



Conceptual and methodological considerations regarding appraisal and response shift

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Accepted: 22 August 2019 / Published online: 12 September 2019
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When evaluating the impact of disease and treatment on patients' perceived health trajectories, it is important to also consider possible changes in the meaning of patients' self-evaluations, i.e., response shift. Response shift has been introduced in health-related quality of life (HRQL) research as an explanation for paradoxical and counter-intuitive findings, such as stable HRQL in spite of life-threatening disease or comparable HRQL in healthy (general) and disease populations [5]. In the current issue, Rapkin and Schwartz (2019) argue that the theory of cognitive appraisal is the "only and best way forward" (p. 3) to elucidate response shift phenomena. However, we have some conceptual and methodological issues regarding the interpretation and operationalization of appraisal and response shift as proposed by Rapkin and Schwartz. Conceptually: What is the relationship between appraisal and response shift? Methodologically: How to investigate appraisal and response shift?

The relationship between appraisal and response shift

The appraisal theory from Rapkin and Schwartz builds on the work by Tourangeau et al. [7] who describe the cognitive processes that respondents use to arrive at an answer on a questionnaire item. That is, for example, (1) comprehension

of the question, (2) retrieval of information from memory, (3) use of heuristic processes to estimate an answer, and (4) choose a response option, e.g., a score of 5 on a 7-point Likert scale [1]. If appraisal theory is correct, then there are two ways in which response shift can occur. Firstly, one or more of the appraisal components can change. Rapkin and Schwartz mention changes in the frame of reference, standards of comparison, sampling of experience, or the combinatorial algorithm that can cause changes in the meaning of item responses. Secondly, cognitive appraisal processes may give room for other constructs than the target construct to affect the item responses. For example, if a respondent is asked about his/her HRQL, before and after a major health change, then interpretation, sampling, references, and combinatorial algorithm may have changed as well. Moreover, the effects of other constructs such as adaptation, coping, and social comparison on HRQL may also have changed.

Understanding appraisal processes is clearly helpful in studying response shift. However, we believe that the interpretation of the concept of appraisal by Rapkin and Schwartz, and how it is represented in their Fig. 2, should be reconsidered. In our view, appraisal is not a variable that only affects change in quality of life that is not explained by a standard model of 'antecedents,' 'catalysts,' and 'mechanisms.' We think that appraisal is a process omnipresent in all subjective measurement, including the measurement of quality of life, and affects all of its variance, whether or not it is explained by other variables. In fact, any subjectively measured variable is subject to appraisal, no matter whether this variable is a predictor or an outcome. Moreover, Fig. 2 representation of response shift does not agree with the formal response shift definitions given by Oort et al. [3], from two perspectives. In the measurement perspective, response shift explains observed changes that are not caused by changes in the intended construct. In the conceptual perspective, response shift explains observed changes that are not caused by acknowledged explanatory variables. In their

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textual description of appraisal, Rapkin and Schwartz seem to subscribe to a measurement perspective on response shift, but Fig. 2 seems to represent a conceptual perspective. However, Fig. 2 lacks a direct (non-moderated) effect of the catalysts on the outcome variable, and all other effects (including a possible direct ‘mechanisms’ effect) should carry the ‘response shift’ label (cf. Figs. 1, 2 of [3]).

