

Are Canadian adolescents happy? A gender-based analysis of a nationally representative survey

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Abstract: In this study, the authors analyzed data from a nationally representative survey of youth to study happiness amongst Canadian adolescents aged 12-17. Testing for differences in the level of happiness between female and male adolescents was conducted. Following this, multivariate analysis was employed to determine which factors were associated with adolescent happiness. The authors determined that the level of happiness appeared to vary between the genders, as the males reported a higher level of happiness than the females. However, the difference between the genders in terms of reported happiness was modest. The authors detected some gender differences in regards to determinants of happiness. The study's theoretical and practical implications are also considered.

Key words: happiness; youth; gender; ecological theory; microsystem

1. Introduction

Adolescence, a time of transition between childhood and adulthood, characterized by the acquisition of skills deemed necessary to live separately from one's parents or guardian, encompasses one's second decade of life (White, 2004). There are divergent research findings regarding the well-being of young persons undergoing this period of transition. For instance, Bergman and Scott (2001, p. 183) report that adolescence has been labeled by some researchers as a crisis-ridden time of " Sturm und Drang (storm and urges) (characterized by) raging hormones, conflicts with parents, and peer pressures". Other researchers, however, opine that such a depiction is an overstatement, since "according to some findings, most adolescents maintain positive relationships with significant others and show few adjustment difficulties as they make the transition into adulthood" (p. 183). This is buttressed by Huebner, Drane and Valois (2000, p. 287), who report that "most adolescents experience positive levels of subjective well-being". Moreover, Bergman and Scott (2001) note that the notion of well-being within adolescence is a complex construct that may be measured in a variety of ways. This may partially explain the apparent contradictory findings regarding the ease in which the bulk of young people pass through this significant stage of life.

One way in which the well-being of adolescents may be measured is through their reported level of happiness. CHENG and Furnham (2001) explain that the concept of happiness is akin to notions of psychological and/or subjective well-being, and that it consists of three components: (1) one's average level of satisfaction over a particular period; (2) the quantity and extent of one's positive affect; and (3) the relative absence of one's

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negative affect.

Given that happiness “has a broad and significant impact on (one’s) life as a whole” (Mahon & Yarcheski, 2002, p. 306), it is clearly an area of substantial importance to social scientists. Huebner, Funk and Gilman (2000) point out that for adolescents, happiness “services important functions with respect to other crucial adolescent systems” (p. 55), such as their moods and adaptive behavior. Suldo, Riley and Shaffer (2006) stress the importance that happiness plays in the quality of a youth’s life and how it is positively associated with future life achievements, including productivity in the workplace.

The impact of happiness on one’s quality of life does not end in adolescence. In adulthood, level of happiness is positively associated with energy, employment, marriage rates, parenting skills, physical health and life span, and is negatively associated with marriage breakdown (Veenhoven, 1988). Correlates of happiness include open-mindedness, feeling in control of one’s life, and having aspirations which transcend enhancing one’s financial status, such as aspirations in social and moral matters (Dockery, 2005).

The purpose of this study is twofold: First, by analyzing data from Canada’s National Longitudinal Survey of Children and Youth (NLSCY), which contains information on a representative sample of young people selected from across the nation, the authors test the differences in the levels of happiness reported by adolescent females and males. Second, through multivariate analysis the authors determine various factors, including personal and environmental factors, which are associated with adolescent happiness. These factors are considered separately for both females and males.

The rationale for the selection of these factors, or independent variables, is informed by ecological theory. Pioneered by the American psychologist Urie Bronfenbrenner, this theoretical perspective emphasizes how multiple levels of the environment influence specific outcomes for individuals, including youth (Eamon, 2001; Haight & Taylor, 2007).

As noted above, happiness clearly plays an important role in a person’s overall quality of life. Hence, any difference in the levels or determinants of happiness between the genders is an issue of paramount concern and importance to the social scientific community and one that warrants rigorous exploration. This study responds to this need for robust and scientifically-based inquiry. As outlined below, the authors analyze data gleaned from a nationally representative sample of Canadian youth, and the basis of the variable selection is to apply ecological theory in a more comprehensive and explicit manner than it has been done in previous related studies.

This paper is outlined as follows: The remainder of section 1 explains the study’s theoretical framework by outlining the essential tenets of ecological theory. Section 2 discusses previous studies on youth happiness within the context of ecological theory as a means of identifying gaps within the literature. Section 3 describes the data set, the sample and the selection of variables guided by the tenets of ecological theory. Section 4 presents the results of the analyses, while section 5 marks the conclusion of the paper.

1.1 Theoretical framework: Ecological theory

Ecological theory proposes that the development of humans and their thoughts, feelings and behaviors are driven by proximal processes, or interactions between individuals and their surrounding environmental contexts (Benner, Graham & Mistry, 2008; McKown, 2005). These contexts include the micro-, exo- and macro-systems (Haight & Taylor, 2007).

The micro-system encompasses the immediate social environment that includes those settings in which individuals generally have face-to-face, sustained and meaningful relationships with others, such as families, peer groups, classrooms, workplaces and places of worship. The exosystem encompasses settings that do not

necessarily involve an individual as a directly active participant, but in which events occur that do affect the individual, which includes institutions such as school districts, neighborhoods and communities. The macrosystem involves the socio-cultural patterns of the larger society that pervade all of the other systems. Examples of macrosystems include widespread societal values such as the notion of individual freedom, as well as institutional forces such as governmental policies and the vitality of the labor market (Benner, et al., 2008; Haight & Taylor, 2007).

