Quality of Life and Self-related Health among Adults Aged 60 and Older in Ten Major World Metropolises

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Abstract

Self-rated health (SRH) is a subjective measure of well-being and physical health, and it is also often strongly associated with quality of life (QoL). However, the concept of quality of life can be interpreted quite differently across different cultures. To date, our understanding of QoL measures is predominantly based upon studies conducted in western, industrialized nations as is the association between QoL and SRH. Yet, there is reason to believe that measures of QoL and their association with measures of well-being such as SRH, may vary in their meaning across different cultures. In the current study, we use data from Assessing Happiness and Competitiveness of World Major Metropolises, 2006 to assess consistency of measurement of a set of QoL indicators among adults aged 60 and older in 10 world major metropolises and to examine the relationship between SRH and QoL in each of these geographic contexts.

The Current Study

Self-rated health (SRH) is a subjective measure of well-being and physical health, and it is also often strongly associated with (if not considered to be, itself a measure of) quality of life (QoL). However, the concept of quality of life can be interpreted quite differently across different cultures. To date, our understanding of QoL measures is predominantly based upon studies conducted in western, industrialized nations as is the association between QoL and SRH. Yet, there is reason to believe that measures of QoL and their association with measures of well-being

such as SRH, may vary in their meaning across different cultures. For example, the underlying philosophy of Buddhism, which is commonly practiced across parts of southern and eastern Asia, where life experience is seen as suffering is substantially different in how it may influence perceptions of QoL than the Judeo-Christian ethic found in Western Europe and former European colonies in the Americas. Thus, it is important to know how differently QoL is measured and interpreted cross culturally and how measures of well-being such as SRH are associated with QoL across these contexts.

In the current study, we use data from Assessing Happiness and Competitiveness of World Major Metropolises, 2006 to assess consistency of measurement of a set of QoL indicators among adults aged 60 and older in 10 world major metropolises and to examine the relationship between SRH and QoL in each of these geographic contexts.

Quality of Life (QoL)

Quality-of-life (QoL) is a broad concept commonly used to refer to well-being at both the individual and societal levels, and is one of the most intrinsic concerns of human existence. It is an encompassing concept that cannot be equated with a single dimension of well-being, but rather it can be considered as the sum of objective (e.g., Gross Domestic Product, income), social (e.g., crime rates, literacy rates), emotional (e.g., depression and anxiety), and physical (e.g., prevalence or presence of specific diseases and disability, life expectancy) dimensions of life (Bowling, 2004).

The rapid growth of urban metro areas over the past several decades has posed great challenges for policy makers and planners around the world, but it also provides opportunities for

environment-behavior researchers to better understand what fundamental factors contribute to the quality-of-life of urban residents around the world. Further, these environment-behavior studies can in turn be useful for policy makers and planners to better design cities and metro areas that enhance their residents' quality-of-life (Marans, 2012). Local QoL has been found to be a driving factor that influences population density, economic productivity, and a growing demand for amenities such as metro based social and residential services (Rappaport, 2009).

Quality-of-life measurement and research concerned with specific cities or metro areas can be referred to as quality-of-urban-life (QoUL). QoUL has been found to directly affect the liveability of cities (Marans, 2002), influence residential location decisions (Campbell et al., 1976), and have major implications for patterns of regional migration, economic growth, and environmental sustainability (Kemp et al., 1997). Additionally, QoUL has been found to affect how people behave, and as such has a major impact on their life outcomes such as health (Marans & Stimson, 2011).

Self-Rated Health (SRH)

Self-rated health (SRH) is an established measure that provides a subjective understanding of an individual's general health status. SRH is a strong predictor of objective health, physical and functional status, and mortality; especially in later life (Franks, Gold, & Fiscella, 2003; Latham & Peek, 2013; Ostbye et al., 2006; Sargent-Cox, Anstey, & Luszcz, 2008). Although there are three measures of SRH (global, age-comparative, and self-comparative), the most commonly used measure is global SRH. The global SRH question asks participants to rate their health in general based on a five point likert scale (excellent, very good, good, fair, and poor). Compared

to the other two SRH measures, global SRH has been shown to be the most sensitive to 19 different biopsychosocial determinants of health and well-being (Sargent-Cox, Anstey, & Luszcz, 2008). Global SRH is also associated with mortality after following up with participants, between the ages of 60 and 80, for up to 20 years (Vuorisalmi, Lintonen, & Jylha, 2005). Changes in physical and functional health tend to be a significant factor in describing SRH among people over the age of sixty, helping to account for age differences in SRH (Sargent-Cox, Anstey, & Luszcz, 2008).

