

# Research Activity in Canadian Developmental Psychology Programs

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The purpose of this study was to summarise recent research activity from 2009 to 2013 of faculty in Canadian developmental psychology programs, as there have been no previous studies on this stream in Canada. Rankings for research productivity (i.e., number of publications) and impact (e.g., citation counts) were evaluated using the *Publish or Perish* software. Various metrics of impact factor were calculated (e.g., *h*-index, *h<sub>r</sub>*-index, *h<sub>t, annual</sub>*-index, and *g*-index). These metrics were evaluated both with and without the most contributing faculty member to examine both the breadth and depth of each program. Overall, while some universities had relatively stable rankings across all the metrics, rankings for other universities fluctuated depending on the metric and whether or not the top contributing faculty member was included. Implications for both students and faculty members with respect to graduate studies are discussed.

*Keywords:* Canadian graduate psychology, developmental psychology, research productivity, impact factor

Selecting which graduate school to attend is an important decision that can have a major impact on a student's professional trajectory. There are many factors to consider when choosing a graduate school, such as the availability of specific programs, location, potential advisor's research interests, and reputation of the school. Although there are some resources available to help individuals make their decision (e.g., faculty and program websites, Maclean's magazine rankings), these resources have limitations. For example, Maclean's magazine has provided global rankings of Canadian universities since 1991, including faculty qualifications, student characteristics, and library resources (Cramer & Page, 2007), but the validity of the rankings is often criticised (e.g., an overall university rank does not necessarily reflect specific programs; see Page, Cramer, & Page, 2010). Moreover, Maclean's rankings do not provide any information on scholarly activity such as faculty research productivity and impact (Carleton, Peluso, & Asmundson, 2010; Cramer & Page, 2007), nor do they include information on departments or specific programs within departments, which may be more useful than assess-

ments of the university as a whole for a student selecting a career in a specific discipline.

The lack of information on overall research activity about specific graduate programs is surprising considering that research training is a key component of many graduate programs, including psychology (Carleton et al., 2010). Beyond the essential task of gathering information about the research productivity and impact of potential advisors, prospective students also need to assess the breadth of research activity across faculty in the program. Although faculty and program websites, as well as software programs such as Google Scholar, provide access to a listing of the research activity of individual faculty members, they do not offer any assessment of the research activity of graduate programs across Canada (Carleton et al., 2010). However, knowledge about the program as whole has several implications for graduate students, including allowing for an assessment of the potential for gaining publications and research experience during graduate school, as well as gauging the likelihood of obtaining postdoctoral and research positions (Matson et al., 2005).

Recently, a few studies have attempted to address the gap in information about research activity for psychology graduate programs, with Carleton and colleagues (2010) examining research activity across Canadian psychology departments as a whole, as well as specifically within Canadian clinical programs (Carleton, Parkerson, & Horswill, 2012), while Nosek and colleagues (2010) compared research activity in social-personality programs in both the United States and Canada. To the best of our knowledge, however, there have been no studies that provide this information on developmental psychology programs across Canada. It is important to have studies on separate streams within a department, including developmental psychology, as the strength of different

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streams may vary within a department. Additionally, students admitted into graduate psychology programs are often admitted into a specific stream. Therefore, the purpose of this study was to provide a summary of recent research activity of faculty in Canadian developmental psychology programs.

One common way to measure research activity in many disciplines, including developmental psychology, is through metrics associated with publications in peer-reviewed journals (Carleton et al., 2010, 2012; Nosek et al., 2010). These metrics include publication count, citation count, and impact factor assessed through the Hirsch index (*h*-index; Hirsch, 2005). These metrics reflect both research productivity (i.e., how “much” research faculty members produce), and impact (i.e., how “useful” the research is to others in the field; Feist, 1997; Krampen, Becker, Wahner, & Montada, 2007; Matson et al., 2005). Research productivity and impact tend to be positively correlated (Feist, 1997).

