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VALUES, EFFICACY AND TRUST AS DETERMINANTS OF INNOVATIVE ORGANIZATIONAL BEHAVIOUR IN RUSSIA

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VALUES, EFFICACY AND TRUST AS DETERMINANTS OF INNOVATIVE ORGANIZATIONAL BEHAVIOUR IN RUSSIA[3]

This study examines the relationship between values, efficacy, trust and innovative organizational behaviour in Russia. We analyse the direct and indirect effect of gender, age and education on innovative behaviour via values, trust and efficacy. For the measurement of values we employed a new revised value instrument with 19 values. We found that Openness to Change values had a significant positive effect and Conservation values a significant negative effect on innovative behaviour in organizations; efficacy and trust had a significant positive effect. Moreover, the effect of values is moderated by the level of efficacy. Gender, age and education directly influence innovative behaviour and determine such behaviour via values, efficacy and trust.

JEL Classification: Z.

Keywords: human values, innovation, innovative behaviour, trust, gender, education, region, age

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Introduction

Innovations are seen as a central driving force for the development and change of economies worldwide. Innovations in the economic sector are also central for the transformation of the Russian economy. Although there has been accumulated knowledge of what drives innovations [Rogers, 2003] the specific role of human values has been not sufficiently clarified. Furthermore, the context dependency of the effects of values is mostly unknown. In this paper we discuss first the theoretical contribution of an extended model of 19 values [Schwartz et al., 2012] for innovative behaviour in organizations, based on a representative survey in Russia. Second, we contextualize the postulated model by testing the effect in two very different regions in Russia: Central Russia and the North-Caucasian region. More specifically the following research questions are dealt with in this paper:

1. Which of the 19 values of the newly developed and expanded Portrait Value Questionnaire of Schwartz [Schwartz et al., 2012] are related to innovative behaviour in the workplace in Russia?
2. Is the specification of a third-order factor model for the 19 values the most adequate theoretical and empirical approach to handle the values representing Openness to Change and Conservation as predictors instead of using the separate values? [see also Cieciuch, Davidov, & Schwartz, in press]
3. How strong are the effects of efficacy, individual trust, perceived contextual trust on innovative behaviour beside the values, and is there a moderating effect of efficacy on the relation between values and innovative behaviour [Mohr, 1969]?
4. Are the effects of gender, education, region and age on innovative behaviour fully or partially mediated by values as there has been inconclusive evidence in the literature [Rogers, 2003]?

To answer questions 1 and 2 we first specified a third-order factor model for the values instrument. To address questions 3 and 4 we specified and tested different structural equation models. As the basis for our empirical analysis we use a representative survey done in 2012 from Central and the North Caucasian federal districts of Russia (N = 2024).

For all analyses, we use the MPLUS Program Version 7.11 [Muthén & Muthén, 2010].

The added value of this paper is:

a. It is the first study to use the new expanded value scale of Schwartz et al. (2012) to explain innovative behaviour in an organizational context.
b. It integrates a third order factor model into a SEM-model to adequately represent the values and circumvent problems of multicollinearity.

c. To the best of our knowledge it is the first study to analyse the relationship of values and innovative behaviour in an organizational context in a representative survey.
d. It systematically analyses the moderation effect of efficacy on the two most important higher order value predictors of innovation that is Openness to Change (positively) and Conservation (negatively).
e. It is the first study that systematically tests full versus partial mediation of the effects of gender, education, region and age on innovative behaviour and taking into account the measurement error of the intervening variables. Furthermore, the direct and indirect effects of the demographic variables on innovative behaviour and their significance are estimated.

Theoretical background

The advancement of knowledge-based industries has shown how innovation empowers individuals, communities and countries. This has led to considerable changes in business, politics and society. Furthermore, the central role of innovations in economic growth and development is being recognized more and more. However, according to the INSEAD Global Innovation Index Russia in 2009 occupied 64 place among 130 countries of the world [Lebedeva & Schmidt, 2012]. It has been shown how differences in values among various nations influence the levels of invention and innovation at the organizational level [Shane, 1992; Shane, Venkataraman, & MacMillan, 1995]. They found that individualistic and non-hierarchical societies are more inventive than other societies. For the empirical measurement of values they used the indices of power distance and individualism developed by Hofstede (2001). Despite research on the relation between values and organizational behaviour, it is still not clear, which values influence the individual level of creativity and innovativeness in different social contexts [Amabile, 1988; Damanpour, 1987, 1992; Dollinger, Burke, & Gump, 2007; Elenkov & Manev, 2005; Greenhalgh et al., 2004; Hurley, 1995; Mezias & Glynn, 1993; Miron, Erez, & Naveh, 2004; Slappendel, 1996; Tang, 1998].

De Dreu, Nijstad and Baas [2011, p. 298] argued convincingly that interchanging creativity and innovation misses important differences. To differentiate between creative and innovative behaviour we employ the following two definitions:

D1: Creativity is defined as the generation of ideas, problem solutions that are novel and appropriate.

D2: Innovation is defined as the intentional introduction and application of ideas, procedures, processes or products that are new to the relevant unit of adoption and designed to significantly benefit the individual, the group, the organization and the wider society.

We are dealing in this paper with innovative behaviour and its determinants.

In recent years, much of the research on values has been based on the theoretical and methodological approach of Schwartz [1992]. According to his concept, values of individuals are assessed in terms of the motivational goals by which one lives. He argued that basic human values are cognitive representations of biological needs, social interaction needs and group welfare needs. Furthermore, he postulated and found empirically that there are 10 different values. A new measurement instrument was developed by him for use in population surveys and applied regularly in the European Social Survey (ESS) since 2002 [Schwartz, 2006] and at least once in the World Value Study and the General Social Survey in the United States. In the ESS a 21 item version was used. The ten values were: Power, Achievement, Hedonism, Stimulation, Self Direction, Universalism, Benevolence, Tradition, Conformity and Security. Based on a series of empirical studies [Knoppen & Saris, 2009; Beierlein et al., 2008] Schwartz expanded and modified his instrument and developed an even more differentiated concept with 19 values and 53 items [Schwartz et al., 2012]. Universalism was now divided into the three sub-dimensions Concern, Nature and Tolerance; Self Direction into Self Direction of Thought and Self Direction of Action; Power into Dominance and Resources; Security into Societal Security and Personal Security, and Conformity into Interpersonal Conformity and Conformity to Rules. Humility was introduced as a value representing Conservation, and Benevolence was divided into Dependability and Caring. Figure 1 contains the visualization of the expanded value circle of Schwartz [2012]. The table 1 contains the definitions and meanings of the 19 values.

