aspect of training most desired by postdocs, despite the increasing reality that many will not secure an academic position. The 2013 survey of Canadian postdocs identifies the narrowness of opportunities as “academic tunnel vision,” or a singular focus on preparation for academic careers, even in spite of a decade of constrained hiring in academic institutions:

‘Academic tunnel vision’ is reflected in the career development and professional training opportunities that postdocs seek out and that universities provide. The most common skills sought by postdocs are those that will prepare them for a faculty position, e.g., grant or proposal writing, project management, and teaching skills.

(Mitchell et al., 2013, p. vii)

However, the 2013 survey notes that even with academic tunnel vision, less than 18% of any postdocs, and fewer than 14% of S-PDF, will gain teaching training (Mitchell et al, 2013). Some universities do not allow postdocs to teach, emphasizing fulltime research instead (CAPS-SSHRC, 2013). In other cases, teaching is allocated on the basis of seniority and is unavailable to postdocs.

¹ ICT, or information and communications technology, referring in higher education to multiple platforms from social media to structured on-line course delivery and webinars.

The CAPS-SSHRC workshop concluded that the key areas in which a postdoc fellow should be trained are:

- Grants and proposal writing; and
- Communication, networking, and conference presentation skills.

The development and implementation of consistent and effective training would require:

- Setting of standards and agreement on basic principles; and
- Collaboration and the sharing of information among departments and faculties, institutions (within and between), and funding bodies.

Best practices around the individual objectives and trajectories should emphasize:

- Unique postdoc aspirations;
- That aspirations are not consistent from one group of postdocs to another (changing from one year to another);
- That aspirations are not consistent from one discipline to another; and
- The need to keep training plans consultative and flexible even as postdocs enter or leave particular institutions.

SSHRC Postdoctoral Fellow Experiences

In addition to the 2013 survey results and the CAPS-SSHRC workshop in Montreal, final reports submitted by recipients of the SSHRC Postdoctoral Fellowship from the 2009-2011 competition years were reviewed. In these reports, postdocs rated their own postdoctoral experiences. A purposive sample of was reviewed, which provided an overall sense of postdocs' degree of satisfaction with their experience. Evaluative comments relating to a number of the discussion themes concerning training and career development were also present.

The data included form 10B which was supplied for 164 of the 165 evaluations reviewed for this report. Form 10B identifies the postdoc's name and contact details, their university, and their current employer. These forms were anonymized prior to evaluation for this report. Form 10B also provides the postdoc's rating of their experience. Evaluations were supplied from 165 fellowship holders. Rating data were supplied in 163 of the 10B forms; one form listed N/A for rating. There were 30 evaluations in French and 135 in English. Rating of postdoc experience was generally very positive, with the majority (61.3%) rating their experience as Outstanding. There were none rated as Poor.

Sample	Outstanding	Very Good	Good	Fair	Poor
n =	100	53	8	2	0
Percent	61.3%	32.5%	4.9%	1.3%	0

In addition to form 10b, Postdoc final report evaluations were 1-6 pages in length. Twenty of the evaluations received for review did not include a report. A close reading was done of four randomly selected evaluations in each of the self-rated categories, from “Outstanding,” to “Very Good,” and “Good.” All two evaluations in which the rating was rated “Fair” were reviewed.

In the reports, S-PDF responded to the following questions:

- What progress was made in the program of research during the period of tenure of the award? Did this progress meet or pass the objectives set at the beginning of the award? Explain.
- What progress was achieved during the period of tenure of the award with respect to professional development? Provide details on any publications and/or papers presented before learned societies or conferences, the development of personal research networks, and teaching experience.
 - Provide a short outline of the infrastructure that was provided by your university of affiliation (e.g., office space, library privileges, course to be taught, etc.).
 - If you are teaching one course, provide information on the subject taught, the level of study (graduate or undergraduate), and number of students.
 - Comment on the degree to which the department has involved you in its activities (e.g., the mentoring of students, any administrative duties, or other activities).

In the cases which were reviewed, the largest proportion of the final report was devoted to the description of the postdoc’s research activities, publications, and presentations, with rather shorter responses being given to the questions about infrastructure, teaching, and department involvement, and some postdocs offering virtually no comment on these latter aspects of their experience. Postdocs reported varying degrees of progress and satisfaction in the program of research, reflecting such factors as the need to narrow the focus of the research to what was achievable during the tenure of the award; balancing the research component of the PDF with other components such as teaching and involvement in departmental activities and administration; and unexpected delays in access to or availability of research materials and subjects.

Only a few postdocs addressed the amount of compensation and other financial support. Unexpected or large expenses (for example related to travel) were sometimes reported.

Infrastructure, Supports and Benefits Reported by SSHRC Postdoctoral Fellows

The themes reported in the final reports were consistent with observations made in the Montreal workshop and reported in the literature and the 2013 survey. The main themes included infrastructure, training support for teaching experience, supervisory experiences, issues for international S-PDF and benefits. Most postdocs reported that they were provided with an office

and full access to library services, but there were some who were not given an office or shared one. One postdoc reported, “The library privileges I was afforded . . . were good but could have been more comprehensive: they did not allow me to request interlibrary loans, forcing me to use colleagues’ accounts to get access to some materials.” (Rating = “Very Good”)

Teaching

The sampled evaluations did identify the need for greater teaching opportunities:

Teaching assignments are awarded on the basis of seniority. Understandably, I was not able to secure teaching work in my host department. (Rating = “Very Good”)

I strongly believe that SSHRC postdoctoral awards should involve a greater level of co-operation between the Council and the host institution in order to more assuredly incorporate teaching and administrative roles into the fellowships. In a difficult and competitive academic job market, such an approach would better serve the fellows themselves and the host institution’s academic community. (Rating = “Good”)

I was not included in faculty activities; my offers to teach, lecture, and give workshops were not accepted; and office space was not provided.” (Rating = “Fair”)

One postdoc who gave a rating of “Good” provided the following suggestions for improvements to the SSHRC PDF program:

While I, and many others, are very grateful to SSHRC, I believe its postdoctoral funding programme could be improved and strengthened in three significant ways: (1) extending the programme from two years to three, reflecting the need for greater short-term stability for new academics and allowing host-universities to better integrate postdoctoral fellows within specific academic units; (2) establish a formal teaching requirement for all postdoctoral fellows, recognizing the crucial importance of teaching to academic careers; and (3) require host-universities to appoint postdoctoral fellows as Visiting Assistant Professors (currently practiced by Carleton University, for example), thereby circumventing collective agreements which often prevent postdoctoral fellows from teaching.

SSHRC Postdoctoral Fellow

Benefits

Related to employment was the question of benefits, which has been identified as an issue for postdocs in Canada (Mitchell et al., 2013, p. vii). One postdoc (rating = “Good”) “found it unfortunate that SSHRC postdoctoral fellows at the University . . . could not pay into and participate in the University’s benefit schemes.”

International

One postdoc (rating = “Good”) identified an issue relating to visa issues for a Canadian postdoc undertaking research at an overseas institution. The postdoc experienced difficulty getting a visa

and began the project a month late. She/he communicated with SSHRC about this but was unsuccessful in getting the official start date amended. The postdoc wanted in their final report “to bring attention to the difficulties future international award holders may encounter with respect to work visas; I suggest that SSHRC advise award holders that visas may take many months to organize, and not all host institutions may be permitted to act as host from an immigration standpoint.”

Relationship with supervisor

The 2013 Canadian survey indicated that “the relationship between the PDF and their mentor or sponsor is a close one, yet the roles may be in a state of evolution. Approximately 80% of Canadian Postdocs are satisfied or very pleased with their supervision, and yet the preponderance of postdocs are only “somewhat satisfied” with their postdoctoral experience. (The median response was 48% among all postdocs and 46.4% amongst S-PDF.) S-PDF, reported a higher proportion of postdoc supervisors who ‘neither encourage nor discourage’ training, at 61.6%, compared to 54% for all postdocs (CAPS-SSHRC, 2013, p. 6).

The institutional structure in which postdocs and their supervisors operate may be a factor. Many supervisors appear to be relatively isolated from other postdocs’ supervisors. Members of the SSH professoriate may have less experience in supervising or mentoring postdocs due to the lower number of postdocs than in the sciences (CAPS-SSHRC, 2013, p. 6). Postdoc supervisors’ perspectives on their roles in the support of training and career development should be sought on a regular basis and incorporated into the development of research and training plans.

For the most part, postdoc evaluations from the 2009-2011 competition years were complimentary about the guidance provided by supervisors. Many postdocs reported opportunities to conduct collaborative research with their supervisor and to co-author published works and co-present at conferences. One of the reports, however, conveyed a sense of supervisor expectations that went beyond the boundaries of the professional duties expected of a postdoc. That person, in their list of work and activities during the tenure of the fellowship, reported doing a number of more personal duties such as unpacking and setting up the supervisor’s office and caring for the supervisor’s pets and plants. This might suggest that there was a lack of clarity regarding a postdoc’s appropriate responsibilities, the kind of situation that might be resolved by clearer and more consistent guidance to mentors about what a postdoc can be expected to do as part of their PDF.

Summary of Training and Career Development Experiences

The themes presented by the SSHRC postdoctoral fellows provide confirmation of the 2013 survey results and experiential evidence for the observations made in the workshop. Some issues such as boundaries around work emerge, while others, such as the lack of opportunity to access teaching experiences, speak to desires which are not met. Variation and lack of consistency

appears as an issue, and although this might be expected, the lack of recourse to effect change may be something that should be considered, especially, as will be discussed below, if the postdoc is not mobile with their award. It appears that one way to address challenges such as inconsistency and difficulties obtaining opportunities may be to connect supervisors more often, so that they are more aware of the range of opportunities which might be developed.

The information reviewed here clearly points to a lack of sufficient information about S-PDF experiences. While it is clear that while there are gaps, in, for example, specific training, it is not clear why, nor is it clear what role the institution and postdoc supervisor is playing versus the funder. This lack of clarity becomes more important when co-delivery is being considered.

Co-delivery Model

The workshop discussion focused on whether SSHRC should go forward with the integration of research training plans and co-delivery and, assuming that co-delivery would be implemented, what the best/ideal model could be (within the realm of feasibility). The workshop participants aimed to come up with concrete recommendations. Implementation timelines were also discussed.

Background: Co-delivery Model

The Banting model represents a new approach to the offering of postdoctoral fellowships. The Banting Postdoctoral Fellowships differ in eligibility criteria, administration, and requests of the host institutions. This model is identified as one type of co-delivery, where the host institution plays a role in screening and nominating select candidates. The current (July 2013) information for institutions presents this succinctly:

- *Host institutions play a critical role in the Banting Postdoctoral Fellowships program and are asked to endorse only their highest-calibre postdoctoral researchers.*
- *Host institutions must collaborate with applicants and provide evidence of the following:*
 - *the institution's strategic use of the program*
 - *institutional support for the proposed research program*
 - *the institution's commitment to developing the research and leadership potential of the applicant*
 - *positioning the candidate for a successful research-intensive career.*

(CAPS-SSHRC, 2013, p. 6)²

However, there are challenges to co-delivery. One of these is in working across institutions with varying institutional structures. For example, among the 492 applicants in 2012, 72 had to be contacted to ascertain if the institutional signatory indeed had the authorization to commit resources because it was not clear from the variations in title.³ In the end, this was found to be appropriate in almost all cases but it demonstrates that program managers have to contend with

² CAPS-ACSP 2013 refers to the discussion paper produced for the Montreal workshop and attached to this report as an appendix. See the bibliography for the full reference.

³ Personal communication, SSHRC.

a heterogeneity of situations. It is likely that oversight will continue to be necessary with non-Canadian institutions due to the variety of structures and infrequent contact individual institutions have with the three federal granting agencies (CAPS-SSHRC, 2013, p. 7).

A more serious issue identified in the administration of the Banting is that various institutions appoint postdoctoral scholarships in diverse ways, and in some cases stipends have been reduced by deducting employee benefits. The Banting administrators have issued a statement to clarify but acknowledge that they cannot override institutional practices. This results in an uneven experience for postdocs (CAPS-SSHRC, 2013, p. 7).

One option is to move all the Social Sciences and Humanities (SSH) postdoctoral fellowships to the co-delivery model. The advantages may lie in requiring institutions to focus their resources, and to cultivate and nurture their postdocs, as well as providing greater remuneration and support to postdocs. However, other models exist as well. In Quebec, the Fonds de recherches du Québec (FRQ) represents the formerly separate three research bodies, of nature and technology, health, and society and culture. The goals of the FRQ are to: provide leadership and direction to research in Quebec; position Quebec researchers well internationally; promote synergies between different sectors of research; and promote public research in Quebec under a common banner (Quebec, 2012). Postdoctoral awards are restricted to those identified as Quebec residents, are valued at a maximum of \$30,000 for 12 months, and must be carried out in under 24 months.⁴ The relationship with the supervisor is conceived of as a “co-supervision” in recognition of the postdoctoral researcher’s independence, and the postdoc is required to be in residence at the host institution. This model provides some structure, including constraints on location and relationship, but is not as prescriptive as the Banting.

The Ontario Graduate Scholarship (OGS) provides yet another model, which, like the Banting, devolves to the institutional level. The applicant applies directly to their institutional graduate office, and each institution may set additional criteria. Awards may be topped up by individual institutions and institutions may set their own deadlines and procedures. Each applicant, on the other hand, must apply to multiple institutions if they wish to have more than one option, which may therefore incur duplications of reviews. The Ontario provincial government provides two thirds of the value of the award, while the institution provides one third. Some institutions indicate that awards are dependent on funding availability (CAPS-SSHRC, 2013, pp. 7-8).

Co-delivery, in all three cases, involves more active engagement of the supervisor, the institution, and the postdoc. The co-delivery model requires institutions to have staff dedicated to the administration of postdoctoral fellowship applications, at a minimum, and to develop administrative procedures at the institutional level. Institutions must demonstrate commitment and adherence to the objectives of the funding program and must therefore develop means of

⁴ Retrieved from http://www.fqrsq.gouv.qc.ca/fr/bourses/programme.php?id_programme=20 – conditions.

assessing whether the program objectives are being met. Supervisors may have a more directive role in ensuring that the postdoc receives the training or other supports specified in the institutional guidelines. This means that there must be a monitoring or accountability process. The postdoc must therefore collaborate more closely with the supervisor and the institution to ensure successful outcomes from the funding opportunity.

Potential Advantages and Disadvantages of the Co-Delivery Model

The co-delivery model is relatively new and neither the postdoc surveys nor extant literatures provided background. The model was a focus of discussion at the Montreal workshop, where advantages and disadvantages were discussed. Those who had direct experience suggested that the co-delivery model may reduce the volume associated with the merit review process, which “is a good thing because it reduces the burden for universities’ staff.” Workshop participants also suggested that co-delivery would benefit from “strengthened coordination between institutions” at least regionally, to take advantage of potential synergies between larger, primarily research institutions and smaller regional universities. Each could learn from each other’s administrative processes, and take advantage of pooled postdoc development opportunities (CAPS-SSHRC, 2013). Lack of coordination or awareness could result in poorer within-institution practices and an inability to balance post-doc applications. One participant saw several benefits of co-delivery for institutional involvement and clarity regarding roles and responsibilities:

Co-delivery is a good thing because it forces universities to be involved in PDF programs and to have a PDF coordinator or an office and to put an organization in place to welcome the postdoc. Human resources will be needed to do so. In a way, co-delivery forces universities to set a clear definition of what will be provided to the postdoc (such as training) but also of what will be expected from him/her. By identifying such regulations, both universities and postdocs will be better informed and committed in the process.

(CAPS-SSHRC, 2013)

The sharing of best practices and information among universities and PDF coordination offices was identified as a benefit, especially for international postdocs.

Participants cautioned that minimum standards needed to be established before financial investment in co-delivery was made, and that all stakeholders involved in the co-delivery process needed to be in agreement on the principles. Universities would not be able to implement co-delivery at the same pace. It was argued that implementation would need to be “an evolutionary process.”

CAPS consultations also addressed the degree to which co-delivery might unevenly and unfairly impact applicants and universities. It was suggested that co-delivery:

Will SEVERELY affect applicants who want to hold this at other institutions. It will likely also affect those who are applying to hold it at smaller Canadian universities. The 'big' Canadian schools, with dedicated and professional research offices are going to come out miles ahead here.

(Personal communication, CAPS)

Participants reflected on how the number of people doing a PDF has increased dramatically but budgets and management capacity have not. This is anticipated to result in “lots of work for members for the overall small number of grants that will be given” (CAPS-SSHRC, 2013).

Discussion also focused on which elements of the life cycle of a fellowship should be co-delivered. Debate also centred on the advantages and disadvantages of having universities adjudicate (conduct a pre-selection):

It hinders postdoc mobility, reduces chances of success and adds more work for university staff (too much work for universities for little gain).

It would be better for universities to communicate clearly about the number of postdocs they welcome, what kind of training they could offer, and provide some examples of alumni postdocs' professional career attainments. Such information could be displayed on the website.

(CAPS-SSHRC, 2013)

Both comments refer to the potential for challenges around communication with postdocs, especially at the institutional level. It was pointed out, however, that “postdocs do not pay much attention to the welcoming institution but rather to the supervisor with whom they want to work or be supervised by” (CAPS-SSHRC, 2013). This suggests that potential administrative impacts will need to be communicated to potential postdoc supervisors, so they clearly understand the impact on applicants. There will be a learning curve.

Recommendations

Given the information reviewed to date, including the workshop discussion in Montreal, the S-PDF data analysis of the 2013 CAPS-Mitacs survey data (Mitchell et al, 2013), the literature review and the SSHRC PDF evaluation reports, CAPS recommends the following in order to further improve the training of PDF in the fields of social sciences and the humanities including education, law, the arts, and business. These recommendations are offered with recognition that postdoctoral scholars are fully prepared scholars, yet at a beginning stage of their career. We also recognize SSHRC, institutional administrators, and postdoctoral supervisors as integral partners in the development of excellence in research careers.