According to ecological theory, individuals are not merely passive objects that are shaped by surrounding systems. Rather, they are active agents whose own biological and psychological characteristics, known as focal systems, can influence how they interact with others and how others interact with them, thus simultaneously shaping their own perspective as well as the perspective of others (Benner, et al., 2008; Haight & Taylor, 2007).

One such influential focal system is gender (McKenzie, 2008). This is reflected in the study by Benner, et al (2008) who, cognizant of the importance ecological theory places on individual characteristics such as gender, investigated if the influence of school and family-level processes on youths' educational outcomes differed by gender. Hence, the study's separation of adolescents by gender and comparing their respective levels and determinants of happiness are informed by ecological theory.

2. Literature review

Although there is a lacuna of studies that explicitly apply the ecological perspective when exploring the determinants of adolescent happiness, a number of studies investigate the relationship between specific variables, which may be considered as belonging to one of the ecological systems outlined above, and adolescent happiness. Therefore, this paper begins with a review of the existing literature on the topic. The discussion is divided into relevant sections in accord with the pertinent assumptions of ecological theory outlined above.

2.1 Focal system

Mahon and Yarcheski (2002) employed hierarchical analyses of sets to determine which of two different clusters of variables had greater explanatory power of youth happiness. These clusters consisted of enabling mechanisms such as self-esteem, future time perspective and optimism and personality dimensions such as extroversion, agreeableness and openness to experience. The researchers concluded that enabling mechanisms had more explanatory power, and of all the variables in this set, optimism was the most strongly linked to happiness.

In their study on the subjective well-being of undergraduate students, Busseri, Sadava, Molnar and DeCourville (2007), ascertained that participants characterized by high levels of subjective well-being scored highly on measures of physical and mental health as well as interpersonal functioning. In another study with undergraduate students, CHENG and Furnham (2001) found that attributing positive outcomes to oneself and believing positive outcomes will happen again as well as the personality trait of extraversion were significant predictors of happiness.

As explained by Huebner, et al (2000), life satisfaction is often included in multidimensional measures of subjective well-being, and is also "an important outcome in and of itself" (p. 54). Given that the study of life satisfaction amongst children and adolescents is "in its infancy" (p. 56), Huebner, et al (2000) collected data on two occasions from high school students in two different high schools, both of which were in a Southeastern state within the United States. Along with measuring the students' life satisfaction, the researchers administered the Behavior Assessment System for Children (BASC), which assesses clinical constructs such as anxiety, depression

and social stress. They found that the life satisfaction reports were distinguishable from the clinical constructs, or that “some individuals may report overall life satisfaction despite experiencing intense negative emotions ... and some individuals may report low overall life satisfaction without experiencing intense negative emotions and/or behavior” (p. 61). The authors concluded that adolescent life satisfaction appears to be separable from various intrapersonal and interpersonal mental health variables.

In their study with children ranging in age from 9 to 12 years, Holder and Coleman (2008) determined that temperament, popularity with peers, and perception of one’s own physical attractiveness were all related to children’s happiness. Other variables, however, such as parental marital status and age(s) “did not account for any appreciable variation in children’s happiness” (p. 296).

As noted above, gender is also a noteworthy focal system, and one that has been considered in prior studies relating to happiness and youth. For instance, Zullig, Huebner and Pun (2007) studied the demographic (focal system) correlates, such as gender and race, of life satisfaction for students enrolled at a university in the Midwestern United States. In order to assess the participants’ life satisfaction, the researchers administered the “brief multidimensional students’ life satisfaction scale” (BMSLSS), which includes questions pertaining to satisfaction with family, friends, school, self and living environment, as well as with one’s overall life. Zullig, et al (2007) detected two main effects for race, as Caucasian students reported greater satisfaction with self and school than did the minority students. The authors suggest this finding may be a result of the possible adverse effect of being a minority student enrolled in a university whose student body is primarily Caucasian. There were no effects detected for gender.

Mahon, Yarcheski and Yarcheski (2005) conducted a study with youth as a means of determining the differences in happiness between early adolescent females and males. While no statistically significant differences were found between the genders in terms of reported happiness levels, the groups did differ in respect to what factors were associated with their happiness.

Mahon, et al (2005) found that for female youth, their happiness was positively related to their perceived health status and wellness but not their clinical health. For the male youth, their happiness was positively related to their clinical health, as well as perceived health status and wellness. These findings suggest that when male youth have fewer symptoms and health complaints they are happier, and vice versa, whereas for female youth there is no relationship between their clinical health and level of happiness.

In a study on the determinants of children’s and adolescents’ happiness, Chaplin (2008) found that more males than females reported participating in sports as a determinant of what makes them happy, whereas females were more likely to report people (e.g., family, friends and other social influences such as neighbors, teachers and coaches) and pets. Chaplin also considered gender differences at specific ages, and found that in terms of what makes them happy, the 3rd grade females placed more emphasis on achievements, the 7th/8th grade females reported more material things, and the 11th/12th grade females reported more people and pets than did the males.

In a cross-cultural study on adolescent development, Dekovic, Engels, Shirai, DeKort and Anker (2002) detected interaction effects between culture and gender in respect to youth happiness and well-being. For instance, no gender differences in well-being emerged in a sample of Japanese adolescents, but amongst Dutch youth the females reported lower levels of happiness than did the males.