In the three studies noted earlier that have examined research activity in Canadian psychology programs (i.e., Carleton et al., 2010, 2012; Nosek et al., 2010), publication count, citation, and *h*-index were measured. For instance, Carleton and colleagues (2010) examined these metrics for psychology departments as a whole across Canada. They accounted for both the number of faculty and the age of a department by looking at three separate 5-year time periods (1994–1998, 1999–2003, and 2004–2008), and averaging the publication and citation counts by the number of faculty. This was done to reduce biases in favour of larger and older universities. Carleton’s study revealed that in their most recent 5-year timespan (2004 to 2008), there was a significant increase in the number of publications, thereby highlighting the growth of research activity across Canadian psychology departments.

While we recognise that each of the studies by Carleton and colleagues (2010, 2012) and Nosek and colleagues (2010) used different timespans (5 year time spans until 2008, faculty lifetime publications until 2011, and faculty lifetime publications until 2009, respectively), as the last 5-year timespan in Carleton et al.’s study (2010) of overall psychology programs ended in 2008, we examined research activity for the 5-year period from 2009 to 2013. We wanted to focus on research in the last 5 years, as it would provide more recent and relevant information for prospective graduate students. Additionally, we chose to focus specifically on graduate schools with programs in developmental psychology as this has not yet been done in Canada. Similar to the work of Carleton and colleagues, we provide mean metrics for both publication counts and citations, to control for the number of faculty members in each program. Finally, we include median scores as well as mean scores for each program with the top contributing faculty member removed. These latter analyses allow us to examine the breadth of research activity across the faculty in each program.

## Method

### Sample

Only Canadian developmental psychology streams with graduate programs were included in analyses (note that some universities had two programs, such as University of British Columbia that has a developmental psychology program in the Psychology De-

partment and a separate developmental psychology program in the Faculty of Education; both were included). Clinical programs were excluded. The Canadian Psychology Association (CPA) Graduate Guide for 2010–2011 (Canadian Psychology Association, 2010–2011) was consulted to examine which Canadian universities included psychology graduate programs. Following this step, university websites then were used to examine which of these graduate programs had specializations in developmental psychology. These specifications resulted in a final list of 23 graduate programs (see Tables 1, 2, and 3 for the programs).

The rules of inclusion for faculty members were that they had to be a full-time tenured or tenure-track faculty member between 2009 and 2013 and core to the developmental area of the department. Faculty members who were cross-appointed, part-time, emeritus, adjunct, or instructors were not included. We adopted these criteria from Carleton et al. (2010, 2012) as it is unclear how active cross-appointed and other noncore faculty may be within the stream (e.g., it is unclear which department is “home” for cross-appointed faculty). Furthermore, if the inclusion boundary is expanded, it may be more difficult to have a systematic and consistent method of including faculty across universities. To create the list of appropriate faculty members, each department’s website was examined to determine who met these criteria. To ensure that our list of faculty members was accurate, e-mails were sent to the chairs or developmental area representatives of each department to confirm the list (see Nosek et al., 2010). We received a 100% response rate from all programs, and then confirmed or adjusted the list as appropriate. The final lists obtained from each of the departments were used in the final analyses (see Tables 1, 2, and 3 for the number of faculty members that represent each department).

### Publication Criteria

As the most recent productivity of developmental psychology programs is what is important to prospective graduate students, we assessed productivity over the past 5 years rather than the lifetime of a department. Only publications between the years of 2009 to 2013 were included in the online searches (i.e., we did not include publications from 2014 or 2015) to minimise the number of recent publications that may be missed (see Carleton et al., 2010). For example, new publications may not yet be available online and/or not yet updated on *Publish or Perish (PoP)* software; therefore, the most recent publications may be missed during the searches.

The inclusion criteria for publications comprised the following: (a) publications in peer-reviewed journals between 2009 and 2013 were accepted even if the faculty member was not affiliated with the current university in 2009 (e.g., if a faculty member joined a university in 2011, but had publications from a previous institute between 2009 and 2010, these publications were included); (b) introductions to special issues and commentaries were included; (c) book chapters, book reviews, errata, and conference proceedings were not included; and (d) only articles published in English were included.