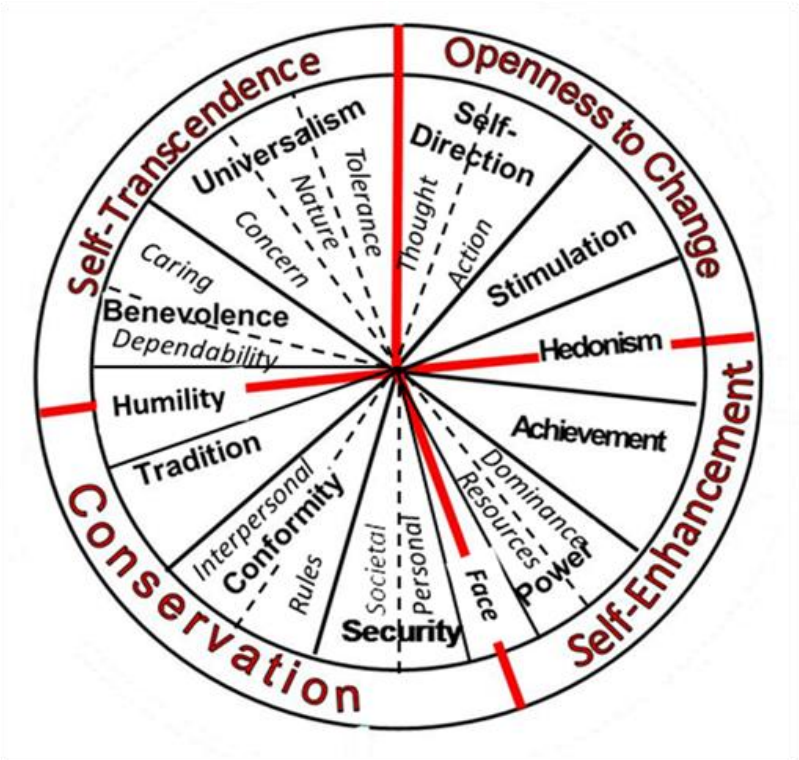

Figure 1. The expanded value circle of Schwartz [2012]

Table 1. Definitions and meanings of the 19 values

Value	**Conceptual Definition**	**Definition Components**
Self Direction	Independent thought and action - choosing, creating, exploring	Autonomy of thought Autonomy of action
Stimulation	Excitement, novelty, and challenge in life	Excitement Novelty Challenge
Hedonism	Pleasure and sensuous gratification for oneself.	Single component: Pleasure
Achievement	Personal success through demonstrating competence according to social standards	Personal success Demonstrating competence
Power	Social status and prestige, control or dominance over people and resources	Dominance over people Control over material resources

		Face: Status and prestige
Security	Safety, harmony, and stability of society, of relationships, and of self	Societal Security Personal Security
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations and norms	Interpersonal: Avoiding upsetting others Compliance with social norms
Tradition	Respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provides	Single component: Maintaining cultural and religious traditions
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact	Single component: Caring for ingroup members
Universalism	Understanding, appreciation, tolerance and protection for the welfare of *all* people and for nature	Tolerance Societal concern Protecting nature

Table is taken from Schwartz et al. (2012)

The values representing openness to change should be substantially related to innovative behaviour. This was empirically confirmed for Autonomy and Stimulation [Dollinger, Burke, & Gump, 2007; Lebedeva & Schmidt, 2013]. The underlying mechanism for this relationship is as follows. It is assumed in the theory that a high value implies a high motivation to realize the corresponding goals. People high in these values want to realize all these four values and satisfy the corresponding motivation by designing and implementing innovations within organizations. Given that they are blocked in their realization of these values and there are alternative organizations where they expect to realize this motivation they will tend to leave their present organization. Given this process over time this will lead to strong selection effects of people within organizations like established public bureaucracies or large bureaucratized private companies compared with start-up companies or self-employed people. The latter ones will have a much larger percentage of people with high Openness to Change values and low Conservation values compared with large public bureaucracies and large private companies. In terms of Hirschman's theory on exit, loyalty and voice [1970, 1974] one could argue, that innovative behaviour represents the mode of voice and a reaction toward certain perceived problems within an organization. Exit represents the amount of people who are leaving the organization because they cannot implement their new ideas and innovations and loyalty represents those, who are just

continuing the tasks done before. However, in contrast to Hirschman we try to explain the choice of voice by explicitly introducing the construct values efficacy and trust as predictors.

If we introduce all four values representing Openness to Change that is Autonomy in thought, Autonomy in action, Stimulation and Hedonism as predictors, simultaneously the multicollinearity between the predictors would be extremely high and there would be large standard errors and converted signs as a consequence [Belsley, 1991]. Furthermore, it would be possible to wrongly eliminate some of the values as predictors.

As Schwartz assumes a higher order values structure, which was confirmed using a higher order confirmatory factor analysis in a recent study [Cieciuch, Davidov, & Schwartz, in press], we use in our later model specification only the higher order factors, which circumvents the problem of multicollinearity. According to our theoretical rationale and preliminary empirical results we would, however, not use all four higher order values but only Openness to Change and Conservation as predictors for innovative behaviour.