Conversely, Huebner, et al (2000) determined no gender differences in the life satisfaction reports of over 5,000 high school students sampled in the Southeastern United States. In their study with a sample of American youth, Csikszentmihalyi and Hunter (2003) detected no gender differences in regards to happiness, though

ANOVA results indicated one interaction, that is, poor females experienced more happiness than males. An inquiry by Fujita, Diener and Sandvik (1991) into happiness levels of college students revealed no gender differences, nor did CHENG and Furnham's (2002) study with youth from the United Kingdom. Moreover, Groot and Maassen van den Brink (2002) detected no gender differences in reported life satisfaction from a sample of Dutch adults, though the responses of women were more varied. In summary, the majority, though not the entirety, of studies focusing on gender and happiness amongst youth report no differences between females and males in regards to level of happiness.

2.2 Microsystem

Yarcheski, Mahon and Yarcheski (2001) explored how perceived social support, operationalized by the Personal Resource Questionnaire (PRQ85), influenced the general well-being of adolescents. Defining general well-being as the "subjective, general, and positive feelings experienced by adolescents" (p. 164), the authors note that the findings from their study suggest that social support, though mediated by constructs such as hopefulness and self-esteem, is a substantial determinant of youth well-being. They propose that the home environment is "most relevant in terms of social support" (p. 176), as well-being is nurtured and sustained by membership in primary groups, such as families. In a similar vein, CHENG and Furnham (2004) detected that the self-reported happiness of a sample of young people from the UK was related to the degree of warmth shown to them by their mothers.

In their review of studies on academic correlates of reported life satisfaction by youth, Suldo, Riley and Shaffer (2006) reported that "numerous studies have shown an association between students' happiness and general feeling about school, including overall attitudes toward school" (p. 570). For instance, Nativig, Albrektsen and Qvarnstron (2003) determined that increased feelings of school alienation and school distress were related to a decrease in the odds of feeling quite happy and/or very happy.

There is also evidence that academic achievement and perceived academic competence are related to youth happiness. This is evinced by the study conducted by CHANG, McBride-CHANG, Stewart and Au (2003), in which a positive correlation was found between the academic self-concept and life satisfaction of students in Hong Kong. Moreover, CHENG and Furnham (2002) detected a positive correlation between school grades and happiness among adolescents from three schools in the United Kingdom, while Suldo, et al (2006) noted that measures of perceived academic competence and self-efficacy have "yielded moderate relationships with life satisfaction in American and Chinese youth" (p. 577).

Piko (2006) collected data from over 1100 secondary school students from Hungary as a means of determining the relationship between various determinants, including psychosocial health and several environmental factors, with life satisfaction. Piko determined that academic achievement and a subjective socioeconomic status (SES) assessment were positive predictors of life satisfaction. Moreover, self-perceived health and diet control were also positive predictors, while smoking, psychosomatic symptoms and depression were negative predictors.

Bradley and Corwyn (2004) examined contextual and personality factors and their influence on life satisfaction amongst five culturally distinct groups of adolescents. The groups were Asian-American, African-American, Dominican-American, Mexican-American and European-American. The authors determined that parental marital status was the consistent family context predictor of adolescent life satisfaction, as all of the groups except Dominican-American youth reported higher levels of life satisfaction when the mother was married. Quality of the home environment, as measured through the early adolescent version of the home observation for

measurement of the environment inventory (EA-HOME) was also positively associated with life satisfaction, as were adolescent health and self-efficacy.

Demir's (2008) research on romantic relationships amongst college students resulted in findings which suggested that relationship quality is positively related to happiness. The authors also found identity formation moderated the association between relationship quality and happiness in that the participants were happier when they reported both high quality relationships and high levels of identity formation.

In another study on how context can influence the psychological well-being of youth, Farruggia, Greenberger, CHEN and Heckhausen (2006), in their investigation of youth in foster care, reported that, "contrary to our hypothesis ... foster care youth did not differ from a comparison group (of non-foster care youth) on levels of depressed mood" (p. 356). The authors suggested that the presence of important nonparental adults (e.g., an aunt, a teacher) in the lives of the foster care youth contributed to the finding of no differences between them and the comparison group regarding levels of depression.

2.3 Summary

While the above studies provide some valuable insights, it is evident from the inconclusive findings that more research on gender differences regarding levels and determinants of happiness amongst youth is needed (Chaplin, 2008). As discussed above, gender is a focal system variable that can simultaneously shape one's own perception as well as how one is perceived by others. Consequently, it is reasonable to assume that gender can influence the levels and determinants of adolescent happiness. Noticeably absent from the literature, however, is a gender-based analysis of adolescent happiness couched within an ecological theoretical framework. Moreover, there is a conspicuous gap of studies in this area that incorporate the exo- and macro-systems level variables outlined above. Macrosystem level variables include various indicators of socioeconomic status (SES) that might be intertwined with public policies and the economic climate, such as income level and poverty rates (Hick, 2007; Huebner, et al., 2000).

To help fill the gap in the current literature, the authors relied upon ecological theory to inform the analysis in three major ways. First, ecological theory suggests that the level of happiness between females and males is different. Second, it suggests that the determinants of happiness for females and males are different. Third, its multisystem structure provided the theoretical rationale for the selection of independent variables.

Another limitation in the current literature on youth happiness is a lack of studies with nationally representative samples. The bulk of existing studies have confined themselves to samples based on a specific domain, such as region of residency (e.g., community and neighborhood), setting (e.g., educational institutions and foster care), and ethnically and culturally distinct groups. The findings of these studies are therefore limited to specific domains and are not nationally representative. By contrast, this study uses a nationally representative sample of youth. Thus, its findings are generalizable to Canadian youth nation-wide and shed light on their level and determinants of happiness. Consequently, this comprehensive application of ecological theory, combined with a nationally representative sample of youth, makes a substantial contribution to the knowledge base regarding adolescent happiness.

