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Compliance-Related Causality Orientations Scale: development and psychometric properties in Russian sample

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Abstract

This paper analyzes opportunities of application of the self-determination theory to the compliant behavior and describes the process of development and validation scale for measuring compliance-related causality orientations in the normative sample. Experts' appraisals demonstrated that in clinical settings controlled causality orientation could be divided into two subscales: controlled by doctors and controlled by others subscales. Empirical data (N=246 students) supports internal consistency (Cronbach's alpha .76-.79), test-retest reliability and factor validity of the scale. All the subscales correlate with general controlled orientation subscale as well as relevant subscales of General Causality Orientation Scale. Controlled by doctors and impersonal causality orientations were negatively related to health-related quality of life. Compliance-Related Causality Orientations Scale correlated with retrospective appraisals of last episode of somatic illness (subjective interference with other domains, fear of future complications, fear of more severe illness, subjective ability to follow chosen treatment. Although testing prospective validity of the scale is a challenge for future research, the scale could be useful to study motivational factors of compliant behavior both in the normative and clinical samples.

1. Theoretical background

Despite a growing number of theories explaining health behavior [1], [2], there is still a gap between psychological (e.g., intentions, see [3]) and behavioral variables. This gap motivates researchers to suggest new approaches or to develop health-related applications of self-regulation theories [4], [5], [6], [7]. Compliance with

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medical recommendations is an example of health behavior that is especially difficult both to assess and to predict [8]. One such difficulty is related to heterogeneity of the construct of compliance: different authors speak about intentional and unintentional non-compliance [9] and even reasonable (mindful) non-compliance when patient consciously makes decision that it's better not to follow medical recommendations [10]. This paper analyzes opportunities of application of the self-determination theory [11] to the compliant behavior and describes a process of development and validation scale for measuring compliance-related causality orientations.

1.1. Self-determination theory and health behavior

Self-determination theory distinguishes three groups of needs [11]: need for autonomy, need for competence and need for relatedness. There are three causality orientations in the structure of motivation: autonomy, controlled and impersonal orientations. In the medical context it means that patient has a need to understand how to achieve goals related to health, to be confident in his abilities to achieve these goals, a need to believe that he has a choice and a need for respect and support, especially from health professionals. According to Sheldon et al. [5], the best way of health promotion is to recognize and develop client's (or patient's) own need to improve his health. According to a self-determination theory it means to recognize and to support client's (or patient's) autonomy including respect to his opinion, frequent choice opportunities and reasonable explanation of the situations when the choice is impossible.

Self-determination theory is successfully applied in the health psychology [12]. It was shown that intrinsic (but not extrinsic) motivation predicts long-term adherence with medications prescribed by the doctor for various medical conditions [13], is related to participation in alcoholism treatment program [14] and weight loss program [15], contributes to a better control of glucose level in diabetes [16]. In patients with a coronary heart disease high level of autonomous motivation predicts increased physical activity and diet changes even three years after survey [5]. In smokers causality orientation predicts smoking cessation in 6-, 12- and 30-months follow-ups [5].

We suggest that the self-determination theory provides a powerful framework for studies of motivational factors of compliance explaining its heterogeneous nature. Indeed both compliance and non-compliance as a result of decision-making processes might be based on autonomous, controlled or impersonal causality orientations. For instance, a patient might follow doctor's recommendations because he really believes it's helpful or because it's the easiest way to treat illness.

1.2. Measurement of the causality orientations: possibilities and limitations

Causality orientations are usually assessed by the General Causality Orientation Scale [17]. For clinical settings it was transformed into Treatment Motivation Questionnaire [15], [16] that was used to assess participation and effect of alcoholism treatment and weight loss programs. While its focus on concrete health behavior helped to reveal specific for this behavior motivational factors it was not applicable to general compliance. Later instrument - Treatment Self-Regulation Questionnaire - was developed to measure different forms of motivation (amotivation, external, introjection, identification and integration) across three types of health behaviors (smoking, diet and exercise, [18]). As for the Treatment Motivation Questionnaire it is oriented on specific behavior and doesn't allow appraising general compliance in a normative sample (regular visits to doctors, following recommendations in the case of illness etc.).

The aim of this study was to develop and validate in the Russian sample a general instrument for measurement compliance-related causality orientations.

