Relative Deprivation and Mental Health in Canadian Adolescents

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Abstract: Prior research on social class differences in adult mental illness suggests that relative differences in affluence impact mental health and well-being more than absolute affluence. However, it is unclear whether relative deprivation also relates to adolescent mental health and to both internalizing and externalizing dimensions of mental health. This study examined the association between relative deprivation in schools and mental health in a community sample of 26,069 adolescent participants of the Canadian Health Behaviour in School-aged Children (HBSC) study. School-based surveys measured five dimensions of mental health and well-being: internalizing symptoms, externalizing symptoms, positive well-being, prosocial behaviour and life satisfaction. Regression analyses found that relative deprivation positively related to internalizing problems and negatively related to well-being and life satisfaction after differences in absolute affluence were held constant. However, relative deprivation did not relate to externalizing dimensions of mental health (externalizing symptoms and prosocial behaviour). These findings extend epidemiological evidence of links between income inequality and internalizing psychopathology to adolescent populations and underscore the influential role of socioeconomic status in adolescent health. Suggestions for future research and the practical implications of the findings are discussed.

Keywords: Adolescence, relative deprivation, social rank, mental health, Health Behaviour in School-aged Children.

INTRODUCTION

Prior research has found that growing up in impoverished or unequal socioeconomic settings contributes to mental distress and illness – even in rich, economically developed countries [1]. Epidemiological studies have found a graded relation between socioeconomic status (SES) and psychological symptoms in nearly every culture and age group in which they have been studied. At every level of SES, mental health tends to be better at the level above and poorer at the level below [2]. Although this research has focused on adult populations, in children and adolescents SES negatively relates to internalizing psychological symptoms (e.g. depression, anxiety), externalizing symptoms (e.g. hyperactivity, conduct problems) and health compromising behaviours that relate to mental health (e.g. poor nutrition, smoking, sedentary behaviour) [3-5].

Current research into the causal paths that underlie these differences focuses on the direct consequences of material deprivation and the indirect psychosocial consequences of relative socioeconomic position [6-8]. The materialist path suggests that SES differences in mental health arise from unequal distributions of material resources that can be used to support health (e.g. access to mental health services). The psychosocial path suggests that feeling poor in comparison to others elicits psychological stress, erodes social supports and thus contributes to mental distress [9, 10]. This psychosocial path might explain why two individuals at the same level of education or household income might differ in their mental health when one is surrounded by more affluent people and the other by less affluent people. What differentiates these individuals is a feeling of relative deprivation from a desirable standard of living that is established by society [11].

The concept of relative deprivation was formulated in the 1960s to express the difference between what a person has and what he or she desires [12]. In 1978, economist Shlomo Yitzhaki operationalized relative deprivation by measuring the average difference between an individual’s income and the incomes of all individuals above him or her within a reference group [13, 11]. This group might be defined by shared characteristics or by proximity among its members (e.g. workplace colleagues). A central tenet of Yitzhaki’s formulation is that individuals tend to weigh upward comparisons more heavily than downward comparisons [11, 14]. Conceptually and computationally, the Yitzhaki index is an “upward looking” measure of relative deprivation.

To date, at least 10 studies have examined the association between relative deprivation and health
using the Yitzhaki index, some after controlling for
differences in absolute income [15, 16]. Only a few of
these studies have examined mental health, and fewer
still have examined adolescent mental health. A study
of British adults by Wildman found a positive correlation
between relative deprivation and mental distress in
adult women but not in men [17]. Another found that
relative deprivation related to an increased likelihood of
depressive disorders and anxiety or panic disorders
after individual differences in absolute income were
controlled [18]. This study concluded that a 25%
decrease in relative deprivation could decrease the
probability of any likely mental health disorder by as
much as 9.5% [18].

We recently examined the association between
relative deprivation and psychosomatic symptoms in
adolescents in eight countries [19]. Our study found a
positive association between relative deprivation and
symptoms after differences in absolute affluence were
held constant. However, the health assessments in this
study included just three psychological symptoms
(irritability, feeling nervous, and difficulty sleeping), so it
is still unclear whether relative deprivation contributes
to both emotional and behavioural problems in
adolescents, and to both positive and negative
dimensions of mental health and wellness. A deeper
understanding of how relative deprivation relates to
mental health in adolescence might lead to more
focused interventions that reduce socioeconomic
inequalities in mental health through the lifespan.

