When aspirations and achievements don’t meet. A longitudinal examination of the differential effect of education and occupational attainment on declines in self-rated health among Canadian labour force participants

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Background To examine the association of a mismatch between educational qualifications and occupational attainment and subsequent declines in self-rated health (SRH) in a longitudinal nationally representative Canadian population sample.

Methods This study used longitudinal data from 4045 healthy, working respondents of the Canadian National Population Health Survey. Respondents were categorized as either qualified, overqualified, or underqualified based on the match between their education and the skills required for their current occupation over a 2-year period. Logistic regression analysis estimated the odds of decline in SRH over the following 4-year period, using the match between occupation and education as the main independent variable. Analyses were controlled for a number of confounding variables including health behaviours, mental health, self-esteem, job control, and demographic information.

Results Relative to respondents with university education working in occupations for which they were qualified, respondents with university education, working in occupations for which they were overqualified had a significant risk of decline in SRH between 1996 and 2000, even after adjusting for a number of potential confounders (OR = 2.08, 95% CI 1.11–3.91). In respondents with secondary education or less, differences in occupational attainment were not associated with differences in the odds of decline in SRH.

Conclusions The effect of occupational attainment on health is important for individuals who have invested the most time in their education. Conversely, differential occupational attainment is not associated with differences in the odds of decline in health for participants with lower levels of education.

Keywords Overqualified, status inconsistency, occupation, education, self-rated health, longitudinal, National Population Health Survey, socioeconomic status

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An individual’s socioeconomic status is a composite measure reflecting the chances, opportunities, and resources available to them.1,2 Education and occupation, along with income, have often been used interchangeably as markers of socioeconomic status, with previous research consistently finding gradients between each of these measures and a range of health outcomes. However, these measures reflect different
dimensions of socioeconomic status. Education reflects the human capital (skills, abilities, and psychological resources) that an individual possesses. On the other hand, occupation predominantly reflects the nature of an individual’s working environment. Occupations of lower status have lower levels of job control and autonomy and higher levels of job strain (where low job control is coupled with high psychological demands), both of which are associated with poor health outcomes. Occupation is also the primary determinant of labour market income.

For many years research in the social sciences has examined the effect of incongruence across different measures of social status, such as education, occupation, income, and race. This mismatch between social status measures has been termed ‘status inconsistency’, with Beniot-Smullyan writing on its importance and implications on individuals as far back as 1944. Within the social sciences authors have investigated the effect of status inconsistency on areas including voting behaviour and biological stress responses.

In contrast, research on the social epidemiology of status inconsistency and health status has been relatively scarce. While some studies have examined perceptions of feeling overqualified on work-related low-back pain, and self-rated health (SRH), we could find only one study using objective measures of education and occupational attainment, which found no association between deviations in education and occupation and SRH.

Within a life-course framework, education usually precedes occupation. In this sense, education can be thought of as a measure of the potential occupations available to an individual. Individuals with higher educational attainment typically progress into the jobs with the most rewarding working conditions. Dressler refers to the situation where occupational attainment does not meet education qualifications as ‘goal striving stress’. Within this framework education is seen as a measure of aspirations, and occupation a measure of achievement. Goal striving stress will result when achievement falls short of aspirations.

Most research examining social inconsistency has been limited in a few key respects. First, most have been cross-sectional in design, not allowing any conclusions to be made concerning the direction of causality between social inconsistency and various outcomes, health or otherwise. Second, many studies in the social sciences have modelled deviations between two measures of social status (e.g. occupation and education) as a third variable in a linear model, along with both measures of social status. This method makes the interpretation of the actual effect of deviation between social status measures problematic due to ‘identification problems’. Further, there has been little investigation of the extent to which deviations between occupational attainment and education are consistent across levels of education (i.e. if you have a low level of education, does your occupational status really matter to you?).

Over the last 25 years the percentage of labour force participants in the Canadian labour force with post-secondary education has steadily increased. In contrast, over the last decade, the number of skilled occupations has remained steady leading to an increasing number of labour force participants with educational qualifications above and beyond those required for their current occupation (see Figure 1). Therefore, an increasing number of labour participants may have occupational achievements, inconsistent with their educational aspirations. Supporting this hypothesis, reports from Canada have suggested that perceptions of feeling overqualified are increasing. Further, the number of overqualified workers will continue to rise as the number of young adults who continue into post-secondary education remains at historically high levels.