As a consequence we formulate the following hypothesis:

H1 The higher the Openness to Change values, the more innovative the behaviour

As described in Figure 1 the higher factor Conservation consists of the following sub-dimensions: Societal Security, Personal Security, Interpersonal Conformity and Conformity to Rules and Humility. For the higher order value Conservation the sign of the relation with innovation is inverted. As innovative behaviour involves risks, insecurity and breaking traditions the underlying mechanism is as follows. A high motivation to reach the goals of avoiding risks, insecurity and maintaining traditions contradict the motivation to innovate in organizations. Therefore we postulate:

H2 The higher the Conservation values, the less innovative the behaviour

Concerning Self Transcendence and Self Enhancement we do not expect substantive relations with innovative behaviour as the underlying motivations may or may not be satisfied by introducing innovations. This depends on situational circumstances and the type of innovation. Certain innovations may lead, for example, to the fulfilment of power motivation others not.

The same is true for the fulfilment of universalistic values. An innovative administrative program in the EU for saving refugees may fulfil it. However, another innovative program to set new barriers for immigrants will contradict universalistic values. Therefore, we expect:

H3 Self Enhancement values are not significantly related to innovative behaviour

H4 Self Transcendent values are not significantly related to innovative behaviour.

Mohr [1969] argued from an expectancy value framework that innovative behaviour in organizations may depend both on the motivations and the expectations to realize it. In other

words, motivation and values may be not sufficient to predict innovative behaviour. In the context of our study, we have one construct measuring the expectancy component which is self efficacy [Bandura, 1997]. Only if people think they have a chance to realize their plans and ideas they will be willing to engage in the process of developing and implementing innovations.

Furthermore, Bandura [1997] argues that strong efficacy beliefs enhance the persistence level and the coping efforts individuals will show, when they are confronted with difficult situations. In the context of our study aiming to study innovative behaviour in a representative sample we have measured general self efficacy and not job efficacy or creative efficacy [Tierney & Farmer, 2004; Tierney & Framer, in press]. Empirical evidence on the relationship between self-efficacy and creativity, which is mostly strongly correlated with innovative behaviour is given by three studies. Two of them are laboratory studies [Locke et al. 1984; Redmond et al., 1993] and one field study [Gist, 1989] We postulate the following hypothesis:

H5 The higher the self-efficacy the more innovative the behaviour.

An open question is whether the effect of self-efficacy is only additive as Bandura [1997] postulated or whether the effect of values is moderated by the amount of efficacy as postulated by Mohr [1969] in terms of value-expectancy theory. He argued that only if innovative members of organizations perceive a certain amount of efficacy, they would start trying to implement an innovation. On the other hand members of an organization which are mainly driven by self-reliance values like Achievement and Powerwould not be inclined to introduce innovations even if their efficacy is high, if these innovations do not enhance or stabilize their Powerand Achievement motive. This would imply the additional two moderator hypotheses:

H6 The effect of Openness to Change values on innovative behaviour is moderated by efficacy.

H7 The effect of Conservation values on innovative behaviour is moderated by efficacy.

Following Mohr [1969], however, we expect that only the multiplicative effect of value and the expectancy component and not the additive effects will be significant. Hypothesis 6 means that the positive effect of Openness to Change values on innovative behaviour grows with increasing efficacy. The same is true for the negative effect of Conservation values on innovative behaviour (as formulated in Hypothesis 7) which will increase with growing efficacy.

However, the issue is not only moderation but also the possibility of mediation [Hayes & Preacher, 2013].

Bandura argues [1977, 1986] that one of the basic tenets of the efficacy-performance relationship is that strong efficacy views induce strong motivational tendencies toward the target performance. As openness to change values represent motivational tendencies, this would imply not only a correlation between efficacy and values but also a directed causal relationship. Given that we have only a cross-sectional field study, it is difficult to establish such a relationship

[Paxton, Hipp, & Marquart-Pyatt, 2011; Pearl, 2012]. However, below we specify a model with correlations, a model with an asymmetric relationship between efficacy and openness to change and a feedback model between them. Furthermore, we will discuss the issues of the equivalence of these models [Hershberger & Marcoulides, 2013].

Finally, we want to introduce two constructs, relevant for the prediction of innovative behaviour, trust toward colleagues and the perceived trust of colleagues and neighbours representing perceived contextual influences (De Cremer et al., 2001). Whereas the effect of trust toward superiors and its effects on creativity and innovation has been studied [Tierney & Farmer, 2004; Tierney & Farmer, in press], there seem to be no studies on the relationship between trust toward colleagues and creativity and innovation. The less trust one has toward colleagues at work the less one can be sure that both innovations are attributed to one`s innovations and will be really supported by the other colleagues at work. This effect will be complemented by the perceived trust of the people around the respondent [Subramaniam & Youd, 2005].

To summarize we formulate the following hypotheses:

H8 The higher the trust toward colleagues at work, the more innovative the behaviour.

H9 The higher the perceived trust of the people around the respondent, the more innovative the behaviour.

According to Rogers [1995] there have been the following predictions for the demographic variables, although the findings were not consistent and Kaufmann and Schmidt [1976] tried to explain the inconsistent findings by explicating the underlying mechanisms. Concerning the effect of education Amabile [1988] and Nicherson [1999] argued, that education seems to be also basic for the development of creative tendencies. This would be also true for innovative behaviour. Education might entail cognitive enhancement, which includes an orientation toward the use of diverse multiple perspectives and increasingly complex schemata. Furthermore, education provides exposure to a variety of experiences, viewpoints and knowledge bases and reinforces the use of divergent problem-solving skills and experimentation critical to innovative activities [Amabile, 1988]. Therefore, we postulate the following hypotheses:

H10 The higher the level of education, the more innovative the behaviour

Age has been assumed to have a negative relationship with innovation given that the range of age in our sample starts with 18 and ends with 75. The reason is, that people with increasing age have more to lose in terms of status and position and will therefore have an increasing risk aversion. However, it might be, that the relationship might be nonlinear, as this effect does not start with 18 but may be only from 35 years on. This is an empirical question, which has to be decided on empirical grounds.

Living in central Russia compared with living in the North Caucasus region is very different (culture, religion, the level of modernization etc.). The effect of different cultural and religious orientations might be mediated by the differences in values. However, the opportunity structure to perform innovative behaviour is in central Russia assumed to be higher than in the Caucasus region. As we do not believe that this effect is mediated by values, we expect also a direct effect of region on innovative behaviour.

