Relative Importance of Individual and Community Predictors of Wellbeing

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Abstract

Inspired by theory in wellbeing science, we examined the relative importance of lifestyle factors and living conditions when predicting two dimensions of wellbeing (hedonic and eudaimonic) in a representative sample of 12,826 participants from Nova Scotia collected in 2019. Using multiple regression and measures of relative importance based on the Lindeman, Merenda and Gold (lmg) method, we identified which variables are most important to predicting life satisfaction and life worth. Twenty-two predictors accounted for 51% of the variance in life satisfaction, of which six accounted for 40% of the variance: self-rated mental health (11%), time adequacy (8%), satisfaction with natural environment (7%), sense of community (5%), financial insecurity (5%), and self-rated physical health (3%). These variables were also the top predictors of life worthwhileness, although all 22 predictors ($R^2 = 0.42$) and these six predictors ($R^2 = 0.26$) accounted for less variance than for life satisfaction. These results show that both community-level (i.e., environmental quality of neighbourhood, sense of community) and individual-level (i.e., mental health, time adequacy, financial insecurity, and physical health) factors are substantial predictors of wellbeing. The effect sizes differ between the hedonistic and eudaimonic dimensions of wellbeing, suggesting there may be important predictors of eudaimonic wellbeing not accounted for. This study may inform where community-level programming and policy could focus resources more effectively to promote wellbeing for individuals and their communities.

Keywords Wellbeing · Healthy communities · Life satisfaction · Relative importance · Life worth · Nova Scotia

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A common refrain in psychological research is that most thoughts, feelings, and behaviours are products of a multiplicity of competing factors. When studying wellbeing in humans, it quickly becomes apparent that no single factor or theory is adequate in isolation to fully understand what makes people happy. The goal of wellbeing science is to understand and promote wellbeing through a more holistic systems change approach that encompasses individual and broader domains including families, communities, and society (Herman & Jané-Llopis, 2005). Most previous research has focused on just one or two contributing factors, instead of considering the contribution of multiple factors drawn from many of life's important domains. Generally, data used to examine wellbeing has tended to be more economic and health related (and has not included more socio-ecological factors), and regression analyses are typically used to identify important factors in explaining differences in wellbeing. However, such assessments rarely consider the *relative* importance of the factors. Relative importance refers to the quantification of an individual regressor's contribution to a multiple regression model (Grömping, 2006) and decomposes overall R^2 into each individual predictor's contributions. The variance in the outcome accounted for by the predictors is decomposed, with the relative importance of each predictor in the overall R^2 for each possible ordering of predictors is averaged (Lindeman et al., 1980). Examining relative importance advances the wellbeing field by enabling researchers to identify what is *most* important. Thus, situated within wellbeing science, the purpose of this paper is to identify which of a multiplicity of economic, health, and socio-ecological individual and community-based factors are relatively most important in predicting variations in wellbeing.

What is Wellbeing?

Wellbeing is an umbrella term that refers to components of individual and collective wellbeing wherein an individual realizes their own abilities, copes with normal stresses in life, works productively, and contributes to their community (WHO, 2004). Two related, but conceptually distinct, dimensions of wellbeing are eudaimonic and hedonic wellbeing. Eudaimonic wellbeing is a type of happiness that is derived from meaningful purpose in life and becoming a fully functioning person, in that the pursuit of personally valued goals (such as those that make life feel worthy) is a source of wellbeing (Ryan & Deci, 2001). Hedonic wellbeing is an approach to happiness that draws on feelings of contentment, pleasure, and positive (Kahneman & Varey, 1992). Wellbeing studies generally focus on life satisfaction, which is also where social policies relevant to wellbeing have been focused. More recently, there has been a call for policies to also consider eudaimonic wellbeing such as hope (Graham, 2023) and for governments to measure and monitor eudaimonic wellbeing in addition to hedonic wellbeing.

Theoretical Justification for Selection of Predictive Factors

Wellbeing can be understood as a number of life domains, each holding individual meaning and local importance while embedded within number of institutions in the larger community ecosystem (Atkinson et al., 2020). Satisfaction with community-level institutions (e.g., healthcare, education, government) and conditions (e.g., social cohesion, neighbourhood) predict a significant portion of the variance in wellbeing (Sirgy & Cornwell, 2001; Sirgy et al., 2008, 2000, 2010). Identifying contributions to wellbeing variance at the individual and community level enables researchers to consider the multiple determinants on human functioning. For instance, sense of community can "spill over" into individual's evaluations of their lives wherein a positive impression of one's community is associated with higher wellbeing. Bottom-up spillover theory (Andrews & Withey, 1976) is a theoretical model of the relationship between individual life domains and quality of overall life. This theory suggests that quality of life in each individual domain produces spillover effects on overall quality of life. For example, satisfaction with individual life domains (e.g., neighbourhood conditions, relationships) can spill over to produce overall satisfaction (Andrews & Withey, 1976). Bottom-up spill over theory can contextualize how individual-level perception of living conditions (e.g., access and participation; neighbourhood design; resource availability) is an essential component of individual-level wellbeing within the community. Research has identified places, things, activities, roles, and relationships that in which individuals are typically involved, including leisure, work, consumer, finances, and health (Andrews & Withey, 1976).

