Published in final edited form as:

Ann Behav Med. 2014 August ; 48(1): 1–2. doi:10.1007/s12160-014-9604-0.

Beliefs About Medicines in 3D: a Comment on Phillips et al

Seth A. Margolis, M.A.¹ and Jeffrey S. Gonzalez, Ph.D.^{1,2}

¹Ferkauf Graduate School of Psychology, Yeshiva University

²Diabetes Research Center, Albert Einstein College of Medicine

Medication non-adherence is a prevalent problem across chronic illnesses and has been consistently associated with poor health outcomes. Concerns about negative effects of prescribed medicines and low perceived necessity of medicines have been shown to be consistently associated with non-adherence across numerous illness populations (1). These constructs have been widely measured using the Beliefs About Medicines Questionnaire (BMQ) (2), and in combination are referred to as the Necessity-Concerns-Framework (NCF). Interventions aimed at improving medication adherence have suggested that maladaptive beliefs about medicines can be modified (e.g., 3,4). Therefore, empirical research directed at better understanding the nature of such beliefs is a topic of great clinical importance.

Despite the growth of the NCF literature since the original publication of the BMQ (See 1), in their new paper, Phillips et al. (5) contend that progress in this field has been limited by inadequate analytic methods used to test the relationships among necessity beliefs, concerns and adherence. Although the NCF is a multidimensional theory where necessity beliefs and concerns are expected to be independent constructs (i.e., not on opposite ends of the same dimension), researchers have tended to examine their unique effects in multivariate analysis (ignoring combined effects), to collapse them into a difference score (necessity beliefs minus concerns), or to artificially create groupings of patients to examine couplings of NCF beliefs (i.e., high necessity/high concerns, high necessity/low concerns, low necessity/high concerns, low necessity/low concerns) (e.g., 6). Phillips et al. argue convincingly that each of these approaches distorts the theorized multidimensional nature of necessity beliefs and concerns and fails to adequately examine their combined effects on adherence. Their paper makes a significant contribution to research on the NCF, as well as to other areas of behavioral medicine research where a multidimensional analytic approach is needed, by demonstrating the advantages of applying polynomial regression, an under-utilized multidimensional analytic approach, to the evaluation of the NCF among stroke survivors prescribed stroke-prevention medications.

Consistent with past research, the authors found some support for the difference score approach in that adherence was greatest when necessity beliefs outweighed concerns about medicines. However, they also showed the limitations of this approach, such that non-

Correspondence concerning this article should be addressed to: Jeffrey S. Gonzalez, PhD, Ferkauf Graduate School of Psychology, Yeshiva University, Diabetes Research Center, Albert Einstein College of Medicine 1300 Morris Park Avenue, Rousso Building, Bronx, NY 10461, Phone: 718-430-3954, Fax: 718-430-3960, jeffrey.gonzalez@einstein.yu.edu.

reciprocal relationships were present and accounted for incremental variance beyond the difference score. Specifically, adherence was higher when both concerns about medicines and necessity beliefs were low (i.e., indifference) than when each were high (i.e., ambivalence). This represents an important step forward in our understanding of the interplay between beliefs about medicines and suggests that clinical interventions should target both necessity beliefs and concerns in order to have the best impact on adherence. Thus, positive and negative evaluations of treatment may have more complex relationships to treatment adherence than has been recognized by previous research. Findings emphasize that clinicians should be aware that it is possible for positive and negative attitudes about medicines to co-occur within a given individual.

Replication of these results among stroke survivors and other patient populations is needed to confirm these findings, and future work should address several study limitations, which were noted by Phillips and colleagues. First, their use of a self-report measure of adherence could be viewed as a weakness. However, in a meta-analysis of 94 studies, Horne et al. (1) showed that greater adherence was consistently associated with stronger necessity beliefs and weaker medication-related concerns, regardless of the type of adherence measure employed. Second, beliefs were assessed about one or more prescribed medications (e.g., anti-thrombotics, blood pressure medication, cholesterol medications) intended to reduce the risk of subsequent stroke. Heterogeneity of drug regimens across participants may have affected their findings. Examinations of whether certain medication regimens differ from others in terms of NCF beliefs, perhaps because of differential efficacy, side-effect profiles, or other aspects of regimen-related burden, would be valuable and could guide clinical practice decisions. Despite the sizable available literature (1), little is known about the relative importance of patient-related variables (e.g., knowledge, attitudes, affectivity, personality) versus characteristics of medication regimens (e.g., side-effect profile, dosing frequency, pill burden) in shaping beliefs about medication. Such information would be important to guiding intervention development. Last and most important, given the cross sectional nature of their data, questions of causality cannot be addressed. More experimental research is needed to evaluate effects of interventions that target beliefs about medication on adherence. Nevertheless, the present work is a welcome and novel addition to the literature on the NCF and treatment adherence. The authors also provide such a detailed rationale for and tutorial on the use of polynomial regression that we hope to see its future use in other areas of behavioral medicine research where a multidimensional analytic approach is warranted.

Acknowledgments

Dr. Gonzalez is partially supported by grants from the National Institutes of Health (DK020541 and DK098742).

References

1. Horne R, Chapman SC, Parham R, Freemantle N, Forbes A, Cooper V. Understanding patients' adherence-related beliefs about medicines prescribed for long-term conditions: A meta-analytic review of the necessity-concerns framework. *PLoS One*. 2013; 2(8):e80633.10.1371/journal.pone.0080633 [PubMed: 24312488]

2. Horne R, Weinman J, Hankins M. The beliefs about medicines questionnaire: The development and evaluation of a new method for assessing the cognitive representation of medication. *Psychol Health*. 1999; 14:1–24.
3. Magadza C, Radloff SE, Srinivas SC. The effect of an educational intervention on patients' knowledge about hypertension, beliefs about medicines, and adherence. *Res Social Adm Pharm*. 2009; 5(4):363–375.10.1016/j.sapharm.2009.01.004 [PubMed: 19962679]
4. Petrie KJ, Perry K, Broadbent E, Weinman J. A text message programme designed to modify patients' illness and treatment beliefs improves self-reported adherence to asthma preventer medication. *Br J Health Psychol*. 2012; 17:74–84. [PubMed: 22107110]
5. Phillips LA, et al. The necessity-concerns-framework: A multidimensional theory benefits from multidimensional analysis. *Ann Behav Med*. 2014; XX(X):##–##. [PubMed: 24500078]
6. Aikens JE, Nease DE, Nau DP, Klinkman MS, Schwenk TL. Adherence to maintenance-phase antidepressant medication as a function of patient beliefs about medication. *Ann Fam Med*. 2005; 3:23–30. [PubMed: 15671187]