I. Research and Training Plan

A. *Training and career development planning*

Training may refer to specific skills development or more generally to professional career development. We recommend the term “career development,” encompassing the development of career skills, knowledge and abilities, in which “abilities” refers to the potential for application of human resources in diverse contexts or opportunities. Career development objectives are meant to enhance opportunities consistent with SSHRC goals of supporting the development of careers in research excellence in a variety of sectors. These recommendations may fall to the shared responsibility of institutions, funders, postdoc supervisors and postdocs.

1. Structure postdocs’ training goals in the context of research excellence in their specific disciplinary field.
 - a. In partnership with professional disciplinary associations, encourage the identification of a set of sample postdoc experiences and trajectories (scenarios) relating to specific disciplinary areas.
 - b. Each plan should identify markers of research/scholarship excellence at junior and senior levels prior to identifying specific training goals.
 - c. Link each postdoc’s training goals to employment opportunities which are specific to disciplinary opportunities (Plan “B”): Identify one “Plan B” to which objectives will be linked.
2. Establish best practices guidelines which take account of individual and disciplinary objectives and trajectories, are constructed with input, and are responsive to changing conditions.
3. Require S-PDF to develop individual career development plans and describe explicit methods for achieving goals including activities and intermediate outcomes (i.e., means of implementation which will be reported on; for example, “attend up to six teaching skills seminars”).
 - a. Define a structure for self-evaluating not just goals but also operational means of realizing goals. For example, if the goal is “to expand collaborative networks,”

- the means may be identified as attending one conference, or becoming part of one network.
- b. Personalize and link fellowship reporting outcomes to the outcomes identified in 3(a). Reflections can be based on how well the operational objectives helped to realize the goals.
4. Develop a common training framework with specific areas to be addressed, but without prescribing details which will not fit particular circumstances.
 - a. Teaching: Identify minimum standards for formal and informal exposures to:
 - i. Teaching experiences and/or skills;
 - ii. Teaching portfolio development; and
 - iii. The scholarship of teaching and learning.
 - b. Grant writing and development:
 - i. Identify goals for formal and informal training and experience in grant writing and development.
 - c. Networking and collaboration:
 - i. Identify evaluation criteria for networking and the development of research collaborations, both within and outside of the academic research environment.
 - d. Presentation:
 - i. Identify specific goals for developing and practising presentations in at least two different contexts.
 - e. Language skills (written and oral):
 - i. Identify specific goals for informal or formal opportunities for training in writing and/or speaking in English or French or other language.
 - f. Publishing:
 - i. Identify specific academic outcomes such as “publication of one paper” so that both supervisor and postdoc are co-invested in the outcome.
 - g. Evaluation: Prepare a framework to measure the achievement of these goals with quantitative indicators (i.e., a scaled rating) so that fellowship completion data can be tabulated easily.

B. Roles and Responsibilities

One of the challenges identified in discussion and information reviewed is an apparent disconnect between training that is available and training that is taken up. This includes lack of awareness of roles and responsibilities, as well as lack of information. For this reason, CAPS/ACSP recommends the following measures:

5. Specify roles in relation to specific training objectives, including the following:
 - a. Identify ways in which supervisors/mentors may assist in ensuring that training opportunities are accessed.
 - b. Identify institutional responsibilities (such as for promoting networking opportunities, supporting supervisory best practices development, and / or ensuring available training is open to postdoc participation).
 - c. Identify postdoc responsibilities (such as for ensuring plans are executed).

6. Encourage institutions to document postdoc supervisors' experiences with and perspectives on training so as to develop postdoc supervision guidelines or principles at the institutional level (encourage best practices).

C. Equity and diversity

7. Identify and track equity issues impacting postdoctoral scholars (see U.K. Concordat for examples).
 - a. Strike an equity committee to assist in implementation of this goal.
 - b. Identify a planning timeline for review of this objective.

II. Co-delivery

If co-delivery is adopted, it means a closer working relationship amongst the stakeholders, including the supervisors, institutions, postdocs, and the funding agency, SSHRC. To this end, feedback suggests that there is a need to establish expectations around communication, collaboration, and information sharing:

1. Clarify responsibilities for developing knowledge, skills and abilities related to developing expertise in:
 - a. research implementation knowledge (research ethics, intellectual property rights); and
 - b. skills related to research (grants and proposal development; written and oral language; networking; presentation; project management; time management); and
 - c. abilities related to researching (mentoring others, collaboration, editing, meeting facilitation).
2. Residency
 - a. Identify whether residency is applicable or desired for reasons related to research objectives.
 - i. Link training objectives to opportunities and limitations related to residency.
3. Establish a national reference committee to develop and monitor promising practices for convening a
4. application processes. Include a minimum of two representatives each from among the following constituencies/groups: postdocs, supervisors, institutional administrators, and funding agency personnel.
5. Identify institutional limitations and opportunities related to co-delivery.
 - a. Encourage or require institutions to develop postdoc policies.
 - b. Encourage or require institutions to publicly advertise postdoctoral fellowships opportunities and application processes.

- c. Ensure that information on institutional policies and how to access institutional resources and personnel is publicly and easily available.
- 6. Identify an implementation review process which specifies:
 - a. Areas of expectations.
 - b. Process for development of agreement framework on responsibilities of:
 - i. postdocs;
 - ii. potential supervisors; and
 - iii. administrators.
- 7. Recognize that institutions and universities are not able to implement co-delivery at the same pace.

III. Ongoing Measurement and Assessment

The implementation of the SSHRC training architecture changes provides an opportunity to establish a new baseline of information.

1. Explicitly establish a goal to conduct research into the current academic and non-academic employment opportunities for postdocs.
 - a. Identify a timeline for planning research into postdoctoral experiences.
2. Establish a scaled questionnaire to be added to the final SSHRC postdoc evaluations to collect quantitative data about SSHRC postdoc outcomes, including:
 - a. progress in their own identified research program goals;
 - b. professional development (as per career development plan);
 - c. infrastructure supports (as per identified responsibilities);
 - d. teaching (as per standardized minimum exposures);
 - e. involvement in departmental activities (as per identified goals); and
 - f. training for diverse employment markets (as per identified objectives).
3. Establish a biannual reporting cycle. Report by disciplinary areas (humanities, social sciences, arts, education and business) rated according to:
 - a. exceeds expectations
 - b. meets expectations
 - c. areas needing improvement
4. If co-delivery is implemented, we strongly suggest a period of close monitoring.
 - a. Satisfaction
 - i. A brief survey of postdoc supervisors' satisfaction and experiences.
 - b. For each of the next five years we recommend a report on:
 - i. Application processes – best practices
 - ii. Distribution of responsibilities – best practices
 - iii. Postdoc and institution satisfaction with respect to SSHRC goals of developing research excellence.

Appendices

Appendix A: Bibliography

Appendix B: Literature Review

- Part I: Thematic Review
- Part II: Annotated Bibliography

Appendix C: Career Development

- Career Development Planning References
- Individual Development Plan for Postdoctoral Fellows (NPA)

Appendix D: Discussion Paper: Improving Postdoctoral Appointments in the Social Sciences & Humanities

- Part I: Background on SSHRC's Talent Program
- Part II: SSHRC Postdoctoral Fellowships Funding Opportunity Description
- Part III: Social Science and Humanities Respondents to the 2013 Canadian Survey of Postdocs

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Appendix B: Literature Review

Appendix B Part I: Thematic Summary of Relevant Literature

Based on a literature review by Shuhua Chen, Ph.D.

The following represents a survey conducted in the fall of 2013 using Google, Google Scholar & Scopus. Key words used include: postdoctoral, social science AND postdoctoral, postdoctoral training, postdoctoral experience, postdoc OR postdoctoral. Years of publication were restricted to 2000-2013.

The review confirms that there is very little empirical data about S-PDF' experiences. In addition, all reviews confirm that there is a lack of training and career resources for postdocs provided by institutions, although this is beginning to change in some jurisdictions. The reviews and reports also consistently point to an inadequate level of supervisors' support for postdocs' career concerns. The findings of the 2013 survey of Canadian postdocs (Mitchell et al., 2013) are confirmed: stipends are low in comparison to other opportunities, parallel fields and the investment in higher education by the postdoc. In addition, gender arises as a focus in respect to parental leave benefits and career timing. All reports agree that the definitions and status for postdocs are too vague, and that postdocs are invisible and being marginalized in institutions.

The following presents the relevant literature arranged according to five main themes: (a) postdoc experiences; (b) training; and (c) gender.

Postdoc Experiences

Postdoc positions are by definition temporary and are often described as stepping stones to a future career, whether inside or outside of academia. While no studies were found that looked specifically at SSH experiences, one study using a social work framework examined postdoctoral experiences in general. Reviews of postdoc experiences have investigated aspirations, supports, and status. Some studies find a mismatch between supervisors' assessments of the important features of career preparation and postdocs' perceptions. Perhaps most telling is that over time, the inability to secure a desired job leads to declining performance on key indicators of success such as the "show [of] self discipline, motivation and thoroughness" (p. 276) and a loss of career development skills in communication and awareness of research environment, including commercial exploitation and funding opportunities (p. 279) (Lee, Gowers, Ellis, & Bellantuono, 2010). Pessimism may be borne out by facts: 61% of the participants wanted to find academic positions but only 37% actually obtained such positions (Bonetta, 2010).

The elements of and extent to which a postdoc position provides productive career preparation is a main theme in studies of postdoc experiences. However, postdocs and supervisors appear to have different perceptions of the important elements of a postdoc position. Supervisors suggest that the most important elements of a postdoc position are: conducting high quality research (79%); learning to work independently (65%); how to write grants and obtain funding (36%); developing new research skills (35%); gaining a deep knowledge of a specific area of research (32%); and learning to manage or supervise others (23%) (Bonetta, 2011)

Additionally, postdoc supervisors in social work might see the postdoctoral position as an opportunity to establish a research program without the added pressures associated with the first years of tenure track employment and an opportunity to become more competitive on the faculty job market (Mendoza, Resko, De Luca, Mendenhall, & Early, 2013).

In contrast, postdocs felt that as doctorally prepared researchers, they were independent scholars (Åkerlind, 2009) and postdocs most consistently valued: (a) obtaining funds/grant writing; (b) networking; (c) advancement/career options; (d) direction and vision; and (e) mentoring (Bonetta, 2011). Instead, postdocs often found themselves occupied with other tasks: 87% reported duties other than research, including; (a) formal supervision (52.6%) and informal supervision, (78.7%); (b) lecturing (39%); (c) tutoring/demonstrating (24.8%); and (d) conference organizing (25.5%) (Åkerlind, 2009).

If publication is one of the keys to success, studies show contradictory results in terms of support (Bonetta, 2011). Lee, Gowers, Ellis, & Bellantuono (2010) found that lack of supervision seems to be associated with increased publication, while, conversely, stronger mentoring is also associated with an increase in publications (Scaffidi & Berman, 2011). The difference may be, as Lee, Gowers, Ellis & Bellantuono (2010) remark, that postdocs who are mentored to take responsibility for their careers publish more. Part of the key may also be collaboration; “postdocs who do establish research collaborations have produced on average 0.97 publications in their current postdoctoral position compared to 0.67 publications produced by postdocs who have not as yet established research collaborations” (Scaffidi & Berman, 2011). However, in spite of documented benefits, Lee, Gowers, Ellis, & Bellantuono (2010) found that transferable skills related to communication and awareness of the process of research (i.e., the process of acquisition of funding, commercialization of research outputs) were lacking, even though these skills were associated with higher publication outputs.

In the struggle to navigate the postdoctoral experience, mentors were valued, but not all supervisors are perceived as mentors (Scaffidi, & Berman, 2011). The Sigma Xi survey of postdocs in the sciences and engineering found that 24% of postdocs do not perceive their supervisor to be a mentor (Davis, 2005). Puljak and Sharif (2009) also found that only a third (34.6%) of postdocs indicated that their mentor had provided career guidance to them, and only 21.3% of postdocs report that they received some form of career guidance from their university. At the same time, supervisors report that they spend sufficient time mentoring and indicate that they

feel they can supervise a number of postdocs at a time Bonetta, 2011). What postdocs seek from mentors is access to information and mentoring that will help them strategically plan and make informed decisions about their future (Lee, Gowers, Ellis, & Bellantuono, 2010).

The ambiguity of postdoctoral positions contributes to a lack of clear support because the nature and functions of postdocs are unclear, the lack of systematic institutional policies and structures mean that there is a lack of systematized postdoctoral training or career support and lack of support for alternative careers because alternatives are considered failure within the academic environment (Åkerlind, 2005). In addition, though training is often emphasized, postdocs desire this is not desired as much as mentoring, support to make strategic decisions, and the opportunity to prepare for non-academic careers. Thus the postdoc experience is one of ambivalence and invisibility.

While the studies revised here are consistent and clear, only one study pertained to experiences of postdocs in SSH fields. It is imperative to explore similarities and differences between lab based environments and the disciplinary fields that SSHRC funds.

Training

Studies into training of postdoctoral scholars focus on the institutional environment and its capacity, the career outcomes of training, and the availability and priorities for training expressed by postdocs.

A series of reports and studies in the past decade in North America and elsewhere have begun to lay the groundwork for a transition from an ad hoc, institution based, training environment to a more systematized and evidence based approach to the provision of training for postdocs. Leshner's (2012) review of the COSEPUP findings concluded that postdoc training is far too variable and recommended a set of remedial steps: (a) developing distinct goals, policies, and standards for postdoc experiences; (b) developing institutional recognition, status, and compensation in keeping with the important roles postdocs play in the research enterprise; (c) provide career guidance to prepare postdocs for regular employment. Micoli (2005) suggests institutions might enhance postdoctoral experiences through implementing three strategies: offering resources such as 'recommended practice' guides for institutional leaders; establishing local postdoc associations; and publishing online survival guides for international postdocs. Provide resources to empower stakeholders who seek change. Assist in the formation of a network and virtual gathering place for postdocs and their stakeholders.

Rybarczyk, Lerea, Lund, Whittington & Dykstra (2011) suggest conceptualizing the postdoc occupation as 75% researcher and 25% teaching and supporting each through professional development activities and mentored teaching. For example, teaching supports could be given through workshop/course support to new teachers while research supports might include lab

management training; budget management and grant writing; instructional technology training; career preparation skills. In addition, regular community meetings help to establish collegial relationships that may further future collaborations and expand professional networks. As can be seen, each study approaches career supports and development with a unique organizational perspective. However, these studies share a dissatisfaction with the fundamental organization of the status quo, and seek to suggest ways to systematize and regularize training. More work needs to be done to match training needs with institutional offers, and this is likely discipline specific, as well. No studies looked at the role funding bodies may play in training.

Similar to the attempts to organize institutional offerings, attempts are made to parse training into broad categories, related to general or transferable skills, research skill development, and awareness and ability to operate in industry and academic environments. Bridgstock (2009) separates these into two areas. First are graduate attributes, or those skills which "... a university community agrees its students would desirably develop during their time at the institution and, consequently, shape the contribution they are able to make to their profession and as a citizen' (Bowden et al., 2000, p. 32). Second, Bridgstock identifies transferrable skills or "'generic' skills, dispositions and attributes that are transferable to many occupational situations and areas." (after Kearns, 2001, p. 2). Dawson, (2007) refers to these as "skills apart from scientific knowledge, such as management, collaboration, communication, and leadership abilities." (p. 16). A report on postdoctoral positions describes benefits such as: (a) seminars hosted by the program director; (b) group meetings, readings discussions, and comments on posters or presentations; (c) smaller group discussions focused on individual projects; (d) availability of an advisor, including individual meetings; (e) the opportunity to enroll in courses; and (f) networking opportunities with senior researchers (Fenster, 2006).

The third area of interest in these studies is outcomes, both of training and, in the long term, on career. Sekuler, Crow, & Annan (2013) found that graduate students were thinking of nonacademic outcomes, but did not perceive support for discussions of them. They recommend training and education specific to the educational level of candidates, something which Mitacs has sought to implement. In some areas the postdoc position is still seen as only benign (it will not prejudice a career), to offering specific assets, sometimes far into the future. Su (2013) found that a longer postdoctoral duration does not necessarily lead to better career outcomes. Su found that scientists' career velocity accelerates during the early years of training and loses much of that momentum once the duration sustains beyond the range of approximately three years. Su did not find evidence that postdoctoral duration affects prestige attainment in scientists' subsequent placements.

Horta (2009) mapped six dimensions of information exchange to career outcomes, including: (a) research and teaching activities; (b) innovative subjects and articles; (c) equipment and research techniques; (c) financial sources for research; (d) publishing and diffusion of research results; and (e) job opportunities. Horta found that information change helps promote the contact and collaboration with peers from other countries, thus facilitating the integration of national

academics into the international scientific community, and that this was particularly positive in the health sciences and humanities but not in engineering.

Women

Gender arises as an issue in some reports. The main themes are the status of women as postdocs, the proportion of women in various fields, the challenges facing women as they transition to employment, and women's satisfaction and motivations as they attempt to balance career and other priorities. Behind this latter concern is an issue facing all parents, which is the lack of parental leave benefits, child care supports, and family health benefits (Mitchell et al, 2013). The proportion of women with doctorates is higher in SSH fields (CAPS-SSHRC, 2013; Desjardins & King, 2012; Maldonado, Wiggers, & Arnold, 2013). According to recent Canadian census data, women made up the majority of graduates in psychology and social sciences (64%) and education and other fields of study (56%), while the proportion of women was comparable to that of men in life sciences and only slightly higher in the humanities (52% versus 48%) (Desjardin & King, op cit). The length of time to doctoral award was longer for all genders in SSH fields, and the average age of women entering (36 years compared to 27 years for all fields) and exiting (42 years) doctorates was older than the means in education and other fields of study (Desjardins & King, 2012). The proportion of doctorally prepared graduates working in institutions of higher education was highest amongst humanities graduates (77%) and lowest among engineering graduates (34%), while the unemployment rate was highest in humanities (16%), followed by engineering (8%). Part-time employment was highest for humanities at 18% (Desjardins & King, op cit). While a higher proportion of women compared to men attain doctoral degrees in the humanities, it is important to note that the growth in doctorally prepared scientists between 1986 and 2000 in science and engineering fields in the U.S. is coincident with the entry of many more women to the natural sciences and engineering (Black & Stephan, 2010), reflecting, perhaps, an increase in participation of women across many fields and disciplines.