Research suggests that the global SRH measure provides a neutral reference point in that participants are able to choose what they want to use as a comparison for describing their general health (Sargent-Cox, Anstey, & Luszcz, 2008). In other words, global SRH allows individuals to reflect on personal experiences, family history, and perceptions of stress and health behaviors in relation to how they rate their overall health status. This approach is of course very different from providing individuals with a frame of reference such as comparing one's current health status to his/her previous health, as in self-comparative SRH, or making comparisons with other people of a similar age, as in age-comparative SRH. Although global SRH is likely to reflect an individual's physical health status, it does not always provide an adequate depiction of a person's well-being (Krause & Jay, 1994). For this reason it is also important to consider psychosocial environmental stress factors that can help or hinder an individual's perception of their health status and impact their quality of life.

The Relationship between Quality of Life and Self-rated Health

Studies that have examined QoL indicators and their association with SRH have generally found a positive relationship where better QoL is linked to better health outcomes. For example, among older adults, those who were happy have been shown to be as much as three times more likely to rate their health as good or better (Maniecka-Bryla et al, 2013). Previous studies have also shown that income inequality in a given social context is negatively associated with individuals' subjective well-being, such as their perceived happiness and their self-rated health (Takashi & Kunio, 2013).

More directly related to QoL within geographic contexts such as the metropolitan areas examined in the current study, indicators of safe environments are linked to perceptions of control related to having access to social services, leisure, transportation, and cultural resources, which in turn directly affect individual health outcomes such as SRH. Nevertheless, while evidence at the individual level demonstrates that psychosocial factors like distrust, control, and the quality of interpersonal relationships affect health, little is known about whether population level analogues of these psychosocial factors explain health differences between countries. Indeed, some evidence suggests that these factors do not explain country differences in self-rated health (Lynch, 2001).

In the current study, we address these somewhat contradictory findings by first verifying consistency of measurement of QoL across different socio-cultural contexts, and second, by using those measures that meet invariance requirements to assess the relationship between QoL and SRH across these same contexts.

Data & Methods

Our data come from the Assessing Happiness and Competitiveness of World Major Metropolises, 2006 survey. This survey empirically examines quality of life and self-rated health as well as community/city conditions for residents living in ten major cities of the world: Beijing, Berlin, London, Milan, New York, Paris, Seoul, Stockholm, Tokyo, and Toronto (between 8% and 12% of the sample per city). Respondents are asked questions about themselves and their city of residence. Questions focus on a range of topics including the economy, culture and education, welfare, safety, environment, living conditions, city administration, community life, health, and happiness. Demographic questions include city of residence, gender, age, education level, income level, occupation, marital status, and religion. Our sample consists of 906 participants (46% women and 54% men) with a mean age of 68.

Measures

Self-rated health is measured with the typical global SRH question, "how is your health in general?" Respondents may choose one of five responses: very good, good, fair, bad, and very bad.

Quality of life is measured via a battery of 21 questions that assess multiple QoL domains including the economy, culture and education, welfare, safety, the environment, city administration, community life, and general living conditions such as transportation. Each respondent indicates their level of agreement using a standard 5-point Likert answer set (strongly agree, agree, neither agree or disagree, disagree, strongly disagree) with statements in each of

these domains. For example, respondents are asked to indicate their level of agreement with the statement, "There are many opportunities for volunteer activities in my city."

Table 1. Descriptive Statistics	
Male	46%
Female	54%
No Formal Education	3%
6th Grade Completed	10%
9th Grade Completed	15%
12th Grade Completed	31%
Vocational Training	10%
College or more Completed	29%
Missing	2%
Very Low Income	9%
Low Income	24%
Middle Income	49%
High Income	13%
Very High Income	1%
Missing	4%
Never Married	12%
Married	54%
Divorced	9%
Widowed	22%
Other	2%
Missing	1%
Very Good Health	21%
Good Health	34%
Fair Health	32%
Bad Health	10%
Very Bad Health	25%
Missing	1%

Additional measures include age (in years), gender, education level, household income (measured with 5 ordinal categories), occupation, and marital status. Two other measures of note are a 5-cateogry level measure of pride in one's city (answers range from very proud to not

proud at all) and a 5-category measure of happiness (very happy to not happy at all). Table 1 shows the descriptive statistics for the sample.