In Nova Scotia, survey data on wellbeing metrics exist at the individual and community level through the Quality of Life Initiative, led by Engage Nova Scotia (ENS; Smale et al., 2020). Based on the community wellbeing survey created by the Canadian Index of Wellbeing (CIW) and guided by its conceptual framework, the survey is designed to be used as a lens for decision-making that is situated within the science of wellbeing (Michalos et al., 2011). The CIW survey measures indicators in eight life domains: community vitality, democratic engagement, education, environment, healthy populations, leisure and culture, living standards, and time use (Michalos et al., 2011). To assess which individual and community factors are most important when predicting variance in wellbeing, we incorporated only variables that apply to all individuals (i.e., not variables contingent to answering a certain way to a previous question). For example, a measure of work-life balance would be excluded because participants could only respond to such questions if they were employed, but whether or not they are currently employed (yes/no) would be included. Therefore, by including only variables that all individuals had an opportunity to answer, rather than variables that reflected contingency questions, we ensure the sample reflects the general population without imposing any restrictions (i.e., the sample was not a subset of the population based on employment, age, or some other characteristic).

Rationale

Uncovering the individual and community factors that shape wellbeing is relevant to knowledge generation, policy, and practice. Moving beyond traditional regression analysis, though relative importance as a general statistical method has been available for some time (Grömping, 2006), it is rarely applied in the wellbeing field. To our knowledge, this novel analysis technique has not been used in a regional wellbeing dataset, or in a dataset arising from such a comprehensive survey that allows for the consideration of many more factors than typically measured. By identifying what factors contribute most strongly to wellbeing, we may find that some factors are: (a) policy-amenable and can be acted on to improve wellbeing at a structural level, and (b) relevant to practitioners and can be acted on to improve wellbeing at an individual level.

Research Questions

The primary purpose of this paper is to explore the relative importance of a multiplicity of individual and community factors for predicting variance in wellbeing. Our research questions are:

1) Do community factors or individual factors appear to be more important in predicting wellbeing?
2) Do the most relatively important community and individual factors differ when predicting hedonic wellbeing compared to predicting eudaimonic wellbeing?

Method

Source of data

Data were drawn from a province-wide survey administered in the spring and summer of 2019 by the Canadian Index of Wellbeing (CIW). Conducted in partnership with Engage Nova Scotia, a not-for-profit organisation committed to having wellbeing recognised as a measure of success and progress, the survey was completed by almost 13,000 residents ($N=12{,}826$).

Sampling Procedure

Based on mailing addresses held by Canada Post, the survey population was created by selecting a stratified random sample of approximately 80,000 residential households in Nova Scotia drawn proportionately from across ten functional economic regions in the province (Smale et al., 2020). An oversampling of rural regions in the province was conducted to ensure adequate representation from these less densely populated areas. Potential participants were sent a letter inviting a household member 16 years of age or older whose birthday came closest to June 1 to participate in

an online survey. Participants were provided with a link to the online survey and accessed it using a unique 5-digit code during the three month collection period from April to June 2019. In addition to the randomly selected households, there was targeted outreach to specific groups who might not typically participate in traditional survey approaches (e.g., lower income residents; people living with disabilities; older adults; Smale et al., 2020).

A total of 12,826 residents provided complete, valid, and usable surveys, which represents an estimated 16% response rate. Most surveys were completed online ($n=11,363$; 87%) with the remainder completed on paper on request or by targeted outreach groups. Given the size of the sample, the margin of error when reporting descriptive statistics for Nova Scotia is estimated to be within ±1.0%; and is somewhat higher for each of the 10 regions across the province (Smale et al., 2020).

Survey Instrument

The questionnaire was comprised of three major sections. The first major section included questions organised around the eight domains of life represented in the CIW's conceptual framework: community vitality, democratic engagement, education, the environment, healthy populations, leisure and culture, living standards, and time use (CIW, 2016). For example, questions within the community vitality subsection focused on aspects such as volunteering and social connectedness, while questions within the living standards sub-section focused on aspects related to employment and financial security. The second major section gathered participants' perceptions of their overall wellbeing, including measures of hedonic and eudaimonic wellbeing. Finally, the third major section collected information on an array of demographic characteristics including sex at birth, age, income, education, place of birth, and disability status.

Data Weighting

To ensure the descriptive statistics from the survey are representative of the residents of Nova Scotia, the data provided by the 12,826 respondents were weighted by sex, age, and region to correspond with the Census profile estimated for 2019 for those residents 16 years of age and older ($N=787,120$). Drawing on the 2016 Census of Canada, population estimates for 2019 were calculated using growth rates within each region. These estimates were then used to weight proportionately the distributions of respondents to the survey to be better represent distributions of residents in each region and across the entire province. It should be noted, however, that population weights are incorporated only for the descriptive statistics summarised in Table 1. Inferential statistics were based on the unweighted data to avoid biased estimates; rather, age and sex were incorporated as control variables in the models.[1]

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[1] Early drafts of our analyses also incorporated region as a random effect. However, region-level variance was incredibly small for life satisfaction and life worthwhileness, respectively (ICCs<0.005). That is, region predicted virtually none of the variation in our outcomes. Thus, for model parsimony and to allow for a more straightforward calculation of effect sizes, we omitted region from the final models presented.

Selected Measures

Wellbeing Measures

Wellbeing was measured with two single-item measures: life satisfaction (i.e., hedonic or evaluative wellbeing) and life worth (i.e., eudaimonic wellbeing). The 10-point life satisfaction measure asks, "How satisfied are you with your life in general?" and provides two anchor labels (1=very dissatisfied, 10=very satisfied). The 10-point life worth measure asks, "To what extent you feel the things you do in your life are worthwhile?" and provides two anchor labels (1=not at all, 10=completely).