The longitudinal Canadian National Population Health Survey (NPHS) offers a unique opportunity to examine the relationship between education and occupational attainment, and declines in SRH over time, in an initially healthy representative sample of labour force participants. The objective of this study is to examine whether respondents, who are employed in jobs for which they are overqualified (based on two consecutive survey cycles), are more likely to report a decline in SRH over the following four years?

Methods

Study population and sample design

This study used longitudinal data from the Canadian NPHS. Starting in 1994, the NPHS has collected information on health and labour force status from a representative sample of just over 17,000 Canadians every 2 years. To date, four cycles are available for analysis (1994–95, 1996–97, 1998–99, and 2000–01). Full details of the collection procedures and response profile of the NPHS has been extensively described elsewhere. For this study only those respondents aged between 18 and 59, who were labour force participants, not currently studying, and reported very good or excellent SRH in 1994 were selected (n = 4682). Of this sample 637 (13.6%) were missing information on either the main independent variable or one or more of the control variables, leaving a final baseline sample of 4045 respondents.

Dependent variable

Self-rated health

SRH has been established as a valid predictor of current health, and future morbidity and mortality, in a variety of different populations. SRH has been measured in all cycles of the NPHS using a five point scale (excellent, very good, good, fair, and poor). As in previous studies, the original five point scale was collapsed to form a dichotomous variable (excellent and very good = good health; good, fair, and poor = poor health). The validity of treating SRH in this way has been explored elsewhere. A decline in SRH over the study period was defined as a transition to poor SRH in either 1998 or 2000.

Main independent variables

Education

Highest level of education was collapsed into four categories: (i) not completed secondary education; (ii) completed secondary education; (iii) completed post-secondary certificate or apprenticeship; and (iv) completed bachelors degree or higher. Categorizing education in this way provides a meaningful measure of the benefits associated with education, which tend to accrue on completion of educational milestones, not necessarily with each year of education completed.
Occupational attainment

Each respondent’s occupation was categorized using the National Occupational Classification (NOC) system, developed by Human Resources and Development Canada (HRDC). The NOC groups occupations based on the minimum skills/education required for each job. It was created through an extensive programme of research collecting information from employers, workers, educators, and associations. Occupations were classified into four skill groups: (i) occupations requiring no training; (ii) occupations requiring secondary school education, and/or occupation-specific training; (iii) occupations requiring college education, or apprenticeship training; and (iv) occupations requiring university education at the bachelors level or higher.

Based on their educational qualifications and occupational skill requirements, respondents were classified into one of three occupational attainment groups: (i) overqualified: where occupational skill requirements are below educational attainment; (ii) qualified: where occupational skill requirements match education attainment; and (iii) underqualified: where educational requirements for the occupation are higher than those possessed by the individual.

Each respondent’s occupational attainment was based on both their 1994 and 1996 responses. Using responses from two cycles enables better separation between those individuals who have extended exposure to an occupation for which they are overqualified, vs individuals who pass through occupations for which they are overqualified, on their way to occupations that match their educational attainment.

Control variables

Analyses were adjusted for age, gender, marital status and the number of children <5 years in the household as these factors may be associated with an occupational choice related to lifestyle factors. Additional analyses adjusted for baseline levels of self-esteem, depression, psychological distress, smoking, physical activity, and job control as these factors may have independent effects on declines in SRH, possibly confounding or mediating the relationship between occupational attainment and SRH. Detailed descriptions of these measures can be found in Appendix 1.

Analysis

To minimize selection effects arising from poor health influencing occupational attainment, only respondents with excellent or very good SRH at baseline were included in the original study sample (n = 4045). From this sample, 244 respondents (6%) did not respond to the 1996 survey, 195 respondents (5%) were either studying or had dropped out of the labour force in 1996, 36 respondents did not report their occupation in 1996, and 141 respondents did not respond to either the 1998 or 2000 survey. This left a remaining longitudinal sample of 3329 respondents (82% of the study sample). No differences across age, gender, education, or occupational attainment were found between respondents and non-responders to the 1996, 1998, or 2000 surveys. Younger respondents were more likely to be studying in 1996, and the
most common reasons for labour force exit were retirement (31%) and caring for children (23%).