H11 Living in the central Russia district has a positive effect on innovative behaviour

If we control for education, age and self-employment we expect no effect of gender on innovative behaviour.

H12 Gender has no significant direct effect on innovative behaviour, but a mediated one via openness to change.

The interesting question is, whether some or all effects of the demographic variables are mediated by values, efficacy, trust and contextual trust. This has not been systematically studied in the literature and therefore the issue of partial versus full mediation of the effects of the demographic variables has not been satisfactorily answered. It would mean that in the case of full mediation H10 and H11 would be wrong, as minimally no direct significant effects would occur. According to the findings of Meuleman et al. [2012] based on data from the ESS we expect the following relationships between the demographic variables and the values of Openness to Change and Conservation:

H13 The higher the level of education, the higher the Openness to Change values

H14 The higher the education, the lower the Conservation value

H15 The older the respondent, the lower the Openness to Change values

H16 The older the respondent, the higher the Conservation value

H17 Living in central Russia leads to higher Openness to Change values than living in the Caucasus region

H18 Men tend to have higher Openness to Change values than women.

Method

We carried out the survey between October-December, 2012.

Participants

The total sample included 2,061 respondents. We interviewed face to face 1,024 respondents from the Central Federal District, including Moscow, and 1,034 respondents from the North Caucasian Federal District (representative samples). For our empirical analysis we

used, however, a subsample of persons who are or have been employed, as for people not in employment like students or soldiers it is difficult or impossible to answer the questions which refer to a job situation.

Measurement

Innovative organizational behaviour was measured by three items. An example item is "Developed something new for your work or organization (new procedures, rules organizational arrangements) that was adopted". The response scale was from 1 (never did it) to 4 (more than 5 times).

Values were measured with the new revised PVQ-R developed by Schwartz [2012] representing 19 values measured by three items each. As our theoretical arguments refer only to the sub-dimensions of Openness to Change and Conservation values and preliminary multivariate analyses showed no significant effects of the dimensions of Self-transcendence and Self-enhancement values, we have not dealt with the latter two.

An example item for the Stimulation value is "it is important to him to take risks that make life exciting". An item to measure Autonomy action is: "It is important to him to plan activities independently", whereas an example item to measure Autonomy thought is "it is important to him to have his own original ideas".

Conformity to Rules was measured by items like "It is important to him never to violate rules or regulations". Interpersonal Conformity was measured by "It is important to him to avoid upsetting other people." An example item for Security Social was "It is important to him that the state is strong and can defend its citizens"; Security Personal was measured by items like "It is important to him to be personally safe and secure". Tradition was measured by items like "It is important to him to maintain traditional values and ways of thinking" and Humility by "It is important to him never to be boastful or self- important".

The range of the scale was from 1 (very much like me) to 6 (not like me at all).

Self-efficacy was measured by three items. An example item was: "Do you feel that you have the power to make important decisions that could change the course of your life". The response scale runs from 1 (totally unable to change life) to 5 (totally able to change life).

Individual trust was measured also by three items. An example item was "I trust my colleagues". The response scale runs from 1 (strongly disagree) to 5 (strongly agree).

Perceived contextual trust was measured also by three items like "My colleagues at work trust each other" using the same 5 point response scale.

An overview of means, standard deviations and percentage of missing values per item and the demographic variables is given in Table 2.

Table 2 Means, standard deviations and percentage of missing values per item.

Items	Mean	SD	Missing
The highest level of education – respondent	5.63	2.19	1%
Respondent's exact age	40.56	12.12	0%
Innovative organizational behaviour			
How many times have you made something using computer graphics?	1.21	0.65	1%
How many times have you developed something new for your work or organization?	1.33	0.77	1%
How many times have you developed a new product?	1.13	0.51	1%
Stimulation			
Important always to look for different things to do.	4.61	1.26	1%
Important to take risks that make life exciting.	3.63	1.59	1%
Important to have all sorts of new experiences	4.82	1.13	1%
Autonomy action			
Important to make his own decisions about his life	5.21	0.93	0%
Important to plan his activities independently.	4.79	1.18	1%
Important to be free to choose by himself what he does.	5.24	0.91	0%
Autonomy thought			
Important to have his own original ideas.	5.30	0.90	0%
Important to expand his knowledge.	4.92	1.21	0%
Important to develop his own understanding of things.	4.93	1.02	1%
Conformity to Rules			
Important never to violate rules or regulations	4.71	1.20	2%

Important to follow rules even when no-one is watching.	4.57	1.26	1%
Important to obey all the laws.	4.72	1.22	1%
Conformity Interpersonal			
Important to avoid upsetting other people.	4.84	1.14	1%
Important never to annoy anyone.	4.53	1.25	1%
Important never to make other people angry.	4.63	1.20	1%
Security social			
Important that there is stability and order in the wider society.	5.22	0.96	0%
Important that the state is strong and can defend its citizens.	5.24	1.02	1%
Important that his country protects itself against all threats.	5.33	0.95	0%
Security personal			
Important to avoid disease and protect his health.	5.28	0.95	0%
Important to be personally safe and secure.	5.32	0.92	1%
Important never to do anything dangerous.	4.98	1.10	1%
Tradition			
Important to maintain traditional values and ways of thinking.	4.90	1.15	1%
Important to follow his family's customs or the customs of a religion.	4.84	1.20	1%
Important to honor the traditional practices of his culture.	4.93	1.12	1%
Humility			
Important never to be boastful or self-important.	4.71	1.25	1%
Important to be humble.	4.61	1.27	1%
Important never to seek public attention or praise.	4.40	1.32	1%
Face			
Important that no one should ever shame him.	5.27	0.99	0%
Important to protect his public image.	5.22	0.98	0%
Important never to be humiliated.	5.21	0.99	0%
Efficacy			

How much influence do you feel you have on the local authorities' decisions?	1.21	0.52	4%
Do you feel that you have power to make important decisions that could change the course of your life?	2.85	1.36	2%
How much influence do you think you have in making your settlement a better place to live?	1.47	0.76	4%
Individual trust			
Most people can be trusted.	2.79	1.04	1%
Most people always act honestly.	2.62	1.00	1%
I trust my colleagues.	3.30	0.93	6%
Perceived contextual trust			
Most people around me think that most people can be trusted.	2.91	0.97	5%
People around me think that most people are honest.	2.85	0.91	6%
My colleagues at work trust each other.	3.24	0.92	9%

N = 1456

54% of the sample live in the central Russian region whereas 45,1% in the Caucasus region. Furthermore 47% are male respondents and 53% females.