Explanatory Variables

The selected variables represent all eight domains in the CIW conceptual framework to ensure a multiplicity of factors, typically absent from previous research, were included in the analyses.

Community Vitality

Perceived Neighbourhood Safety. Perceptions of being safe from crime in one's neighbourhood after dark was measured on a 7-point scale (1=very unsafe, 7=very safe) in response to the question, "How safe from crime do you feel walking alone after dark in your neighbourhood?"

Membership to a Faith-based Group. Belonging to a faith-based group was measured on a dichotomized scale (0=No, 1=Yes) in response to the question, "In the past 12 months, were you a member of, or a participant in, a faith-based group?"

Volunteer Status. Volunteer status was measured on a dichotomized scale (0=No, 1=Yes) in response to the question, "In the past 12 months, did you do any unpaid volunteer work for any organization?"

Number of Close Relationships. Three variables related to social support were selected for inclusion in the analysis. number of close relatives ("How many relatives (including uncles, aunts, cousins) do you have who you feel close to, that is, who you can feel at ease with, can talk to about what is on your mind, or call on for help?"), number of close friends ("How many friends do you have, that is, people who are not your relatives, but who you feel at ease with, to talk about what is on your mind, or call on for help?"), and number of neighbours close enough to ask a favour ("How many people in your neighbourhood do you know well enough to ask for a favour?"). An upper limit of 100 was applied to these social support variables to maintain data integrity.[2]

Sense of Community Scale. A previously validated 12-item Sense of Community scale (Prezza et al., 2009) was adopted for this study. Participants' responses to the items comprising this scale were measured on a 7-point Likert scale from 1 (Very

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[2]An arbitrary upper limit of 100 was imposed on the three items measuring number of relatives, friends, and neighbours, as values higher than this are both implausible and extreme multivariate outliers. In each instance, less than 0.5% of the sample reported more than 100 persons.

strongly disagree) to 7 (Very strongly agree). A sample items is, "I feel at ease with the people in my community." See the online supplementary materials for a summary of a confirmatory factor analysis demonstrating a unidimensional factor structure and a list of all items. For the current sample, the scale has good internal consistency ($\alpha=0.88$), which is identical to the reliability of the scale originally reported ($\alpha=0.88$; Prezza et al., 2009).

Healthy Populations

Self-Assessed health. Both self-rated physical health and self-rated mental health were measured on a 5-point scale (1=poor, 5=excellent) in response to the questions, "In general, how would you say your physical health is?" and "In general, how would you say your mental health is?"

   Physical Exercise. Frequency of physical exercise was measured on a 7-point Likert scale (1=very strongly disagree, 7=very strongly agree) in response to the statement, "In the past week, I engaged in good quality exercise."

Time Use

Time Adequacy. A slightly modified version of the Time Adequacy scale (Moen et al., 2008) was used to determine if time devoted to certain activities was adequate (e.g., "To participate in or be active in your community"). Twelve items were measured on a 10-point scale ranging from 1 (Not at all enough) to 10 (Almost always enough). A composite score was created by calculating the average of all 12 items. See the online supplementary materials for a summary of a confirmatory factor analysis demonstrating a unidimensional factor structure and a list of all items. The original Time Adequacy scale (Moen et al., 2008) had good internal consistency ($\alpha=0.89$) and internal consistency was excellent in the present dataset ($\alpha=0.97$).

Democratic Engagement

Perceived benefit from public policy. Perceived benefit from public policy was measured on a 7-point scale (1=much worse off, 7=much better off) in response to the question, "Have the programmes and services of the local government (municipal, band, and/or regional) made you better off?"

Environment

Satisfaction with quality of natural environment. Participants' satisfaction with quality of natural environment was measured on a 7-point Likert-type scale (1=very dissatisfied, 7=very satisfied) in response to the question, "How satisfied are you with the quality of the natural environment in the neighbourhood in which you live?"

Living Standards

Financial Insecurity Scale. A measure of financial insecurity was created by combining participants' response to eight items indicating how frequently their financial security was threatened in the past year (e.g., "I could not pay my bills on time"). Items were measured using a 5-point scale ranging from 1 (Never) to 5 (At least once a month) and the composite measure was created by calculating a mean score with higher scores reflecting greater financial insecurity. A confirmatory factor analysis indicated that these items could be combined into a value reflecting a one-factor financial insecurity score with good internal consistency ($\alpha = 0.88$).

Demographic Variables

Ten demographic variables were included in the analysis. *Age* was measured as a continuous variable, in years. *Annual household income* was measured using ten groupings ranging from less than $10,000 to $150,000 and higher. *Highest education level completed* was measured using six groupings starting with elementary school and ending with graduate degree. *Proportion of lifetime spent in Canada* was calculated as age divided by years spent in Canada. Other demographic variables included were dichotomous and measured as binary variables: sex at birth (i.e., male = 0 or female = 1), *immigrant status* (i.e., whether the participant was born in Canada = 1 or not = 0), *employment status*, (i.e., works for pay = 1 or not = 0), *parental status* (i.e., having at least one child = 1 or not = 0), *relationship status* (i.e., having a partner = 1 or not = 0), and *disability status* (i.e., living with a disability or chronic condition = 1 or not = 0).