2. Study

2.1. Development of the Compliance-Related Causality Orientations Scale

Three medical doctors were asked to create a list of general medical situations in which patients' decision-making process is critical (e.g., patients choose whether to do something or not) and which are familiar to everybody. Six situations chosen were: coming to a doctor, choosing and buying medicines in the pharmacy, taking medications, undergoing medical treatment (e.g., massage, physical therapy, etc.), lifestyle changes (execising, quitting smoking, etc.) that were prescribed by the doctor. We separated situations of taking medications, undergoing medical procedures and lifestyle changes as former is common and habitual action, while behavior changes are typically more complex and effortful [10]. Then experts' panel of five clinical and health psychologists familiar with the self-determination theory was formed. For each situation in the list two psychologists formulated one statement with multiple ends reflecting personal motivation (autonomy, controlled or impersonal orientations) to do something or to refuse from doing something. Then three other psychologists appraised to what scale each item refers. All the disagreements were resolved in a discussion of the experts' panel. As a result of the discussion controlled orientation was found to be heterogeneous and divided into two subscales: controlled by a doctor (compliance with recommendations because of the trust to doctor) and controlled by others (orientation to the opinion of friends and relatives). Additional subscale of non-compliance: refusal from visiting a doctor, taking medication or following medical recommendations without explanation of the reasons.

Scale includes 41 item grouped in four main and one additional subscales: autonomy orientation (14 items), controlled by doctors orientation (8 items), controlled by others orientation (7 items), impersonal orientation (12 items), non-compliance (7 items). Agreement with the items is appraised on 7-points Likert scale.

2.2. Participants

246 students of non-medical faculties participated in the study (91 males, 155 females, age range was 17-40 years, mean age 22.10±6.57 years). Subjects were included only if they had no acute somatic symptoms at the time of the study.

2.3. Materials and Procedure

All of the participants filled Compliance-Related Causality Orientations Scale and answered retrospective questions about last episode of somatic illness. We asked participants to recall the last episode of somatic illness they had experienced, to describe its symptoms, subjective reasons and to appraise using the Likert scale from 1 to 10 subjective severity, duration, interference with other spheres of life, fear of a more severe diagnosis or negative consequences, treatment, treatment-related self-efficacy and subjective rate of recovery. Test-retest reliability was appraised on the subsample of 45 participants who filled out CRCOS again in a month.

To test convergent validity subsample of 123 participants (50 males, 73 females) also filled out a number of questionnaires:

The General Causality Orientation Scale [17] appraises autonomy, controlled and impersonal causality orientations. In the Russian version [19] it consists of 25 situations each of those includes three possible variants of behavior.

The short version of the Quality of Life Enjoyment and Satisfaction Questionnaire [20], [21] consists of 23 items and appraises the quality of life and satisfaction in the four main domains: health, emotions, leisure, social relationships.

2.4. Results

Means and standard deviations of the subscales are presented in table 1 separately for males and females because we found that autonomic and impersonal orientations are higher in females (p<0.01). There were

medium Cronbach'se alpha for all the subscales except non-compliance subscale which consistency was rather low (0.70) and needed improvement in further studies. All the test-retest correlations were significant demonstrating stability of the questionnaire.

Table 1. Means, standard deviations and reliability of the Compliance-Related Causality Orientations Scale

Subscales	Males		Females		Cronbach's alpha	Test-retest reliability
	Mean	St. dev.	Mean	St. dev.		
Autonomy orientation	48.36	13.79	55.18	12.21	.79	.64***
Controlled by doctors orientation	27.03	8.50	25.44	7.52	.77	.43**
Controlled by others orientation	30.56	9.90	30.04	8.49	.79	.62***
Impersonal orientation	56.72	10.72	60.02	10.60	.76	.55***
Non-compliance with treatment	20.73	7.52	19.68	6.65	.70	.62***

* - p<0.05, ** - p<0.01, ** - p<0.001.

Exploratory factor analysis was used to test the factor validity of the scale. Five factors explaining 43.4% of variance were revealed. In general, the revealed factors are in accordance with our expectations. However, there are some items that are referred to the autonomy orientation, impersonal orientation or non-compliance in the model but that have high factor loadings to other factors. This result could be explained by a low differentiation of the reasons of decision-making in the health domain. Also the processes of interiorization and exteriorization may come into play. For instance, if a person interiorizes initially external motivation to follow medical recommendations they function as autonomy orentation but look like a controlled orientation.