### Metrics Program (*PoP*)

To obtain the relevant metrics for our analyses, we used the *PoP* software (Harzing & van der Wal, 2008), which uses Google



Table 1  
 Mean Metrics for Each Department Including All Faculty Members (2009–2013)

University	No. of faculty	Publication count		Citation count		$h$ -index		$h_r$ -index		$h_{i,annual}$ -index		$g$ -index	
		Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value
Brock University	6	3	20.33	8	335.67	2	10.00	2	3.31	3	1.00	3	16.00
Carleton University	9	14	11.00	11	219.89	15	5.44	19	1.68	17	.63	15	9.44
Concordia University	11	6	18.09	6	349.64	4	9.36	4	2.86	5 <sup>a</sup>	.92	4	15.64
Dalhousie University	7	2	23.57	4	425.71	3	9.71	6 <sup>a</sup>	2.64	4	.93	2	17.43
McGill University	7	11	13.43	15	160.71	14	5.71	16	1.80	15 <sup>c</sup>	.65	14	9.57
McMaster University	6	1	33.67	3	490.83	1	12.83	1	3.98	1	1.14	1	19.33
Memorial University	5	19	8.00	21	109.40	17	5.20	17 <sup>b</sup>	1.72	20 <sup>c</sup>	.57	17	7.40
Queens University	6	7	17.00	7	346.33	6 <sup>a</sup>	8.33	9	2.55	2	1.06	5	15.50
Ryerson University	9	20	7.89	18	141.67	18	5.11	21	1.58	18 <sup>d</sup>	.61	19	7.11
Simon Fraser	3	13	12.33	17	150.67	12	6.00	13	1.95	12	.72	13	10.00
U of Alberta	8	9	13.63	12	217.25	10	6.88	12	2.06	11	.75	10	10.75
U of British Columbia, HDL	10	18	9.20	13	177.00	21	4.80	17 <sup>b</sup>	1.72	14	.67	16	8.40
U of British Columbia, Psych	6	10	13.50	5	351.17	6 <sup>a</sup>	8.33	5	2.65	7	.91	9	12.33
U of Manitoba	4	21	7.50	22	82.50	23	4.25	23	1.13	23	.39	22 <sup>a</sup>	6.00
U of Ottawa	5	22 <sup>a</sup>	6.80	16	151.40	19 <sup>b</sup>	5.00	20	1.65	15 <sup>c</sup>	.65	21	6.80
U of Regina	3	17	9.67	23	69.00	16	5.33	10	2.30	18 <sup>d</sup>	.61	18	7.33
U of T, OISE: AP&HD	18	15	10.28	19	137.72	22	4.39	22	1.32	22	.48	20	6.89
U of Toronto	11	4	19.27	10	274.73	9	8.00	6 <sup>a</sup>	2.64	9 <sup>b</sup>	.81	8	13.82
U of Victoria	6	5	18.50	9	286.00	5	8.67	8	2.62	8	.90	7	14.00
U of Waterloo	5	22 <sup>a</sup>	6.80	20	119.80	19 <sup>b</sup>	5.00	15	1.82	20 <sup>c</sup>	.57	22 <sup>a</sup>	6.00
Western University	4	8	16.50	1	515.00	8	8.25	3	2.95	5 <sup>a</sup>	.92	6	14.50
Wilfrid Laurier	6	12	12.50	14	172.17	13	5.83	14	1.88	13	.71	11	10.50
York University	8	16	10.25	2	493.50	11	6.75	11	2.18	9 <sup>b</sup>	.81	12	10.25
Overall mean			13.93		251.58		6.83		2.16		.75		11.04
Individual faculty range			0–86		0–2823		0–27		0–9.99		0–3.17		0–44

Note. For rank, “1” indicates the top ranked university, whereas “23” indicates the lowest ranked university. The superscripts <sup>a</sup>, <sup>b</sup>, <sup>c</sup>, <sup>d</sup>, and <sup>e</sup> indicate ties for ranking. U of T, OISE: AP&HD = University of Toronto, Ontario Institute for Studies in Education: Applied Psychology & Human Development; HDL = Human Development and Learning.