The present study addressed these knowledge
gaps using data from the 2010 Canadian Health
Behaviour in School-aged Children (HBSC) study. The
study explored material family affluence and five
dimensions of mental health and wellness in early- and
mid-adolescence: internalizing emotional problems,
externalizing behavioural problems, emotional well-
being, prosocial behaviour and life satisfaction [20, 21].
Using schoolmates as a social reference group for
adolescents, we hypothesized that relative deprivation
within schools positively relates to adolescents’
internalizing and externalizing problems and negatively
relates to well-being, prosocial behaviour and life
satisfaction after differences in absolute affluence are
statistically controlled.

**METHOD**

**Participants**

The 2010 Canadian HBSC study surveyed 26,078
students (51.85% female, 48.15% male) aged 9.67 to
19.17 years ($M=13.85, SD=0.09$) in all Canadian
provinces and territories except Prince Edward Island
and New Brunswick [19]. A clustered sample of
students in grades 6 to 10 from 1,294 classes in 436
schools was selected using weighted probability
methods in order to ensure a representative sample of
school population characteristics, such as language of
instruction (English or French), province or territory,
type of school (public or Catholic), and community size.
Students from private schools, special need schools, or
schools specifically for adolescents in custody were
excluded from the study. Ethnic and racial
classifications of the participants were not measured.

School jurisdictions and schools were given the
option of using active or passive parent consent.
Approximately 59% of participating schools used
active consent and 41% used passive consent. Response
rates were 11/13 (84.6%) at the
provincial/territorial level, 436/765 (57.0%) at the
school level and 26,078/33,868 (77.0%) at the
individual level. The most common reasons for
nonparticipation were a failure to return consent forms,
failure to receive parental consent, and absence on the
day of survey administration. Our analyses found
no significant differences in family affluence or mental
health owing to whether the schools used passive or
active consent. A university research ethics board
approved the study procedures.

A total of 195 schools (0.75%) had less than 10
student observations and were thus excluded from the
present study given our focus on relative deprivation
within schools. Furthermore, 2,356 observations
(9.03%) with missing data on family affluence were
excluded from the study, resulting in a final sample of
23,570 adolescents.

**Measures and Procedures**

Self-report questionnaires were administered by
teachers or trained interviewers in classroom settings.
The survey measured sociodemographic information
(e.g. age, gender, grade level) and various health and
health behaviours and took approximately 45 minutes
to complete.

**Mental Health**

The 2010 cycle of the Canadian HBSC survey
developed a 26-item factor analytically derived
assessment of mental health that assessed both
positive and negative aspects of internalizing and
externalizing functioning (Table 1) [19, 20]. Six items
measured externalizing problems (e.g. aggression,
The questionnaire also included Cantril’s self-anchoring measure of life satisfaction, “In general, where on the ladder do you feel you stand at the moment?” [22]. Respondents used a figure of a ladder to indicate how they felt about their life on an 11-point scale ranging from 0 (worst possible life) to 10 (best possible life).

**Affluence**

Estimates of absolute and relative affluence were based on data that were collected using the HBSC Family Affluence Scale (FAS). The FAS contains four items that address common indicators of wealth and material assets: does your family have a car or a van?