Data Analysis Plan

Data were analyzed using R (version 4.0.5). Multiple linear regression was used to predict life satisfaction and life worthwhileness in separate models. For effect sizes, we relied on semi-partial squared correlations (sp^2) and measures of relative importance using the Lindeman, Merenda and Gold (lmg) method in Grömping's (2006) relaimpo() package in R. Semi-partial correlations represent the proportion of unique variance in the outcome accounted for by each predictor. Relative importance is a decomposition of the total R^2 for each variable such that coefficients sum to R^2; in other words, relative importance is the proportion of the total R^2 contributed by each predictor. We also re-analyzed each model using robust regression as a sensitivity test (Field & Wilcox, 2017). Field and Wilcox (2017) suggest using robust statistics as a sensitivity check for violated assumptions in place of traditional assumption checking for normality and outliers. In short, if the results of a robust analysis do not differ much from a non-robust analysis, this indicates that non-normal residuals and multivariate outliers did not have undue impact on the results. Robust regression methods sacrifice clear standardized effect sizes for robustness against violated assumptions (e.g., normality).

Results

Profile of Sample

The final sample was 53% female, most born in Canada (84.1%), and with a median annual household income of $60,000 to $80,000 (see Table 1). Values in Table 1 adapted with permission from Table 1-J10 of the first survey report from Engage (Smale et al., 2020).

Preliminary Data Analysis

Bivariate correlations are presented in Fig. 1. Both dimensions of wellbeing (i.e., life satisfaction and life worth) were significantly associated with all variables except for the proportion of lifetime spent in Canada and sex at birth. Associations with wellbeing varied by predictor (value of r ranged from -0.03 to 0.54). The only negative association with life satisfaction was financial insecurity. In general, the predictor variables were moderately correlated with each other as one would expect, but none of the correlations were strong enough to raise concerns over multicollinearity (i.e., had simple bivariate correlations less than 0.70) and therefore each factor made relatively unique contributions in explaining variations in wellbeing.

Primary Data Analysis. Regression Models

Model 1. Multiple Regression Predicting Life Satisfaction

Our first regression model was built to predict life satisfaction based on 22 independent variables (Table 2). We used relative importance (ri) to identify which variables predicted the most variance in life satisfaction. Collectively, the 22 variables predicted more than half of the variance in life satisfaction ($R^2=0.51$), mainly due to the relative importance of six variables ($R^2=0.39$): self-rated mental health (ri=0.11), time adequacy (ri=0.08), satisfaction with natural environment (ri=0.07), sense of community (ri=0.05), financial insecurity (ri=0.05), and self-rated physical health (ri=0.03).

Model 2. Multiple Regression Predicting Life Worth

Our second regression model was built to predict life worth from the same 22 independent variables as above (Table 3). Collectively, the 22 variables predicted just over 40% of the variance in life satisfaction ($R^2=0.42$), mainly due to the relative importance of five variables ($R^2=0.31$), four of which were the same as in Model 1: self-rated mental health (ri=0.10), satisfaction with natural environment (ri=0.07), time adequacy (ri=0.06), sense of community (ri=0.05), and financial insecurity (ri=0.03).

A comparison of relative importance between the two models predicting variance in wellbeing is presented in Table 4, showing that both measures of wellbeing share

Table 1 Descriptive Statistics

Domain Variable	M	SD	%
Demographics			
Age	50.30	17.35	
Works for pay			62.1
Has children			66.6
Highest education level			
Elementary school			3.0
High school			20.1
Trade/apprentice college			19.9
College diploma			17.1
University degree			26.3
Graduate degree			13.6
Proportion of life spent in Canada			96.6
Born in Canada			92.4
Has a partner			93.1
Sex at birth			
Female			52.1
Male			47.9
Reports a disability and/or chronic illness			26.0
Annual Household Income			
Less than $10,000			5.2
$10,000 - $19,999			4.3
$20,000 - $29,999			7.5
$30,000 - $39,999			7.9
$40,000 - $59,999			15.7
$60,000 - $79,999			14.6
$80,000 - $99,999			12.5
$100,000 - $119,999			10.5
$120,000 - $149,999			9.7
$150,000 and higher			12.0
Community Vitality			
Number of close relatives	5.84	5.64	
Number of close friends	4.86	4.56	
Number of neighbours known well enough to ask a favour	4.17	4.60	
Overall Sense of Community scale	4.71	0.89	
Feeling of safety alone in neighbourhood at dark	5.63	1.50	
Volunteered in past 12 months			52.1
Member of a faith-based group			20.4
Healthy Populations			
Self-rated physical health	3.33	0.97	
Frequency of physical exercise	4.67	1.60	
Self-rated mental health	3.41	1.00	
Time Use			
Time Adequacy scale	7.00	2.40	
Democratic Engagement			
Perception of benefiting from government policy	4.42	1.22	
Environment			

Table 1 (continued)

Domain	M	SD	%
Variable			
Satisfaction with quality of natural environment	5.29	1.41	
Living Standards			
Financial insecurity	1.42	0.79	
Wellbeing			
Life satisfaction	7.68	2.15	
Life worth	7.73	2.03	