Scholar to compile lists of faculty publications. Although some past research (e.g., Carleton et al., 2010, 2012) has used the Web of Science to obtain publication information, Meho and Yang (2007) indicate that Google Scholar tends to be more comprehensive in its searches (e.g., Google Scholar includes journal articles, abstracts, preprint articles, etc.) whereas Web of Science includes mostly journal articles and conference papers. Nosek et al. (2010), however, conducted a search for individuals’ citation counts using both Google Scholar and Web of Science and found that the correlation between these databases’ citation count results was very high ( $r = .92$ ). Although no program is perfect in retrieving citation information, similar to Nosek et al. (2010) we assumed any errors in our citation retrieval would be random. A benefit of using the *PoP* software is that it provides additional metrics that are not available through the Web of Science. For example, the Web of Science provides publication counts, citation counts, citation averages per publication, and the  $h$ -index. *PoP*, however, also provides the  $g$ -index,  $e$ -index,  $h_c$ -index,  $h_r$ -index,  $h_{i,norm}$ -index,  $h_m$ -index, age-weighted citation rates (see Harzing, 2010), and the  $h_{i,annual}$ -index.

### Publication Search Protocol

Searches were conducted by using each faculty member’s full first and last name, and were restricted to publications between the years of 2009 and 2013. Middle initials were not included in the *PoP* searches as not all publications include this information;

however, if too many results were retrieved for individuals with common names, a middle initial was included in a revised search. When possible, result lists were compared with faculty members’ online CVs or online lists of publications. The resulting *PoP* publication list was checked by two of the authors and any results that were not consistent with the inclusion criteria were eliminated. Duplicate articles were combined into one citation (a feature of the *PoP* program). As citation counts continuously increase, all searches were conducted during the week of January 8–15, 2015.

### Measures

Examining both quantity and impact of publications is key to evaluating the impact and productivity of a program. Furthermore, to examine the breadth of a program (e.g., whether the program is generally productive as a whole, or if one individual is driving the program’s productivity), analyses were conducted both for the program as a whole and without the most productive faculty member.<sup>1</sup> Both the mean (with and without the most productive faculty member) and the median (including all faculty members) for each metric were examined. Medians were included as they are more resistant to skewed data and may more accurately reflect a

<sup>1</sup> Each individual’s publication count was multiplied by their citation count to create a value to determine who was the top contributor of the department taking into consideration both the quantity of publications and the impact of those publications.

Table 2  
 Mean Metrics for Each Department Excluding the Top Faculty Member (2009–2013)