Results

To test our propositions we used the two-step procedure of structural equation modelling [Anderson & Gerbing, 1988].

Step 1: Test of the Measurement Models

Model 1.1. Test of the measurement model for all values as a third-order confirmatory factor analysis model: Values (third order, second order and first order factors)

Model 1.2. In addition all the other factors efficacy, individual Trust, contextual Trust and innovative Behaviour are specified as first order factors and are tested together with the values to establish convergent and discriminant validity of all scales.

Step 2: Test of full Structural Equation Models (SEM)

Model 2.1: Test of the SEM Values as determinants of innovative behaviour.

Model 2.2: Test of an enlarged SEM with Values, Efficacy and the two Trust constructs as Determinants of Innovative Behaviour.

Model 2.3.1 – 2.3.4. Multiple Group Structural Equation Models(4): Moderation Effects between different values and Efficacy on Innovative Behaviour.
Model 2.4.1 and 2.4.2. MIMIC Models → full versus partial mediation of demographic variables as predictors of innovative behaviour.

During the first step we tested the underlying measurement model 1.1 for our 6 latent variables with their reflective indicators. However, this was a more demanding case than usual as we had to specify the measurement model for the values as a third-order factor model to both represent the underlying more general constructs Openness to Change and Conservation, and to circumvent multicollinearity [Cieciuch, Davidov, & Schwartz, in press]. High multicollinearity arises if one uses all 19 values or the subset of those which represent Openness to Change and Conservation. The two higher order values Openness of change and Conservation were specified as third order factors.

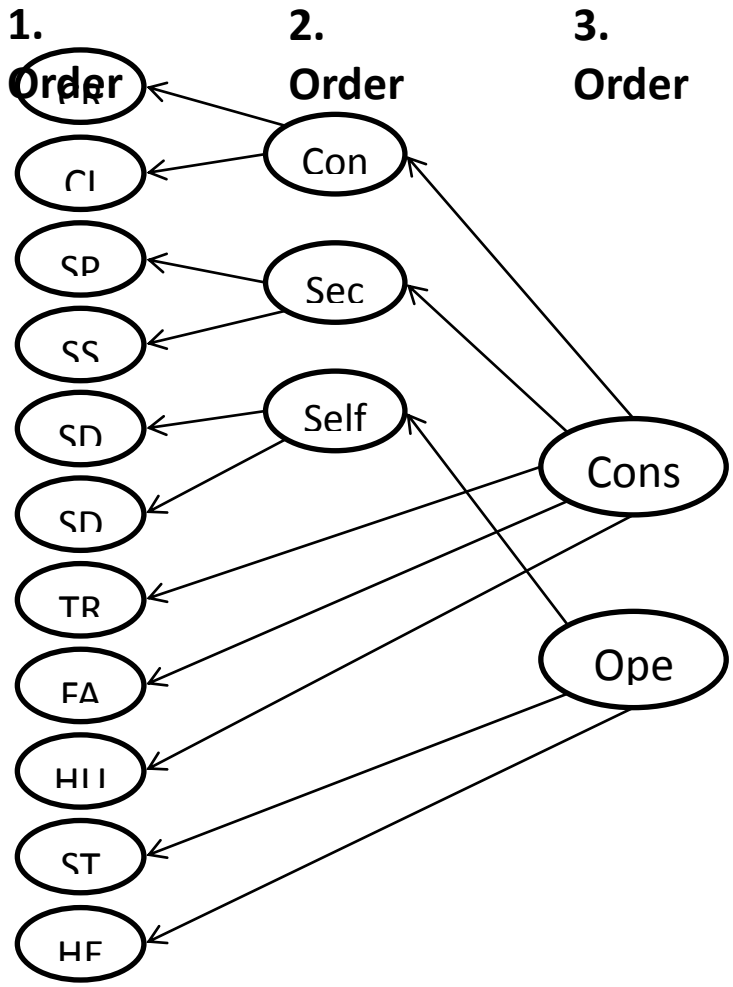

Figure 2: model 1.1. Third order confirmatory factor model for Openness to Change and Conservation

Autonomy, Conformity and Security as second order factors and Autonomy of Thought and Action, Stimulation, Humility, Tradition, Conformity to Rules and Conformity Interpersonal, and Personal and Societal Security as first order factors. We began by testing the third-order factor model for values alone (model 1.1) and then the simultaneous factor model with the two higher order values, efficacy, trust, contextual trust and innovative behaviour to establish sufficient convergent and discriminant validity (model 1.2). The fit for the third order factor model for values (model 1.1) visualized in Figure 2 was sufficient with Chi2 = 1463.22 and 473 degrees of freedom; CFI = .90; RMSEA = 0.038; Pclose = 1.0, SRMR = .052.