Note. Descriptive statistics are presented with population weighting applied, meaning that proportions are presented as percentages without frequency counts. These values have been adapted with permission from Table 1-J10 of the first survey report from Engage (Smale et al., 2020)
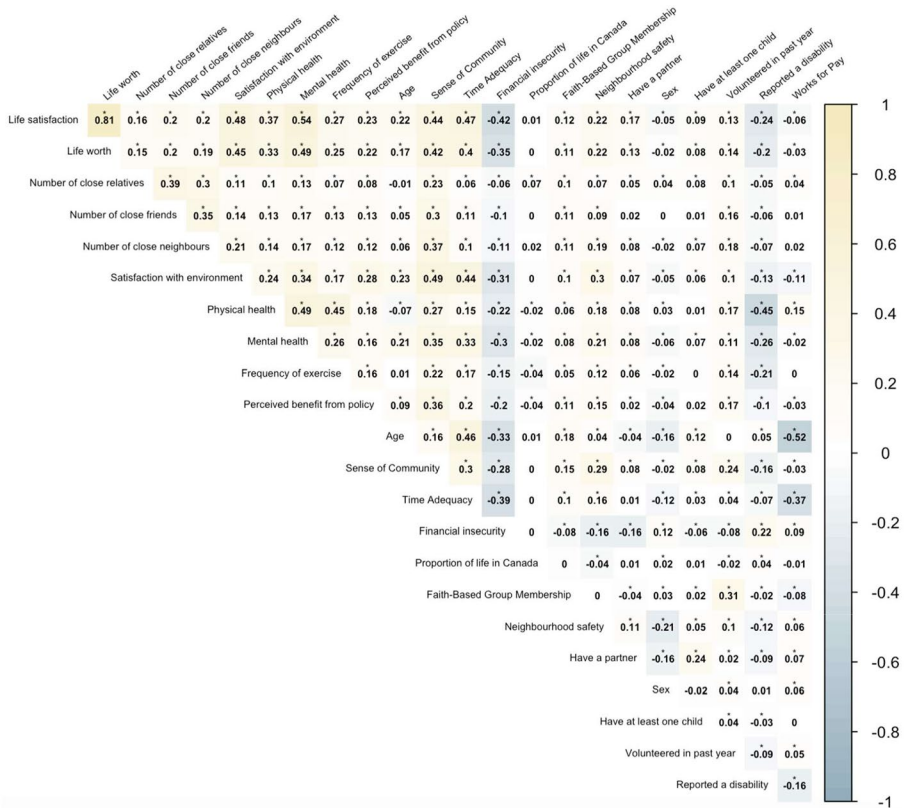

Fig. 1 Bivariate correlations among study variables. * $p<0.05$

Table 2 Multiple regression model predicting life satisfaction

Coefficient	B	β	95 CI B	95 CI β	p	sR²	Relative importance
Intercept	1.69	0.00	1.20–2.18	-0.01–0.01	**<0.001**	--	--
Mental Health	0.63	0.29	0.59–0.67	0.27–0.30	**<0.001**	0.051	0.114
Time Adequacy	0.21	0.24	0.19–0.23	0.22–0.26	**<0.001**	0.032	0.083
Environment Satisfaction	0.26	0.16	0.24–0.29	0.15–0.18	**<0.001**	0.017	0.072
Sense of Community	0.26	0.11	0.22–0.31	0.09–0.13	**<0.001**	0.007	0.053
Financial Security	-0.33	-0.13	-0.38 – -0.29	-0.15 – -0.11	**<0.001**	0.015	0.050
Physical Health	0.06	0.03	0.02–0.10	0.01–0.05	**0.007**	0.000	0.032
Physical Exercise	0.07	0.06	0.05–0.09	0.04–0.07	**<0.001**	0.003	0.018
Has a Partner	0.50	0.10	0.43–0.58	0.09–0.12	**<0.001**	0.011	0.014
Disability Status	-0.16	-0.03	-0.23 – -0.08	-0.05 – -0.02	**<0.001**	0.001	0.013
Benefit from Policy	0.01	0.01	-0.02–0.04	-0.01–0.02	0.414	0.006	0.009
Neighbourhood Safety	-0.00	-0.00	-0.02–0.02	-0.02–0.02	0.917	0.005	0.009
Age	-0.04	-0.26	-0.05 – -0.03	-0.35 – -0.17	**<0.001**	0.002	0.008
Age Squared	0.00	0.24	0.00–0.00	0.15–0.33	**<0.001**	0.001	0.008
Friends	0.01	0.03	0.00–0.02	0.01–0.05	**<0.001**	0.001	0.006
Neighbours	-0.00	-0.01	-0.01–0.00	-0.03–0.01	0.300	0.000	0.005
Relatives	0.01	0.02	0.00–0.01	0.00–0.04	**0.016**	0.000	0.004
Volunteer Status	0.06	0.01	-0.01–0.12	-0.00–0.03	0.088	0.001	0.003
Has Kids	0.13	0.03	0.06–0.20	0.01–0.04	**<0.001**	0.001	0.003
Work for Pay	0.20	0.05	0.13–0.28	0.03–0.07	**<0.001**	0.000	0.003
Faith-Based Group Membership	0.07	0.01	-0.00–0.14	-0.00–0.03	0.061	0.000	0.002
Time in Canada	0.46	0.03	0.22–0.70	0.01–0.04	**<0.001**	0.000	0.001
Sex at birth	-0.13	-0.03	-0.19 – -0.07	-0.05 – -0.02	**<0.001**	0.000	0.001
R²							0.51