University	No. of faculty	Publication count		Citation count		$h$ -index		$h_f$ -index		$h_{1,annual}$ -index		$g$ -index	
		Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value
Brock University	5	3	19.20	4	284.60	3	9.00	3	2.82	4	.90	4	14.40
Carleton University	8	13	8.25	11	130.50	16	4.38	19	1.34	17	.53	15	6.88
Concordia University	10	4	17.80	3	321.90	2	9.40	2	2.90	3	.93	3	15.10
Dalhousie University	6	2	19.67	2	361.17	4	8.67	6 <sup>a</sup>	2.35	5	.86	2	15.83
McGill University	6	10	10.67	13	120.67	11 <sup>a</sup>	5.00	12	1.67	12	.62	11	8.00
McMaster University	5	1	28.40	1	420.60	1	12.00	1	3.94	1	1.13	1	18.40
Memorial University	4	17	6.50	16	104.75	14	4.75	18	1.39	18	.51	17	6.50
Queens University	5	7	13.40	5	258.80	5	7.40	6 <sup>a</sup>	2.35	2	1.01	5	13.20
Ryerson University	8	15	7.50	18	99.00	13	4.88	14	1.54	15	.58	16	6.63
Simon Fraser	2	11	8.50	17	103.50	15	4.50	20	1.24	13 <sup>b</sup>	.59	12	7.50
U of Alberta	7	8	11.86	9	185.29	8	6.14	11	1.88	10 <sup>a</sup>	.67	8	9.43
U of British Columbia, HDL	9	14	7.78	15	117.44	17	4.11	13	1.55	13 <sup>b</sup>	.59	14	6.89
U of British Columbia, Psych	5	12	8.40	8	203.40	9	6.00	9	2.02	8	.73	10	8.40
U of Manitoba	3	23	3.67	23	28.67	23	2.33	23	.69	23	.24	23	3.00
U of Ottawa	4	19	5.50	12	120.75	18 <sup>b</sup>	4.00	15	1.45	16	.56	19	5.50
U of Regina	2	16	7.00	22	62.50	11 <sup>a</sup>	5.00	4	2.50	10 <sup>a</sup>	.67	13	7.00
U of T, OISE: AP&HD	17	18	5.82	21	72.00	21	3.47	21	1.14	22	.42	18	5.59
U of Toronto	10	5	17.30	6	242.90	6	7.30	5	2.42	7	.74	6	12.90
U of Victoria	5	6	15.40	7	204.80	7	7.00	8	2.28	6	.81	7	11.80
U of Waterloo	4	22	4.00	19	97.25	18 <sup>b</sup>	4.00	17	1.40	20	.46	22	4.00
Western University	3	21	5.33	20	81.33	22	3.33	16	1.41	21	.44	21	5.33
Wilfrid Laurier	5	9	11.20	14	120.20	10	5.40	10	1.89	9	.72	9	8.80
York University	7	20	5.43	10	160.71	20	3.86	22	1.07	19	.47	20	5.43
Overall mean			11.08		174.95		5.79		1.87		.66		9.18
Individual faculty range			0–40		0–901		0–18		0–5.89		0–1.83		0–29

Note. For rank, “1” indicates the top ranked university, whereas “23” indicates the lowest ranked university. The superscripts <sup>a</sup> and <sup>b</sup> indicate ties for ranking. U of T, OISE: AP&HD = University of Toronto, Ontario Institute for Studies in Education: Applied Psychology & Human Development; HDL = Human Development and Learning.

department’s overall productivity rather than being influenced by a single outlying member who is highly (un)productive. As it is important to examine both productivity and impact of each program’s research, we considered publication count as a measure of productivity, and citation count,  $g$ -index,  $h$ -index,  $h_f$ -index, and  $h_{1,annual}$ -index as measures of impact (outlined below; for more information on these metrics, see Harzing & van der Wal (2008)).

**Publication count.** The purpose of the publication count was to examine how productive individuals were throughout 2009–2013.

**Citation count.** The purpose of the citation count was to examine how many times publications were cited throughout 2009–2013.

**$h$ -index.** This metric takes into account the number of an individual’s publications and the number of citations these publications have received (see Harzing, 2010; Hirsch, 2005). For example, an individual would have an  $h$ -index of 15 if he or she had at least 15 papers with at least 15 citations each. Harzing cautions that the  $h$ -index does not take into account how many citations there were *in addition to* the amount that was required for an  $h$ -index of 15. For example, one individual could have 15 papers that each received 150 citations, whereas another individual could have 15 papers that each received 15 citations, but both individuals are ranked equally according to this metric. Therefore, the  $g$ -index also was calculated as it takes these differences into account.

**$g$ -index.** This metric builds off of the  $h$ -index as it accounts for articles that have high citation counts (Egghe, 2006; Harzing,

2010). Egghe (2006) states that for a set of articles, “ranked in decreasing order of the number of citations that they received, the  $g$ -index is the (unique) largest number such that the top  $g$  articles received (together) at least  $g^2$  citations.” (p. 131). An example provided by Harzing (2010, p. 12) indicates that an individual has a, “ $g$ -index of 30 if the top 30 most cited of his/her papers combined have at least 900 citations.”