More intensive investigations into the experiences of doctorally prepared women reveal challenges with life/career timelines, as well as a trend toward career choices which enable well balanced aspirations. According to Case & Richley (2013), who interviewed 24 women in science, women are "finding other arenas, where their norms and expectations are more aligned with personal identities and desired futures." (p. 344). The subtext to this is that women are redefining success in ways that are broader than merely career progression, though they also recognize that the timing of doctoral education occurs at a critical life stage transition with competing demands.

Women who are doctorally prepared are over-represented in term teaching positions in higher education, and under-represented in the professorate relative to the proportion of Ph.D. students. However, precise ratios and information is only partially available for the humanities and social sciences. The U.K. Centre for Women in Science, Engineering and Technology

demonstrates this trend graphically for the Biological Sciences (see Figure 2, Career Progression for Women in the Biological Sciences).⁵

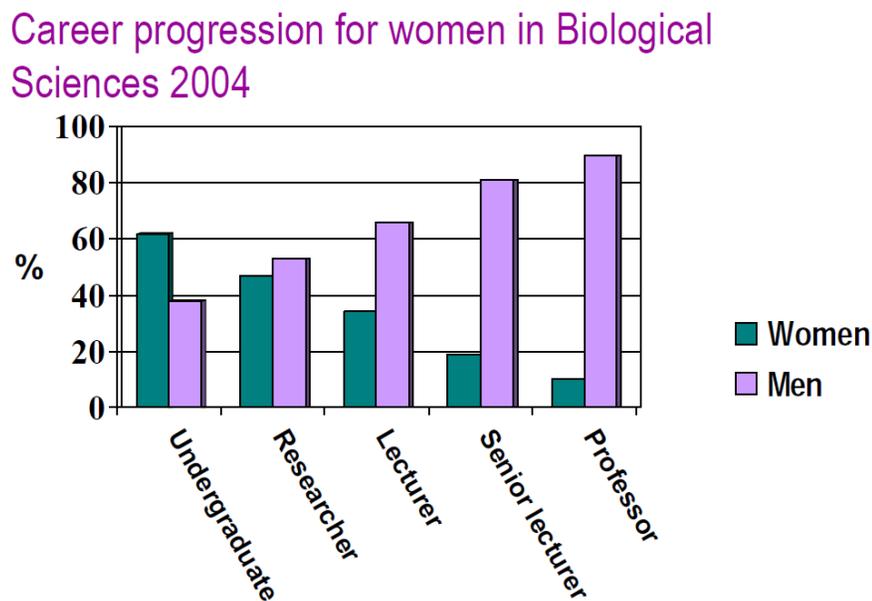


Figure 2 Career Progression for Women in Biological Sciences, (Tobbell, n.d.)

Summary

Reviews of postdoctoral experiences demonstrate a field in transition, and suggests continued growth in the number of postdocs. Challenges arise from a long era in which postdocs were supported in an ad hoc way resulting in a lack of consistency in training and support, an environment in which alternatives to academic careers are not explicitly talked about, and statistical information which is only starting to be available. Gender equity seems to be an issue, but there is not sufficient documentation in the SSH fields to determine how this applies in non-science fields. However, strengths are apparent, as well. There is converging agreement on the need to prepare people for an era of global engagement, as well as the need to systematically document status and supports.

⁵ Tobbell, R. (n.d.). U.K. Resource Centre for Women in Science, Engineering and Technology (SET). <http://www.wiset.eps.manchester.ac.uk/pdf/presentation-rachel-tobbell.pdf>

Appendix B Part II: Annotated Bibliography (Alphabetical)

Association of American Universities. (1998). *Committee on Postdoctoral Education: Report and Recommendations*. Washington, DC. Retrieved on November 26, 2013 from <http://www.aau.edu/WorkArea/showcontent.aspx?id=6834>

This document reports on the findings from three informal surveys of administrators of selected research universities in the U.S. regarding policies and practices of postdoctoral education, and makes corresponding recommendations to institutions. Major themes are that: (1) a universal definition of postdoctoral appointment statuses needs to be implemented; (2) issues around stipends, benefits, career advising, and job placement assistance, which postdocs prioritize, need to be addressed immediately; and (3) problems with postdoctoral education are that (a) in terms of practice, postdoctoral education is not systematic, and (b) in terms of policy, institutions have few policies designed particularly for postdocs. Only one SSH disciplinary field (psychology) is involved in the surveys examined in this report (the three main fields are biochemistry, mathematics, and physics) and findings are not reported by discipline. However, a few recommendations are relevant: (1) to develop a clear definition of postdoctoral scholars (note this report does not distinguish the status of postdocs as trainees or employees); (2) to systematically incorporate postdoctoral education into academic training programs; (3) to assign an administrative officer who is responsible for monitoring the implementation of relevant policies regarding postdoctoral education; and (4) to ensure departments and faculty mentors provide career advising and job placement assistance appropriate to their postdoctoral appointees.

American Federation of Teachers, AFT. (2010). *Survey of Part-Time and Adjunct Higher Education Faculty*. Washington, DC: Higher Education Program and Policy Council of the American Federation of Teachers and Hart Research Associates. Retrieved on November 26, 2013 from http://www.aft.org/pdfs/highered/aa_partimefaculty0310.pdf

This report presents the findings of a telephone survey conducted with 500 part-time and adjunct teaching faculty members employed in the United States regarding their working conditions and their views about their employment. Research questions are: (1) Who are part-time/adjunct faculty members? (2) Under what conditions do they work? (3) How do they view their work and the challenges they face on campus? The major findings are: (1) Most of the participants are motivated to work primarily by their desire to teach and have been at their institutions a considerable amount of time. (2) The participants are about evenly split between two groups – those who prefer part-time teaching (50%) and those who would like to have full-time teaching jobs (47%). (3) Job satisfaction is fairly high, and those who are more satisfied with their employment are people who prefer to work part time, at two-year or private four-year institutions, and teach fewer courses. (4) Younger participants are more concerned about the availability of full-time employment than older ones. (5) Most participants do not receive health benefits from their employer. Over 70% of those surveyed have been teaching at their institution

for over 6 years, and 67% are over 45 years of age. However, only 26% of the participants have a PhD, and the AFT report does not provide useful information about novice teaching staff, which would be equivalent to postdocs teaching. The survey does reveal that SSH participants are less satisfied with their job security than those in other fields.

[CAPS-ACSP] Canadian Association of Postdoctoral Scholars – L’association Canadienne des stagiaires post-doctoraux. (2009). A Postdoctoral Crisis in Canada: From the “Ivory Tower” to the Academic “Parking Lot.” Retrieved on November 26, 2013 from <http://www.caps-acsp.ca/Home/survey/results>

This document summarizes the results from a national survey conducted in 2009 about the situation of Canadian postdoctoral scholars, and makes recommendations for policy and practice. Major themes are: (1) There is a lack of national level definition of what a postdoc is (i.e., a trainee or an employee). (2) Canadian postdocs are (a) paid less than graduates holding lower degrees and those in other countries; (b) many are not receiving basic benefits such as health, dental and child care; (c) the pay does not take into account postdocs’ years of experience; and (d) postdoc fellowships do not include provisions for increases in cost of living. (3) Training for postdocs is insufficient and ineffective. The reports notes a reported decrease in academic positions in Canada, and suggests training provided to postdocs may be problematic in that it mainly prepares postdocs for academic to the exclusion of non-academic positions. As a result, the key questions focus on: (a) the skills needed to enhance employability, (examples include teaching and supervision, grant writing, project management); and (b) whose responsibility it is to train/educate postdocs (e.g., supervisors, institutions, funding agencies).

Of the self-selected respondents, 11% were from SSH fields, indicating an increase in the number of postdocs in these fields. Forty four percent were women, 81% were over 30 years old, and 79% earn less than \$45,000 per year. The report recommended; (a) establishing a nationally accepted definition of postdocs in Canada; (b) providing a clear status for postdocs at Canadian institutions; and (d) providing clear training guidelines for postdocs. In addition, funding agencies and institutions are encouraged to facilitate the granting of appropriate stipends and extended benefits for postdocs; and enhance academic career progression.

Black, G.C., and Stephan, P.E. (2010). The economics of university science and the role of foreign graduate students and postdoctoral scholars. In *American Universities in a Global Market*, Ed. C.T. Clotfelter. University of Chicago: Chicago, pp. 129–161.

Based on statistics and findings from a study on authorship patterns in articles published in *Science*, this chapter documents the presence and importance of graduate students and postdocs in the science and engineering fields in the U.S., with a particular focus on the role and contribution of those born or trained in foreign countries. Major themes: (1) labs have been an important venue to train graduate students and postdocs. (2) The increase in doctorates awarded from 1980 to 2006 were consistent with the increase of women entrants. (3) From 1985 to 2006,

the number of postdocs increased by 110%, and by the 2000s 60% of the postdoctoral scholars were foreign born. (4) International postdocs play lead roles in university research, as represented by authorship patterns. The chapter points out that the count of postdocs as authors may not be accurate and the actual percentage might be higher, as some postdocs had other job titles, such as “research scientist.” The chapter concerns U.S. postdocs in the sciences, not S-PDF in Canada. It may be relevant to similarly consider the role of S-PDF’ in producing knowledge (publications).

Davis, G. 2005. Doctors without orders. *American Scientist*, 93(3, supplement). Retrieved August 7th, 2013 from <http://postdoc.sigmaxi.org/results>.

This article summarizes findings from a survey (Sigma Xi) conducted in 2004-2005 of over 7,600 postdoctoral scholars working in 46 institutions in the U.S. (universities, government institutes and laboratories, and other research institutes). The findings are consistent with other research projects regarding salaries and training. The racial and ethnographic profile of U.S. census categories are used to identify the respondents; 75% were white. In addition, 54% of respondents are international; 58% are 30-35 years old; 69% are married or have a partner; 34% have children. Of U.S. citizens and permanent residents, 51% are women; of international postdocs, 65% are men. Women comprise 60% of those in SSH fields. Seventy percent are satisfied with their overall postdoctoral experience, but it should be noted that the majority of institutions that participated in the study have good “administrative oversight” (for example, a postdoc office and/or association or an administrator with a strong interest in postdoc welfare). The survey shows that postdocs earn less than those holding lower degrees (master’s \$55,950, bachelor’s \$45,000, median of postdocs \$38,000); 25% earn less than \$35,000 per year; more than 3% make less than \$30,000 a year. In addition, international postdocs earn \$2,000 less per year than U.S. citizen or permanent-resident counterparts. Over 46% live in expensive cities and 28% of those married have a spouse who does not work. Among international postdocs, 43% have a spouse who does not work. An overwhelming majority of the U.S. respondents have health and other benefits. However, only 4% of the respondents are working in SSH; most are in the life or health sciences, and 22% in the physical sciences or engineering. Women are a distinct majority in SSH (60%); but the report does not provide information by gender.

Regarding training and education, most of the education that postdocs get is informal and experiential; 43% do not even recognize their postdoc to be professional training and 24% do not consider their advisors to be mentors; coursework and seminars are present in some institutions, but they constitute only a very small part of the postdoctoral experience (on average about an hour of formal training per week according to the respondents). The most needed skills are crafting proposals, lab and project management, writing, teaching and negotiating.

EKOS Research Associates. (2013). Evaluation of NSERC's Postdoctoral Fellowships (PDF) Final Report. Ottawa, ON: National Sciences and Engineering Research Council (Canada).
http://www.nserc-crsng.gc.ca/doc/Reports-Rapports/Evaluations/PDFReport2013_e.pdf

This report examines the relevance, design, delivery, success, impacts, and cost effectiveness of NSERC postdoctoral fellowships by review of documents, literature, and administrative data, as well as through interviews and focus groups. The postdoc data covers the period from 2000 to 2011 and the majority of participants completed their fellowships no later than fiscal year 2010-2011. Those interviewed include vice-presidents and deans of universities, members of selection committees, and representatives of the Canadian Association of Graduate Schools (CAGS) and CAPS. In addition, online focus groups were conducted with funded fellows, unfunded postdocs, and supervisors. The report concludes that overall, the NSERC PDF program remains relevant, efficient, and necessary and contributes to applicants' development of research experience within an academic setting, including their chances to obtain employment in academia. The report gives no findings regarding differences in gender, which is an important issue given that there are more women in SSH and life sciences, the latter relevant to NSERC. Recommendations: The program may "explore options to increase the financial support available to PDFs; consider increasing development and networking opportunities for PDF fellows; [and] consider moving up the time-frame of decisions to accommodate PDF applicants" (p. iii). A report of this kind on the performance of SSHRC postdoctoral fellows would be a worthwhile undertaking and could use similar methods to collect data.

Lamont, M., Goldman, R. I., and the Blue Ribbon Panel Probe on Peer Review at SSHRC. (2008). Promoting Excellence in Research: An International Blue Ribbon Panel Assessment of Peer Review Practices at the Social Sciences and Humanities Research Council (SSHRC) of Canada. Social Sciences and Humanities Research Council of Canada. Retrieved on November 26, 2013 from http://www.sshrc-crsh.gc.ca/about-au_sujet/publications/peer-pairs_e.pdf

This document reports on the process and results of the Blue Ribbon Panel's review of SSHRC's peer-review system. The panel, comprised of scholars from around the world, "analyzed an extensive amount of documentation, conducted interviews with peer reviewers, program officers and management, and did a web survey of the humanities and social sciences faculty in Canadian universities [and] also took into account the experiences of the American, Australian, British and German peer-review systems." (p. 1). Among the conclusions of the panel are that "the quality, equity and credibility of the peer-review process at SSHRC are unquestionably up to the highest international standards" (p. 44). The panel made 39 recommendations as to how SSHRC may further improve its peer review practice. The panel also suggested that examples of outstanding and successful fellowship and grant proposals for each program be put on the SSHRC website.

Recommendation 28 may be relevant to postdoc applications. "To reduce the workload of adjudication committees and program officers, maintain and simplify reports to all grant

applicants. Forward to applicants the standardized forms filled by external assessors, as well as those filled by adjudication committee readers . . . Communicate to applicants on a standardized form the summary position of the adjudication committee, when different from that of the readers and the decision is negative. In all cases, transmit these forms with a cover standardized letter: a) explaining the general peer-review process; b) emphasizing that it is the adjudication committee only that is fully responsible for final recommendation, not the external assessors, nor the committee readers alone; and c) reminding the applicant that the committee decision on his/her proposal is the result of a competition” (p. 57).

An issue raised in the report regarding funding scholars at smaller universities may also be relevant. Recommendation 31: “Treat issues related to proposals from smaller university researchers as an area of policy responsibility, shared with institutions, and eventually adopt and implement complementary decision-making rules and mechanisms” (p. 63). Questions such as this raise questions about whether SSHRC has relevant policies regarding funding postdoctoral fellows working in smaller universities.

Although the report had some recommendations referring to doctoral education, the report focused on the former standard research grants program and was not particularly about S-PDF. There was no mention of what host institutions do to facilitate awardee experiences, for example. Observations included that feedback to applicants (especially for those who are not awarded) may also be seen as training or a learning opportunity in that many reapply and may be funded later. There is a suggestion that SSHRC’s present feedback may be too brief. However, reviewers noted that providing feedback adds to the workload of assessors.

Maldonado, V., Wiggers, R., & Arnold, C. (2013). So You Want to Earn a PhD? The Attraction, Realities, and Outcomes of Pursuing a Doctorate. Toronto: Higher Education Quality Council of Ontario. Retrieved on November 26, 2013 from <http://www.heqco.ca/SiteCollectionDocuments/At%20Issue%20Doctoral%20ENGLISH.pdf>

Based on statistics and research findings regarding Ontario universities from 1990 to 2010-2011, this paper discusses the purposes of PhD education and compares the recent trends in PhD enrolments, PhD training and the situation of the broader labour market. The main argument is that the present PhD education should adapt to the situation of the labour market, where PhD graduates are outnumbering tenure-track or tenure-stream positions available. Recommendations include: (1) Governments should re-consider the promotion of expanding PhD enrolments. (2) Graduate programs should provide students with information about non-academic positions and opportunities to develop skills beyond academic ones. (3) Students should talk to recent graduates about outcomes of the PhD, seek opportunities to develop skills for alternative positions, and prepare for alternative academic and non-academic jobs.

Although postdocs' voices are absent from this report, it is nevertheless relevant to S-PDF in several ways. Academic positions are becoming more difficult to obtain, yet in SSH fields many programs still continue to train their students solely for academic careers. There is a higher concentration of women in SSH fields than in the sciences. Many SSH fields see increased enrolments in PhD programs, apart from education, which has shown a steady enrolment. SSH full-time faculty members teach more courses each semester than sciences colleagues (sciences average 2.7 courses, SSH 3.7 courses based on research on four Ontario universities), which is probably evidence that SSH doctoral programs and postdoc fellowships should address awardees' development of teaching skills. The average age when completing a PhD is 33 years old, when most are considering life events such as starting a family or purchasing a house.

Committee on Science, Engineering, and Public Policy (COSEPUP), National Academy of Sciences, National Academy of Engineering, & Institute of Medicine. (2000). *Enhancing the Postdoctoral Experience for Scientists and Engineers (Executive Summary)*. Washington, DC: National Academic Press.

This three-page executive summary outlines three guiding principles for improving postdoctoral education in the U.S. and 10 action points. The three principles can be summarized as: (1) The postdoctoral experience mimic the apprenticeship model and be a stage to advance skills and career. (2) Postdocs should receive appropriate recognition and compensation. (3) All parties involved in appointing postdocs should agree on the nature and purpose of the appointment. The 10 actions points are about specific things that advisers, institutions, funding organizations, and disciplinary societies can do to enhance postdoctoral experience. Major points are: (a) to develop distinct policies and standards for postdocs; (b) to establish a mechanism to maintain communication with all parties and evaluation system to assess the performance of postdocs; (c) to consult postdocs when creating standards, definitions, and conditions for appointments; and, (d) to provide substantive career guidance and prepare postdocs for regular employment. The summary is not about SSH fields, but the principles and action points are useful, especially the mention of clarity on the status of postdocs and purposes of postdoctoral training.