3. Data and sample

3.1 Data

As outlined above, the data set used in this study is the Canadian NLSCY. This survey represents a

nation-wide research effort to study the development and well-being of Canadian youth from birth to early adulthood. The NLSCY is jointly designed and implemented by Statistics Canada, Canada's National Statistics Authority, and Human Resources Development Canada to collect information about factors influencing the social, emotional and behavioral development of Canadian children and youth. The NLSCY records information about children's personal health, physical development, learning and behavior. Moreover, it includes information about children's social environments, such as their families, peer groups and the neighborhoods they reside in (Statistics Canada and Human Resource Development Canada, 1995).

3.2 Sample

As explained above, this study, unlike previous studies, involves a comprehensive and explicit application of ecological theory when testing for the determinants of youth happiness for both genders. Due to the exploratory nature of this study, a cross-sectional approach was employed. The authors utilized cycle 4 of the NLSCY, which is the latest publicly available cycle with a cross-sectional sample of Canadian children and youth. The data collection for cycle 4 was conducted between September 2000 and June 2001, with a resultant sample of 30,540 youth. The final release of the microdata file with updated sample weights was initiated on December 2004. The cycle 4 sample represents all Canadian children and youth who were from 0 to 17 years old on January 1st, 2001. Only youth between the ages of 12-17 who responded to the question pertaining to happiness were selected for this study (Statistics Canada, 2005).

To construct data that is nationally representative of the total population of Canadian children and youth, the NLSCY employs a complex sample design, including stratification, clustering, multiple stages of selection and unequal probabilities of the selection of respondents. Such a complex sample design may render the results of estimations seriously biased, especially when multivariable modeling is involved (Levy & Lemeshow, 2008).

In order to compute correct estimations from the NLSCY, the authors used a subprogram developed and recommended by Statistics Canada for the STATA 10 statistical software package (Stata, 2007; Statistics Canada, 2001). By using this subprogram, the authors were able to provide correct estimations from the NLSCY when taking into account the complex survey design outlined above. Hence, all estimations in this paper are nationally representative.

3.3 Ethics

Before its start, the study was reviewed and approved by the affiliated university's Research Ethics Board (REB). To protect the confidentiality and security of the data, the NLSCY is considered a restricted data set available for analysis only at designated Statistics Canada facilities. Hence, the data analysis component of this study was conducted at a Statistics Canada Research Data Centre at the University of Western Ontario. The results of the data analysis were screened by a designated Statistics Canada employee to ensure the confidentiality and security of the data (University of Western Ontario, n.d.).

3.4 Measures

3.4.1 Independent variables

The full description of the descriptive statistics for the independent variables is provided in Table 1.

As seen in Table 1, some of the questions which formed the basis of the independent variables were responded to by the youth themselves, whereas others were responded to by the "person most knowledgeable" (PMK). The PMK is always a family member with the best knowledge of the child. In more than 90% of the cases the PMK was the biological mother. In other cases the PMK was the biological father or a biological grandparent, a step or foster parent or another form of legal guardian (Statistics Canada, 2001).

Table 1 Descriptive statistics: Independent variables

Variable	Variable description	Level	Reported by	Mean	Std. Err.	No (%)	Yes (%)
Continuous independent variables							
Genselfscore	Adolescent's General Self Score	Focal	Youth	13.05	0.07		
Friendscore	Adolescent's Friends Scale	Micro	Youth	13.54	0.07		
Famfunc	Family Functioning Score	Micro	PMK	9.21	0.16		
Depress	PMK's Depression Scale	Micro	PMK	4.59	0.18		
Socsupp	PMK's Social Support Scale	Micro	PMK	18.6	0.12		
Nbhdsafe	Neighborhood Safety Scale	Exo	PMK	6.57	0.05		
Yearsnbhd	Years of residence in this neighborhood	Micro	PMK	9.47	0.19		
Binomial independent variables							
Goodfuture	The next five years look good for adolescent	Focal	Youth			9.63	90.36
Canbornpar	Adolescent has Canadian born parents	Micro	PMK			17.78	82.22
Havebgf	Adolescent has a boyfriend or a girlfriend	Micro	PMK			62.67	37.33
Belowlico	Adolescent lives in family below poverty	Macro	PMK			87.81	12.19
Nounivgrad	PMK not university graduate	Micro	PMK			24.98	75.02
Dowellschool	Adolescent does well in school	Micro	Youth			37.83	62.17
Nogoodhealth	PMK not in good health	Micro	PMK			89.33	10.67

Notes: Data are rounded up; All estimations are adjusted to complex survey design.
Source: Own estimations based on NLSCY.

In terms of the discrete variables, the youth responded to questions asking if the next five years looks good to them (1=yes), if they have a boyfriend or girlfriend (1=yes), and if they are doing well in school (1=yes). The PMKs responded to questions asking if the youths' parents are Canadian born (1=yes), if the total family income is below Statistic Canada's Low-Income Cutoff (LICO) (1=yes), if the PMK is not a university graduate (1=not a university graduate), and if the PMK is not in good health (1=not in good health). Given the strong relationship between poverty rates and macroeconomic conditions (Hick, 2007), the question pertaining to the family's LICO status is considered a macrosystem level variable.

The continuous independent measures collected from the respondent youth were the "general self score" and the "friends scale". The general self-score measured the youth's overall self-esteem, with a higher score indicating higher self-esteem. The friends scale measured how well the youths believe they are getting along with their peers, with a higher score indicating a more positive relationship with peers. Please refer to Appendix 1 for a full description of these variables.