**$h_f$ -index.** This metric controls for coauthored papers (Harzing, 2010) by dividing the  $h$ -index by the average number of authors in the publications included in the calculation of the  $h$ -index (Batista, Campiteli, & Kinouchi, 2006).

**$h_{1,annual}$ -index.** This metric calculates “the average number of single-author equivalent  $h$ -index points that an academic has accumulated in *each* year of their academic career” (Harzing, Alakangas, & Adams, 2014, p. 5). It offers a fairer comparison between early career and late-career researchers.

## Results

The universities and their mean metrics are presented alphabetically in Table 1. The universities and their mean metrics when excluding the most productive faculty member are presented alphabetically in Table 2. Median metrics are presented alphabetically in Table 3. Each table indicates the ranking (1 = *highest* to 23 = *lowest*) and the numeric value each university scored on the various metrics. Publication count and citation count were significantly correlated,  $r = .781, p < .001$ .

Table 3  
 Median Metrics for Each Department Including All Faculty Members (2009–2013)

University	No. of faculty	Publication count		Citation count		<i>h</i> -index		<i>h<sub>f</sub></i> -index		<i>h<sub>L,annual</sub></i> -index		<i>g</i> -index	
		Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value
Brock University	6	2	25.00	3	360.00	2	11.00	2	3.47	1 <sup>a</sup>	1.09	3	18.00
Carleton University	9	13 <sup>b</sup>	8.00	12	134.00	12 <sup>d</sup>	5.00	15	1.56	11 <sup>c</sup>	.67	12 <sup>c</sup>	8.00
Concordia University	11	5	20.00	4	281.00	3 <sup>a</sup>	9.00	4	2.61	6 <sup>c</sup>	.83	4	15.00
Dalhousie University	7	3	22.00	2	386.00	3 <sup>a</sup>	9.00	3	2.79	3 <sup>b</sup>	1.00	2	19.00
McGill University	7	9	12.00	20	78.00	19 <sup>c</sup>	4.00	19	1.33	16 <sup>f</sup>	.60	15 <sup>d</sup>	7.00
McMaster University	6	1	34.50	1	521.00	1	13.50	1	3.69	1 <sup>a</sup>	1.09	1	21.00
Memorial University	5	16 <sup>c</sup>	7.00	14	128.00	12 <sup>d</sup>	5.00	20	1.19	19 <sup>b</sup>	.50	15 <sup>d</sup>	7.00
Queens University	6	7	14.50	5	267.50	6 <sup>b</sup>	8.00	6	2.39	3 <sup>b</sup>	1.00	5 <sup>a</sup>	14.50
Ryerson University	9	16 <sup>c</sup>	7.00	17	90.00	12 <sup>d</sup>	5.00	16	1.50	16 <sup>f</sup>	.60	15 <sup>d</sup>	7.00
Simon Fraser	3	10 <sup>a</sup>	11.00	16	113.00	12 <sup>d</sup>	5.00	17	1.47	11 <sup>c</sup>	.67	10 <sup>b</sup>	9.00
U of Alberta	8	10 <sup>a</sup>	11.00	10	175.50	6 <sup>b</sup>	8.00	7	2.38	8	.75	8	11.00
U of British Columbia, HDL	10	18	6.50	21	61.50	21 <sup>f</sup>	3.50	18	1.42	18	.55	18 <sup>c</sup>	6.00
U of British Columbia, Psych	6	12	9.00	7	234.00	9	6.50	14	1.81	9 <sup>d</sup>	.74	10 <sup>b</sup>	9.00
U of Manitoba	4	20 <sup>d</sup>	5.50	22	43.00	21 <sup>f</sup>	3.50	23	1.04	23	.37	22 <sup>f</sup>	4.50
U of Ottawa	5	19	6.00	9	180.00	12 <sup>d</sup>	5.00	11	1.92	11 <sup>c</sup>	.67	18 <sup>c</sup>	6.00
U of Regina	3	13 <sup>b</sup>	8.00	19	82.00	10 <sup>c</sup>	6.00	10	2.00	19 <sup>b</sup>	.50	12 <sup>c</sup>	8.00
U of T, OISE: AP&HD	18	22 <sup>c</sup>	5.00	23	35.00	23	3.00	22	1.07	22	.45	22 <sup>f</sup>	4.50
U of Toronto	11	4	21.00	8	217.00	6 <sup>b</sup>	8.00	5	2.46	6 <sup>c</sup>	.83	7	12.00
U of Victoria	6	6	17.00	6	247.50	5	8.50	8	2.27	5	.92	5 <sup>a</sup>	14.50
U of Waterloo	5	22 <sup>c</sup>	5.00	11	173.00	12 <sup>d</sup>	5.00	12	1.88	11 <sup>c</sup>	.67	21	5.00
Western University	4	13 <sup>b</sup>	8.00	15	122.00	12 <sup>d</sup>	5.00	9	2.11	11 <sup>c</sup>	.67	12 <sup>c</sup>	8.00
Wilfrid Laurier	6	8	12.50	13	133.50	10 <sup>c</sup>	6.00	13	1.83	9 <sup>d</sup>	.74	9	9.50
York University	8	20 <sup>d</sup>	5.50	18	83.00	19 <sup>c</sup>	4.00	21	1.11	19 <sup>b</sup>	.50	20	5.50
Overall median			11.00		163.00		6.00		1.96		.67		9.00