National Science Foundation. (2011). *Doctorate Recipients from U.S. Universities*. Retrieved October 29, 2013 from <http://www.nsf.gov/statistics/sed/digest/2011/nsf13301.pdf>

Based on data from the Survey of Earned Doctorates (SED), this document provides a scan of the doctorate recipients from U.S. universities. Major questions addressed are: (1) Who earns a U.S. doctorate? (2) Which fields attract students? (3) What influences the path to the doctorate? (4) How do graduates pay for doctoral education? (5) What are the post-graduation trends (i.e., early career patterns)? The study found that the number of research doctorates has greatly increased since 1958; this increase is mostly due to the increase in Science and Engineering (S&E) fields while the increase in SSH is minor. In some years, however, declines occurred. [Note: here only research doctorates were counted; other kinds of doctorates, such as professional doctorates, were not included.]

Women doctorate recipients increased greatly, especially in S&E fields, which accounted for 74% of the increase. In non-S&E fields female enrollment declined over the past decade; women doctorates are still fewer in physical sciences and engineering, but the number of women in these fields is growing considerably. “The fastest growing subfields of doctoral study for women over the past 10 years are physical sciences (led by computer and information studies) and engineering” (p. 4). There are proportionately more women doctorate recipients in SSH fields.

Other themes include: Most doctorates in SSH are awarded by research intensive universities; people in SSH spend more time completing the doctorate than those in S&E fields; and the time to completion has declined in all non-S&E fields. Fellowships/grants and RAs are the most important sources of financial support. Yet, by field, while most social science students depend on fellowships and grants, education students were most likely to rely on their own resources (instead of fellowships, grants, TAs and RAs). Also, students in humanities mostly rely on teaching assistantships, fellowships and grants. Postdocs are prevalent in all fields, including SSH; postdoc salaries are similar across fields; but are lower than those in non-postdoc employment in industry and in academe. The report indicates that doing a postdoc is becoming common in SSH fields. As in S&E fields, postdocs in SSH earn much less than graduates working in academe and in industry. Students in education rely more on their own resources to pay for the doctoral study.

[Note (a) the survey identifies 7 broad fields and distinguishes education from SSH, life sciences, physical sciences, social sciences, engineering, education, humanities, and other non S&E fields; and, (b) postdoc positions are defined as “a temporary position primarily for gaining additional education and training in research for doctorate recipients” (p.12).]

Nerad, M. (2010). Globalization and the Internationalization of Graduate Education: A Macro and Micro View. *Canadian Journal of Higher Education / Revue canadienne d'enseignement supérieur*, 40(1), 1-12.

Drawing on existing literature about globalization and doctoral education, this article summarizes the implications of globalization for doctoral education and make suggestions regarding how higher education institutions (HEI) may meet the challenges of globalization. They suggest that the globalization has; (a) contributed to an expansion of PhD education globally (although the largest increase in PhD production is in Asia); (b) increased the number of international students studying in the U.S.; and, (c) brought an element of commercialization to PhD education. The authors point to five major implications for doctoral education: (a) research does not stop at basic research but also continues into the application of knowledge; (b) the significance of transferrable/translational skills are emphasized ⁶; (c) doctoral education is increasingly standardized in terms of its format and definition; (d) quality assurance is stressed by

⁶ Translational skills refer to communication skills beyond the high level expected of doctorally prepared researchers.

governments, funding agencies, and universities; and (e) international scholarly networks are being encouraged and formed. Globalization is also driving training not only for skills required for traditional academic positions, but also for a variety of careers. However, the article does not particularly focus on S-PDF. It does discuss increased international networks and trans-disciplinary collaborations as a result of globalization; knowledge and application in an internationalized environment; and the training doctoral students for a variety of careers. Related to this, the author focuses on development of transferrable/translational skills and suggests that if we consider the postdoctoral period as extended training, then transferrable skills should be emphasized as well.

SSHRC. (2007). Framing Our Direction: Social Sciences and Humanities Research Council (SSHRC).

This document reports on SSHRC's achievements for 2005-2007 in regards to three ambitions and sets out related strategic priorities for 2008-2010. The three ambitions are defined as: (a) quality; to enhance the quality of research and research training); (b) connections, to enable connections among disciplines, between research and the larger community, in Canada and internationally; and (c) impact, to increase the impact of research and research training. Three central concerns of the agency are: entrepreneurial advantage (to translate knowledge into practical applications), knowledge advantage (to generate new ideas and build research excellence), and people advantage (to increase and retain the highly skilled individuals). The quality ambition indicates that training researchers is one of the goals of SSHRC: "to enhance the quality of, and support for, research and research training in the social sciences and humanities" (p. 2). Training of researchers is also embedded in the impact ambition: "to increase the impact of research and research training for the benefit of society" (p. 2). However, training is not reported as one of its achievements, and probably due to the difficulty of setting up evaluation criteria for research training and collecting evidence of it.

SSHRC. (2010a). Briefing on SSHRC's Renewed Program Architecture: Social Sciences and Humanities Research Council.

This report is a brief overview of SSHRC's three umbrella programs (as of 2013) in comparison to the previous programs. Stated rationales for renewing the program structure were: (a) to "create a simpler, more flexible and effective application and assessment system"; and (b) to "reduce complexity, eliminate overlaps in program objectives, and minimize logistical barriers for applicants" by taking into consideration the concerns of the SSH community and previous experience (p.1). Training and support for early career researchers (graduate students and postdoctoral scholars) have not been made a requirement for the Insight research grants program: "Activities funded through this program may include support for training of students and/or for outreach and knowledge mobilization as part of a broader research endeavour." (p. 6). Only research skills are stressed in relation to the trainee Talent funding program, while other skills and needs are not mentioned: "*Talent* at SSHRC promotes the acquisition of research skills

and assists in the training of highly qualified personnel in the social sciences and humanities.” (p. 14). It might be problematic that SSHRC postdoctoral fellowships promote “full time research” of postdocs, whereas other skills are needed (e.g., teaching) if postdoctoral period is perceived as a stepping stone to a verity of academic positions: “The Postdoctoral Fellowships provide support and a research allowance for individuals undertaking full-time research following the successful completion of their doctoral studies.” (p. 15).

SSHRC. (2010b). Framing Our Direction: 2010 to 2012: Social Sciences and Humanities Research Council (SSHRC).

This report outlines strategic priorities and next steps for restructuring SSHRC’s funding programs. See Table 1 for a summary of the priorities and next steps. Besides direct support for new researchers through the career development Talent program, the research grant Insight program will also support new scholars. SSHRC will continue to seek feedback from stakeholders (certainly include postdoctoral scholars) and allow their voices to be heard. An interesting statement is that the Talent program may support those who will work in academia or in other sectors. Priority for this program is “to strengthen SSHRC programs and policies aimed at developing the next generation of leaders and thinkers, both within academia and across all sectors of the economy” (p.9, emphasis added).

SSHRC. (2012). The Insight to Innovate, 2011-12 Annual Report: Social Sciences and Humanities Research Council (SSHRC).

This report describes ways in which SSHRC’s three umbrella funding programs (Talent, Insight, and Connection) promote innovations in knowledge production and application. This 2011-2012 frames global innovation as arising out of the development of knowledge about people and uses this people-centred approach to frame a discussion of the structuring of its programs. The then new *Talent* program, focused on career development, promotes innovation by “adopting a consistent approach to research training across the Talent, Insight and Connection programs; [by] (a) expanding partnership opportunities to support research training; (b) undertaking a series of changes to the programs to directly support students and postdoctoral researchers; and (c) taking deliberate steps to harmonize tri-agency funding opportunities over the next three years.” (p. 12) The *Insight* program promotes innovations through supporting research projects that “span disciplines and sectors to tackle questions that transcend any single area of study” (p. 22). The *Connection* program promotes innovations through mobilizing knowledge (e.g., supporting workshops, conferences, forums, summer institutes) and encouraging partnerships (e.g., industry-academic partnerships). The report does not particularly focus on postdoctoral fellowships. SSHRC’s Imagining Canada’s future initiative, initiated in 2011 explores challenges and opportunities which would influence priorities for funding programs. As the report states that these areas “will be integrated, as appropriate within SSHRC’s Talent, Insight and Connection programs.” (p. 23) SSHRC reports on a series of evaluations, which, according to the report, are available at www.sshrc-crsh.gc.ca, of its funding programs.

Table 1 SSHRC Program Priorities (SSHRC 2011-2012 Annual Report)

Programs/ Services	Priorities/Next steps
Talent	<ul style="list-style-type: none"> • Examine SSHRC’s programs of direct support for research trainees, with a view to strengthening their coherence. • Strengthen SSHRC support for postdoctoral researchers by launching, with CIHR and NSERC, a new postdoctoral fellowships program, and by evaluating SSHRC’s Postdoctoral Fellowships program.
Insight	<ul style="list-style-type: none"> • Launch Insight, a program of renewed funding opportunities for researchers and institutions undertaking research aimed at building knowledge and understanding, working as individuals, teams, and in formal partnerships. • Adjust SSHRC’s peer review processes to support the objectives of the renewed program architecture, while maintaining SSHRC’s internationally recognized standards of excellence. • Provide special support for Canada’s current generation of new scholars, to strengthen and renew Canada’s capacity for world-class research in the social sciences and humanities. • Launch a process to renew SSHRC’s priority areas.
Connection	<ul style="list-style-type: none"> • Launch <i>Connection</i>, a program of renewed funding opportunities for researchers and institutions to undertake knowledge mobilization activities, as individuals, teams, and in formal partnerships. • Promote knowledge mobilization objectives throughout SSHRC’s programs, processes and policies, and align adjudication criteria and processes with these objectives.
Strengthening SSHRC’s Business Practices	<ul style="list-style-type: none"> • Continue to engage SSHRC’s stakeholders in dialogue on issues related to the design, development and implementation of SSHRC policies and programs, particularly those relating to program architecture renewal. • Work with researchers, research institutions and partners to better capture and communicate the results and impacts of social sciences and humanities research. • Improve service delivery by further developing electronic application and assessment processes, and by renewing award administration systems. • Improve governance and management practices by building stronger links between strategic, operational, financial and human resources planning.

Vitae. (2013). Careers in Research Online Survey (CROS): 2013 U.K. Aggregate Results: Views of research staff on their experiences, career aspirations and development opportunities.

Careers Research and Advisory Centre (CRAC) Ltd. Retrieved October 10, 2013 from <http://www.vitae.ac.uk/CMS/files/upload/Vitae-CROS-Report-2013.pdf>

This document reports on findings from the CROS survey conducted in the U.K. in 2013 about the views of over 8,000 research staff in 68 universities about their work experiences, career aspirations, and career development opportunities. The sample is identified as ethnically mostly white⁷ 85%, including women (54%), with a median age 31-45 years old (58%); 20% are from SSH fields. The results, compared to those from 2009 and 2011 surveys, are used to evaluate the progress of the implementation of *Concordat to Support the Career Development of Researcher*, and make recommendations to HEIs.⁸ The Concordat is an agreement between the funders and employers of researchers in the U.K., setting out the expectations and responsibilities of each stakeholder in researcher careers – research staff themselves, their managers, employers and funders. It aims to increase the attractiveness and sustainability of research careers in the U.K. and to improve the quantity, quality and impact of research for the benefit of U.K. society and the economy. The report defines research staff as “individuals whose primary responsibility is to conduct research and who are employed for this purpose. It is recognised that this broad category of staffing covers a wide range of staff with different disciplinary backgrounds, levels of training, experience and responsibility, types of contract (fixed or open-ended, full- or part-time), and different career expectations and intentions.” (p. 5) Postdocs are included in this definition.

The survey found that the proportion of research staff (those on fixed-term contracts) remains consistent. The majority are positive about their experience in terms of recognition for contributions by their institution and fairness in treatment. However, a few (slightly more women and more people who had five or more contracts) feel not recognized and not treated fairly. The availability of training opportunities and take-up of these opportunities are relatively low, yet many are already engaged in teaching, lecturing, supervisory and management activities. The overwhelming majority want to work in higher education; half have a career development plan.

Recommendations to HEIs focused on recognition and fair treatment, and on career development. Regarding recognition and fair treatment, the report recommended that HEIs consider how institutions can recognize more fully the contribution of researchers beyond their research activities; and review policies for unjustified inequalities between research staff and lecturers, particularly in promotion and progression and in participation in departmental and institutional decision-making processes. Regarding career development, the report recommends that HEIs: (a) provide more placement and secondment opportunities to broaden experiences of researchers and widen career aspirations; (b) encourage research staff to engage more actively in career development planning; (c) use the experience of their managers, staff developers and

⁷ The Vitae report uses the label ethnicity for “White,” “Asian,” “Black,” “Chinese,” and “other.”

⁸ See <http://www.vitae.ac.uk/policy-practice/505181/Concordat-to-Support-the-Career-Development-of-Researchers.html>].

careers advisors; and (d) increase and promote the provision of information and advice about careers, career progression and application processes within and outside academia.

No data were presented by broader disciplinary field (i.e., STEM versus SSH). An interesting finding was that, although the respondents are employed for research purposes, over half are actively engaged in pedagogical activities (teaching, supervising, and mentoring). Respondents wanted training and professional development activities beyond research responsibilities. For example, over half wanted to attend training on career management, knowledge exchange, leadership and management, public engagement, and research impact. Over 45% of the respondents wanted to undertake personal effectiveness, supervision of doctoral/masters students, teaching and lecturing.

Appendix C: Career Development Planning

Mentoring and professional development planning for postdoctoral researchers are promoted by the National Postdoc Association (NPA) in the U.S., and the Vitae association for staff researchers in the U.K. Both associations focus on the importance of career development for early stage researchers. In the U.K. a national framework for training, the Concordat, arose in response to the 2002 Sir Garth Roberts review of innovation in research and development. The Roberts review focused on challenges in the supply of research scientists and engineers. The review notes both the importance and the fragility of the postdoctoral period, which is defined as within four years of completion of a doctorate:

Postdoctoral research is a crucial phase in researchers' careers, for it is here that researchers can make a name for themselves through ground-breaking, innovative research. It is also an important phase in which they can develop the skills to lead research projects, which in turn is vital in making the transition to becoming a permanent member of academic staff (or to leading research work elsewhere).

(Point No. 47, Report of the Sir Roberts review, p. 12)

As in other jurisdictions, the Roberts review found that working conditions did not encourage investment in a postdoctorate: the pay was insufficient in comparison to other options; fewer than 20% achieved employment at institutes of higher education (referring specifically to the field of physics, though); and training and career development were insufficient to bridge the gap.

Entering the environment of postdoctoral research work is an uncertain and, for many, unattractive prospect. Postdoctoral researchers ... receive [lower pay and] few opportunities to undertake training and development; and are faced with uncertain futures since employment beyond the current project contract – commonly around two years – is not guaranteed. Furthermore, there is little structure to their career, and little advice as to how to make the jump to becoming a permanent member of the academic staff. (Point No. 48, Report of the Sir Roberts review, p. 12)

Since the 2002 report, significant progress has been made in the U.K. to advance a structured approach to career development (CRAC, 2013). The Concordat agreement, signed by major which are now tracked biannually through the Vitae CROS survey (2009, 2011, 2013).⁹ In addition, due

⁹ Although the Vitae CROS survey focuses on staff researchers, the majority are on fixed term contracts (77%), and 43% identified themselves as researchers with four or fewer years' research experience (years during doctorate education were excluded). A total of 67% indicated that they had been at their current institution four years or less (Vitae, 2013). This is consistent with the majority of postdoc terms in Canada (Mitchell, et al., 2013).

to the development of a database, the impact of training and career supports on research outcomes is now tracked across four domains, named reaction, learning, behaviour, and institutions of higher education as well as the research councils, has implementation criteria outcomes. These refer respectively to immediate perceptions following training, the development of awareness or knowledge, the development of skills, and impacts on research outcomes (Impact and Evaluation Group (IEG), 2010).

In the U.S., career development is supported through the National Postdoctoral Association (NPA), which is co-founded by the research councils and which represents postdocs as well as institutional administrations. The NPA has developed a set of recommendations focused on training and career development. The Sigma Xi Scientific Research Society, representing the sciences and engineering in the U.S., conducted a national survey in 2004-2005. Together with the U.K. Concordat framework, the Vitae CROS surveys, and special reports, the two approaches provide complementary suggestions about training and career development.

Individual Development Plan and Mentoring

Both the U.K. and U.S. approaches centre on career development planning and a close professional mentoring relationship. The central platform of the NPA approach is an individual development plan, or IDP. A basic principle of the IDP, as with the U.K. career development plans, is that the postdoc him or herself develop the plan and assume responsibility for implementing it. Both organizations emphasize that while the postdoc knows what suits him or herself best and can best satisfy their own interests, the mentor acts as a guide, knowledgeable resource, and encourager. However, the postdoc is responsible for developing the elements of the IDP and for ensuring that regular mentoring meetings take place.

The NPA recommends developing an IDP around six core competencies (see Figure 3, Six Core Competencies). The NPA explicitly advises against using “boiler plate” templates, however, they offer suggestions for IDP formats which have been developed by professional societies (see their example from Vanderbilt University). The IDP is put into action through a mentoring plan (see Figure 7 Mentoring Plan ‘How To’). The first part of the first step in the mentoring plan is to identify career opportunities and select ones of interest. The NPA notes that because career opportunities are discipline specific, mentors play an important role in familiarizing postdocs with opportunities and ways of achieving goals. The NPA then suggests that the postdoc conduct rigorous and systematic self-evaluations using formal self-assessment tools such as the well-known Myers-Briggs or others. The third stage of the first step

1. Discipline-specific conceptual knowledge
2. Research skill development
3. Communication skills
4. Professionalism
5. Leadership and management skills
6. Responsible conduct of research

Figure 3 Six Core Competencies, NPA

is selecting priorities for self-development in conversation with the mentor, to optimize future opportunities.