**Table 1: Mental Health Scales in the 2010 Canadian HBSC study**

<table>
<thead>
<tr>
<th>Internalizing problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In the last 6 months I have felt low or depressed.</td>
</tr>
<tr>
<td>2. In the last 6 months I have been in a bad mood.</td>
</tr>
<tr>
<td>3. In the last 6 months I have felt nervous.</td>
</tr>
<tr>
<td>4. In the last 6 months I have had difficulties in getting to sleep.</td>
</tr>
<tr>
<td>5. I have trouble making decisions.</td>
</tr>
<tr>
<td>6. I often wish I were someone else.</td>
</tr>
<tr>
<td>7. I often feel helpless.</td>
</tr>
<tr>
<td>8. I often feel left out of things.</td>
</tr>
<tr>
<td>9. I often feel lonely.</td>
</tr>
<tr>
<td>10. Thinking about the last week, have you felt sad?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Externalizing problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I cut classes from school.</td>
</tr>
<tr>
<td>2. I make other people do what I want.</td>
</tr>
<tr>
<td>3. I talk back to my teachers.</td>
</tr>
<tr>
<td>4. I get into fights.</td>
</tr>
<tr>
<td>5. I often say mean things to people to get what I want.</td>
</tr>
<tr>
<td>6. I take things that are not mine from home, school, or elsewhere.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Emotional well-being</th>
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<tbody>
<tr>
<td>1. Thinking about the last week, have you felt fit and well?</td>
</tr>
<tr>
<td>2. Thinking about the last week, have you felt full of energy?</td>
</tr>
<tr>
<td>3. Thinking about the last week, have you had fun with your friends?</td>
</tr>
<tr>
<td>4. I have a happy home life.</td>
</tr>
<tr>
<td>5. I have confidence in myself.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prosocial behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I often do favours for people without being asked.</td>
</tr>
<tr>
<td>2. I often lend things to people without being asked.</td>
</tr>
<tr>
<td>3. I often help people without being asked.</td>
</tr>
<tr>
<td>4. I often compliment people without being asked.</td>
</tr>
<tr>
<td>5. I often share things with people without being asked.</td>
</tr>
</tbody>
</table>

**Table 2: Mental Health Scales in the 2010 Canadian HBSC study**

<table>
<thead>
<tr>
<th>Scale rating</th>
</tr>
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<tbody>
<tr>
<td>1=definitely like me, to 6=definitely not like me.</td>
</tr>
</tbody>
</table>

**Note:**
- a: Response options: 1=about every day; 2=more than once a day; 3=about every week; 4=about every month; 5=rarely or never.
- b: Response options: 1=strongly agree; 2=agree; 3=neither agree nor disagree; 4=disagree; 5=strongly disagree.
- c: Response options: 1=never, 2=seldom, 3=quite often, 4=very often, 5=always.
- d: Scale ranging from 1=definitely like me, to 6=definitely not like me.

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Absolute affluence was estimated by summing these four items to a 0-9 point scale, with 9 meaning greatest affluence [23]. In our analyses, absolute affluence scores were centred around the grand mean of the total sample. Relative affluence was estimated using the Yitzhaki index of relative deprivation of each individual within his or her school [13, 18]. For an individual adolescent $i$ with an absolute affluence score of $y_i$, who is a member of reference group $j$ composed of $N$ individuals, this index is expressed:

$$Yitzhaki_i = \frac{1}{N} \sum_{j} (y_j - y_i), \forall (y_j > y_i)$$

Thus, the amount of deprivation is operationalized as the average difference in absolute affluence between the individual $i$ and other members of the group $j$ that have greater affluence. A single estimate of relative affluence was calculated for each individual student using his or her school as the reference group.

**Data Analysis**

The data were analysed using the `svy` command set in STATA 13 (StataCorp LP, College Station, TX), which adjusted standard errors according to the sampling design effects of classroom and school clustering. Poststratification data weights were applied to ensure that the results accurately reflected the population of students in all Canadian regions represented in the study. Linear regression analyses were used to test for any sample bias owing to our exclusion criteria and to estimate the relative contributions of demographic and affluence characteristics to each of the five measures of mental health and well-being. The mental health variables were converted to standard deviation units ($z$-scores) to facilitate the comparisons of their effects (slopes) across outcomes.

**RESULTS**

The 2,508 cases (9.6% of the original sample) that were removed due to either missing affluence data or too few observations in their schools were more likely to be male (61.64% vs. 48.15%), $\chi^2(df=1)=164.35$, $p<.001$, and reported more externalizing symptoms, $b=0.32$, $SE=0.05$, $t=5.88$, $p<0.001$, less prosocial behaviour, $b=-0.17$, $SE=0.06$, $t=-2.71$, $p=0.01$, and lower life satisfaction, $b=-0.15$, $SE=0.07$, $t=-2.09$, $p=0.038$, than the remaining sample. However, their removal did not significantly change the composition of the sample nor bias any of the variables.