Analytic Strategy

Our analytic strategy is divided into two steps. First, it is necessary to establish the overall measurement properties of the QoL measures in the World Metropolis survey and to assess whether these measurement properties vary by geographic context. In order to establish the overall QoL scale, we conduct exploratory factor analysis on the full set of 21 QoL questions to identify the latent factor structure of QoL in these data. Second, once the factor structure is identified, it is necessary to verify the consistency of this structure within each of the different cultures represented by the ten major cities in the survey. To do this, we move to confirmatory factor analysis and use a multiple group technique within structural equation modeling to test the factor invariance of QoL across each of these geographic contexts. For those factors that are consistent across metro areas, we then examine the association of SRH with QoL, again using a multiple group technique to assess differences among the ten cities examined.

All analyses, other than descriptive statistics which are analyzed in SAS 9.3, are conducted in MPlus version 6.12 using the weighted least square means (WLSM) estimator to deal with non-normality with a categorical dependent variable. WLSM uses the diagonal of the weight matrix to compute standard errors and chi-square (Muthen, du Toit and Spisic 1997). To gauge the goodness-of-fit, we use the following criteria: a non-significant Chi-square; root mean square error of approximation (RMSEA) value <.08; weighted root mean square residual (WRMR) value <1.00, comparative fit index (CFI) and Tucker Lewis index (TLI), both of which require values greater than .90 to indicate acceptable fit between the model and the data (Byrne 2012;

Xu et al. 2008b).

Preliminary Results

The results of the exploratory factor analysis are shown in Table 2. The twenty-one QoL items load on to four latent factors that are identified as having Eigen values larger than one. Given that one would expect some correlation among these latent measures of QoL, a promax rotation is applied to the factor loadings that are shown in the table. An indicator is considered to load on a factor when the factor loading exceeds the 0.4 threshold.

The first factor consists of 5 indicators that relate mostly to quality of public welfare and educational institutions. The second factor consists of 3 indicators of economic, physical, and community environment. The third factor consists of 5 indicators related mostly to personal and public amenities. A sixth indicator regarding volunteer opportunities also loads minimally on this factor, but since this indicator's loading is minimal on this factor and loads more strongly on the second identified factor, it is omitted from the third factor indicators. The fourth factor consists of 3 indicators focused mostly on safety issues. An additional 5 indicators do not load on any indentified factors, and thus, are omitted from further analysis.

Using the factor structure identified in the EFA model above, confirmatory factor analyses and structural equation modeling of the QoL relationship with SRH controlling for the impact of demographic covariates (e.g., gender, marriage status, education, and income) are currently in progress. Preliminary results (not shown) suggest that geographic/cultural context is important in understanding how differing levels of QoL relate to how individuals perceive their overall health.

Table 2. Exploratory Factor Analysis of Quality of Life Indicators				
Indicator	*Factor 1*	*Factor 2*	*Factor 3*	*Factor 4*
Job opportunities	--	--	--	--
High cost o living	--	.64	--	--
Access to culture/leisure	--	--	.51	--
Pride in city expressed to a visitor	.47	--	--	--
Quality of education is good	.65	--	--	--
Helpful public institutions	.45	--	--	--
Good place to rear children	.63	--	--	--
Comprehensive assistance for needy populations	.67	--	--	--
Quality of health care is good	--	--	--	--
Safe walking at night	--	--	--	--
Safe from dangerous accidents	--	--	--	.58
Public water system is safe	--	--	--	.51
Air pollution is a problem	--	.43	--	--
Access to public transportation	--	--	.64	--
Peaceful and relaxed neighborhoods	--	--	.50	--
Convenient grocery stores	--	--	.71	--
City information is online	--	--	--	--
City government addresses citizen concerns	--	--	--	--
City administration is transparent	--	--	.64	--
Friends/neighbors visit frequently	--	--	--	.51
Abundant volunteer opportunities	--	.47	.41	--

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