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

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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 characteristics 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 passive consent and 41% used active 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,

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

Internalizing problems
1. In the last 6 months I have felt low or depressed.[a]
2. In the last 6 months I have been in a bad mood.[a]
3. In the last 6 months I have felt nervous.[a]
4. In the last 6 months I have had difficulties in getting to sleep.[a]
5. I have trouble making decisions.[b]
6. I often wish I were someone else.[b]
7. I often feel helpless.[b]
8. I often feel left out of things.[b]
9. I often feel lonely.[b]
10. Thinking about the last week, have you felt sad?[c]
Externalizing problems
1. I cut classes from school.[d]
2. I make other people do what I want.[d]
3. I talk back to my teachers.[d]
4. I get into fights.[d]
5. I often say mean things to people to get what I want.[d]
6. I take things that are not mine from home, school, or elsewhere.[d]
Emotional well-being
1. Thinking about the last week, have you felt fit and well?[c]
2. Thinking about the last week, have you felt full of energy?[c]
3. Thinking about the last week, have you had fun with your friends?[c]
4. I have a happy home life.[b]
5. I have confidence in myself.[b]
Prosocial behaviour
1. I often do favours for people without being asked.[d]
2. I often lend things to people without being asked.[d]
3. I often help people without being asked.[d]
4. I often compliment people without being asked.[d]
5. I often share things with people without being asked.[d]

HBSC=Health Behaviour in School-aged Children.
[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.

theft, school truancy; α=.84), ten items measured internalizing problems (e.g. sadness, anxiety, loneliness; α=.84), five items measured emotional well-being (e.g. self-confidence, energy; α=.73) and five items measured prosocial behavior (e.g. helping others; α=.73). Details on the development and validation of these indices are reported elsewhere [19].

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?

(0=no, 1=yes, one, 2=yes, two or more); do you have your own bedroom for yourself (0=no, 1=yes); during the past 12 months, how many times did you travel away on holiday/vacation with your family? (0=not at all, 1=once, 2=twice, 3=more than twice); how many computers does your family own? (0=none, 1=one, 2=two, 3=more than 2). Prior studies have found that the FAS has good content and criterion validity in relation to parental occupation and health, and is less affected by non-response bias than measures of SES that rely on adolescent reports of parental education or income [23, 24].

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

Variable	Mean	SE	Max	Min	Correlations						
					1.	2.	3.	4.	5.	6.	7.
1. Absolute affluence	6.11	0.04	9.00	0.00	-						
2. Relative deprivation	0.94	0.01	7.58	0.00	-0.91	-					
3. Internalising symptoms	2.46	0.01	5.00	1.00	-0.12	0.12	-				
4. Externalising symptoms	1.73	0.02	6.00	1.00	-0.06	0.05	0.19	-			
5. Emotional wellbeing	3.80	0.01	5.00	1.00	0.19	-0.18	-0.53	-0.16	-		
6. Prosocial behaviour	3.86	0.02	6.00	1.00	0.09	-0.08	-0.07	-0.08	0.24	-	
7. Life satisfaction	7.33	0.03	10.00	0.00	0.18	-0.17	0.50	-0.16	0.55	0.17	-

Note: All correlations statistically significant at $p< 0.001$.