Of the longitudinal sample, 22.6% reported a decline in SRH in either 1998 or 2000 with another 8.4% reporting a decline in both cycles. Preliminary analyses, using any decline in SRH as the dependent variable, found an interaction between education level and occupational attainment. Therefore analyses were stratified by level of education. No interactions were found between age or gender, and occupational attainment.

Only a small proportion of the final sample (n = 336, 10%) had moved from one occupational attainment group to another between 1994 and 1996. This led to extremely small categories of movement in occupational attainment, by levels of education. As these categories could not be grouped together (e.g. ‘qualified to overqualified’ cannot be grouped with ‘qualified to underqualified’) respondents in these categories were removed, as interpretation of odds ratios and confidence intervals, given the small number of respondents in these categories would not have been meaningful. Odds ratios and variance estimates for the remaining groups did not change substantially when these groups were included or excluded.

Analyses were completed using both logistic regression (collapsing health decline in one and both cycles together), and polytomous regression (no decline, decline in one cycle, decline in both cycles). Because no substantive differences in findings existed between these two models, only results from the logistic models have been included here for ease of interpretation. In accordance with guidelines from Statistics Canada, frequency counts and point estimates have been weighted to represent the Canadian population. To account for the stratified, clustered sampling procedures used in the NPHS, variance estimates have been adjusted using a bootstrap technique. All analyses were completed using Stata. The final variance estimates were calculated by a bootstrap procedure with 500 iterations using SAS.

Results

Table 1 describes the distribution of qualified, overqualified, and underqualified respondents in the study sample. Younger workers were more likely to be overqualified for their jobs compared with older workers. Recent immigrants were more likely to be overqualified compared with non-immigrants.

Table 2 presents the association between education level and occupational attainment, skill requirements, and decline in SRH. As the level of each socioeconomic status measure decreased the odds of decline in SRH increased, even after adjustment for possible confounding variables.

Table 3 presents the relationship between occupational attainment and decline in SRH, stratified by education level. Respondents with university education, working in occupations for which they were overqualified for two consecutive cycles, had greater odds of declining to poor SRH in 1998 or 2000, after adjustment for age, gender and demographic information (OR = 2.02, 95% CI 1.16–3.53). Further adjustment for possible confounders did not alter this relationship. Similar effects were obtained among respondents with only post-secondary diplomas or apprenticeship training. However, within this group we cannot be confident these effects were not obtained by chance alone.

An additional unstratified analysis, specifying the interaction between education and occupation, is presented in Table 4. While the results confirm the inverse risk of decline in SRH with level of education (as presented in Table 2), overqualified respondents with bachelors education had similar odds for decline in SRH compared with respondents with post-secondary diplomas and the risk of decline in SRH for respondents with post-secondary diplomas, working in occupations requiring bachelors training, was not statistically different from respondents with matching occupations, but higher educational level (the reference group).
This study sought to examine how educational status (aspirations) and occupational attainment (achievements) affect declines in SRH in a representative sample of the Canadian labour force. This paper adds two main findings to previous research on socioeconomic status and health. First, individuals with university education, working in occupations that require less education, had over twice the odds of declining SRH over the next 4 years, compared with respondents with the same education, working in occupations requiring this level of education. Second, occupational attainment did not alter the odds or decline in SRH for individuals with secondary education or lower (see Table 3). This finding reinforces the view that there are multiple pathways, beyond simply access to higher level occupations, leading to inequalities in health between populations of differing education levels, in particular those with low levels of education. Therefore, although we find evidence that ‘goal striving stress’, as referred to by Dressler, 15

### Table 2 Odds-ratio for decline in SRH in 1998 or 2000 by educational attainment and occupation skill requirements (n = 2993)

