Population-level response shift: novel implications for research

Darren Lau, Calypse Agborsangaya, Fatima Al Sayah, Xiuyun Wu, Arto Ohinmaa & Jeffrey A. Johnson

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Population-level response shift: novel implications for research

**Darren Lau · Calypse Agborsangaya ·
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Abstract

Objectives Response shift is a change in perceived HRQL that occurs as a result of recalibration, reprioritization, or reconceptualization of an individual respondent's internal standards, values, or conceptualization of HRQL. In this commentary, we suggest that response shift may also occur at the population level, triggered by causes that affect the distribution of individual-level risk.

Methods We illustrated the nature and consequences of potential population-level response shift with two examples: the September 11 terror attacks, and the recent denormalization of smoking.

Results Response shift may occur at the population-level, when a large proportion of the population experiences the shift simultaneously, as a unit, and when the cause of the response shift is a socially significant event or trend. Such catalysts are of a qualitatively different nature than the causes leading to health status changes among individuals, and speak to the determinants affecting the underlying distribution of risk in the population.

Conclusions We do not know if population-level causes have actually resulted in response shifts. Nonetheless, response shifts at the population-level may be worthwhile to investigate further, both to assess the validity of research evidence based on the measurement of HRQL in large populations, and as a desirable intermediate outcome in evaluations of population health programs.

D. Lau · C. Agborsangaya · F. A. Sayah · X. Wu ·
A. Ohinmaa · J. A. Johnson (✉)
Department of Public Health Sciences, 2-040 Li Ka Shing Centre
for Health Research Innovation, University of Alberta,
Edmonton, Alberta, AB T6G 2E1, Canada
e-mail: jeff.johnson@ualberta.ca

We read with interest the discussion generated by this journal's May 2010 articles concerning the response shift construct in measures of health-related quality of life (HRQL) [1–3]. Response shift has hitherto been cast as an individual-level phenomenon, triggered by a perceived change in an individual's health status as a result of treatment or disease. Measures of HRQL are applied at the individual level in clinical contexts but are also increasingly used as indicators of population health. We suggest that response shift may also occur at a population level, triggered by socially significant trends or events.

Response shift is a change in the meaning of a respondent's self-evaluation of a target construct as a result of changes in the internal standards, valuation, and conceptualization of the construct (i.e., recalibration, reprioritization, and reconceptualization, respectively) [4]. We are concerned primarily with response shift in self-reported measures of HRQL. In the model proposed by Sprangers and Schwartz, response shift occurs when a catalyst triggers processes, such as coping strategies, social comparisons, and spiritual practice [4]. The classic illustration of response shift is the decrease in HRQL often reported on retrospective assessments of baseline HRQL (i.e., the "then-test") after successful treatment of a chronic condition [5]. Such a shift occurs independent of functional status, since actual function for the baseline period has not changed between prospective and retrospective measurements; however, the antecedent catalyst is usually conceptualized as a perceived change in health status, which, in this example, is the effect of a function-restoring intervention. Response shifts such as these occur at the

individual level. Because HRQL is multidimensional and socially embedded, other catalysts might trigger response shifts as well: Could socially significant events or trends trigger response shift, at the level of populations?

The September 11 terror attacks provide an example of a traumatic event affecting a large population. A majority of Manhattan residents (58%) reported one or more symptoms of post-traumatic stress disorder (PTSD) 2 months after the attacks [6]. Rates of PTSD much higher than those of baseline non-disaster samples have been demonstrated both in Manhattan, and among US residents outside of New York [6–8]. However, positive effects have also been perceived by a majority of Americans (58%) subsequent to September 11 [9], including closer relationships with others, and increased compassion and spirituality [10, 11]. The perception of positive changes may reflect the action of psychological processes mitigating the trauma of September 11, such as benefit-finding and meaning-making in post-traumatic stress-related growth [10]. Indeed, those experiencing increased hope and spirituality following the attacks also experienced lower anxiety and depression, and greater satisfaction with life [9].

These differences may represent response shifts in a resilient portion of the population. It seems plausible that similar mechanisms should affect HRQL. For example, the widespread perception of a challenge to fundamental assumptions concerning security may have triggered a reprioritization of spirituality, with increased spirituality leading respondents to perceive better HRQL independent of any actual change in functional status. Response shift in this example may be considered *population-level* insofar as a large proportion of the population experiences the shift simultaneously, as a unit; and insofar as the cause of the response shift is a socially significant event or trend, instead of an individual change in health status. The denormalization of smoking provides a second example illustrating this latter point.