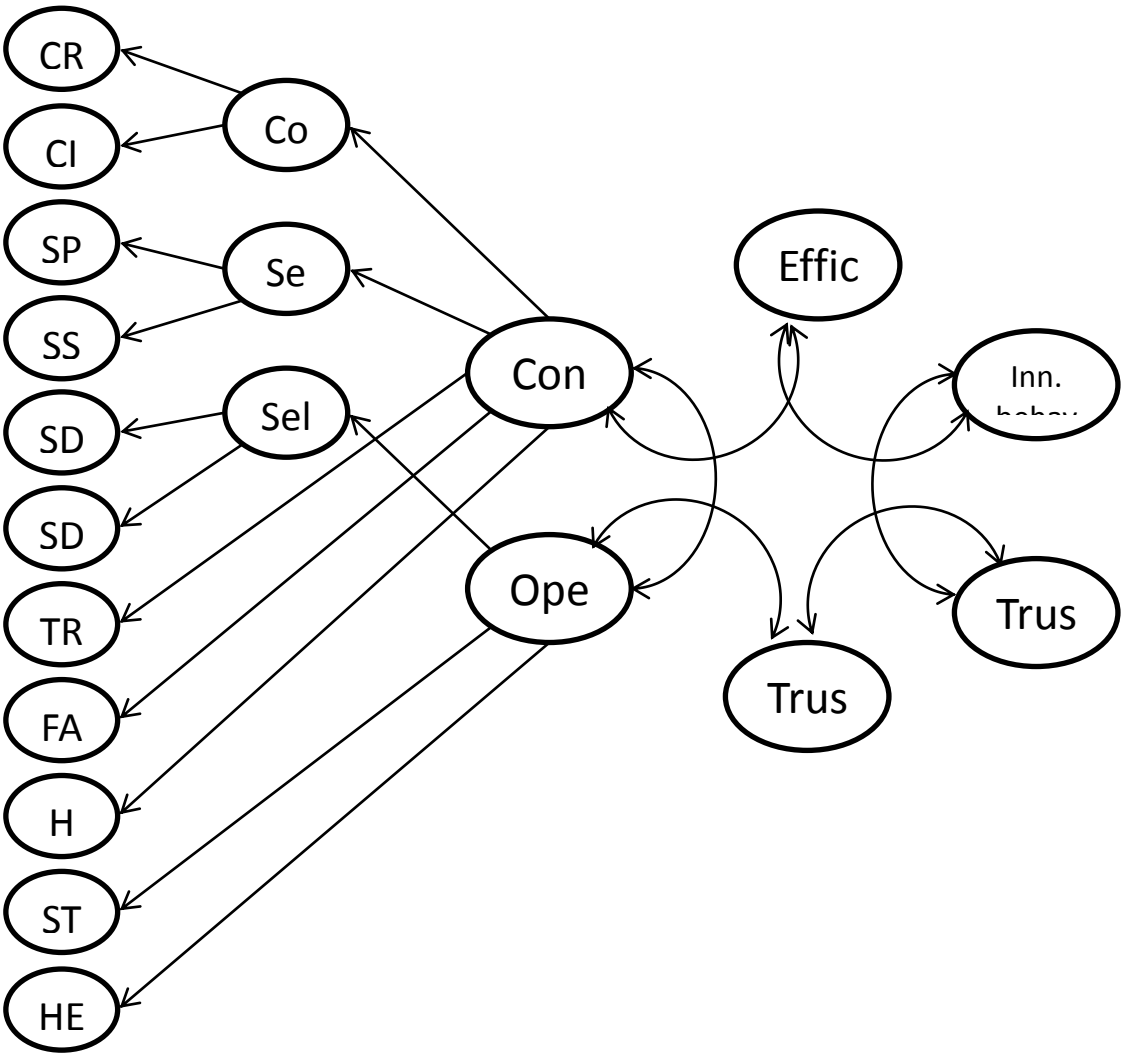

Figure 3: Model 1.2 Third order confirmatory factor analysis model with values, Efficacy, Trust1, Trust 2 and Innovative Behaviour

The fit for the simultaneous factor model 1.2 visualized in figure 3 was sufficient with Chi2 = 2840.559 and 952 degrees of freedom; CFI = .90; RMSEA = 0.037; Pclose = 1.0, SRMR = .054; Unstandardized factor loadings and standardized factor loadings are given in Table 5 in

the Appendix. The standardized factor loadings have all reasonable weights over .40 [Brown, 2005].

The number 999.000 in the program MPLUS indicates that the significance cannot be computed as the parameter has been fixed to one to solve the identification problem.

In this model we found it necessary to introduce seven error correlations to gain a good fit. The error correlations mirrored similarities in the question wording of the corresponding pairs of items [Brown, 2005]. We used Robustified Maximum Likelihood Estimation as implemented in the program MPLUS Version 7.11 for estimating all parameters.

Having finalized the first step of the two-step approach, we have specified and tested full SEM to test our additive hypotheses from the theoretical section. In the first full SEM (model 2.1) of the second step we have specified only Openness to Change and Conservation values as determinants of innovative behaviour. As predicted Openness to Change had a significant positive effect on innovative behaviour whereas Conservation had a significant negative one (see Table 3). The Model-Fit was excellent.

In model 2.2 we specified in addition to openness to change and Conservation also efficacy, trust and perceived contextual trust as predictors. The model fitted the data well. The structural models 2.1 and 2.2 can be seen in Figures 4 and 5. The coefficients for Models 2.1, 2.2 and 2.4.2 are given in Table 3

Table 3 Coefficients of the SEM 2.1,,2.2 and 2.4.2

Model Results	**Unstandardized**				**Standardized**				
Model 2.1									
	Coeff	**S.E.**	**t**	**P-Value**	**INT**	**Coeff**	**S.E.**	**t.**	**P-Value**
CONSER	-0.136	0.032	-4.279	0.000	CONSER	-0.236	0.045	-5.235	0.000
OPENTC	0.299	0.052	5.779	0.000	OPENTC	0.385	0.041	9.281	0.000
Model 2.2									
INT									
CONSER	-0.088	0.027	-3.222	0.001	CONSER	-0.155	0.043	-3.591	0.000
OPENTC	0.218	0.045	4.872	0.000	OPENTC	0.277	0.044	6.340	0.000
EFFI	0.436	0.084	5.193	0.000	EFFI	0.352	0.044	8.012	0.000
TRUST1	0.004	0.021	0.198	0.843	TRUST1	0.010	0.053	0.197	0.843
TRUST2	-0.073	0.022	-3.288	0.001	TRUST2	-0.173	0.053	-3.252	0.001
Model 2.4.2									
INT									