The NPA recommends that the IDP be evaluated annually through a textual report: the postdoc is encouraged to use the report as a discussion piece with their mentor. The Concordat approach is much more structured, with a requirement of filing of plans and funding for training, but execution of the plan in the research environment still requires support of the mentor.

The structured and logical approach to training suggested by the NPA is echoed by the Concordat approach in the U.K. However, the range of identified career development supports evaluated through the Concordat is broader and includes an equity lens (see Figure 4, Seven Key Principles). Equity plays an important role in how close working relationships develop, and so mentoring and many related career development supports engage equity considerations (King, 2000) as well as reflecting important for publicly funded systems.

These areas of development reflect not only individual research career development, but also the contributions that doctorally prepared researchers are making within the research environment. Looking at the broader picture painted by the Concordat, along with the six principal areas of development suggested by the NPA, provides a coherent set of suggestions for promoting career development and a strong indication of ways to evaluate the impact of development on research outcomes during the tenure of a postdoctoral position.

Seven Key Principles

1. Recognition of the importance of recruiting, selecting and retaining researchers with the highest potential to achieve excellence in research.
2. Researchers are recognised and valued by their employing organisation as an essential part of their organisation's human resources and a key component of their overall strategy to develop and deliver world-class research.
3. Researchers are equipped and supported to be adaptable and flexible in an increasingly diverse, mobile, global research environment.
4. The importance of researchers' personal and career development, and lifelong learning, is clearly recognised and promoted at all stages of their career.
5. Individual researchers share the responsibility for and need to pro-actively engage in their own personal and career development, and lifelong learning.
6. Diversity and equality must be promoted in all aspects of the recruitment and career management of researchers.
7. The sector and all stakeholders will undertake regular and collective review of their progress in strengthening the attractiveness and sustainability of research careers in the U.K.

Figure 4 Seven Key Principles, The Concordat, U.K. (Vitae, 2013, p. 4)

Areas of Focus

The types of development and areas of focus vary slightly between the U.S. Sigma Xi survey and the Concordat. The Concordat goals are broader, beyond specific skills development, and may have more implications for the research environment, though, the more individualized level planning of the NPA provides more specific direction around mentoring. The Concordat refers to:

- The assumption of responsibilities within the research environment, including but not limited to teaching and mentoring
- Opportunities to develop and become productively involved in research collaborations
- Feeling valued and appreciated as a member of a research team and institution
- Participating as a lead or significant named author in publications

In spite of the aspirations, significant gaps exist between desired training and achieved training. The Sigma Xi survey (see Table 2, Main Areas of Training) shows a disappointing level of training in such areas as project management, where one might presume that informal training refers to learning by experience, rather than being taught. The challenge is pervasive: most recent survey of postgraduates in the U.K., which included 48,401 post-graduate students in 36 disciplinary areas¹⁰ at 122 institutions of higher education, showed that while satisfaction with supervision was high (over 84%), opportunities for engagement beyond the department or school were lower (58%), opportunities for teaching were yet lower (52%), and opportunities for training in teaching were only available to half of those who taught (1/4 of the overall sample) (Bennett & Turner, 2013).

Table 2 Training Obtained by U.S. Postdocs in the Sciences and Engineering (Sigma Xi, 2004-2005)

Training Areas	Workshop/ seminar/ formal coursework	Informal, on the job training	No training
Research ethics	35.6	33.3	31.1
Writing skills	10.3	60.3	29.4
Public speaking skills	12.0	60.3	27.7
Teaching skills	5.3	30.7	64.0
Grant or proposal writing	16.7	46.3	37.0
Group or lab management	3.6	46.9	49.5
Project management	3.2	63.6	43.3
Negotiating skills	4.2	28.9	66.9
Intellectual property	9.5	26.8	63.7
Conflict resolution skills	6.0	32.7	61.4
English language skills	6.4	36.4	57.2

¹⁰ Including 18 SSHRC domain disciplines from the fine arts to area studies, law, business, education, and social sciences.

Foundation for Planning is Poor

The foundation for poor career planning is laid before the postdoctoral career begins. When asked about direct professional development planning opportunities, 56% of postgraduate students in the health sciences and 54% in STEM areas report no opportunities (Bennett & Turner, 2013). However, the figure is even lower for those in the social sciences (37%) and humanities (39%). As the Bennett and Turner report points out, over 60% of SSH postgraduate students may therefore have no experience with professional development planning. While these results would need to be confirmed for Canada, the similarity of postdoctoral survey results in a number of areas, and the consistency with U.S. surveys in the physical and life sciences and engineering, suggest that there are not likely significant differences between the experiences of postgraduate trainees in either nation. If the trend holds in Canada, an introduction to mentors and mentees on how to construct and manage a professional development and mentoring plan could be an essential first step towards ensuring success for S-PDF' career development.

Developing Mentoring

Developing IDP, or career development plans, is envisioned as a collaborative exercise. Both the Concordat and the NPA mentoring process place responsibility with mentors to make themselves aware of training and career development opportunities for postdocs so that they can offer support. The Canadian 2013 survey of postdocs, the 2013 CROS survey in the U.K., and the 2004-05 Sigma Xi survey in the U.S. all found that too few mentors take an active role in making their mentees aware of training opportunities. Further inquiry needs to be done to understand whether mentors lack information about training opportunities or whether they are aware but believe someone else in the institutional environment has responsibility for communicating about training. The support mentors can offer is an important issue, because postdocs are predominantly in temporary positions and the institutional connections are complex and sometimes tenuous. For example, in Canada only 36% of postdocs are employees, so the institutional path for communicating about opportunities may be limited to the mentor (Mitchell et al., 2013). In addition, the Sigma Xi survey notes that postdocs who are explicit about their expectations with the support of an advisor are more satisfied than those who are not (see Figure 5, Setting Expectations). Both the U.K. and U.S. reports consistently recommend that more attention should be paid to career development planning.

The act of constructing a serious plan of research and career development is a valuable expectation setting exercise. In our survey, 20 percent of postdocs who drew up no initial plan indicated that their advisor is not meeting their initial expectations, whereas less than 5 percent of those with written plans addressing their own as well as their advisors' obligations report such complaints.

Figure 5 Setting Expectations (Davis 2005, p. 13)

Evaluation

Evaluation of performance is the link between the success of individual planning to institutional responsibilities. The Concordat, for example, is an agreement that enables a flow of data for evaluation. Even the survey response rate has improved as a result of monitoring, from a low of 21% of the total population of staff researchers when they began in 2009 to 26% in the 3rd biannual 2013 survey. The number of participating institutions rose from 51 to 68 in the same period (Vitae, 2013). The responses also indicate satisfaction on key issues; for example, 85% of the respondents to the CROS survey agree or strongly agree that they are treated fairly in comparison to other staff in respect to access to training and development opportunities. The results also show that highest uptake in skills training was in the area of research and development, at 41.3% and that the next most accessed training was teaching and lecturing (31.9%), followed by learning and dissemination (31.9%). These trends in uptake are consistent with the Canadian 2013 survey results, though the proportions are much lower. Together, the results indicate areas of institutional work which can support IDP and career development planning. This has important consequences for developing excellence in the research environment, and explicit goal expressed in the Concordat as well as the SSHRC program architecture renewal. Mentors can play an extremely important role in achieving this vision (see Figure 6, Responsible Mentoring).

Responsible Mentoring of Researchers

Mentoring a less-experienced researcher is a professional responsibility of all scientists. The ultimate goal of the mentor is to establish the trainee as an independent researcher. Mentoring responsibilities include sharing knowledge and skills, overseeing the trainee's work, helping the trainee to make contact with other researchers, and assisting with career counseling. The trainee reciprocates by providing work hours and a fresh perspective for the mentor, and taking a proactive role in learning, developing and landing a job.

American Psychological Association

www.ncsu.edu/grad/preparing-future-leaders/rcr/modules/module_3.doc

Figure 6 Responsible Mentoring, APA

'Mentors are advisors, people with career experience willing to share their knowledge; supporters, people who give emotional and moral encouragement; tutors, people who give specific feedback on one's performance; masters, in the sense of employers to whom one is apprenticed; sponsors, sources of information about and aid in obtaining opportunities; models, of identity, of the kind of person one should be to be an academic.' In general, an effective mentoring relationship is characterized by mutual respect, trust, understanding, and empathy. Good mentors are able to share life experiences and wisdom, as well as technical expertise. They are good listeners, good observers, and good problem-solvers.

(Council of Graduate Schools, 1995; Zelditch, 1990)

The implementation of the Concordat means that the success of career planning and training can be evaluated against the development of research outcomes in the U.K. The “Rugby Team Framework” (2008), as it is known, links research outcomes to funding structure, policy/strategy, and personnel development. The Concordat, as a much broader framework, has nevertheless enabled the systematic growth of training opportunities, pointing institutions of higher learning toward training priorities.

The focus on research outcomes is critical to proving the efficacy and relevance of training and career development as a human resource investment toward national targets. This is consistent with SSHRC’s goals for the revision of program architecture, which aim to support research excellence within and outside of academe.

Mentoring Plan "How To"

Developing a mentoring plan does not have to be complicated or time-consuming. The four essential elements of an effective mentoring plan are:

1. Begin with self-assessment *by postdoctoral scholar*.

Consider standardizing this self-assessment with an Individual Development Plan (IDP), which is a written plan that identifies professional goals and milestones and includes a plan for achieving them.

- There are a number of available templates for postdoc IDPs, such as [this template](#) developed by the Federation of American Societies for Experimental Biology (FASEB).
- Using the NPA [Competency Checklist](#) may be a worthwhile exercise.
- Read the current draft of the [Core Competencies](#) document.

2. Develop/find/offer relevant activities (several are suggested in this toolkit).

3. Schedule regular meetings. Frequency will depend on the individual situation; some postdocs may need more frequent meetings than others.

- Take care not to let the research work take over the conversation; stay focused on the development of the person.

4. Conduct a final evaluation.

It is recommended that mentors avoid using "boilerplate" or a "laundry list" of activities and instead tailor any mentoring plan to the postdoc, the postdoc supervisor, the project, and the institution. In practice, mentoring is very individualized, therefore a mentoring plan should allow for flexibility to accommodate an individual's needs as well as style of interaction (especially in the case where the postdoc has not yet been identified).

<http://www.nationalpostdoc.org/publications-5/mentoring-plans/mentoring-plan>

(emphasis added)

Figure 7 Mentoring Plan "How To" (NPA)

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Guidance for Trainees

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Individual Development Plan for Postdoctoral Fellows (NPA)

This IDP is adapted from the School of Medicine, Vanderbilt University, and the National Postdoctoral Association career development section of their website.

The **Individual Development Plan (IDP)** provides a planning process that identifies annual progress, professional development needs, and career objectives for postdoctoral fellows. The IDP serves as a communication tool between postdoctoral fellows and their mentors. Each postdoctoral fellow must complete and submit an IDP within six months of his or her initial appointment. Subsequently, each postdoctoral fellow must complete and submit a renewed IDP at the time of annual reappointment (or every six months).

Goals of the IDP

Help the postdoctoral fellow identify:

- Short-term needs for improving current performance
- Long-term career goals and options and the necessary tools to meet these

Benefits of the IDP

Identifying short-term goals will give postdoctoral fellows a clearer sense of expectations and help identify milestones along the way to achieving specific objectives. Postdoctoral fellows will have a process that assists in developing and achieving long-term career goals. The IDP provides a tool for communication between the postdoctoral fellow and the mentor (PI).

Outline of the IDP process

The development, implementation and revision of the IDP requires a series of steps to be conducted by the postdoctoral fellow and the mentor. These steps are an interactive effort. Thus, both the postdoctoral fellow and the mentor must participate fully in the process.

Additional information

- <http://bret.mc.vanderbilt.edu/bret/>
- <http://bret.mc.vanderbilt.edu/postdoc/>
- <http://www.nationalpostdoc.org/careers-24/career-planning-resources>

Individual Development Plan for Postdoctoral Fellows (suggested form)

A. Information/Signatures

Name of Postdoctoral Fellow: _____

Department: _____

Signature: _____ Date: _____

PI: _____

PI signature: _____ Date: _____

Departmental Chair Signature: _____ Date: _____

B. Research Project(s)

- Describe the aims and experimental approaches of your current research project(s).
- What is the significance of your research?

C. Annual Progress Report

- List or briefly describe major research accomplishments this year (do not include publications or presentations here).
- List new techniques/expertise acquired this year.
- List references for publications submitted or published this year. List references for abstracts that were presented at meetings. In each case, underline your name in the author list. For examples, see <http://bret.mc.vanderbilt.edu/bret/> and follow the links to the sample IDP.
- List your funding source(s) and grants applied for this year. Describe your visa status if appropriate
- List honor/awards received this year.
- List intellectual and/or technical collaborations established or continued this year
- List accomplishments this year in other aspects of career development (e.g. teaching, clinical, committees, course work, etc.). Include teaching of graduate students, undergraduate students, etc. in the laboratory.
- Describe and explain your level of satisfaction with your research progress in the past year?
- Describe and explain your level of satisfaction with other aspects of your career development in the past year?

D. Plans for Up-Coming Year

- Research Project Goals for the up-coming year (be brief).
- What are your plans for improving your scientific writing skills and your oral presentation skills in the up-coming year?

- Anticipated research techniques to learn in the up-coming year.
- Anticipated publications to submit in the up-coming year (indicate projected titles).
- Anticipated meeting and workshop attendance in the up-coming year.
- Fellowship or other funding applications planned for the up-coming year. Describe your plans to alter your visa status if appropriate.
- Anticipated collaborations to establish in the up-coming year.
- Anticipated other professional training for the up-coming year (e.g. teaching, course work, etc.).
- How can your PI help you achieve your goals for the upcoming year? What do you want/need from your PI/mentor?
- [Question for Mentor] How can the postdoctoral fellow improve performance and achieve his/her goals for the upcoming year?

E. Career Goals

- What are your short-term career goals? Describe your time line for achieving them?
- What are your long-term career goals? Describe your time line for achieving them?
- In reference to your career goals, what resources can your PI provide or help you find?
- What further research activity or other training is needed before it is appropriate to start a job search?
- When will you begin a job search? If you do not know, estimate.

How to complete the IDP

Basic Steps	...For Postdoctoral Fellow	...For Mentor
Step 1	Conduct a self-assessment	Become familiar with available opportunities
Step 2	Survey opportunities with mentor	Discuss opportunities with postdoc
Step 3	Write an IDP; Share IDP with mentor and revise	Review IDP and help revise
Step 4	Implement the plan Revise IDP as needed	Establish regular progress review

Appendix D: Discussion Paper: Improving Postdoctoral Appointments in the Social Sciences & Humanities

Improving the Experience for Social Sciences & Humanities (SSH) Postdoctoral Fellows in Canada

A discussion paper on the training, career development needs and administration of Postdoctoral Fellows in the Social Sciences and Humanities

Prepared for the Social Sciences and Humanities Research Council by Silvia Vilches, with assistance of Jeremy Mitchell on behalf of the Canadian Association of Postdoctoral Scholars (CAPS-ACSP)

Talent Program Architecture (PA) Renewal Exercise:
SSHRC Postdoctoral Fellowships (S-PDF)

Research Training Portfolio / Portefeuille de la formation en recherchés
Social Sciences and Humanities Research Council of Canada /
Conseil de recherchés en sciences humaines du Canada

Oct. 15, 2013

Purpose

The Social Sciences and Humanities Research Council of Canada / Conseil de recherches en sciences humaines du Canada (SSHRC / CRSHC) is seeking to improve the experience for social sciences and humanities (SSH) postdoctoral fellows (S-PDF) in Canada by reviewing the training and development needs of postdoctoral fellows in the social science and humanities. The results of this discussion paper will support changes to changes in the research training plan (RTP), which will be in place in time for the next S-PDF competition, to be launched as early as June, 2014.

Current Situation

SSHRC has been renewing its program architecture (PA) to create a simpler, more flexible and effective application and assessment system. The focus of this particular review is on the Talent program, of which the mandate is to "... support graduate and postdoctoral fellows in order to develop the next generation of researchers and leaders needed in academia and across the public, private and not-for-profit sectors." (SSHRC, 2010b, p. 7). The focus on the Talent program represents the third wave in the renewal of the SSHRC PA, after attention to "Insight," which focuses on building knowledge, and "Connections" which facilitates the flow of knowledge and supports impacts. **Phase 1** of the SSHRC PDF (postdoctoral fellowship, or S-PDF) changes have already taken place, increasing the level of the award, reducing the span of time in which a candidate may apply after completing their doctorate, eliminating the research allowance and aligning the evaluation criteria with other SSHRC grants. Two proposals are being considered as part of the **Phase 2** PA changes:

- Require prospective host institutions to submit research training plans as part of the SSHRC Postdoctoral Fellowship application.
- Shift the SSHRC Postdoctoral Fellowships to the model of co-delivery with universities.

SSHRC management has identified consultations with key stakeholders and further analysis of existing information as the mandatory next steps in preparation for the upcoming implementation, and to this end, has invited the Canadian Association of Postdoctoral Scholars to convene workshop with key stakeholders to solicit feedback and suggestions for how best to implement these changes, and to prepare a discussion paper based on this feedback and other information.

Expected outcomes

The changes to S-PDF will be developed and finalized in time for the 2015-2016 competition to be launched, i.e., as early as June, 2014. While the two proposals above may be supported, amended or challenged, it is hoped that key issues will become clearer through stakeholder discussions. Among the questions which may be considered:

- Whether or not SSHRC should go forward with the integration of research training plans and co-delivery, however, assuming so:
- What would be the best/ideal model (within the realm of feasibility) for research training and co-delivery (concrete recommendations)?

- In regards to the recommended models, what would be the implementation timelines?
 - What could be done now (upcoming competition – to be launched June 2014);
 - What could be done in the short to medium term;
 - What would require further research or analysis and, therefore, would require more time to implement?

A final report will be completed by the end of December 2013 for consideration in revising the S-PDF component of the Talent program.