To test convergent validity we correlated compliance-related causality orientations with general causality orientations. General controlled orientation was related to any compliance-related orientations (table 2). We explain this result by the fact that making decisions about treatment is always a socially desirable process that is determined by social norms and expectations. Therefore compliance regardless of its reasons is related to orientation to the opinion of other people. Nevertheless compliance-related autonomy and impersonal orientations also correlated (autonomy orientation marginally correlated) to relevant subscales of GCOS. Non-compliance doesn't correlate with the causal orientation because it was formulated in behavioral and not motivational terms. As we expected compliance-related causality orientations were related neither to the internal locus of control nor to the general self-efficacy.

Criterial validity of the scale was tested in two ways. First, we expected that compliance-related orientations would predict quality of life and enjoyment in the health domain. Controlled by doctors and impersonal causality orientations negatively correlate with the health-related quality of life. We suggest two possible mechanisms underlying these correlations. On the one hand, controlled by doctors orientation increases when subjective health worsens. On the other hand, impersonal orientation leads to infrequent and occasional visits to a doctor and following prescribed treatment that could be the reason of increase in health problems.

Second, we expected that compliance-related causality orientations would be related to retrospective appraisals of the last episode of illness. As retrospective appraisals may hardly depend on the illness recalled we counted correlation matrix for all full protocols (N=210) and then only for participants recalled cold or flu as their last illness (N=90). The difference between two matrixes was minimal so we presented correlations from the whole sample. There were low to moderate positive correlations between all the causal orientations and subjective interference of the illness with other life domains and fears about complications. There are two

possible explanations of these results. First, the more symptoms disturb normal functioning and activate fears the more compliant the person is in general. This leads to an increase in all the causal orientations regardless of the kind of motivation underlying final decision. Second, all compliance-related causality orientations activate attention to health. Therefore more compliant people could be more sensitive to illness real and possible consequences. Fear of a more severe illness is related to doctors controlled orientation. We suggest that the orientation to doctors' opinion activates attention to illnesses and fears about possible diagnosis. Subjective ability to follow chosen treatment has low but significant positive correlations with all the compliance-related causality orientations except impersonal orientation. This is reasonable because orientations to autonomy, doctors or others "push" a person to regularly active actions while impersonal orientation leads just to occasional actions. Subjective severity, duration and the rate of recovery were not related to compliance-related causality orientations.

Table 2. Correlations between the compliance-related causality orientations and general causality orientations, locus of control, self-efficacy, health-related quality of life and retrospective appraisals of the illness episode (only scales with significant or marginally significant differences are shown).

Scales and retrospective appraisals	Compliance-related autonomy orientation	Compliance-related controlled by others orientation	Compliance-related controlled by doctors orientation	Compliance-related impersonal orientation	Non-compliance
General autonomy causality orientation (N=123)	$.18^T$	.10	-.14	-.10	.09
General controlled causality orientation (N=123)	.31**	.34**	.25*	.26*	-.05
General impersonal causality orientation (N=123)	.16	.11	.02	.24*	-.05
Quality of life and enjoyment in the health domain (N=123)	-.09	-.06	-.35**	-.24*	.05
Subjective interference with other life domains (N=210)	.18**	$.13^T$	.14*	.16*	-.04
Fear of future complications (N=210)	.20**	.15*	.27**	.18**	-.14*
Fear of more severe illness s(N=210)	.01	.06	.19**	.11	-.08
Subjective self-efficacy (N=210)	.11	.07	$.13^T$	.10	-.15*
Subjective ability to follow chosen treatment (N=210)	.14*	.14*	.14*	.07	-.10

$^T – p<.1,$ * - $p<.05,$ ** - $p<.01$

3. General Discussion

Applying the self-determination theory to the general medical compliance we developed and validated in the Russian normative sample of the Compliance-Related Causality Orientations Scale. Experts' appraisals demonstrated that in clinical settings controlled causality orientation could be divided into two subscales: controlled by doctors and controlled by others subscales. Empirical data supports internal consistency, test-retest reliability and factor validity of the scale. Subscales correlate or marginally correlate with relevant subscales of General Causality Orientation Scale. Criterial validity of the scale was shown by comparing Compliance-Related Causality Orientations Scale and retrospective answers about last episode of somatic illness as well as quality of life in the health domain. Although testing prospective validity of the scale is a challenge for future research, the

scale could be useful to study motivational factors of compliant behavior both in the normative and clinical samples.