Note. B=unstandardized coefficient. β=standardized coefficient. In 95 confidence intervals for *B*: sR²=semi-partial R-squared. Predictor variables are presented in order of relative importance (largest to smallest)

the same top predictors.[3] Of note, these predictors accounted for less variance in life worth (i.e., eudaimonic wellbeing) than in life satisfaction (i.e., hedonic or evaluative wellbeing). Our robust regression analysis showed similar results (see Tables S1 and S2). Both models showed nearly identical significant predictors with consistent unstandardized coefficients. For example, when predicting life satisfaction, the unstandardized coefficients differed by only 0.014 on average (minimum=0.00, maximum=0.1). When assessing null hypothesis testing conclusions with *p*-values, the robust model had three more statistically significant predictors (feelings of safety walking alone after dark in the neighbourhood; self-rated physical health). Propor-

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[3] When age² was removed from the model, the linear coefficients for age when predicting life satisfaction were B=0.00, β = −0.03, 95% CI for β [-0.05, −0.01] and the linear coefficients when predicting life worth were B = -0.01, β = −0.04, 95% CI for β [-0.06, −0.02] No other slopes changed in any substantial way.

Table 3 *Multiple regression model predicting life worth*

Coefficient	B	β	95 CI B	95 CI β	p	sR²	Relative importance
Intercept	2.14	-0.00	1.63–2.64	-0.02–0.02	**<0.001**		
Mental Health	0.55	0.27	0.51–0.59	0.25–0.29	**<0.001**	0.045	0.096
Environment Satisfaction	0.27	0.18	0.24–0.30	0.16–0.20	**<0.001**	0.020	0.071
Time Adequacy	0.15	0.19	0.14–0.17	0.17–0.21	**<0.001**	0.019	0.057
Sense of Community	0.27	0.13	0.23–0.32	0.10–0.15	**<0.001**	0.009	0.052
Financial Security	-0.22	-0.09	-0.27 – -0.18	-0.11 – -0.07	**<0.001**	0.007	0.032
Physical Health	0.02	0.01	-0.02–0.06	-0.01–0.03	0.337	0.000	0.025
Physical Exercise	0.07	0.06	0.05–0.09	0.04–0.07	**<0.001**	0.002	0.015
Has a Partner	0.35	0.08	0.28–0.43	0.06–0.09	**<0.001**	0.007	0.009
Neighbourhood Safety	0.02	0.01	-0.01–0.04	-0.01–0.03	0.189	0.000	0.009
Benefit from Policy	0.01	0.00	-0.02–0.03	-0.01–0.02	0.676	0.002	0.008
Disability Status	-0.06	-0.02	-0.14–0.01	-0.03–0.00	0.097	0.000	0.008
Friends	0.01	0.03	0.00–0.02	0.01–0.05	**<0.001**	0.001	0.006
Neighbours	-0.01	-0.01	-0.01–0.00	-0.03–0.00	0.109	0.000	0.005
Age	-0.02	-0.18	-0.04 – -0.01	-0.27 – -0.08	**<0.001**	0.001	0.005
Age Squared	0.00	0.15	0.00–0.00	0.05–0.24	**0.004**	0.001	0.005
Volunteer Status	0.12	0.03	0.05–0.19	0.01–0.05	**<0.001**	0.001	0.005
Relatives	0.00	0.02	0.00–0.01	0.00–0.03	**0.047**	0.000	0.003
Work for Pay	0.23	0.06	0.15–0.30	0.04–0.08	**<0.001**	0.002	0.002
Has Kids	0.10	0.02	0.02–0.17	0.01–0.04	**0.009**	0.000	0.002
Faith-Based Group Membership	0.05	0.01	-0.03–0.12	-0.01–0.03	0.207	0.004	0.001
Sex at birth	-0.19	-0.05	-0.25 – -0.13	-0.07 – -0.03	**<0.001**	0.001	0.001
Time in Canada	0.29	0.02	0.04–0.53	0.00–0.03	**0.021**	0.001	0.000
R²							0.42

Note. B=unstandardized coefficient. β=standardized coefficient. In 95 confidence intervals for B. sR²=semi-partial R-squared. Predictor variables are presented in order of relative importance (largest to smallest)

tion of lifetime spent in Canada and participation in volunteering significantly predicted life worth in the non-robust model, but not the robust model. The robust model showed feelings of safety walking alone after dark in neighbourhood as a significant predictor of life worth, which the non-robust model did not. Otherwise, the pattern of results was very similar when compared to the traditional multiple regression analysis, suggesting our results are not affected much by violated statistical assumptions. However, when null hypothesis test conclusions differ, readers should probably place more weight on the robust analysis (Field & Wilcox, 2017). Importantly, the top six predictors seem generally robust to this sensitivity test.

Table 4 *Comparison of relative importance of independent variables predicting variance in life satisfaction and life worth*	Variable	Life satisfaction	Life worth
	Self-rated mental health	0.114	0.096
	Time Adequacy	0.083	0.057
	Satisfaction with natural environment in neighbourhood	0.072	0.071
	Sense of Community	0.053	0.052
	Financial insecurity	0.050	0.032
	Self-rated physical health	0.032	0.025
	Frequency of exercise	0.018	0.015
	Have a partner	0.014	0.009
	Reports a disability and/or chronic condition	0.013	0.008
	Perception of benefiting from government policy	0.009	0.008
	Feelings of safety in neighbourhood after dark	0.009	0.009
	Age	0.008	0.005
	Age^2	0.008	0.005
	Number of close friends	0.006	0.006
	Number of close neighbours	0.005	0.005
	Number of close relatives	0.004	0.003
	Volunteered in past 12 months	0.003	0.005
	Works for pay	0.003	0.002
	Has at least one child	0.003	0.002
	Faith-based group membership	0.002	0.001
Note. Variables are presented in order of size of relative importance value for life satisfaction	Sex at birth	0.001	0.001
	Proportion of life spent in Canada	0.001	0.000
	R^2	0.51	0.42