<table>
<thead>
<tr>
<th>Educational attainment</th>
<th>Model one&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Model two&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Model three&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
</tr>
<tr>
<td>Bachelors degree or higher</td>
<td>659</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Post-secondary diploma</td>
<td>652</td>
<td>1.40 (1.00–1.96)</td>
<td>1.45 (1.04–2.03)</td>
</tr>
<tr>
<td>Secondary education</td>
<td>1318</td>
<td>1.64 (1.21–2.21)</td>
<td>1.67 (1.24–2.25)</td>
</tr>
<tr>
<td>Less than secondary education</td>
<td>364</td>
<td>2.97 (2.00–4.39)</td>
<td>2.83 (1.89–4.23)</td>
</tr>
<tr>
<td>Occupational skill requirements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University degree</td>
<td>685</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Post-secondary/apprenticeship</td>
<td>1075</td>
<td>1.84 (1.35–2.52)</td>
<td>1.91 (1.39–2.62)</td>
</tr>
<tr>
<td>Secondary education</td>
<td>1027</td>
<td>1.80 (1.33–2.42)</td>
<td>1.86 (1.38–2.50)</td>
</tr>
<tr>
<td>No education required</td>
<td>206</td>
<td>2.36 (1.52–3.67)</td>
<td>2.47 (1.58–2.87)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Unadjusted.

<sup>b</sup> Adjusted for age, gender, and demographics.

<sup>c</sup> Adjusted for all variables in model two, plus baseline depression, psychological distress, part-time employment status, smoking, physical activity, job control, and self-esteem.

### Table 3 Odds-ratio for decline in SRH in 1998 or 2000 by occupational attainment. Analyses are stratified by education level (n = 2993)

<table>
<thead>
<tr>
<th>Bachelors degree or higher</th>
<th>Model one&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Model two&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Model three&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
</tr>
<tr>
<td>Qualified</td>
<td>424</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Overqualified</td>
<td>235</td>
<td>1.84 (1.11–3.05)</td>
<td>2.02 (1.16–3.53)</td>
</tr>
<tr>
<td>Post-secondary diploma</td>
<td>292</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Qualified</td>
<td>268</td>
<td>1.25 (0.79–1.98)</td>
<td>1.35 (0.82–2.22)</td>
</tr>
<tr>
<td>Underqualified</td>
<td>92</td>
<td>0.86 (0.43–1.74)</td>
<td>0.88 (0.43–1.80)</td>
</tr>
<tr>
<td>Secondary education</td>
<td>538</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Qualified</td>
<td>92</td>
<td>0.98 (0.56–1.74)</td>
<td>1.11 (0.61–2.02)</td>
</tr>
<tr>
<td>Underqualified</td>
<td>687</td>
<td>1.00 (0.73–1.36)</td>
<td>0.98 (0.71–1.35)</td>
</tr>
<tr>
<td>Less than secondary education</td>
<td>305</td>
<td>0.84 (0.36–1.97)</td>
<td>0.85 (0.35–2.12)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Unadjusted.

<sup>b</sup> Adjusted for age, gender, and demographics.

<sup>c</sup> Adjusted for all variables in model two, plus baseline depression, psychological distress, part-time employment status, smoking, physical activity, job control, and self-esteem.

### Discussion

This study sought to examine how educational status (aspirations) and occupational attainment (achievements) affect declines in SRH in a representative sample of the Canadian labour force. This paper adds two main findings to previous research on socioeconomic status and health. First, individuals with university education, working in occupations that require less education, had over twice the odds of declining SRH over the next 4 years, compared with respondents with the same education, working in occupations requiring this level of education. Second, occupational attainment did not alter the odds or decline in SRH for individuals with secondary education or lower (see Table 3). This finding reinforces the view that there are multiple pathways, beyond simply access to higher level occupations, leading to inequalities in health between populations of differing education levels, in particular those with low levels of education. Therefore, although we find evidence that ‘goal striving stress’, as referred to by Dressler.
is associated with increased risk of decline in SRH, this effect is only present in respondents with the highest occupational aspirations (i.e. education level).

The current study has a number of strengths. These include a large, representative population sample, followed longitudinally over 6 years, making it one of the few studies we are aware of which has examined the effect of status inconsistency in a appropriately designed prospective study. The longitudinal sample had relatively small attrition, which appears biased only in relation to gender. Classification of occupational attainment within each educational strata utilized objective information as well as two cycles of data, increasing precision of this measure, relative to an estimate taken only at one point in time. Lastly, we were able to adjust for a large number of possible confounders.