Process

The process of review will include the preparation and distribution of this brief discussion paper to key stakeholders who are invited to a workshop (Nov. 2nd, Montreal). Key stakeholder groups are invited and encouraged to consult colleagues for their input prior to the November workshop, and if appropriate, to prepare remarks to help focus the conversation. The workshop discussion, any remarks prepared or submitted by stakeholders, as well as reviews of the Banting co-delivery model, SSHRC regional consultations, and further background reviews, will be incorporated into the development of a final discussion paper. The review paper will be consulted by the SSHRC's Research Training Portfolio (RTP) in its decision making process.

Key Considerations

A summary of key considerations is presented here by drawing on three diverse sources; (a) significant reports on postdoctoral experiences and status issues, (b) the 2013 survey of Canadian postdocs, and (c) the Banting Program, which has incorporated a model of co-delivery.

Key Literature

Not many publications have focused on the state of postdoctoral education, and those that have tend to focus on experiences in the natural sciences, engineering and/or life sciences due to the quantitative dominance of these research areas (see: Black & Stephan, 2010; EKOS Research Associates, 2013; see: National Academy of Sciences, 2000; National Science Foundation, 2011). Other reports have focused on career or term placement researchers and instructors (American Federation of Teachers, 2010; Vitae, 2013) or have discussed postdocs in the context of the internationalization of research training and education (Black & Stephan, 2010). However, all reports tend to focus on the experiences of "science" researchers due to the much lower proportion of (S-PDF). The 1998 report of the Association of American Universities noted that of the estimated 52,000 postdocs in the U.S., only 4%, or approximately 2000, were in the social sciences and humanities. The proportion of SSHRC area disciplines represented in the U.K. Vitae CROS survey sample of staff researchers was 21% of 8030. The Canadian 2013 survey sample included 250 of 1830, or 13.7%, a proportion in between. The Vitae survey further reflects a similar distribution of areas of study to the Canadian sample.

Table 3 “Main Subject Specialisms” (Vitae 2013 CROS survey, p. 7)

	CROS 2013 (%)	CROS 2011 (%)	HESA¹¹ 2011/12 (%)
Architecture, Building & Planning	1	1	1
Administration, Business & Social Sciences	12	13	8
Humanities & Languages	4	4	3
Design, Creative & Performing Arts	2	1	1
Education	2	2	2
Total	21	21	15

Regardless of discipline, the consensus amongst writers is that not enough is known about the population of postdocs, though the emerging literature is helping to define key issues. The first of these is lack of institutional oversight. Beginning with the 1998 report of the AAU notes that postdoctoral education in the U.S. grew steadily from a relatively small population in the 1950s through to the 1980s when changing economic circumstances appear to have driven a rapid expansion of postdoctoral positions. Their survey of institutional practices in 1998 noted that, likely due to this haphazard growth, institutions were not consistent with their policies. For example, there was (a) little or no attempt to control the number or the quality of postdoctoral appointments; (b) no time limits on the length of postdoctoral appointments or regular exemptions of such limits; and (c) few institutions with campus wide compensation policies for postdoctoral appointees.

The AAU committee concluded that “the lack of clear central oversight of postdoctoral education raises serious questions about how successfully institutions are meeting their obligations to postdocs as trainees and professional colleagues.” They further recommend a definition of postdoctoral positions (see box “Definition of a Postdoctoral Appointment” in this document).

If the focus of this discussion is on research-purposed appointments that have a career developmental aspect, reports focused on staff and employment conditions are relevant in that they provide the most focused and structured attention on supports. In Europe and the U.K., where the norm is for Ph.D. appointments to be standardized as employment positions, postdoctoral positions tend to be classified as research staff. The VITAE organization in the U.K. conducts a regular review of conditions for research staff. Their 2013 survey report includes a profile of postdocs which indicates some parallels with our own classifications: 25.1% have been appointed two or fewer years, and 57% five years or less. While 24% of the research staff population have been in their positions longer than 10 years, 15.8% of Canadian postdocs expect to complete more than three appointments. In the British survey, only 5.5% of the sample

¹¹ HESA, the Higher Education Statistics Agency (www.hesa.ac.uk) established in the early 1990s, is the official statistical agency representing government, the higher education funding councils and the universities and colleges in the UK.

Definition of a postdoctoral appointments

- The appointee was recently awarded a Ph.D. or equivalent doctorate (e.g., Sc.D., M.D.) in an appropriate field;
- the appointment is temporary;
- the appointment involves substantially full-time research or scholarship;
- the appointment is viewed as preparatory for a full-time academic and/or research career;
- the appointment is not part of a clinical training program;
- the appointee works under the supervision of a senior scholar or a department in a university or similar research institution (e.g., national laboratory, NIH, etc.); and
- the appointee has the freedom, and is expected, to publish the results of his or her research or scholarship during the period of the appointment.

represents S-PDF, so approximately 441 out of 8050, while 13.3% of the Canadian sample represents SSH disciplines. Nevertheless, even given these differences, the U.K. report notes that little progress has been made in improving career development opportunities for research staff. Specifically, they note that against the Concordat 12 standards agreed to in 1996 and revised in 1998, only 60% of research staff have had an appraisal (development evaluation) in the last two years, while slightly over half have a formal development plan, and only 20% have availed themselves of development opportunities. While research staff are satisfied with career development opportunities, with over ¾ aspiring to continue in higher education, the authors note that confidence is much lower, with only one in six being certain that they will achieve their goals. The VITAE report provides a convenient list of key career training supports (see Table 2).

Figure 8 Definition of a Postdoctoral Appointment (APA, 1998)

Table 4 Respondents’ development activities and wider experiences during their current role (Vitae, 2013)

	% Have done this	% Would like to do this	N
Collaborate with colleagues outside U.K.	66 [61]	30 [33]	8093
Collaborative research with external organisations	65	30	8071
Work as part of cross-disciplinary team	59 [54]	34 [37]	8075
Undertake internship/placement outside HE ⁽²⁾	9 [5]	42	8044
Knowledge exchange	32	51 [45]	7992
Participate in public engagement	40	40 [37]	8025
Engage with policymakers and end users	30	45	8037
Supervise undergraduate or postgraduate research projects	58	31	8047
Mentor or support other researchers	47	40	8048
Teach or lecture	52	31	8038
Manage a budget	38 [35]	43 [38]	8052
Write a grant/funding proposal	54 [49]	38 [41]	8057

* Vitae, 2013. p. 10, Table 5.

* (2) HE: Higher Education

¹²The Concordat to Support the Career Development of Researchers (<http://www.researchconcordat.ac.uk>).

The primary purpose of postdoctoral positions may be viewed as “To broaden and deepen the research and other skills that are required for a significant contribution to society and satisfying, professional employment” (National Academy of Sciences, 2000, p. 1). The focus in this definition is oriented towards research as a central or significant portion of the activity. In contrast, though, the American Federation of Teachers (AFT) notes that 47% of the instructors at American universities are part time and adjunct faculty, and that 55% have doctoral degrees or the equivalent medical degree. Thus while this discussion focuses on career trajectories of those who are continuing on in expectations of a research career, it must also be recognized that a postdoc is in a period of transition, which may lead to a variety of outcomes. While considering the impact of research training preparation on the field and the institutional structure of research excellence, postdocs may envision additional training purposes besides research preparation. Postdocs themselves may wish for career development supports that would prepare them for a broader range of careers.

Beyond discussion of institutional supports and training needs, some reports also focus on the internationalization of research preparation and knowledge exchange, particularly focusing on the place of researchers in a globalized economy (Black & Stephan, 2010). Although Black and Stephan exclude S-PDF from their analysis, one of the issues they note is that the number of Ph.D.s awarded in the natural sciences and engineering grew from 12,000 in the early 1980s to 23,000 in the mid-2000s. However, they note that domestic (American) citizen awards grew by 30%, almost all the growth was in awards to females. In contrast, the greater proportion of increase was among awards to non-U.S. citizens, demonstrating the growth of higher education internationally. This growth sets the background to a tension between relatively flat growth of positions in the non-SSH disciplines against a dramatic increase of Ph.D.-prepared researchers.

Canadian 2013 survey of postdoctoral fellows

The results of the 2013 survey of Canadian postdoctoral scholars, the 2nd such survey in Canada, raise important questions about the experiences of postdoctoral fellows. This comprehensive survey, which represents 1830 respondents, shows that the average age of postdoctoral fellows is 34, that two-thirds are in long term relationships or married, and one third have dependent children. The results reveal three key problems. The first problem is administrative ambiguity: there is a plethora of institutional arrangements, including employment status and status terms. The variety of appointment arrangements are reflected by, but not necessarily consistent with, the variety of terms used. Postdocs may be appointed or referred to as employees, trainees/students (primarily Quebec), visiting scholars, or teaching fellows, among other statuses. The language of “externally appointed” may be used to refer to those who have independent funding as opposed to those whose funding is managed by the human resource department of an institution and who receive their funds in the form of a salary. However, even externally funded postdocs may be processed through payroll departments. Compared to the whole survey sample, S-PDF were more often appointed as fellows,

Training Options

- Career development
- Research ethics
- Teaching skills
- Presentation skills
- Grant or proposal writing
- Project management
- Writing skills
- Intellectual property
- Group or lab management
- English language skills
- Conflict resolution skills
- Negotiating skills
- French language skills

The second issue is a relatively low level of access to benefits and a relatively high level of dissatisfaction with compensation levels. While the median compensation for all postdocs was between 40,000 and 45,000, the median for S-PDF was reported as between 35 and 40,000. However, there is a multimodal distribution of earning for S-PDF, with a set falling below 25,000 and another peak between 70,000 and 75,000. The multimodal distribution may be connected to a relative dependence on fellowships. Though S-PDF reported a slightly higher reliance on a greater variety of sources of funding, postdoctoral fellowships dominated, at 48.8% vs. 19.8% for all postdocs. In contrast, the proportion of S-PDF who relied on supervisor's research grants was 22.4%, versus 48.5% of all postdocs. The difference in payment sources is connected to differences in appointment status, as those on grants seem to be paid through university payroll and therefore appointed as employees. This, in turn, is connected to lower levels of access to benefits, and consistent with this scenario, S-PDF report lower levels of access to benefits.

**Figure 9 Areas of Training, 2013
CAPS-Mitacs Postdoc Survey**

Finally, though, postdocs have relatively low levels of access to formal or informal levels of training, and S-PDF have less than the average. The 2013 survey developed a list of training questions based on the 2009 survey and the U.S. Sigma Xi questions (see Figure 9, Areas of Training). This list is somewhat narrower than the Vitae list, which includes career development opportunities such as collaboration with colleagues. In the 2013 survey, though, a distinction is made between formal opportunities and informal, and between training taken, training available and training desired. S-PDF had greater access to informal research ethics training (18.3%), informal teaching training (16.2%), and informal negotiating skills training 9.2%. However in all cases except teaching, which was equal, S-PDF had less access to formal training opportunities. Even the category with the greatest access to training, informal opportunities for presentation skills training, was only available to 25.6% of all postdocs. Overall, the majority of respondents in each category claimed that training was either not available or not known if available, though S-PDF left less training behind than non-S-PDF.

More importantly, there were differences reflected in training which was desired, taken and not taken. For example, 70.2% of S-PDF wanted grant writing training. However, 53.2% reported that it was either not available or not known to be available. While 28.9% were able to access informal or formal opportunities, 17.9% also did not take up opportunities.

Internationalization

As various materials and SSHRC's own Banting and other initiatives are responding to the increasing internationalization of the research world. The 2013 survey shows that 51% of all postdoctoral fellows are permanent residents or have temporary visas. However, the proportion is much lower amongst S-PDF, of whom 70% are Canadian citizens as compared with 46.6% of the whole sample. Again, in the area of ethnic diversity, 85% identified as Caucasian versus 65.2% of the whole sample. Only those of Latino/a heritage were equivalent between the SSH and whole sample.

Institutional Support for training within Canada

The relationship between the PDF and their mentor or sponsor is a close one, yet the roles may be in a state of evolution. Over 75% of Canadian Postdocs are satisfied or very pleased with their supervision, and yet over 50% of mentors/sponsors "neither encourage nor discourage" training or career development. This proportion is higher amongst S-PDF; 61.6% compared to 54%. This suggests several possibilities:

- Training and career opportunities which are available are not perceived as relevant by either the Postdoc or the supervisor/mentor.
- Work which is not related to training and development is perceived to be a higher priority by either Postdoc or supervisor, suggesting that the definition of career development may need to be expanded or reconsidered.
- Goals and career trajectories are unclear, and so requirements for preparation are similarly uncertain, leading to lack of uptake and pursuit of training.
- Supervisors and/or trainees are unaware of opportunities.
- Few opportunities are available and therefore encouragement is not the core issue.
- Barriers such as distance, cost, timing, or other issues prevent the take-up of training and support opportunities. This may be the case when postdocs are undertaking work far from their base institution.

Further, the lack of training and career development encouragement may also arise from the institutional structure in which postdocs and their supervisors operate. Many supervisors, as well as PDFs, appear to be relatively isolated from other postdocs. Members of the professoriate in the social sciences and humanities may have less experience in supervising or mentoring postdocs due to the lower number of postdocs. As many institutions are finding, due to the plethora of administrative statuses, it is difficult to connect with postdocs working within their institutions (CAPA, personal communication). While the institutional structure for PDFs has been identified as an issue and is in the process of being addressed by individual institutions, there is an opportunity to explore the perspectives of PDF supervisors on their roles in the support of training and career development. They are key sources of information on the future training needs of postdoctoral fellows and early career researchers.

Banting Postdoctoral Fellowships: Co-delivery model

The Banting model represents a new approach to the offering of postdoctoral fellowships. The Banting fellowships differ in eligibility criteria, administration, and requests of the host institutions. This model is identified as one model of what is termed co-delivery, where the host institution plays a role in screening by only nominating select candidates. The current (July 2013) information for institutions presents this succinctly:

Host institutions play a critical role in the Banting Postdoctoral Fellowships program and are asked to endorse only their highest-calibre postdoctoral researchers. Host institutions must collaborate with applicants and provide evidence of the following:

- the institution's strategic use of the program
- institutional support for the proposed research program
- the institution's commitment to developing the research and leadership potential of the applicant
- positioning the candidate for a successful research-intensive career.

<http://banting.fellowships-bourses.gc.ca/app-dem/instit-etab-eng.html>

The Banting postdoctoral scholarship is open to any Canadian studying at a foreign or Canadian institution, or any non-Canadian studying at a Canadian institution. The Banting thus facilitates international exchange and is able to draw on a wider pool of candidates to promote research excellence. In recognition of this, the stipend is much higher.

However, there are challenges as well. One of these is in working across institutions with varying institutional structures. Last year, of 72 of 492 applicants were contacted to ascertain if the institutional signatory had the authorization to commit resources¹³. This was found to be appropriate in almost all cases, and the wording has been clarified. However, it is likely that in working with diverse foreign institutions there will continue to need to be oversight by the three federal granting agencies.

A more major issue identified in the administration of the Banting is that various institutions appoint postdocs in diverse ways, and in some cases stipends were reduced by deducting employee benefits. The Banting administration issued a statement to clarify but acknowledges that they cannot override institutional practices. This results in an uneven experience for postdocs.

¹³ Personal communication, SSHRC.

A Banting Postdoctoral Fellowship is a stipend and not a salary. Therefore, it is not eligible for Canada Pension Plan (CPP), Employment Insurance (EI), or other non-discretionary benefits. However, institutional policies related to the status of fellows and fellowship payments may differ according to specific legislation and/or institutional policies.

Personal communication, SSHRC

One option is to move all the SSH postdoctoral fellowships to this model, thus requiring institutions to articulate their resources more explicitly, as well as, potentially, to provide more clarity around support to postdocs. However, other models exist as well. In Quebec, the fonds de recherches du Québec (fdrc) represents the formerly separate three research bodies, of nature and technology, health, and society and culture. The goals of the fdrc include to provide leadership and direction to research in Quebec, to position Quebec researchers well internationally, to promote synergies between different sectors of research, and to promote public research in Quebec under a common banner (Quebec, 2012). Postdoctoral awards are restricted to those identified as Quebec residents, are valued at a maximum of \$30,000 for 12 months, and must be carried out in under 24 months.¹⁴ The relationship with the supervisor is conceived of as a “co-supervision” in recognition of the postdoctoral researcher’s independence. In addition, cultural postdoctoral awards are available specifically to promote the completion of creative endeavours. These may be carried out internationally.

The Ontario Graduate Scholarship (OGS) provides yet another model, in this case, like the Banting, devolved to the institutional level. The applicant applies directly to their institutional graduate office, and each institution may set additional criteria. Awards may be topped up by individual institutions and institutions may set their own deadlines and procedures. Each applicant, on the other hand, must apply to multiple institutions if they wish to have more than one option, which may therefore incur duplications of reviews. Two thirds of the value of the award is provided by the Ontario provincial government, while one third is provided by the institution. Some institutions indicate that awards are dependent on funding availability.

Key Questions and Needs

Publicly funded research requires some form of evaluation. Beyond the issue of peer judgments of quality, there are always trade-offs: What research is truly innovative and/or practical? Who should be supported? When is the best time to invest? How best to invest?
(Lamont, Goldman, & the Blue Ribbon Panel, 2008)

As little is known about S-PDF, in spite of the 2013 survey and dedicated attention by SSHRC and other funding bodies, and with the existing administrative ambiguity which makes it difficult to draw conclusions, the intent of this exercise is to undertake discussions with key stakeholders

¹⁴ http://www.fqsc.gouv.qc.ca/fr/bourses/programme.php?id_programme=20#conditions

which will inform the development and implementation of the upcoming changes to the S-PDF funding opportunity.

The questions posed below focus on the needs of individuals, the opportunities available within our current structure, and the future context which is increasingly interdisciplinary and international. These questions are suggested to prompt discussion, and it is hoped that they will encourage a wide ranging and thoughtful set of responses.

Research Training Plan

Training related information suggests that there may be a mismatch between the training provided to S-PDF and the training that is desired.