The other continuous measures involved collecting data from the PMK. For instance, residential stability was measured by the respondents reporting the number of years they have lived in their present neighborhood. The rest of the continuous variables, that is, family functioning, depression of PMK, social support and neighborhood safety were measured with scales. For the "family functioning score", a higher score indicated a higher level of family dysfunction, whereas for the "depression scale", a higher score indicated a greater presence of depressive symptoms exhibited by the PMK. For the "social support scale", a higher score indicated a greater presence of social support for the PMK, and a higher score on the "neighborhood safety scale" indicated a greater sense of safety within the neighborhood the participant youth and their families resided in. Please refer to Appendix 2 for a

full description of these variables.

As outlined above, ecological theory informed the selection of independent variables. Alongside gender, the focal level variables were the youth’s General self score and if the next five years looks good to them. There were a total of ten microsystem level variables. They were a youth’s “family functioning score”, “friends scale”, and the years the youth’s family had lived in their current neighborhood. Other microsystem level variables were whether the youth had (a) Canadian-born parent(s), a boyfriend or girlfriend, and their reported school performance. The remainder of the microsystem level variables pertained specifically to the PMK. They were the “depression scale” and “social support scale” as well as educational level and health status. There was one exosystem level variable, which was the “neighborhood safety scale”. As noted above, there was also one macrosystem level variable, which was the poverty or LICO status of the participant youths’ families.

3.4.2 Dependent variable

Happiness was measured by posing the statement “In general, I am happy with how things are for me in life now” to the youth participating in this survey. It was a discrete variable as the participants could respond with 1=strongly disagree, 2=disagree, 3=agree or 4=strongly agree. The overall response rate to this question by the participants was 77%, with a weighted response of 80% for the females and 75% for the males (Statistics Canada, 2001).

4. Results

4.1 Differences in rating of happiness by gender

The authors compared the female and male youth in their responses to the statement discussed above which measured the dependent variable, that is, level of happiness. Just over 25% of the females and 30.3% of the males responded “strongly agree” to the happiness statement, whereas 60.6% of the females and 57.3% of the males responded “agree”. Approximately 12% of the females and 9.6% of the males chose “disagree”, while 2.3% of the females and 2.7% of the males reported “strongly disagree”.

To test for significant differences, the authors computed the Pearson chi-square statistic while using the Rao-Scott correction factor, which takes into account the complex survey design used in the study and determines the proper *p*-value, the adjusted *F* statistic, and the degrees of freedom (Lee & Forthofer, 2006). The findings suggest that level of happiness is dependent upon gender, as $p < 0.05$. Refer to Table 2 for a summary of the bivariate analysis.

Table 2 Results of bivariate analysis: Gender and level of happiness

Answers	Males and females			Males			Females		
	(%)	Std. Err.	CI at 95%	(%)	Std. Err.	CI at 95%	(%)	Std. Err.	CI at 95%
Strongly disagree	2.5	-0.0036	[0.0188, 0.033]	2.7	-0.0055	[0.018, 0.0402]	2.3	-0.0045	[0.0156, 0.0338]
Disagree	10.8	-0.0074	[0.095, 0.1241]	9.63	-0.0107	[0.0772, 0.1195]	12.11	-0.0103	[0.1022, 0.1429]
Agree	58	-0.0115	[0.5668, 0.6121]	57.34	-0.0173	[0.5391, 0.6069]	60.58	-0.0153	[0.5754, 0.6354]
Strongly agree	28	-0.0101	[0.2572, 0.297]	30.34	-0.0158	[0.2732, 0.3353]	25.01	-0.0141	[0.2236, 0.2787]
Total	100			100			100		

Notes: Uncorrected: $\chi^2(3)=19.4856$; Design-based: $F_{(2.96, 2958.45)}=2.6998$; $p=0.0450$; Data are rounded up; All estimations are adjusted to complex survey design.

Source: Own estimations based on NLSCY.

4.2 Determinants of happiness by gender

As for the multivariate analysis on the determinants of adolescent happiness, the authors conducted ordered logit regression. The authors constructed one multivariate model and for this model they ran two separate regressions on the data pertaining specifically to the female and male participants as a means of identifying the particular determinants of happiness for both genders.

In order to address multicollinearity, the authors utilized the method employed by Habibov and Fan (2008), in which they ran ordered logit regression between each individual predictor and the outcome variable. The sign of the regression coefficient was then recorded. Any predictor variable whose coefficient in the full model was in the opposite direction from its coefficient in the one-by-one regression would be deemed multicollinear. No multicollinearity was found in the models, since the signs of each of the regression coefficients in the full models were the same as they were in the pertinent one-by-one regressions.

Tables 3 and 4 report the results of the multivariate analysis for the female and male participants. To facilitate the interpretation of the tables, the significant regression coefficients and marginal effects are highlighted in bold.

(1) Female sample

Table 3 reports the results of the multivariate analysis for the female participants. The significant predictors for happiness amongst the female youth were the “general self score” (genselfscore) and if the “future looks good” (goodfuture).