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

	Internalizing symptoms			Externalizing symptoms			Emotional wellbeing			Prosocial behaviour			Life satisfaction		
	β (SE)	***t***	***p***	***β (SE)***	***t***	***p***	***β (SE)***	***t***	***p***	***β(SE)***	***t***	***p***	***β (SE)***	***t***	***p***
Constant	-0.49 (0.21)			-0.36 (.25)			1.05 (0.19)			-0.53 (0.24)			0.09 (0.20)		
Gender (female)	0.09 (0.13)	0.70	0.49	-0.04 (.13)	-0.34	0.74	-0.09 (0.10)	-0.93	0.35	0.31 (0.12)	2.65	0.01	-0.02 (0.12)	-0.20	0.84
Grade	0.00 (0.02)	-0.15	0.88	0.11 (0.03)	4.04	<0.001	-0.12 (.02)	-6.39	<0.001	-0.03 (.02)	-1.26	0.21	-0.02 (0.02)	-1.06	0.29
Gender X Grade	0.03 (0.02)	2.09	0.04	-0.02 (0.02)	-1.11	0.27	-0.02 (0.01)	-1.88	0.06	0.01 (0.01)	0.69	0.49	-0.02 (0.01)	-1.22	0.22
Absolute Affluence	-0.02 (0.01)	-1.82	0.07	-0.03 (0.02)	-1.85	-0.07	0.06 (0.02)	4.02	<0.001	0.04 (0.02)	2.50	0.013	0.07 (0.01)	4.50	<0.001
Relative Deprivation	0.09 (0.02)	4.01	<0.001	-0.01 (0.03)	-0.42	0.68	-0.08 (0.02)	-2.84	0.01	-0.01 (0.03)	-0.04	0.97	-0.07 (0.02)	-2.50	0.01
R^2		.050			.025			.098			.044			.043	

R^2 and standard errors were adjusted for the effects of sample clustering.
*p< 0.05. **p< 0.01.

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 internalizing 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

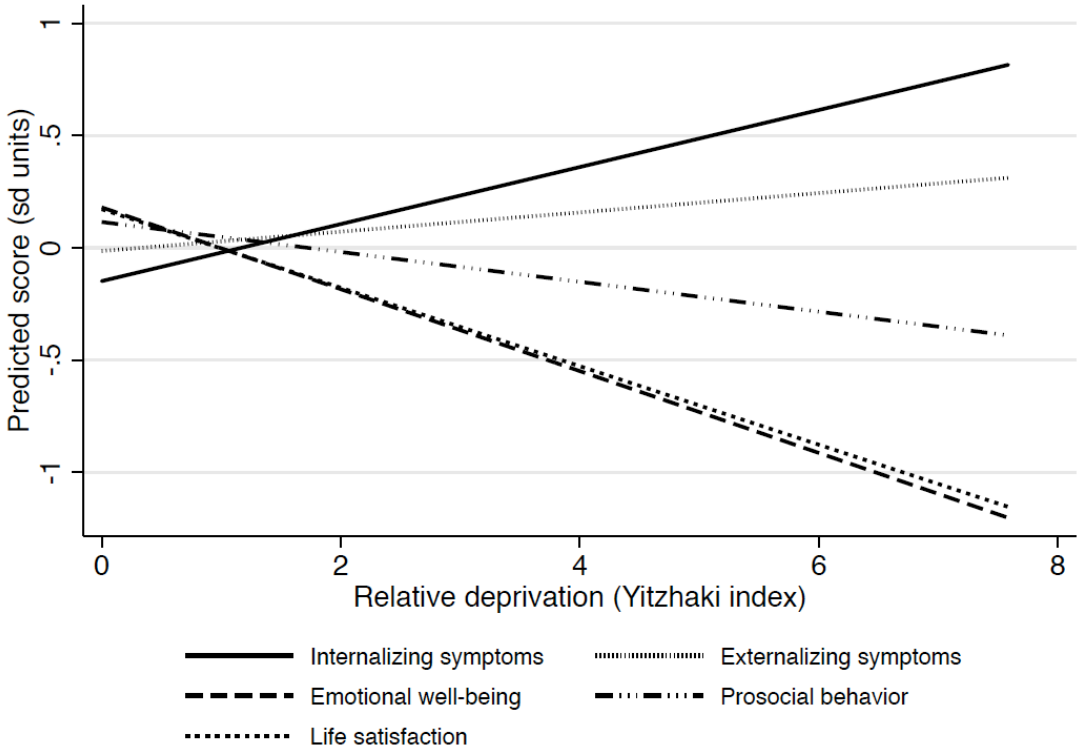

Figure 1: Relative deprivation and predicted mental health scores (adjusted for differences in gender, grade level and absolute affluence).

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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