The investigation of appraisal and response shift

Empirical research on appraisal processes would be helpful in understanding response shift. Methods that directly assess the psychological processes or cognitive operations of appraisal include think-aloud protocols, focus groups, or interviews [4]. For example, Taminiu-Bloem et al. [6] used think-aloud interviews to investigate individual cognitive processes used to answer quality of life (QOL) items, and how changes in these processes could be linked to response shift. The research methods proposed by Rapkin and Schwartz are different, as they propose to measure appraisal processes in a quantitative way, i.e., through self-assessment with the QOL Appraisal Profile (QOLAP and QOLAP v2) or Brief Appraisal Inventory (BAI), and by incorporating the resulting scores as a variable in the response shift model. However, we question the representation of appraisal as a variable. It is difficult to think of the cognitive appraisal process as something that individuals can score high or low on. What does ‘more appraisal’ or ‘less appraisal’ mean? For example, the appraisal instruments that Rapkin and Schwartz proposed for research on (general) QOL contain items that ask how often the respondent thinks about things like ‘being free of money problems’ or ‘spiritual growth’ when completing the QOL questionnaire, and the appraisal instruments yield scores on domains such as ‘meaning of QOL,’ and ‘goals’ (QOLAP) or ‘health worries’ and ‘spiritual growth and altruism’ (BAI). We do not think that it is possible to measure and quantify the appraisal components in this way, as we do not see how high and low scores on ‘meaning of quality of life,’ or ‘spiritual growth and altruism’ are indicative of appraisal, or—more generally—what high and low scores on ‘frame of reference,’ ‘standards of comparison,’ ‘sampling of experience,’ or the ‘combinatory algorithm’ would mean. In our view, the proposed operationalizations of appraisal do not sufficiently distinguish the appraisal of QOL from QOL itself, so it is not surprising to find substantive correlations between QOL and appraisal.

Investigations of appraisal theory may help to understand response shift. Still, in order to investigate response shift it is not necessary to assess appraisal. In the measurement perspective on response shift, we need statistical methods that distinguish observed change from ‘true’ change in the

intended construct, such as factor analytic and item response methods that operationalize ‘true’ change with latent variables. With such methods, we can only find ‘group level’ response shifts if it is present in a minority of the indicator variables for the majority of the respondents [2]. Still, if operationalizations of ‘antecedents’ and ‘mechanisms’ are available, then we can also assess their effects on observed changes in HRQL, either controlling for latent change (to assess response shift in measurement perspective), or controlling for acknowledged explanatory variables (to assess response shift in conceptual perspective), or both [3]. Individual differences in antecedents and mechanisms would then result in individual differences in the effects of response shift.

Conclusion

We agree with Rapkin and Schwartz on the importance of cognitive appraisal processes in subjective measurement, such as the measurement of HRQL, and we agree that a better understanding of appraisal processes would contribute to the advancement of response shift research. Yet, we question their conceptualization and theoretical model of appraisal and response shift, and we would urge all researchers of response shift to clearly distinguish between measurement and conceptual perspectives on response shift. We also question the proposed operationalization of appraisal, as the quantitative representation of cognitive processes seems problematic for interpretation and thus not helpful in investigating the role of appraisal in eliciting response shift. Finally, although we agree about the need for more empirical research on appraisal, we do not think that operationalization of appraisal processes (if at all possible) is necessary to investigate response shift. We hope that by addressing these issues, we can stimulate the academic debate about conceptual and methodological issues with appraisal and response shift, and thus further the research area of HRQL as a whole.

Compliance with ethical standards

Conflict of interest All the authors declared that they have no conflicts of interest.

References

1. Jobe, J. B. (2003). Cognitive psychology and self-reports: Models and methods. *Quality of Life Research*, 12, 219–227.
2. Oort, F. J. (2005). Using structural equation modeling to detect response shift and true change. *Quality of Life Research*, 14, 587–598.

3. Oort, F. J., Visser, M. R. M., & Sprangers, M. A. G. (2009). Formal definitions of measurement bias and explanation bias clarify measurement and conceptual perspectives on response shift. *Journal of Clinical Epidemiology*, *62*, 1126–1137.
4. Padilla, J.-L., & Benítez, I. (2014). Validity evidence based on response processes. *Psicothema*, *26*(1), 136–144.
5. Sprangers, M. A. G., & Schwartz, C. E. (1999). Integrating response shift into health-related quality of life research: A theoretical model. *Social Science and Medicine*, *48*, 1507–1515.
6. Taminiau-Bloem, E. F., van Zuuren, F. J., Koeneman, M. A., Rapkin, B. D., Visser, M. R. M., ... Sprangers, M. A. G. (2010). A 'short walk' is longer before therapy than afterwards: A qualitative study questioning the baseline and follow-up design. *Health and Quality of Life Outcomes*, *8*, 69.
7. Tourangeau, R., Rips, L. J., & Rasinski, K. A. (2000). *The psychology of survey response*. Cambridge, UK: Cambridge University Press.

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