Table 3 Determinants of adolescent happiness for female sample of Canadian youth

Independent Variables	Logistic regression main estimation		Marginal effects estimation regarding probabilities for levels of agreement with happiness statement							
	Odds Ratio	Std. Err.	Strongly disagree		Disagree		Agree		Strongly agree	
			Marginal	Std. Err.	Marginal	Std. Err.	Marginal	Std. Err.	Marginal	Std. Err.
Genselfscore	1.33171***	0.092807	-0.001362	0.00092	-0.02113	0.00579	-0.02525	0.00862	0.047749	0.0102
Friendscore	1.044884	0.071081	-0.0002088	0.00034	-0.00324	0.00495	-0.00387	0.00623	0.007318	0.01139
Goodfuture	14.59636***	8.245491	-0.0493306	0.03031	-0.40427	0.11812	0.225382	0.11818	0.228221	0.03703
Dowellschool	1.485124	0.442795	-0.0019795	0.00217	-0.03037	0.02346	-0.03185	0.0253	0.064202	0.04827
Canbornpar	0.5033074	0.295694	0.0025833	0.00247	0.041376	0.0297	0.086763	0.09922	-0.13072	0.12848
Havebgf	1.087582	0.304755	-0.0003941	0.00132	-0.00613	0.0204	-0.00758	0.02559	0.014102	0.04718
Belowlico	1.239447	0.78574	-0.0009318	0.00255	-0.01467	0.04015	-0.02211	0.07473	0.037711	0.11711
Nounivgrad	0.8862661	0.36904	0.0005554	0.00187	0.008665	0.02909	0.0113	0.04185	-0.02052	0.07265
Famfunc	0.9470495	0.034049	0.0002587	0.00024	0.004014	0.00287	0.004796	0.00321	-0.00907	0.00592
Depress	0.9586335	0.034589	0.0002009	0.00021	0.003117	0.00282	0.003724	0.00327	-0.00704	0.00606
Nogoodhealth	1.977119	0.969631	-0.0024707	0.00215	-0.03979	0.02513	-0.08983	0.08302	0.132086	0.10707
Socsupp	0.9959764	0.053878	0.0000192	0.00026	0.000297	0.004	0.000355	0.00474	-0.00067	0.00899
Nbhdsafe	1.054637	0.106112	-0.0002529	0.00051	-0.00392	0.00727	-0.00469	0.00909	0.008867	0.01674
Yearsnbhd	1.025449	0.022331	-0.0001195	0.00013	-0.00185	0.0017	-0.00222	0.00206	0.004189	0.00375

Notes: Number of observations=551; $F_{(14, 987)}=4.48$; $\text{Prob}>F=0.0000$; Data are rounded up; * indicates significance at the $p<0.05$, ** at $p<0.01$, *** at $p<0.001$; Significant predictors are highlighted in bold. All estimations are adjusted to complex survey design.

Source: Own estimations based on NLSCY.

The results from the odds ratio column indicate that every one unit increase in the “general self score” (genselfscore) corresponded with greater odds of being happy. More specifically, the marginal effects

demonstrated that for every one unit increase in the “general self score” (genselfscore), a participant was 0.13% less likely to strongly disagree, 2.1% less likely to disagree, 2.5% less likely to agree, and 4.8% more likely to strongly agree with the happiness statement.

Similarly, reporting that the “future looks good” (goodfuture) was associated with greater odds of being happy. In terms of marginal effects, a response of “yes” to the good future question translated into being 4.9% less likely to strongly disagree, 40.4% less likely to disagree, 22.5% more likely to agree, and 22.8% more likely to strongly agree with the happiness statement.

(2) Male sample

Table 4 reports the determinants of happiness for the male participants. For them, the “general self score” (genselfscore), “perception of the future” (goodfuture), “doing well in school” (dowellschool), and “having a boyfriend/girlfriend” (havebgf) were all significant predictors of happiness. In terms of odds ratios, an increase in the “general self score” (genselfscore) corresponded with greater odds of being happy. As for marginal effects, a one unit increase in the “general self score” resulted in being 0.12% less likely to strongly disagree, 1.1% less likely to disagree, and 4.5% less likely to agree, and 5.7% more likely to strongly agree with the happiness statement.

Table 4 Determinants of adolescent happiness for male sample of Canadian youth

Independent variables	Logistic regression main estimation		Marginal effects estimation regarding probabilities for levels of agreement with happiness statement							
	Odds ratio	Std. Err.	Strongly disagree		Disagree		Agree		Strongly agree	
			Marginal	Std. Err.	Marginal	Std. Err.	Marginal	Std. Err.	Marginal	Std. Err.
Genselfscore	1.356604***	0.09786	-0.0012468	0.00072	-0.01127	0.0035	-0.04481	0.01143	0.05733	0.01266
Friendscore	1.113184	0.071056	-0.0004383	0.00036	-0.00396	0.0025	-0.01575	0.0095	0.020156	0.01189
Goodfuture	13.60465***	8.598124	-0.0384118	0.02517	-0.24862	0.11446	0.015746	0.11237	0.271288	0.03652
Dowellschool	1.939106*	0.570947	-0.0029087	0.00232	-0.02605	0.01501	-0.09191	0.03983	0.120862	0.05365
Canbornpar	1.222645	0.483441	-0.0008875	0.00197	-0.00797	0.01678	-0.02749	0.05017	0.036339	0.06864
Havebgf	2.521574**	0.751388	-0.0032933	0.00209	-0.02996	0.01166	-0.15373	0.05491	0.186988	0.06279
Belowlico	1.132767	0.731918	-0.0004838	0.0024	-0.00439	0.0217	-0.01917	0.1039	0.024046	0.12794
Nounivgrad	0.7877249	0.292193	0.0009087	0.00144	0.008262	0.01216	0.037293	0.06199	-0.04646	0.07519
Famfunc	0.9460711	0.034046	0.0002266	0.0002	0.002049	0.00142	0.008145	0.00535	-0.01042	0.00676
Depress	0.9864124	0.025157	0.0000559	0.00011	0.000506	0.00093	0.00201	0.00379	-0.00257	0.00481
Nogoodhealth	1.571902	0.925923	-0.001531	0.00195	-0.01403	0.01545	-0.07739	0.114	0.092953	0.13056
Socsupp	0.9565236	0.046217	0.0001817	0.00023	0.001643	0.00181	0.006531	0.00717	-0.00836	0.0091
Nbhdsafe	1.001119	0.095508	-0.00000457	0.00039	-0.000041	0.00353	-0.00016	0.01402	0.00021	0.01793
Yearsnbhd	1.012371	0.021844	-0.0000503	0.0001	-0.00045	0.0008	-0.00181	0.00315	0.002311	0.00403

Notes: Number of observations=548; $F_{(14, 986)}=4.92$; Prob>F=0.0000; Data are rounded up; * indicates significance at the $p<0.05$, ** at $p<0.01$, *** at $p<0.001$; Significant predictors are highlighted in bold; All estimations are adjusted to complex survey design.