- In comparing training made available to postdocs within Canada and elsewhere, does the array of training support the development of excellence in research, including exploration of knowledge, development of impacts, and development of career trajectories in research? How so?
- Given the lower uptake of training amongst S-PDF reported in the 2013 survey of Canadian postdocs, is there a mismatch between either the modes of delivery of training to S-PDF or the types of training which are made available?
- What proportion of S-PDF desire, first and foremost, a career in academia vs. a non-academic career, and how might this impact the structure, focus or nature of awards and training?
- Would a broader approach to training, which is inclusive of a variety of career outcomes, be more useful to the application of research skills in a variety of public, private and not for profit settings?
- What resources and information are available to supervisors/mentors as well as postdocs themselves about training, career opportunities, and research development? Are supervisors sufficiently equipped?
- How does Canada benefit from the international exchange of postdocs, and do Canadian postdocs benefit from this international exchange?
- What would be included/covered in the ideal Research Training Plan?
- Does the term “Research Training Plan” reflect the desired concept? Would “Individual Training and Development Plan” be more appropriate/accurate?

Co-delivery Model

- What strengths and opportunities for improvements and/or challenges exist in the current administrative structure of postdoctoral appointments? What would be the ideal co-delivery model and why?

Additional Gaps and Issues for Further Considerations

The reports reviewed here also point to more specific questions. Some of these questions arise from potentially unique work environments and what is known or not known about them, others from the composition of the SSH postdoctoral population and what this may imply, and still others, from what is known or not known.

First, according to the 2013 Canadian Postdoc survey, the administrative environment today appears to reflect Institutional ambiguity and complexity of approaches reported in 1998 by the AAU. This raises some questions around training and career development:

- What is the best institutional structure or point of origin for delivering supports to postdocs and their mentors? Will co-delivery assist in enhancing the training environment?
- What challenges or assets to administering training exist in the current multiplicity of approaches? How can standards of excellence and accountability be assured?

None of the reports reviewed here focus specifically on S-PDF and some explicitly exclude SSH fields. The lack of information is itself an issue. However the reasons behind the lack of reporting may also reflect a parallel lack of focus on the differences and similarities in the training and career development needs of S-PDF.

- What is known and not known about the training and support needs of S-PDF and whether they are or are not distinct? And if so, how can S-PDF be effectively supported alongside postdoctoral fellows in other fields and disciplines?

The 2013 survey of Canadian postdocs reported a lower proportion of international and new Canadian citizens among S-PDF in Canada. This may be reflective of excellence and specializations in some Canadian fields, including strengths in mentoring excellent doctoral candidates. However, this also raises the possibility that training needs may be unique, either to reflect possible differences in international career trajectories, or differences in skill sets between SSH and non-S-PDF have owing to the concentration of Canadian experience. In addition, the SSRHC program architecture goals focus, in part on knowledge mobilization and international exchange of ideas.

- Is the lower rate of international citizens relevant to the training and career development planning for SSHRC funded postdocs? What information may be necessary to answer this question?
- Are there barriers to internationalization in SSH fields in Canada, and would particular training and/or career development supports assist in overcoming possible barriers? What information is needed to answer this question, if it is relevant?

- Does the greater proportion of Canadians in SSHRC funded postdoctoral positions impact the achievement of greater SSHRC program goals, and should this or could this be addressed through training and career development guidance?
- If S-PDF should be prepared for international research work, are they adequately prepared?
- How competitive are ancillary opportunities in Canada? In other words, does or can training opportunities support competitive advantage in attracting top tier postdoctoral applications?

The 2013 report also reflected a higher proportion of women compared to all postdocs. This may or may not impact training and career development needs.

- Are there gender relevant or specific gender-relevant experiences or aspects of career aspirations, which would impact career development and training support needs?
- Is gender equity training important to career development?

According to the 2013 survey of Canadian postdocs, there was a lower proportion of S-PDF who desired English language training, and a greater proportion who preferred French language training.

- What does the desire for French language reflect, and is this something that could or should be encouraged?

In comparison to Ph.D.-prepared researchers in non-SSH fields, the working environments of S-PDF are less well documented. The question of working environments impacts directly on training and preparation.

- Large research teams are less common in social science and humanities research environments, and although an increasing emphasis has provided funding for networks, the nature of the work environment remains the project-based rather than equipment-based. Teams are coalitions which form for the purpose of carrying out a project. How does the different work environment impact formal and informal training opportunities?
- The equipment needs of those in SSH fields tend to be different than those in life science, natural and engineering fields. Rather than large capital investments, researchers apply smaller capital investments to networks and personnel development. What kind of career development implications might this imply, and how could the training needs of S-PDF be ascertained, including by asking S-PDF?
- The apparent project-based nature of the work may suggest that the articulation of research objectives carries more prominence in the work of SSH researchers. Is there a need for a training focus on development and articulation of research ideas?

These three issues represent possibilities that lack of systemic documentation. However, they may also suggest advantages in specific areas of training such as in the preparation and training in the development of networks, the mentoring of successors, the articulation of research trajectories, the management of university-community partnerships and ethical relations, and knowledge mobilization.

- What key issues would indicate the extent of differences, in working environments for S-PDF, both in their current situations and in their future careers, and how this might indicate unique training needs?

Bibliography¹⁵

Appendices to the Discussion Paper

- I. Background on SSHRC's Talent Program
- II. SSHRC Postdoctoral Fellowships Funding Opportunity Description
- III. Focus on Social Sciences and Humanities Data from the 2013 Survey of Canadian Postdocs

¹⁵ For full list of references and bibliography, see Appendix A, this report.

Appendix D (Part I) Background on SSHRC's Talent Program

The Talent program provides one means of fulfilling the three strategic ambitions of SSHRC (SSHRC, 2010b) quality, connections and impact. The Talent programs promote the acquisition of research skills among new researchers and students for the purpose of assisting in the training of highly qualified personnel in the social sciences and humanities. The Talent program is intended to foster the development of leaders across campuses and communities, and through this personnel development, contribute to Canada's success in the globalized 21st century (SSHRC, 2010a). The Talent program provides support through master, doctoral and postdoctoral fellowships. These include:

- Canada Graduate Scholarships (CGS) program for masters and doctoral students
- The Vanier Canada Graduate Scholarships for doctoral students (open to non-Canadians, administered by the Tri-agencies, first granted 2009)
- Postdoctoral Fellowships (restricted to Canadians)
- Banting Scholarships (open to non-Canadians, administered by the Tri-agencies, announced in 2010 and first granted in 2011.)
- Michael Smith Health Research Foundation supplements to Social Sciences and Humanities students

The new program framework, approved in March 2012, centres on four key changes: (a) adopting a consistent approach to research training across the Talent, Insight and Connection programs; (b) expanding partnership opportunities to support research training; (c) undertaking a series of changes to the programs to directly support students and postdoctoral researchers; (d) and taking deliberate steps to harmonize tri-agency funding opportunities over the next three years (SSHRC, 2012, p. 12). It is the third focus, support to students and postdoctoral researchers, which is the specific focus here. However, the SSHRC 2011-12 annual report also noted that a high demand for social sciences and humanities-related skills and competencies in all sectors of the business community because jobs are increasingly data- and information-intensive, and "soft skills", such as teamwork and the ability to communicate clearly, are in increasing demand. In addition, the evolution of the Banting Fellowships as an opportunity jointly administered by the Tri-agencies and implemented in 2010/11 serves as a possible model for co-delivery.

Objectives

The objectives of the Talent program are:

- to support the development of highly qualified personnel with research and professional skills;
- to support the most promising students and postdoctoral fellows;
- to assist students and scholars in gaining exposure to international scholarship; and
- to mobilize knowledge.

Appendix D (Part II) SSHRC Postdoctoral Fellowships Funding Opportunity Description

Notice of Change: October 2013 Competition

Applicants should be aware that changes have been made to the 2014-2015 SSHRC Postdoctoral Fellowships funding opportunity.

Overview

Value	\$40,500 per year
Duration	12 to 24 months
Application deadline (8 p.m. eastern)	October 2, 2013 (Closed)
Results announced	February 2014
Apply	Web CV, application and instructions

Description

SSHRC Postdoctoral Fellowships proposals are expected to respond to the objectives put forward in the call for proposals for the Talent program.

SSHRC Postdoctoral Fellowships support the most promising Canadian new scholars in the social sciences and humanities and assist them in establishing a research base at an important time in their research careers.

SSHRC Postdoctoral Fellowships provide stipendiary support to recent PhD graduates who are:

- undertaking original research;
- publishing research findings;
- developing and expanding personal research networks;
- broadening their teaching experience; and
- preparing to become competitive in national research grants competitions.

Fellowships will normally be awarded to candidates affiliated with a university other than that which awarded the PhD. SSHRC Postdoctoral Fellowship awards are tenable at Canadian or foreign universities and research institutions.

Note that SSHRC also welcomes applications involving research-creation.

For a complete list of other SSHRC funding opportunities that may be of interest to postdoctoral researchers, please use the Funding search tool and select “Postdoctoral researchers” as the type of applicant.

Value and Duration

SSHRC Postdoctoral Fellowships are valued at \$40,500 per year. These are taxable, non-renewable fellowships, tenable for a minimum of 12 months and a maximum of 24 months. The award may begin on the first of any month between May 2014 and January 2015.

Eligibility

Subject Matter

Most SSHRC funding is awarded through open competitions. Postdoctoral Fellowship proposals may involve any disciplines, thematic areas, approaches or subject areas eligible for SSHRC funding. Please see Eligibility for more information.

Research Eligibility

It is the subject matter and the objectives and content of a proposal, rather than research methodology or the institutional affiliation of the applicant, that determine research eligibility. Research programs proposing only the adaptation of doctoral theses for publication, the editing of textbooks, translation, or the acquisition of a foreign language are ineligible. In other words, the research proposed in the application for a SSHRC Postdoctoral Fellowship must be significantly different and distinct from, or add significantly to, that related to the doctoral thesis.

Applicants

Eligibility to Apply

To apply to this funding opportunity, applicants must:

- be a citizen or permanent resident of Canada (by the application deadline);
- have earned a first doctorate from a recognized university no earlier than October 1, 2011 (date all degree requirements were completed, not the date of graduation), or have completed a first doctorate no earlier than October 1, 2008, but have had their career interrupted or delayed for the purpose of maternity, childrearing, illness, or health-related family responsibilities;
- not hold a tenure or tenure-track faculty position;
- have finalized arrangements for affiliation with a recognized university or research institution;
- have applied not more than twice before to the SSHRC Postdoctoral Fellowships funding opportunity;

- not be applying in the 2013-14 academic year to the Natural Sciences and Engineering Research Council (NSERC) Postdoctoral Fellowships program or the Canadian Institutes of Health Research (CIHR) Postdoctoral Fellowships program; and
- not have already received a postdoctoral award (including a Banting Postdoctoral Fellowship) from SSHRC, NSERC or CIHR.

Applicants who obtain their PhD from a foreign university are eligible to apply only if they wish to hold their award at a Canadian university.

Applicants are eligible to apply to hold their award at a foreign university only if their PhD was earned at a Canadian university.

Eligibility to Hold a Fellowship

To hold the award, applicants must:

- have completed all requirements for their doctoral degree before taking up the SSHRC Postdoctoral Fellowships award;
- engage in full-time postdoctoral research for the period of the award; and
- not hold or have held a tenure or a tenure-track position or hold any other employment with the exception teaching the equivalent of one full course per year.

Applicants who do not complete all requirements for their doctoral degree by December 31, 2014, may have their offer of an award withdrawn. Note that withdrawn or declined awards will be included in the calculation of the three-application limit for this funding opportunity.

Federal government employees are eligible to hold a SSHRC Postdoctoral Fellowship award only if they are on an unpaid leave of absence (no salary or special allowances permitted).

Application Process

Before submitting their application, applicants must ensure that they meet the requirements specified under Eligibility. Applicants must complete and submit **only one application** form, together with the CV and the required attachments. Instructions for filling out the application form and CV are available within the form used by applicants to create their online submission.

Evaluation and Adjudication: Competition Process

Step 1: On or before the deadline, the applicant submits to SSHRC his or her completed application and supporting documents.

Step 2: SSHRC staff review all applications and forward eligible applications to the multidisciplinary selection committees.

Step 3: The multidisciplinary selection committees evaluate all eligible applications and make recommendations regarding funding. Committee recommendations are subject to approval by SSHRC.

Step 4: SSHRC informs all applicants of the outcome of their applications in February of each year. Results are not provided by telephone or email.

Evaluation Criteria and Scoring

The following criteria and scoring scheme are used by the multidisciplinary committees to evaluate SSHRC Postdoctoral Fellowship applications:

1. Challenge—The aim and importance of the endeavour (20%):
 - originality and potential significance of the proposed program of work.
2. Feasibility—The plan to achieve excellence (30%):
 - feasibility of the proposed program of work; and
 - appropriateness of the intended place of tenure.
3. Capability—The expertise to succeed (50%):
 - fellowships, scholarships or other awards obtained;
 - previous research experience and/or publications; and
 - timely completion of doctoral studies, taking into account the nature of the program and relevant personal circumstances.

Scoring table

Committee members assign a score for each of the three criteria listed above, based on the following scoring table. The appropriate weighting is then applied to arrive at a final score. Applications must receive a score of 3.0 or higher for each of the three criteria in order to be recommended for funding.

Note: The subcriteria listed above are themselves not weighted, and are, instead, indicative factors that reviewers should consider in scoring the corresponding criteria.

Score	Descriptor
5 – 6	Very good - excellent
4 - 4.9	Good - very good
3 - 3.9	Satisfactory - good
Below 3	Unsatisfactory

Administrative Regulations and Related Information

SSHRC reserves the right to determine the eligibility of applications it receives, based on the information therein. SSHRC also reserves the right to interpret the regulations governing its funding opportunities set out in its published materials.

All applicants and fellowship holders must comply with the Regulations Governing Fellowship and Scholarship Applications and with the regulations set out in the Award Holder's Guide.

For descriptions of SSHRC terms, see Definitions of Terms (website).

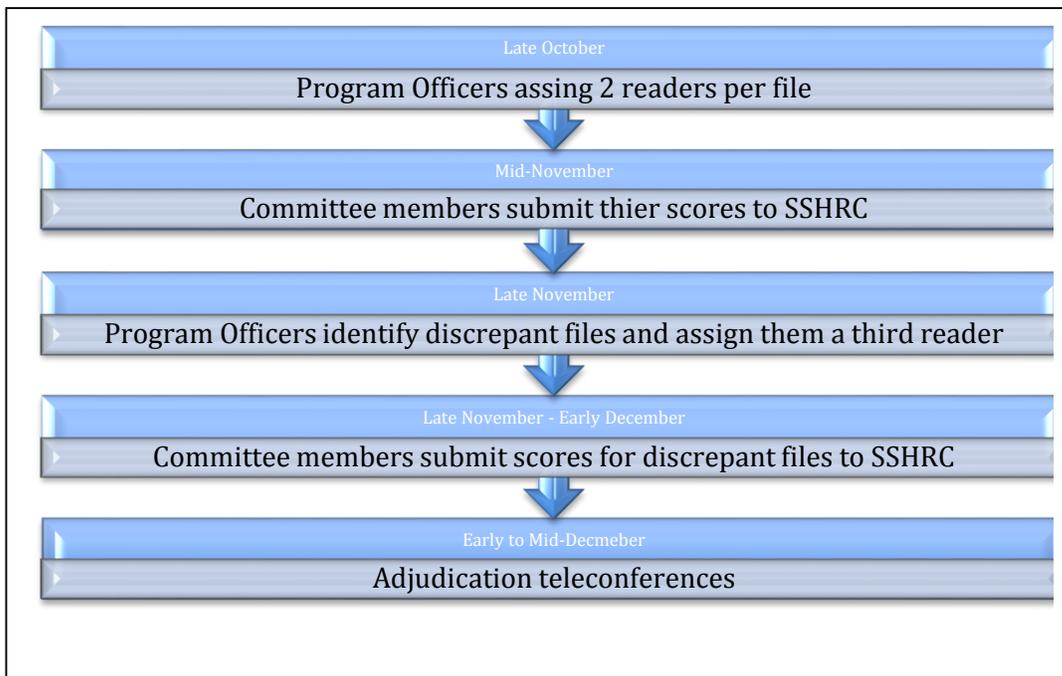


Figure 10 SSHRC Postdoctoral Fellowships evaluation process, Model of decision making process for S-PDF (Lamont, Goldman and the Blue Ribbon Panel, 2008)

Appendix D (Part III): Focus on Social Science and Humanities Data from the 2013 Canadian Survey of Postdocs

This report presents a subset of key findings from the CAPS Mitacs 2013 Canadian Postdoc Survey (Mitchell et al, 2013) as they pertain to Social Sciences and Humanities (SSH) postdocs. Most previous studies of postdoc communities have concentrated on postdocs working in natural science and medicine; studies focusing on S-PDF are scarce. The 2013 Survey is an opportunity to remedy that deficiency. Of the 1830 postdocs who completed the survey, 250 identified an SSH research field¹⁶. This impressive response rate allows CAPS to better characterize Canadian S-PDF and to contrast the SSH postdoc community with the overall population of Canadian postdocs.

The full survey dataset is incredibly rich; this appendix provides a summary overview. We focus here on demographic characteristics, including nationality; on funding sources and compensation; on respondents' future aspirations and on training access and needs. Throughout, we contrast S-PDF with the overall postdoc population. Where practical, we also contrast SSH sub-disciplines. For the sake of brevity, results are summarized in tables, with key observations highlighted in the text.

SSH Sub-disciplines

Most S-PDF identify their field of study as Social Sciences, Humanities, or Psychology ¹⁷ (Table 1). Twenty respondents were classified as interdisciplinary, either because they self-identified as such or because they identified multiple SSH research fields. Interdisciplinary postdocs whose research fields extended beyond SSH research fields were not included within the SSH population. Sub-disciplines with relatively few respondents were pooled to as "Other SSH."