Note. For rank, "1" indicates the top ranked university, whereas "23" indicates the lowest ranked university. The superscripts <sup>a</sup>, <sup>b</sup>, <sup>c</sup>, <sup>d</sup>, <sup>e</sup>, <sup>f</sup>, and <sup>g</sup> indicate ties for ranking. U of T, OISE: AP&HD = University of Toronto, Ontario Institute for Studies in Education: Applied Psychology & Human Development; HDL = Human Development and Learning.

## Discussion

The purpose of the current study was to provide current research activity metrics on Canadian developmental psychology programs. Although Maclean's magazine provides rankings of universities, and Carleton and colleagues (2010) provide information on research activity for psychology departments, our aim was to provide metrics on the research activity and impact specifically for developmental psychology as they are not available elsewhere. Overall, university and psychology department rankings may not benefit graduate students when the program they are interested in differs in research activity from the university or department as a whole. This also was our reasoning for examining the metrics with and without the top contributing faculty member. A program's reputation could be driven by a single strong researcher, rather than having breadth across faculty within a department. If a program only has a small number of productive researchers, graduate students may be left with few opportunities for research collaborations outside their highly productive lab. Furthermore, eliminating the top research contributor (as well as examining the median performance of the programs) reduces biases because of outliers.

Results indicated that although there was some stability in school rankings across the different metrics, there also were differences in rankings depending on the type of analysis. For example, regardless of the type of analysis (i.e., mean scores when all faculty members were included in the analyses vs. median scores when all faculty members were included in the analyses vs. mean scores when the top producing faculty member was deleted from

the analyses), rankings for McMaster University, Dalhousie University, Brock University, and Concordia University remained in the top five rankings for many of the metrics. The rankings for some other universities, however, displayed top five rankings in some metrics but shifted considerably when the top producing faculty member was not included in the analyses (see Tables 1 and 2 for specific universities), suggesting that the top producing member could be an outlier in that department.

Consistency in rankings across the metrics suggests that as a whole, faculty members within the developmental stream at a university share similar levels of research activity. However, shifts in rankings once the top contributing faculty member is removed suggest that a single faculty member who is very active and productive may carry the stream's research productivity and that the remaining faculty are not as active or productive in their research.