Descriptive statistics and correlations between absolute affluence, relative deprivation and mental health variables are shown in Table 2. Absolute affluence closely and negatively correlated with relative deprivation ($r=-0.91$), negatively correlated with internalizing and externalizing symptoms, and positively correlated with wellbeing, prosocial behaviour and life satisfaction. Conversely, relative deprivation positively correlated with symptoms and negatively correlated with wellbeing, prosocial behaviour and life satisfaction.

**Table 2: Descriptive Statistics on Affluence and Five Indicators of Mental Health**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SE</th>
<th>Max</th>
<th>Min</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.</td>
</tr>
<tr>
<td>1. Absolute affluence</td>
<td>6.11</td>
<td>0.04</td>
<td>9.00</td>
<td>0.00</td>
<td>-</td>
</tr>
<tr>
<td>2. Relative deprivation</td>
<td>0.94</td>
<td>0.01</td>
<td>7.58</td>
<td>0.00</td>
<td>-0.91</td>
</tr>
<tr>
<td>3. Internalising symptoms</td>
<td>2.46</td>
<td>0.01</td>
<td>5.00</td>
<td>1.00</td>
<td>-0.12</td>
</tr>
<tr>
<td>4. Externalising symptoms</td>
<td>1.73</td>
<td>0.02</td>
<td>6.00</td>
<td>1.00</td>
<td>-0.06</td>
</tr>
<tr>
<td>5. Emotional wellbeing</td>
<td>3.80</td>
<td>0.01</td>
<td>5.00</td>
<td>1.00</td>
<td>0.19</td>
</tr>
<tr>
<td>6. Prosocial behaviour</td>
<td>3.86</td>
<td>0.02</td>
<td>6.00</td>
<td>1.00</td>
<td>0.09</td>
</tr>
<tr>
<td>7. Life satisfaction</td>
<td>7.33</td>
<td>0.03</td>
<td>10.00</td>
<td>0.00</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Note: All correlations statistically significant at $p<0.001$. 
Multiple linear regression analyses were used to determine the relative contributions of gender, grade level, the interaction of gender and grade and both affluence variables to mental health (Table 3). Gender and grade interacted in their contributions to internalising symptoms. A simple slopes analysis determined that grade level related more strongly to internalising symptoms among females \( (b=0.05, SE=0.01, t=4.80, p<0.01) \) than in males \( (b=0.02, SE=0.01, t=2.71, p=0.007) \). Also, prosocial behaviour was higher in females than in males, and externalizing symptoms were higher among older adolescents.

These regression analyses also found that relative deprivation uniquely contributed to differences in the internalising symptoms, positive well-being and life satisfaction, after differences in gender, grade level and absolute affluence were taken into account (Table 3). Relative deprivation did not relate to externalizing symptoms and prosocial behaviour. Figure 1 internalizing the relations between relative deprivation and predicted mental health scores based on these linear regressions. Absolute affluence uniquely contributed to differences in well being, prosocial behaviours and life satisfaction, but not to internalizing and externalizing problems.

**DISCUSSION**

This study examined socioeconomic differences in mental health in a large community sample of adolescents. Our goal was to determine whether relative deprivation relates to both internalizing and externalizing dimensions and positive and negative dimensions of mental health. Using schoolmates as a social reference group, we hypothesized that relative deprivation contributes to all dimensions of mental health and wellbeing. We found that relative deprivation related to three out of five outcomes: internalizing problems, emotional wellbeing and life satisfaction. Relative deprivation did not relate to the two ‘external’ dimensions: externalizing symptoms and prosocial behaviour.

Overall, these results were consistent with the psychosocial hypothesis of SES differences in mental health. They are consistent with the notion that feeling poor in relation to more affluent peers relates more closely to mental health than does merely being poor, as measured by a summation of material assets. Based on these findings, we conclude that SES impacts adolescent emotional functioning through upward social comparisons of affluence or class differences, in addition to material deprivation. These comparisons might elicit stress and class anxiety, which would explain why relative deprivation related to the internalizing dimensions of mental health and not externalizing dimensions [1, 18, 19].