Smoking is a leading contributor to morbidity and mortality. The last three decades have seen increasing social marginalization of smokers [12]. A substantial proportion of smokers now perceives social disproval of smoking (81%), has fewer places to smoke (81%) [13], and regrets having started smoking (89–91%) [14]. These shifts in perceptions of smoking have been referred to as denormalization, the "reposition[ing] of tobacco products and the tobacco industry consistent with the addictive and hazardous nature of tobacco products; the health, social, and economic burden resulting from the use of tobacco and the practices undertaken by the industry to promote its products and create social goodwill" [15, 16]. Denormalization may have triggered a reconceptualization of HRQL to include the negative effects of smoking. We would expect this response shift to manifest in decreased HRQL.

Indeed, healthy young smokers report lower HRQL compared with non-smokers, despite having no significant medical conditions [17]. Primarily because they believed smoking was endangering their health, 72% of smokers followed from 1993 to 2001 made one or more attempts to quit smoking [18].

Social perceptions of smoking are population-level determinants of disease. Individual-level causes of disease include such risk factors as blood pressure, blood cholesterol, and smoking status, which are identifiably different in the ill. Population-level causes of disease incidence, on the other hand, do not have a direct bearing on particular cases of disease, but, rather, determine the distribution of individual-level causes. Population-level causes may not be apparent at the individual level because they vary primarily between populations. Such causes include diet, prosperity, and social norms. For example, a society's generalized view of smoking may affect the prevalence of smoking, an individual-level risk factor for disease, via social pressures exerted on its members. The response shift triggered by the gradual denormalization of smoking is a population-level phenomenon, insofar as its catalyst is a "cause of causes", a determinant of the underlying distribution of individual risk.

We can think of at least three important implications of conceptualizing response shift at the population level. First, HRQL norms may differ between time and place without reflecting differences in health status or function. These differences may be valid representations of locally contingent variations in standards, valuations, or conceptions of HRQL. However, if the purpose of measurement is to explore differences between populations, track changes over time, or evaluate the impact of large-scale programs, as is common in the health policy applications of HRQL measurement, then the forces shifting responses at the population level may confound measurement. Measures might not assess the same construct over time and place and may be affected by forces outside the scope of health policy.

Second, response shift may account for differences in the weights used to calculate utility scores in preference-based HRQL instruments, such as the EQ-5D. Researchers and decision-makers are often advised to apply utility values that account for local preferences, especially where utility indices are used to inform resource allocation. Differences in the utility values generated for similar health states by country-specific scoring algorithms, such as the UK- and US-specific algorithms of the EQ-5D [19–23], may be ascribed to cultural variation. However, the UK and US algorithms were estimated almost 10 years apart, raising the possibility that a global shift in perceived HRQL may have contributed to the apparent between-population difference. Alternatively, response shifts

specific to certain populations may cause similar preference functions to diverge. Thus, population-level response shift may add further complexity to the selection and interpretation of preference functions for health economic applications.

Both of these implications suggest that researchers may need to be aware of trends and occurrences in the broader social context that may affect evaluations of HRQL. Surveillance of HRQL across time and between communities distinguished by exposure to potentially relevant population-level influences may help identify challenges to the validity of HRQL comparisons due to population-level causes.

Third, response shift may be an important outcome to consider when evaluating the impact of a population-level health intervention. As students and researchers in a school of public health, we distinguish between high-risk and population-based approaches to the prevention of illness. The former comprise clinical interventions targeting those with high levels of individual risk factors, while latter comprise more radical solutions, intended to address the root causes of individual risk [24]. A smoking ban is a population intervention, insofar as it operates, in part, by producing a social environment inimical to smoking. A shift in smokers' perceived HRQL is an intermediate outcome of such a program, mediating the relationship between a gradual denormalization of smoking and the final endpoint of decreased smoking. Thus, response shift may be related to better future health for the population. Response shift has already been proposed as an intermediate outcome at the clinical level [3, 4]. Response shift may also be important at the population level, as a mechanism by which changes in population-level determinants affect individual distributions of risk, and as an intermediate outcome of public health interventions.

In this brief communication, we have aimed to broaden the scope of thinking about response shift. Response shift may occur at the population level, when a large proportion of the population experiences the shift simultaneously, as a unit; and when the cause of the response shift is a socially significant event or trend. Such catalysts are of a qualitatively different nature than the causes leading to health status changes among individuals, and speak to the determinants affecting the underlying distribution of risk in the population. We do not know whether such causes have actually resulted in response shifts, or whether such shifts would have significant bearing on the conduct and interpretation of research. In posing these questions, we suggest that it may be worthwhile to investigate population-level response shifts further, both to assess the validity of research evidence based on the measurement of HRQL in large populations, and as a desirable intermediate outcome in evaluations of population health programs.

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