CONSER	-0.058	0.030	-1.937	0.053	CONSER	-0.105	0.053	-1.984	0.047
OPENTC	0.199	0.044	4.550	0.000	OPENTC	0.279	0.052	5.332	0.000
EFFI	0.363	0.080	4.532	0.000	EFFI	0.296	0.046	6.436	0.000
TRUST1	-0.008	0.021	-0.390	0.696	TRUST1	-0.020	0.051	-0.393	0.694
TRUST2	-0.055	0.021	-2.617	0.009	TRUST2	-0.133	0.052	-2.559	0.010
REGION	-0.119	0.026	-4.596	0.000	REGION	-0.167	0.031	-5.368	0.000
GENDER	-0.050	0.022	-2.267	0.023	GENDER	-0.070	0.030	-2.364	0.018
G26	0.003	0.001	2.699	0.007	G26	0.095	0.037	2.568	0.010
G6A	0.021	0.005	4.128	0.000	G6A	0.128	0.029	4.392	0.000

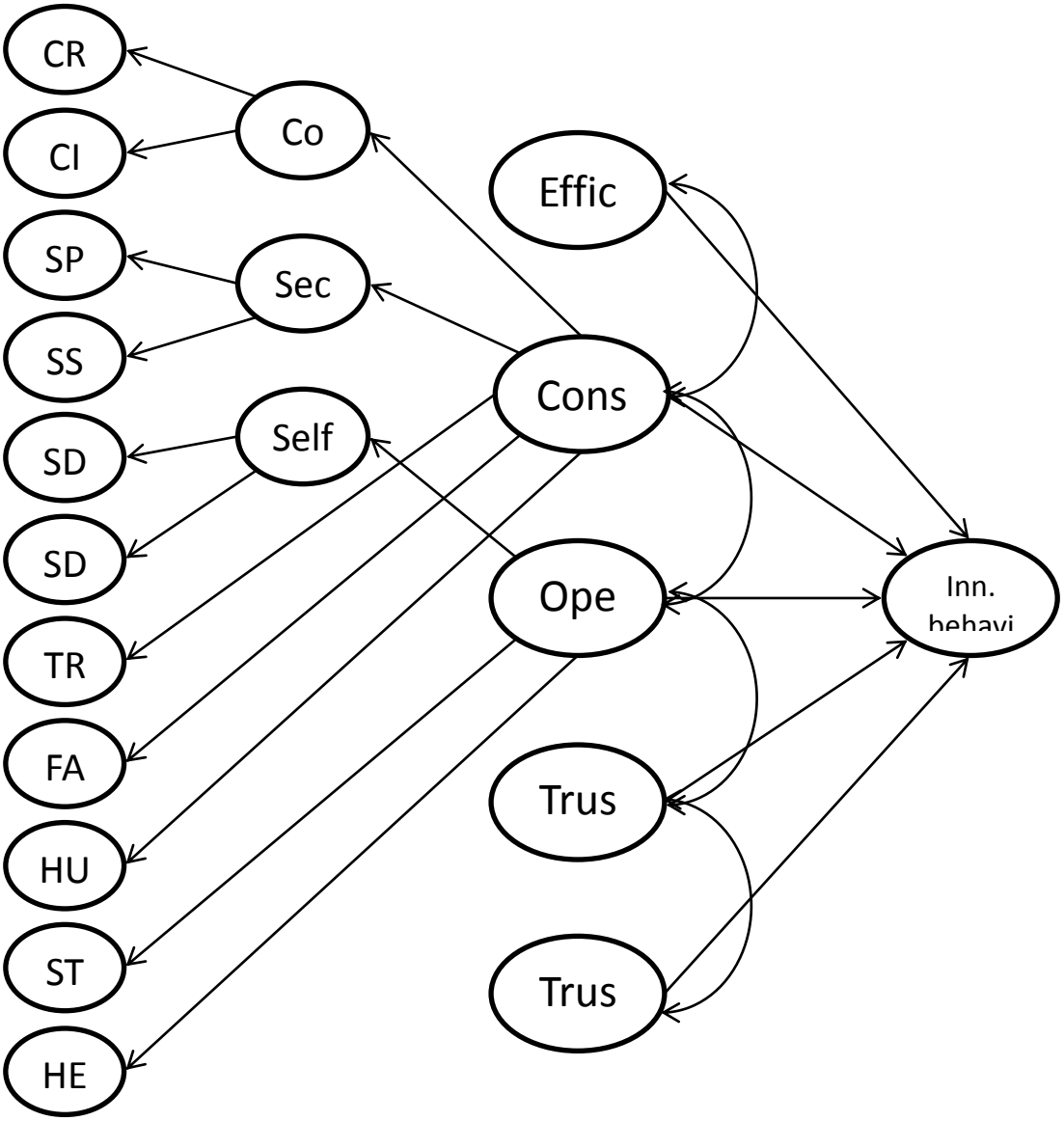

Figure 4: FULL SEM Model 2.2: Values, Efficacy and Trust as determinants of innovative behaviour

The fit for model 2.2 was Chi2 = 2864.579 with 952 degrees of freedom; CFI = .90; RMSEA = 0.037; PCLOSE = 1.0; SRMR = .054.

In model 2.2 Openness to Change and Conservation had the same signs and significant effects (see table 3). However the effect sizes were smaller after controlling for efficacy and the two trust variables. Both individual and perceived contextual trust had a positive significant effect and efficacy had also as expected a positive significant effect. The explained variance of innovative behaviour in this model has been 26%.

In model 3 we tested the moderation effects. As the QML-estimator in MPLUS for testing interaction effects did not converge we employed multiple-group modelling for testing moderation effects. To test the postulated moderation effect between efficacy and values we ran a multiple group model with a low and a high efficacy group. As the model did not converge with the third order factor model we ran it with the first order factors. The results are given in Table 4.