These findings are also consistent with epidemiological research on the association between income

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**Table 3: Linear Regression Analysis of Mental Health in Canadian Adolescents (n=23,570)**

<table>
<thead>
<tr>
<th></th>
<th>Internalizing symptoms</th>
<th>Externalizing symptoms</th>
<th>Emotional wellbeing</th>
<th>Prosocial behaviour</th>
<th>Life satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta ) (SE)</td>
<td>t</td>
<td>p</td>
<td>( \beta ) (SE)</td>
<td>t</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.49 (0.21)</td>
<td>-0.36 (.25)</td>
<td>-0.05 (0.19)</td>
<td>-0.53 (0.24)</td>
<td>0.09 (0.20)</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>0.09 (0.13)</td>
<td>0.70 0.49</td>
<td>-0.34 0.74</td>
<td>-0.09 (0.10)</td>
<td>-0.31 (0.12)</td>
</tr>
<tr>
<td>Grade</td>
<td>0.00 (0.02)</td>
<td>-0.15 -0.88</td>
<td>4.04 &lt;0.001</td>
<td>-0.12 (0.01)</td>
<td>-0.03 (0.01)</td>
</tr>
<tr>
<td>Gender X Grade</td>
<td>0.03 (0.02)</td>
<td>2.09 0.04</td>
<td>-1.11 0.27</td>
<td>-0.02 (0.01)</td>
<td>-1.88 0.06</td>
</tr>
<tr>
<td>Absolute Affluence</td>
<td>-0.02 (0.01)</td>
<td>-1.82 -0.07</td>
<td>-0.03 (0.02)</td>
<td>0.06 (0.02)</td>
<td>4.02 &lt;0.001</td>
</tr>
<tr>
<td>Relative Deprivation</td>
<td>0.09 (0.02)</td>
<td>4.01 &lt;0.001</td>
<td>-0.01 (0.03)</td>
<td>-0.42 0.68</td>
<td>-2.84 0.01</td>
</tr>
</tbody>
</table>

\( R^2 \) and standard errors were adjusted for the effects of sample clustering. 
\( *p<0.05 \). **\( p<0.01 \).
inequality and mental health [10]. Studies have found that societies with larger differences between the rich and poor (and therefore more relative deprivation) have higher prevalence rates of mental illness [10], and lower well-being in children and adolescents, as indicated by rates of teenage pregnancy [25], school bullying [26], alcohol misuse [27] and school dropout [28].

Strengths of this study include the large sample size and assessments of multiple dimensions of mental health. The study also has limitations. First, the cross-sectional design and lack of parental data prevented us from investigating the role of relative deprivation in the development of mental health problems through childhood and adolescence. Given the many social influences on adolescent health, including parental mental illness, it is likely that deprivation and mental health share mutual, transactional effects. The psychosocial impact of relative deprivation may contribute to stress and distress in all family members and, conversely, family affluence and parents’ earning potential may be impacted by the presence of mental illness [29]. Second, additional assessments of socioeconomic conditions that use standard measures of parental occupation or household income would provide more precise estimates of SES and deprivation. Third, we could not rule out the possibility of non-response bias in the assessments of mental health [30], nor examine differences between subgroups such as youths with disabilities, youths from different racial or ethnic groups and youths with different sexual orientations. Such analyses would have contributed to a deeper understanding of the social determinants of adolescent mental health [31].

Another avenue for future research is cross-cultural and cross-national comparisons. Throughout the adult literature on deprivation and inequality lies an implicit assumption that socioeconomic determinants of health are culturally universal. However, adolescents’ perceptions of class differences and relative deprivation are likely to be grounded in political, cultural and historical contexts. It would be worthwhile to replicate these findings in different cultures and to monitor trends in relative deprivation and inequality in their relation to mental illness.

Given these caveats, the study still contributed unique evidence to the literature on the psychosocial mechanisms that underlie SES differences in mental health. These findings suggest that young people in the most economically segregated communities – not necessarily the poorest – are an important target population for mental health policy and services.
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