Source: Own estimations based on NLSCY.

For the males, reporting that the “future looks good” (goodfuture) also corresponded with greater odds of being happy. When considering marginal effects, the participants were 3.8% less likely to strongly disagree, 25% less likely to disagree, 1.6% less likely to agree, and 27% more likely to strongly agree with the happiness

statement if they reported that the future looked good to them.

Likewise, “doing well in school” (dowellschool) was associated with greater odds of being happy. More specifically, marginal effects demonstrated that the participants were 0.29% less likely to strongly disagree, 2.6% less likely to disagree, 9.1% less likely to agree, and 12% more likely to strongly agree with the happiness statement if they reported doing well in school.

Finally, “having a boyfriend/girlfriend” (havebfgf) was associated with greater odds of being happy. As shown by marginal effects, an affirmative response to the boyfriend/girlfriend question was linked to being 0.33% less likely to strongly disagree, 3.0% less likely to disagree, 15.4% less likely to agree, and 18.7% more likely to strongly agree with the happiness statement.

5. Conclusion

5.1 Differences in happiness by gender

As explained above, the objectives of this study were to determine if there were differences in the levels of happiness reported by adolescent females and males and to examine the factors which appeared to affect their levels of happiness. To achieve these objectives, the authors utilized data from the nationally representative NLSCY. Moreover, the theoretical basis for selecting the variables was the ecological perspective. The Pearson chi-square statistic was used to test if youths’ level of happiness was dependent upon gender, while multivariate ordered logit regression was employed in order to determine the predictors of happiness in separate subsamples of female and male adolescents. There are several noteworthy findings emanating from the analyses.

First, the majority of the youth in this study did report being happy, a finding similar to Huebner, et al (2000), as reported above. Second, as outlined above in the literature review section, the majority of previous studies indicated no gender differences in terms of happiness amongst youth. In this study, however, as suggested by ecological theory, levels of happiness did appear to vary between the genders, as the male adolescents reported higher levels of happiness than did the females. This finding should be interpreted with caution as the difference between the genders in terms of reported happiness was modest, albeit statistically significant. Third, as suggested by ecological theory, there were some gender differences in regards to determinants of happiness. For instance, only for the males were the microsystem level variables of perception of academic performance and whether or not they were involved in a romantic relationship significant predictors of their reported happiness levels. For both genders, however, focal system variables such as the “general self score” and optimism towards the future were positively associated with their happiness. Fourth, as explained above, in previous studies microsystem level factors such as family functioning and social support were significantly associated with adolescent happiness. In this study, however, neither the “family functioning score nor the social support scale” was a significant predictor of adolescent happiness.

There are two possible reasons for the difference between this study’s findings and the results of previous studies regarding gender-based differences in levels and determinants of happiness. One reason may be the difference in the measure of happiness employed in this study and in previous studies. In the bulk of the previous studies discussed above, a variety of multidimensional scales pertaining to happiness were used. By contrast, in this study only a single-item measure of happiness was administered. It should be noted there is no one generally accepted measure of adolescent happiness and findings can vary depending on the measure that is employed (Holder & Coleman, 2009). Hence, future research should focus on assessing how apparent differences between

female and male adolescents in terms of their levels and determinants of happiness can vary depending on the type of happiness measure that is employed.

Another possible reason for the difference is that in the studies outlined above, the samples were limited to specific domains such as region of residency, setting and ethnically and culturally distinct groups. The results of these studies could potentially be influenced by distinct cultures and locales. Conversely, in this study a nationally representative sample of Canadian youth was selected. Such differences in samples can lead to differences in findings (Haga, Kraft & Corby, 2009). Consequently, it would be beneficial if future research efforts included more studies based on nationally representative samples. Cross-national comparative studies based on nationally representative samples in multiple countries would be especially important for generating a better understanding of variation in the levels and determinants of youth happiness.

5.2 Limitations

While the use of cross-sectional analysis was in keeping with the exploratory nature of this study, it is limited in that precludes the possibility of making causal inferences between the identified factors or determinants associated with happiness. Only longitudinal data analysis would allow for a more robust understanding regarding the predictors of trajectories of adolescent happiness (Galambos, Barker & Krahn, 2006; Galambos & Krahn, 2008).

Moreover, it would be helpful to further divide the sample not only by gender but by age subgroups, such as youth aged 12-15 years in one group and those aged 16-17 years in another. This way it could be tested if age interacts with gender in regards to levels and determinants of happiness. In this study, however, such a division would have left the authors with a sample size not large enough to conduct the multivariate analysis with the selected predictors.

5.3 Summary

This study has both theoretical and practical implications. From a theoretical perspective, the authors have demonstrated the utility of incorporating the ecological framework when analyzing gender-based differences in the levels and determinants of adolescent happiness. In terms of practice, the findings of gender-based differences regarding the determinants of adolescent happiness have substantial importance for human service professionals such as educators, social workers and nurses who may be working with youth of both genders with the intent of promoting their happiness, well-being and overall development.