These findings, however, should also be interpreted with some caution. There may be misclassification across underqualified and qualified categories in the main independent variable. Ideally, if years of relevant work experience were measured in the NPHS, a more accurate distinction between underqualified and qualified jobs would be possible. For example, the NOC documentation specifies that individuals working in occupations requiring post-secondary college education or apprenticeships may alternatively have ≥2 years of specific on-the-job training, or work experience. However, misclassification between underqualified and qualified respondents would not have altered either of this paper’s major findings. Further, without taking years of work experience into account, respondents classified as underqualified reported higher levels of job control than those who are qualified (results not shown, but available from authors on request).

Limitations also exist in the classification of overqualified respondents. It is not possible in this dataset to identify those respondents who work in occupations for which they are overqualified by choice (e.g. due to family circumstances or geography) or respondents who completed post-secondary education without the goal of higher occupational attainment (e.g. for self-interest alone). Both these limitations would lead to an underestimation of the true effect of overqualification in respondents with post-secondary or higher educational qualifications.

The results of this study offer a novel insight into how education and occupation differentially affect health status, supporting the need for more health inequality research to incorporate different life-course trajectories among individuals. Unless university education is combined with similar occupational attainment the odds of decline in SRH is similar to respondents with lower levels of education. Further, the effect of overqualification on health appears to be limited to respondents with bachelors education or higher (see Tables 3 and 4).

Between 1992 and 2001 the number of university degrees (bachelors or higher) granted per year by Canadian universities increased from 145,555 to 160,075. In addition, with over 75% of Canadian youth either currently, or previously, enrolled in post-secondary education courses we can expect the proportion of labour force participants with some post-secondary training to continue to increase. However, there does not appear to have been a similar increase in the number of skilled occupations. Without a similar increase in available skilled occupations, the percentage of overqualified labour force participants will continue to increase, as will the number of years which individuals will have to work in less skilled occupations. This has examined the effect of status inconsistency in a appropriately designed prospective study. The longitudinal sample had relatively small attrition, which appears biased only in relation to gender. Classification of occupational attainment within each educational strata utilized objective information as well as two cycles of data, increasing precision of this measure, relative to an estimate taken only at one point in time. Lastly, we were able to adjust for a large number of possible confounders.

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degrees or higher. We suggest that both employers and policy makers alike need to investigate ways to better utilize the increasing educational potential that current labour force participants provide. Possible options include increased job autonomy and skill utilization. In contrast, differences in occupational attainment make little difference in the odds of decline in SRH for people with lower levels of education, suggesting that improvements in the health status of this group will depend upon a wider array of factors outside of the workplace.

Acknowledgements

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KEY MESSAGES

- The number of labour force participants with some post-secondary education is rising, while the number of skilled occupations has remained steady.
- Healthy labour force participants with university education who are overqualified for their current job have greater odds of declines in self-rated health over time, compared with those who are qualified.
- Differences in occupation skill requirements make little difference on the odds of decline in self-rated health for respondents with secondary education or lower.

References

Appendix 1: description of control variables

Self-esteem
Self-esteem was measured using a subset of six questions from Rosenberg’s original 10-item scale. The internal consistency of this scale in the total baseline population has been reported as $\alpha = 0.85$.

Depression
Depression was classified as present or absent, using a subset of 11 questions from the short form University of Michigan Composite International Diagnostic Review (UM-CIDI).

Psychological distress
Psychological distress (range 0–24) using a subset of six questions from the UM-CIDI.

Job control
Job control was measured at baseline using five questions from the abbreviated form of Karasek and Theorell’s Job Content Questionnaire. The internal consistency for job control within the initial cross-sectional sample of this survey has previously been reported as $\alpha = 0.61$.

Smoking
Level of smoking was categorized into four groups (none, social, 1–24 cigarettes a day, 25 or more cigarettes a day)

Physical activity
The physical activity over the last 12 months, for each respondent was grouped into the following three categories (inactive, moderately active, and active).