Table 5 SSH sub-disciplines

	%	(n)
Social Sciences	31.2	(78)
Humanities	26.8	(67)
Psychology	21.6	(54)
Other SSH:	12.4	(31)
-Business Management	4.0	(10)
-Education	3.2	(8)
-Fine and Applied Arts	2.8	(7)
-Communication, Journalism, and Library Science	1.6	(4)
-Law	0.8	(2)
Interdisciplinary	8.9	(20)
	(Total 250)	

¹⁶ Respondents to the survey identified one or more fields of study that best described their work. These were then grouped into broad research fields: Social Sciences and Humanities (SSH), Life Sciences, Physical Sciences and Engineering, and Interdisciplinary. Respondents who identified fields of study spanning two or three broad research fields were classified as "Interdisciplinary." This report focuses on postdocs whose declared research field(s) were exclusively SSH. In this report, "interdisciplinary" is used to describe a SSH postdoc whose work spans more than one SSH sub-discipline.

¹⁷ The research interests of an individual psychology postdoc may fall under the purview of SSHRC, NSERC, or CIHR. Blanket inclusion of psychology postdocs within the SSH population should lead to more conservative estimates of the differences between S-PDF and the overall population.

Funding Sources, Compensation, & Benefits

Table 2 summarizes respondents' primary funding sources and average annual salaries/stipends. The most dramatic difference between S-PDF and the broader postdoc population is the importance of direct fellowship funding from SSHRC: almost half of all S-PDF report that they are funded through a Tri-Council — presumably SSHRC — fellowship. Thus, SSHRC's influence on the administration and compensation of S-PDF is much more direct than that of CIHR or NSERC.

Table 6 Primary funding source and average salary/stipend by SSH subdiscipline and for all Canadian postdocs ("All") (Sources are percentages. Sample sizes are in grey.)

	SocSci	Human	Psychol	Other	Interdisc	SSH	All
Funding source							
CIHR/NSERC/SSHRC fellowship	51.3	67.2	38.9	32.2	30.0	48.8	19.8
Supervisor's research grant	23.1	10.4	35.2	22.6	25.0	22.4	48.5
Provincial government or research council	5.1	4.5	3.7	12.9	10.0	6.0	5.6
Institutional/departmental training grant	6.4	5.9	0	6.4	15.0	5.6	4.2
Private foundation fellowship	1.3	4.5	13.0	0	0	4.4	5.9
Mitacs or industrial fellowship	3.8	0	3.7	6.4	0	2.8	7.0
Foreign government or entity	5.1	3.0	3.7	3.2	5.0	4.0	2.3
Other/Don't know	3.8	4.5	1.8	16.1	15.0	6.0	6.6
	78	67	54	31	20	250	1830
Average Salary/Stipend*	42,266	41,022	42,314	38,815	41,774	41612	43973
	75	66	54	31	19	245	1802

Despite the large numbers of international postdocs working in Canada, only 4% of S-PDF (and only 2.3% of postdocs overall) have funding from outside the country. The number of international postdocs who have the financial flexibility to choose a host country, and who choose Canada, is a potentially useful metric for assessing Canada's reputation within the international research community.

On average, S-PDF are paid significantly less than their peers in other research fields. The pattern of variation around that average is unusual: the salary/stipend distribution for S-PDF is multimodal: the most common salary bracket is \$35,000-\$39,999, but there are also distinct secondary peaks at <\$25,000 and \$70,000-&74,999 (Table 3). In contrast, the salary/stipend distribution for the overall postdoc population is unimodal (albeit skewed) with a peak at \$40,000-\$44,999. The SSH distribution may indicate distinct salary/stipend differences between sub-disciplines or funding sources.

Table 7 Access to key benefits (percentage; sample sizes in grey)

	SSH	All
Health insurance	54.8	67.9
Dental insurance	36.4	51.2
Employment insurance (EI)	18.0	23.3
Health insurance for family	32.8	46.8
Canada Pension Plan (CPP)	14.4	20.6
Retirement plan	3.6	5.4
	250	1830

S-PDF are also less likely to have access to benefits. Table 4 summarizes access to the six benefits prioritized by Canadian postdocs in order of decreasing importance. In each case, S-PDF are less likely to have access to the benefit than their

non-SSH peers. It seems likely that this pattern arises, at least in part, because a greater proportion of S-PDF are funded through external (SSHRC) fellowships. Many institutions, including universities, have been unable or unwilling to offer employee benefit packages to externally-funded postdocs. Likewise, EI and CPP benefits require employee status. We encourage SSHRC to explore means of extending these benefits to SSHRC-funded postdocs.

Table 5 presents key demographic data for S-PDF, by sub-discipline and collectively, and the equivalent data for the overall postdoc population. Two points are worth noting. First, the demographic data for both S-PDF and the overall postdoc population clearly show that postdocs have reached a life stage where the uncertainties and instability currently associated with postdoctoral scholarship can conflict with other life priorities. The typical SSH postdoc is in their early to mid-thirties. Most are married. Roughly two thirds are women, though the proportion of female postdocs in the social sciences and humanities is higher (63.2%) than the overall average (45.8%). Roughly one third of S-PDF

Table 9 Demographics (percentages; sample sizes in grey)

	SocSci	Hum	Psych	Other	Inter	SSH	All	
Age	25–29	2.6	7.5	24.1	9.7	5.0	9.6	15.2
	30–34	57.7	55.2	53.7	29.0	40.0	51.2	51.5
	35–39	20.5	29.9	20.4	29.0	25.5	24.4	21.8
	40+	19.2	7.5	1.9	32.3	30.0	14.8	11.5
	78	67	54	31	20	250	1821	
Gender	Female	65.4	61.2	64.8	48.4	80.0	63.2	46.5
	Male	34.6	38.8	33.3	51.6	20.0	36.4	53.4
	Other	0.0	0.0	1.9	0.0	0.0	0.4	0.1
	78	67	54	31	20	250	1828	
Marital	Sngl, NM	20.5	30.3	42.6	6.7	15.0	25.8	29.2
	Mar/CL	76.9	66.7	55.6	90.0	85.0	71.8	68.9
	Div/Sep/Wid	2.6	3.0	1.9	3.3	0.0	2.4	1.9
	78	66	54	30	20	248	1796	
Dep. Child.	0	71.1	68.8	77.8	61.3	40.0	68.2	64.7
	1	18.4	17.2	11.1	12.9	25.0	16.3	19.1
	2	6.6	10.9	7.4	19.4	30.0	11.4	12.2
	3+	3.9	3.1	3.7	6.5	5.0	4.1	3.9
	76	64	54	31	20	245	1802	
Residence	Atlantic	2.6	3.0	11.1	6.5	10.0	5.6	5.9
	B.C.	21.8	14.9	11.1	12.9	5.0	15.2	15.5
	Ontario	41.0	31.3	42.6	35.5	45.0	38.4	36.4
	Outside Canada	7.7	11.9	7.4	3.2	0	7.6	3.4
	Prairies	5.1	9.0	3.7	6.5	5.0	6.0	14.0
	Quebec	21.8	29.9	24.1	35.5	35.0	27.2	24.8
	78	67	54	31	20	250	1830	
Citizen.	Can Cit	73.1	76.1	57.4	64.5	80.0	70.0	46.9
	LI/PM	10.3	7.5	7.4	12.9	0	8.4	15.4
	Intl	16.7	16.4	35.2	22.6	20	21.6	37.7
	78	67	54	31	20	250	1818	
Canadian degree?	62.8	65.7	57.4	67.7	65.0	63.2	50.4	

Table 8 Salary/stipend brackets (percentages; sample sizes in grey)

	SSH	All
\$24,999 or less	6.1	2.2
\$25,000 - \$29,999	3.3	2.6
\$30,000 - \$34,999	11.8	8.6
\$35,000 - \$39,999	33.9	20.5
\$40,000 - \$44,999	19.6	30.1
\$45,000 - \$49,999	6.9	14.4
\$50,000 - \$54,999	8.6	10.3
\$55,000 - \$59,999	0.8	4.6
\$60,000 - \$64,999	1.6	2.6
\$65,000 - \$69,999	0.4	1.2
\$70,000 - \$74,999	6.5	2.1
\$75,000 - \$79,999	0.4	0.3
\$80,000 or more	0.0	0.6
	245	1802

have dependent children. To support S-PDF effectively, the realities of postdocs' lives must be recognized and accommodated.

The second demographic reality is that while the SSH postdoc population is certainly heterogeneous, it is less variable than the overall postdoc population. The higher proportion of Canadian citizens is particularly notable (70%, vs. 47% in the overall postdoc population, (see below). It would be prudent to ask whether SSHRC policies or SSH research culture are discouraging research talent from underrepresented demographic groups.

Migrations of skilled researchers continue to be a topic of great interest. The global mobility of early-career researchers can aid in the transmission of new perspectives and approaches between research groups and encourage the formation of new collaborative research teams. The 2013 survey approached this topic in several ways, two of which are illustrated in Table 6, which summarizes the countries where postdocs earned their highest degree, and presents non-citizens' continents of origin¹⁸. (Note that the two questions are not equivalent, e.g., Canadian citizens may undertake graduate studies in another country and then return to Canada as postdocs.) By either measure, S-PDF are more homogeneous than the overall postdoc population. S-PDF are more likely to have completed their highest degree in Canada and, if not in Canada, then in one of a relatively small number of western nations. S-PDF are also more likely to be Canadian citizens (Table 5). Among postdocs who are not Canadian citizens, S-PDF's continents of origin are more concentrated than those of the overall postdoc population.

Table 10 Initial and current career aspirations (percentages)

	SSH		All	
	Initial	Current	Initial	Current
University research faculty	91.6	82.4	80.5	68.9
Non-research teaching faculty	14.4	18.8	11.4	13.8
Public service	6.8	11.6	7.7	10.0
NGO research	6.0	10.4	6.4	8.3
Consulting	6.4	10.4	6.3	10.4
Professional practice	4.8	5.6	3.7	5.2
Industry/private sector research	4.4	8.4	24.7	30.2
Entrepreneurship	1.2	4.4	4.8	7.5
Unsure	2.8	3.6	4.8	7.8
Other	1.6	3.6	1.0	2.9
Goals have not changed	82.0		76.9	

Table 11 Country of highest degree and continent of origin (percentages; sample sizes in grey)

	SSH	All	
Highest Degree	Canada	63.2	50.4
	United States	11.2	9.1
	United Kingdom	6.8	4.9
	France	4.8	8.2
	Germany	2.4	3.3
	China	1.2	4.4
	Australia	0.8	1.9
	India	0.4	2.3
	Other	9.2	15.5
		250	1,830
Origin (non-citizen)	Europe	51.4	39.8
	Asia	22.2	37.6
	North America	18.1	10.5
	Australia	4.2	3.2
	Africa	2.8	4.4
	South America	1.4	4.5
	Prefer not to answer	4.2	1.5
	72	952	

Finally, the 2013 survey asked postdocs about their career aspirations both when they first took up their appointment and currently. These data are presented in Table 7. Across the overall postdoc population, there is an overwhelming preference for academic careers. Among S-PDF, aspirations for an academic career are even more concentrated. Very few SSH respondents reported an interest or intent to pursue careers in the private sector at the start of their postdocs. The career aspirations of S-PDF are also less likely to change over the course of their postdoctoral appointments. Whether aspirations should be seen as a problem for the SSH research community and SSHRC depends on SSHRC's program objectives and on the availability of faculty job openings. If SSHRC programs are intended to provide advanced training to future academics then SSHRC might conclude that the focus should be on ensuring that PDF postdocs obtain academic positions, and therefore tailor not only the quality of training but the number of awards to the size of the job market. If the PDF program is explicitly intended to help SSH PhDs explore a

¹⁸ We report continent, rather than country of origin because specific nationality information was removed in order to preserve respondent anonymity.

more diverse set of career pathways, a narrow focus on academic careers may be problematic. As a result, there is a need in general to ascertain the ratio of Ph.D. graduates and SSHRC postdocs to positions. This information should be available from Canadian colleges and universities.

Training and Career Development Supports

Training is a fundamental aspect of a postdoctoral appointment. Most definitions, including the definition used by CAPS, state that a postdoctoral appointment is intended to provide training, [and] ... many universities formally classify their postdocs as trainees. In a university setting, training is arguably the only real distinction between a postdoctoral scholar and a research associate. The 2013 Canadian Postdoc Survey devotes considerable attention to characterizing the training available to Canadian postdocs and the fit between postdocs' training and their career aspirations.

(Mitchell et al., 2013, p. 25)

Access to formal and informal training and development opportunities was limited for all postdocs, but more limited for S-PDF. Most frequently, all postdocs indicated that they either did not know if a specific training was available or they knew it was not. This was equally true for S-PDF. The level of access was low: for example, S-PDF most frequently accessed training in the area of teaching, yet only 13.4% of all S-PDF accessed informal or formal opportunities in this area. Most postdocs did indicate that they wanted training, though. In Table 8, the training that was accessed is shown as a percentage of all training accessed. As the 2013 survey report points out, the priorities are a clue to future career aspirations. However, all postdocs indicate that only a small proportion of the training taken by postdocs is designed for postdocs.

The measures of training taken versus training desired differ in that one is about experience and the other about aspiration. However, the results consistently show that for S-PDF, as with all postdocs, neither the opportunities nor the specific training taken meet the aspirations. For example, 70.8% of S-PDF wanted grant writing training, while 28.9 7% were able to access grant writing training. Of that, less than one third was formal training (8.7%). A further issue emerges when postdocs are asked how much of the development and training supports they access are designed for postdocs. Much training is either for graduate students or faculty members. In this case, 18.2% of the grant writing training that S-PDF accessed was reported to be designed or intended for postdocs. This means that 18.2% of 8.7% was designed for postdocs, so a maximum of 4 individuals out of 250 accessed formal grant writing training that was intended for them. The access that postdocs had to training was generally less than the general sample: for example, 67.3% of the whole 1830 wanted grant writing training, while 43.4% were able to access such training. However, while it may be important to point out that the gap between desired training and obtained training was wider amongst S-PDF than it was for the whole group, the larger story is that training which was accessed may not have suited postdocs well, and that the low access to training hardly reflects the status of “trainee.”

As with all postdocs, the majority of supervisors/mentors of S-PDF neither discouraged nor encouraged training and career development opportunities, though SSH mentors were a little less likely (61.6% vs. 54.0%) to encourage training.

The International Perspective on Opportunities

As mentioned above, the proportion of S-PDF who are Canadian citizens is greater than in the whole sample, and more identify as Caucasian. The differences in desired training may also be revealing as a set of priorities and perceived advantage. For example, Table 9 shows that greater opportunities to do research in their field is a number one reason for all postdocs to do a postdoc in Canada. However, there are small differences in the priorities between S-PDF and the whole population. S-PDF name career opportunities as their no. 2 priority, for example, suggesting they see it is advantageous to their careers. The fourth priority, access to equipment and physical infrastructure, may indicate a competitive advantage for Canada. Of note (not shown here), the top aspiration for all postdocs was language training, but for S-PDF, it was French language training (18%). This difference may reflect the greater internationalization of non-S-PDF, or it may, alternately, reflect the emphasis on language skills in the social sciences and humanities. However, of note in this context is the higher aggregate priority on French language skills among S-PDF. This may reflect the greater homogeneity of this population, but it may also reflect a perceived career advantage. These differences suggest that one solution will not fill all, and that further investigation is needed to understand the reasons for this difference.

In summary, while S-PDF form a smaller subset of the whole postdoc sample, they show important variation within the group as well as between SSH and non-S-PDF. This summary has highlighted some of the key differences. If the whole postdoc population were like the SSH population, there might be greater emphasis on parental leave, and more concern about diversity and curiosity about internationalization. The gap between desired training and attained training would be that much greater, raising questions about institutional structure, access, barriers, and relevance. The lower rate of encouragement by SSH mentors might be perceived as a reflection

Table 12 Training Taken vs. Training Available, Difference between SSH Postdocs and All Respondents as a percentage of all training available or taken (excluding “not available” and “I don’t know”)

	Training Taken (top 5)		Training Available (top 5)				
SSH	All	SSH	All	SSH	All	SSH	All
Career Development	31.3	Career Development	48.3	Grant Writing	70.8	Grant Writing	67.3
Group / lab mgmt	27.2	Grant writing	43.4	Career Development	53.2	Project mgmt	48.4
Presentation	21.2	Project mgmt	39.9	Teaching	44.8	Career Development	47.3
Grant writing	18.2	Conflict mgmt	41.8	Project mgmt	36.8	Teaching	40.9
Project Mgmt	18.2	Presentation	36.2	Writing	26.0	Group / lab mgmt	37.0
Writing	15.4	Group / lab mgmt	34.3	Negotiating	23.2	Negotiating	28.4

on lack of relevance, or it might be investigated as a general lack of practice of taking training in the social sciences and humanities. The gap between training and aspirations might also be investigated as a location issue, since lab-based scientists who are in a fixed location may be easier to deliver training to. This connects to conditions of work, which this survey did not cover. S-PDF may be in the field or more free to work at various locations. Thus this synopsis raises some key questions.

Table 13 Top 5 Reported Reasons for Wanting to do a Postdoc in Canada

Priorities	SSH		All
Greater opportunities to do research in my field	52.8	Greater opportunities to do research in my field	48.8
Future career opportunities	45.3	Learning new approaches	47.2
Learn new approaches	41.5	Future career opportunities	42.5
Better access to equipment and physical infrastructure	41.5	Reputation of the institution (as 2 nd choice)	41.9
Opportunity to collaborate with Canadian researchers	37.7	Greater opportunities to do research in my field (as 2 nd choice)	37.5
Personal interest in living in Canada	37.7	Learning new approaches (as 2 nd choice)	37.5

Key Discussion Questions

- Given the demographic profile, are the needs of S-PDF being met?
- Does the relative lack of diversity suggest a strength or a need for encouragement of internationalization?
- Is the training that is available well suited to the needs of S-PDF, or is it more suited to non-S-PDF?
- Is training perceived as relevant and useful to career aspirations?
- Does Canada have an inherent advantage for attracting S-PDF, and what are the specific features?