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(Edited by Nicole and Lily)

Appendix 1: Youth reported scales

General self score

This scale was developed to measure the youth's overall self-esteem. The information for the scale came from the youths' self-completed questionnaires of the NLSCY. The scale is based on four items including: "In general, I like the way I am", "Overall I have a lot to be proud of", "A lot of things about me are good", and "When I do something, I do it well". The answers include: "False", "Mostly false", "Sometimes false/Sometimes true", "Mostly true", and "True". The questions for this measure were taken from the General-Self Scale of the Marsh Self Description Questionnaire developed by H.W. Marsh (Statistics Canada, 2001). The Cronbach's alpha coefficient for the measure is 0.728. Overall, the scores range from 0 to 16. A higher score indicates a higher level of self-esteem.

The friends scale

This scale was developed to measure how well the youth feels s/he gets along with others by collecting information on the extent and quality of the youth's social support network. The information for the scale came from the youths' self-completed questionnaires of the NLSCY. The scale is based on four items including: "I have many friends", "I get along easily with others my age", "Others my age want me to be their friends", and "Most others my age like me". The answers include: "False", "Mostly false", "Sometimes false/Sometimes true", "Mostly true", and "True". The questions were adapted from the Ontario Child Health Study (Statistics Canada, 2001). The Cronbach's alpha coefficient for the score is 0.779. Overall, the scores range from 0 to 16. A higher score indicates better the extent and quality of the youth's social support network.

Appendix 2: PMK reported scales

Family functioning score

This measure was developed to measure various aspects of family functioning, such as problem solving, communications, roles, responsiveness and behaviour control. This scale is aimed at providing a global assessment of family functioning and indicating the quality of the relationships between parents or partners by asking the small number of questions. The information for the scale came from PMK-completed questionnaires of the NLSCY. The 9-item scale contains questions such as: "In times of crisis we can turn to

each other for support”, “Individuals (in the family) are accepted for what they are”, “There are lots of bad feelings in our family”, “Making decisions is a problem for our family”, and “We feel accepted for what we are”. The answers vary by Likert scale from “Strongly agree” to “Strongly disagree”. Questions relating to family functioning were developed by researchers at the Chedoke-McMaster Hospital of McMaster University, Ontario, Canada and have been widely used both in Canada and abroad (Statistics Canada, 2001). The Cronbach’s alpha coefficient for the score is 0.880. Overall, the scores range from 0 to 36. A higher score denotes a higher level of family dysfunction.

Depression scale

This measure was developed to collect information about the mental health of the PMK, with particular emphasis on symptoms of depression. The information for the scale came from PMK-completed questionnaires of the NLSCY. This scale is a condensed version of the Center for Epidemiologic Studies Depression Scale (CES-D), which contains 20 questions and was developed by L. S. Radloff of the Epidemiology Study Center of the National Institute of Mental Health in the United States. This CES-D is used to gauge the frequency of depression symptoms in the public at large by measuring the incidences and severity of depression symptoms during the previous week. For the purpose of the NLSCY, the original CES-D scale was reduced to 12 questions by Dr. M. Boyle of the Chedoke-McMaster Hospital at McMaster University in Hamilton, Ontario, Canada (Statistics Canada, 2001). These questions include: “How often you have felt or behaved this way during the past week?: I did not feel like eating; my appetite was poor”, “How often you have felt or behaved this way during the past week?: I felt depressed”, and “How often you have felt or behaved this way during the past week?: I felt that everything I did was an effort”. The answers vary by Likert scale from “Rarely or none of the time (Less than 1 day)” to “Most or all of the time (5-7 days)”. The Cronbach’s alpha coefficient for the scale is 0.820. Overall, the scores range from 0 to 36. A higher score signals a higher presence of depression symptoms.

Social support scale

This measure was developed to collect information on the quantity and quality of social support. The information for the scale came from PMK-completed questionnaires of the NLSCY. The questions were derived from the Government of Ontario’s Better Beginnings, Better Futures Project and include dimensions such as guidance, reliable alliance and attachment (Statistics Canada, 2001). The 8-item scale consists of questions such as: “I have family and friends who help me feel safe, secure and happy”, “I lack a feeling of closeness with another person”, and “There is no one who shares my interests and concerns”. The answers vary by Likert scale from “Strongly agree” to “Strongly disagree”. The Cronbach’s alpha coefficient for the scale is 0.877. Overall, the scores range from 0 to 24. A higher score indicates a higher level of social support.

Neighborhood safety scale

The measure was developed to collect information about the respondent’s satisfaction with her/his neighborhood as a place to raise children, including perception of the extent of danger and problems in the neighborhood. The information for the scale came from PMK-completed questionnaires of the NLSCY. The questions represent a revised version of a section of the Simcha-Fagan Neighborhood Questionnaire used by Dr. Jacqueline Barnes in her studies of neighborhoods in Boston and Chicago (Statistics Canada, 2001). Revisions were made in consultation with Dr. Barnes. The 3-item scale consists of items such as: “It is safe to walk alone in this neighborhood after dark”, “It is safe for children to play outside during the day”, and “There are safe parks, playgrounds and play spaces in this neighborhood”. The responses vary by Likert scale from “Strongly agree” to “Strongly disagree”. The Cronbach’s alpha coefficient for the scale is 0.701. Overall, the scores range from 0 to 9. A higher score indicates a higher degree of perceived safety in the neighborhood.