Discussion

The purpose of this paper was to explore the *relative importance* of community and individual factors that explain variations in wellbeing. We were granted the opportunity to assess predictors of wellbeing in a largely unexplored dataset that is unique in size and scope, representative of a major Canadian province, and grounded in wellbeing science framework. Given the large sample and number of potential predictors in the dataset, identifying the relative importance of each predictor is more informative than relying on traditional null hypothesis significance testing. We analyzed the relative importance of numerous predictor variables to predict as much variance in wellbeing as possible. We accounted for about half of the variance in life satisfaction. In particular, the top six predictors accounted for most of the variance, suggesting that both community-level (i.e., environment quality of neighbourhood, sense of community) and individual-level (i.e., mental health, time adequacy, financial insecurity, and physical health) variables are substantial predictors of wellbeing. Both life satisfaction and life worth shared the same top six predictors, although the effect sizes were smaller for life worth, suggesting there may be important predictors of eudaimonic wellbeing not accounted for in these analyses.

Relatively Important Predictors of Variation in Wellbeing

In the following section, we discuss the top six predictors of variation in wellbeing in order of their relative importance.

Mental Health

Self-rated mental health was the strongest predictor of variance in both life satisfaction and life worth, relative to the entire set of independent variables. Wellbeing and mental health are separate but related constructs (Cloninger, 2006) in that wellbeing refers to an overall sense of how life is going which is subject to daily fluctuations (Waterman, 2007) and mental health reflects a spectrum of functioning that shapes one's ability to handle stress, make decisions, and cope with the ups and downs of daily life (Orpana et al., 2016). Mental health and wellbeing may bidirectionally influence one another; maintaining positive mental health may lead to a sense of wellbeing (such as being satisfied with one's life), and vice versa, enjoying a sense of wellbeing may be a protective factor against poor mental health.

Neighbourhood Environment Quality

Feeling satisfied with the quality of the environment in which you live has been linked to mental health and wellbeing (Leslie & Cerin, 2008), where positive perceptions of the neighbourhood promote mental health. For instance, spending time outdoors was identified as a protective factor against poor wellbeing outcomes during the COVID-19 pandemic (Bu et al., 2020). A relatively new theory, eco-existential positive psychology, holds that engaging with the natural environment addresses existential anxieties, such as happiness, isolation, freedom, and death (Passmore & Howell, 2014), all of which may be heightened during a global pandemic. Indeed, this theory is particularly applicable to eudaimonic wellbeing; indeed, the relationship between natured connectedness and various components of eudaimonic wellbeing (e.g., social wellbeing, personal growth, meaning in life, engagement) have been documented in the literature (Herzog & Strevey, 2008; Howell et al., 2011, 2013; Nisbet et al., 2011; Peterson et al., 2007).

Time Adequacy

Time use shapes wellbeing in a variety of ways, such as time adequacy and having the autonomy to choose how to spend it (Bhattacharjee & Mogilner, 2014; Mogilner et al., 2018; Mogilner & Norton, 2016). Moreover, the relationship between time-use and wellbeing may be bidirectional, as mental ill-health has been linked to decreased physical exercise (Fancourt et al., 2020), less motivation to spend time on leisure activities (Fancourt et al., 2020), and increased engagement in passive screen time (Gunnell et al., 2016), all of which hinder wellbeing.

Sense of Community

Sense of community (SOC) is considered a basic human need (Maslow, 1954) for quality of life. Early research identified feelings of belonging to a community as a determinant of psychological wellbeing (Hagerty & Patusky, 1995) and social functioning (Hagerty et al., 1996). In Canada, high SOC is associated with self-assessed health, even after controlling for proxies of socio-economic status, chronic illness, health behaviours, and stress (Ross, 2002), and low SOC is associated with poor mental health (Michalski et al., 2020). The underlying mechanisms between SOC and wellbeing may be that positive social climate and tight bonds, the sense of having needs fulfilled in one's community, or having help available in case of need (McMillan & Chavis, 1986) all lead to an increase in wellbeing.

Physical Health

Self-reported physical health has been identified as one of the largest contributors to the indirect effects of lifestyle choices on mental health (Ohrnberger et al., 2017). Potentially, those with positive perceptions of their physical health enter a cycle of engaging in health-promoting behaviours (e.g., physical exercise) and making healthy lifestyle choices (e.g., abstaining from cigarettes) which in turn lead to a higher sense of wellbeing. A recent study reported that engaging in a range of health-promoting behaviours such as consuming nutritious food, practicing good sleep hygiene habits, and physical activity are all predictive of wellbeing (Smith et al., 2022), suggesting that healthy lifestyle choices may be a mental health promotion tool.

Financial Security

While financial security can contribute to wellbeing, the association between income and wellbeing is strongest at lower income levels and then declines as income increases (Biswas-Diener & Diener, 2001; Howell & Howell, 2008), suggesting that basic financial security is strong predictor of wellbeing. Financial security may make it easier to meet basic needs such as a sense of security and autonomy. Weinstein and Stone (2018) showed that experiencing financial insecurity can thwart basic psychological needs and lower wellbeing across income levels. In sum, financial security is linked to wellbeing by not only being able to meet basic needs, but also by providing a sense of resilience via security and autonomy.