This study has a few methodological limitations that should be taken into consideration. First, no software program is without error in retrieving the metric information. Similar to Nosek et al. (2010), we assumed any errors would be consistent across searches. We also tried to reduce the number of errors by referring to available CVs and online lists of publications. Further, a preliminary search was conducted the semester before the final search, which aided in ensuring the publication list was consistent (although the citation counts changed). Second, some programs may have experienced retirements, hired new faculty post-2013, or both. Therefore, the current performance of the program may differ from 2009–2013. For example, a study examining the years from 2014–2018 may paint a different



picture, especially for departments with many early career faculty; this is why we included the  $h_{i, \text{annual}}$ -index as it gives an indication as to how programs'  $h_i$ -index is changing over the years. Finally, while we established clear inclusion criteria for designating core faculty within a developmental psychology program, prospective graduate students also should be aware that faculty who are, for example, part-time, emeritus, or cross-appointed from other departments or other settings within a university, could enrich a program considerably.

While this study provides some useful metrics for prospective graduate students, it is important to acknowledge that these results should be used in combination with other information when deciding on a graduate program. For example, it is important for prospective students to conduct individualized searches for specific faculty members. Additionally, prospective students should examine whether the members of the department(s) of interest conduct research with their graduate students, as opposed to solely on their own or with other research collaborators. This information—in addition to information on supervision style—may be obtained from directly contacting the faculty member, finding his or her online CV, and contacting the faculty member's current and/or former students. This would aid prospective students in deciding whether a potential supervisor would provide them with publication opportunities. Finally, prospective students could also examine whether previous students have been successful in finding employment after completing their degree (e.g., by examining departmental websites). Thus, although more factors must be taken into consideration when choosing a graduate program, the current study provides prospective students with information about developmental psychology in Canadian graduate schools.

### Contributions

Despite the limitations, our study provides a number of different metrics that give a clearer picture of how developmental psychology programs compare across Canada. Graduate students often apply and are accepted into a specific stream within a department. Although we recognise that there may be research opportunities outside of a specific stream, it is likely that graduate students will primarily conduct research within their stream. As a result, this information should be helpful for prospective graduate students as it indicates the potential not only for research experiences and the gaining of publications during graduate schools, but also for obtaining jobs in the future (Matson et al., 2005). On a larger scale, this study may aid faculty members in making a case for tenure as well as research grant funding (see Cyrenne & Grant, 2009) as they can assess how their research accomplishments and potential for research compares to peers in the same stream in other Canadian universities, albeit in an aggregate form. Finally, while this study may provide prospective graduate students with information primarily on developmental psychology, looking at this study in combination with the studies by Carleton et al. (2010, 2012) and Nosek et al. (2010) provides an overview on research activity in multiple streams in Canadian psychology graduate programs.

### Résumé

Le but de cette étude était de résumer les récentes activités de recherche s'échelonnant entre 2009 et 2013 de facultés de programmes de psychologie de développement au Canada, étant donné

qu'il n'existe aucune étude antérieure en cette matière au Canada. Les classements en matière de productivité de la recherche (c'est-à-dire, le nombre de publications) et de l'impact (p. ex., le nombre de citations) ont été évalués à l'aide du logiciel Publish or Perish. Différentes mesures de facteur d'impact ont été calculées (par exemple, l'indice  $h$ , l'indice  $h_i$ ,  $h_i$ , l'indice annuel et l'indice  $g$ ). Ces mesures ont été évaluées à la fois avec et sans le plus important contributeur du corps professoral afin d'examiner l'ampleur et la profondeur de chaque programme. Dans l'ensemble, bien que certaines universités affichaient des classements relativement stables pour toutes les mesures, les classements d'autres universités fluctuaient par rapport à une mesure ou une autre et selon que le plus important contributeur du corps professoral était inclus ou non. Les implications pour les étudiants et les membres du corps professoral en ce qui a trait aux études supérieures sont discutées.

**Mots-clés** : programmes de psychologie de deuxième cycle au Canada, psychologie du développement, productivité de la recherche, facteur d'impact.

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