References

[1] Glanz K, Rimer B, Lewis FM Theory, research and practice in health behavior and health education. In: Glanz K, Rimer B, Lewis FM, editors. *Health behavior and health education,* San Francisco: Jossey-Bass; 2002, p. 22-40.
[2] Armitage CJ, Conner M Social Cognition Models and Health Behavior: A structured review. *Psychology and Health* 2000;15:173-89.
[3] Webb TL, Sheeran P Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin* 2006;132(2):249-68.
[4] Scheier M, Carver C Goal and confidence as self-regulatory elements underlying health and illness behavior. In: Cameron LD, Leventhal H, editors. *The self-regulation of health and illness behavior,* New York: Routledge; 2003; p. 17-41.
[5] Sheldon K, Williams J, Joiner T *Self-determination theory in the clinic.* New Haven & London: Yale University Press; 2003.
[6] Mezzich J. E., Zinchenko Yu. P., Krasnov V. N., Pervichko E. I., M. A. Kulygina. Person-centered approaches in medicine: clinical tasks, psychological paradigms, and the postnonclassical perspective. *Psychology in Russia: State of the Art* v. 6, Lomonosov Moscow State University; Russian Psychological Society Moscow, 2013; p. 95-110.
[7] Karpov A.V. The Integral Abilities of the Personality as the Subject Matter of Psychological Research. *Psychology in Russia: State of the Art* v. 5, Lomonosov Moscow State University; Russian Psychological Society Moscow, 2012; p. 99-116.
[8] Svarstad BL, Chewning BA, Sleath BL, Claesson C The brief medication questionnaire: a tool for screening patient adherence and barriers to adherence. *Patient Education and Counseling* 1999;37:113-24.
[9] Mora PA, Berkowitz A, Contrada RJ, Wisnivesky J, Horne R, Leventhal H, Halm EA Factor structure and longitudinal invariance of the Medical Adherence Report Scale-Asthma. *Psychological Health* 2011;26(6):713-27.
[10] Geist-Martin P, Ray EB, Sharf BF *Communicating health: Personal, cultural and political complexities* Belmont: Wadsworth/Thomson Learning; 2003.
[11] Deci EL, Ryan RM The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry* 2000;11:227-68.
[12] Ryan RM, Patrick H, Deci EL, Williams GC Facilitating health behaviour change and its maintenance: Interventions based on self-determination theory. *The European Health Psychologist* 2008;10:2-5.
[13] Williams GC, Rodin GC, Ryan RM, Grolnick WS, Deci EL Autonomous regulation and long-term medication adherence in adult outpatients. *Health Psychology* 1998;17(3):269-76.
[14] Ryan RM, Plant RW, O'Malley S Initial motivations for alcohol treatment: Relationship with patient characteristics, treatment involvement and dropout. *Addictive Behavior* 1995;20:279-97.
[15] Williams GC, Grow VM, Freedman Z, Ryan RM, Deci EL Motivational predictors of weight loss and weight loss maintainance. *Journal of Personality and Social Psychology* 1996;70:115-26.
[16] Williams GC, Freedman Z, Deci EL Promoting motivation for diabetics' self-regulation of HbA1c. *Diabetes* 1996;45(Suppl. 2):13A.
[17] Deci EL, Ryan RM The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality* 1985;*19*:109-34.
[18] Levesque CS, Williams GC, Eliot D, Pickering MA, Bodenhamer B, Finlet PJ Validating the theoretical structure of the Treatment Self-Regulation Questionnaire (TSRQ) across three different health behaviors. *Health Education Research* 2007;22(5):691-702.
[19] Dergacheva OE, Dorfman LY, Leont'ev DA Russkoyazychnaya adaptatsiya oprosnika kauzal'nykh

orientatsii. *Vestnik Moskovskogo universiteta. Seriya 14. Psikhologiya* 2008;3:91-106 [In Russian].
 [20] Ritsner MS Predicting quality of life impairment in chronic schizophrenia from cognitive variables. *Quality of Life Research* 2007;16:929-37.
 [21] Rasskazova EI Metodika otsenki kachestva zhizni i udovletvorennosti: psikhometricheskie kharakteristiki russkoyazychnoi versii. *Psikhologiya. Zhurnal Vysshei shkoly ekonomiki* 2012;9(4):81-90 [In Russian].