In sum, our results suggest that mental health, quality of the natural environment in neighbourhoods, feelings of time adequacy and sense of community, positive perceptions of physical health, and being financially secure are key drivers of overall wellbeing. These individual factors are particularly important for life satisfaction as it may be that achieving wellbeing in a hedonic sense (i.e., enjoying comfort and pleasure) is achievable through these factors. Though they are still the strongest predictors, the overall effect sizes for life worth were smaller, suggesting there are other experiences, life circumstances, and living conditions that promote feelings of life worth beyond the six factors identified here. Eudaimonic wellbeing, as measured by life worth, may be more strongly associated with factors not included in this dataset,

such as goal attainment, feeling a calling in one's work, and achieving ego integrity. That is, while life satisfaction and life worth are highly correlated, they are conceptually distinct constructs. The difference in effect sizes illustrate how life satisfaction can be predicted by factors typically measured in wellbeing surveys, whereas life worth is a more specific, internal assessment related to life goals and purpose. The factors that predict wellbeing in general are similarly important for both life satisfaction and life worth, but not necessarily to the same degree for everyone.

Limitations and Future Directions

While relative importance analysis is a valuable tool for quantification of an individual regressor's contribution to a multiple regression model (Grömping, 2006), it has limitations. In general, relative importance analysis will work better than traditional regression weights in terms of correctly partitioning variance in the presence of large correlations among the independent variables (i.e., collinearity; Tonidandel & LeBreton, 2011). However, like any cross-sectional multiple regression model, in specifying a single outcome variable, the model fails to account for potentially complex interactions, indirect effects, and causal relationships among the predictors. Thus, we can describe which variables predict the most variance in wellbeing but cannot learn much about the mechanisms behind such correlations. If intercorrelations among predictors are due to construct overlap (rather than causal relationships), such intercorrelations may artificially minimize the overall importance of a particular variable because the overall importance of that variable will be partitioned by the redundant predictors (Stalder et al., 2017).

Research rooted in wellbeing science is emerging, particularly as the global pandemic shifts conversations toward what matters most for quality of life. Periodic surveying and monitoring of wellbeing in representative samples will help keep the evidence base accurate and up to date, inform more specific research avenues in wellbeing, and build on baseline knowledge of pre-pandemic wellbeing knowledge. In particular, inclusive surveying that offers participants the opportunity to report their own demographic characteristics (e.g., sexual orientation, gender identity) rather than choose from a pre-defined list of categories would be important to capturing diversity in data. Given the limitations of multiple regression, future research might analyze data using network analysis (Boorsboom & Cramer, 2013) which would allow for a more nuanced examination of the interrelationships between predictors. As part of our variable selection process, we chose variables that were theoretically linked to wellbeing and non-contingent on any other variable. This means we might have missed some factors that are important to wellbeing (not to mention policy-amenable or practice-relevant) such as work-life balance, perception of time spent with one's children, and time spent participating in unpaid labour. Finally, building on these findings to uncover which individual and community factors are associated with eudaimonic wellbeing (e.g., life worth) more than hedonic wellbeing (e.g., life satisfaction) would paint a more holistic picture of wellbeing than what this study currently can.

Implications

Factors that contribute to wellbeing include mental health promotion, perceptions of time adequacy, satisfaction with one's neighbourhood environment, sense of community, and financial security. Notably, some factors are more policy-amenable than others. For example, efforts to improve wellbeing by attending to social determinants of mental health could include strengthening work-life balance conditions at the organizational level (time adequacy) or developing social connection programs at the community level (sense of community). These findings can inform programming and policy that seeks to promote well-being for individuals and their communities. Implementing public policy that favours mental health (Kobau et al., 2011) through whole of government and whole of society approaches (Barry, 2019) is needed. As well-being is shaped by every policy at each socio-ecological level (e.g., minimum wage amounts and vacation time at work; universal basic income at the societal level), advocating for policies that support mental health, enable families to have time to enjoy life, and improve social connections within communities is important. Program planning and implementation could take these findings into account, and design programs that bring individuals together in the community. Canada's strategy for quality of life has contributed to a national dialogue suggesting that future investments could be guided by monitoring progress on quality of life indicators (Department of Finance Canada, 2021), many of which are identified in this analysis as being "relatively most important" when such decisions are made.

Conclusion

This study utilized a novel method to assess the relative importance of individual and community factors in predicting variance in two dimensions of wellbeing. We learned that both community-level (i.e., environment quality of neighbourhood, sense of community) and individual-level (i.e., mental health, time adequacy, financial insecurity, and physical health) variables are substantial predictors of wellbeing, which may inform community-level programming and policy that seeks to promote wellbeing for individuals and their communities. Moving beyond just identifying predictors of wellbeing, this paper investigates what is most important to wellbeing, which provides new insights into the multi-level determinants of wellbeing, at the individual and community level in a large, representative sample. We believe this paper makes a valuable contribution toward understanding what matters most for wellbeing. This study provides evidence for which factors can be focused on to improve wellbeing. In conclusion, focusing on improving mental health, perceptions of time adequacy, satisfaction with one's neighbourhood environment, sense of community, and financial security may help improve wellbeing overall.

Declarations

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