Table 4: Model 2.3.1 – 2.3.4 :Moderation effect of efficacy and values on innovative behaviour

	Efficacy	**On innovative behaviour**		
		Unstandard	**Standard**	**p-value**
				St./Unstan.
Hedonism	Low	0.017	0.069	0.129/0.147
	High	0.091	0.120	0.033/0.015
Self Direction of Action	Low	0.054	0.176	0.002/0.000
	High	0.199	0.236	0.000/0.000
Self Direction of Thought	Low	0.043	0.146	0.044/0.006
	High	0.248	0.291	0.002/0.000
Stimulation	Low	0.019	0.107	0.023/0.010
	High	0.057	0.115	0.031/0.013

As one can see from table 4, there seems to be substantial and significant differences for the effect of values in the high and the low efficacy group. For respondents which are high in efficacy Autonomy in thought and in action as dimensions of Openness to Change have a significant stronger effect on innovation than for those low in efficacy. The same is true for the effect for Hedonism but not for Stimulation, where we find no moderating effect.

One reason for this finding might be that Stimulation and its underlying motivation is less rationally controlled than the other three dimensions of Openness to Change and therefore perceived efficacy has no moderating influence. Furthermore it demonstrates how important the analysis of specific values seems to be, as the moderating effects of other variables do not modify all sub-dimensions of Openness to Change.

To test whether the effects of demographic variables were fully or partially mediated by values, individual trust, perceived trust and efficacy we enlarged our structural model 1 by introducing age, gender, region and education as additional exogenous observed variables.

The model of full mediation (model 2.4.1) was falsified. The fit of this model 4a was poor.

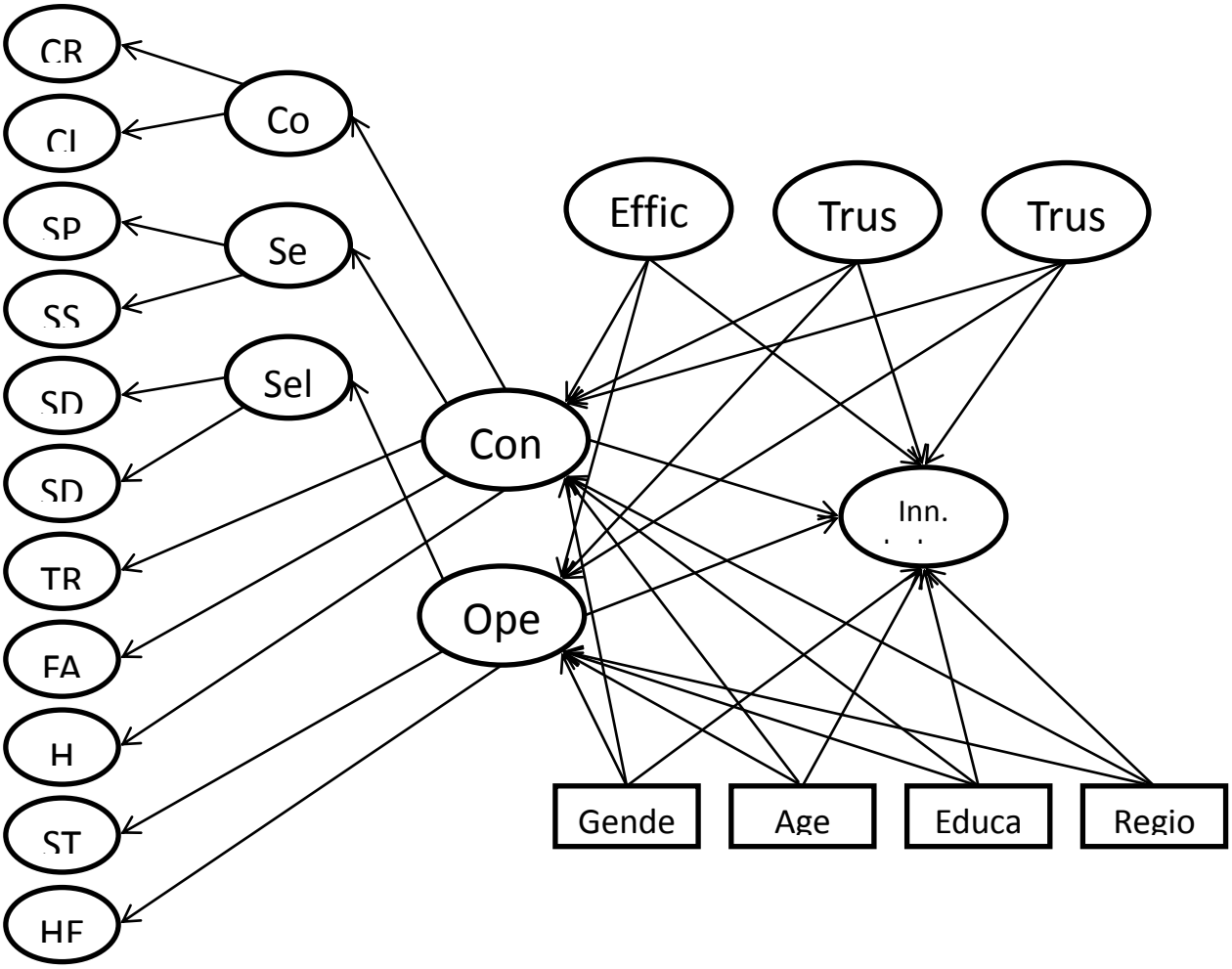

Figure 5 Fit Measures for all models

	Chi2	df	RMSEA	P-Close	SRMR	CFI
Model 1.1	1463.22	473	.038 [.036-.040]	1	.052	.901
Model 1.2	2840.55	952	.037 [.035-.038]	1	.054	.902
Model 2.1	2067.84	605	.041 [.039-.043]	1	.056	.894
Model 2.2	2864.57	952	.037 [.036-.039]	1	.054	.900
Model 2.3.1 (HE)	96.41	36	.048 [.037-.060]	.579	.051	.934
Model 2.3.2 (SDA)	104.32	36	.051 [.040-.063]	.407	.055	.929
Model 2.3.3 (SDT)	106.83	36	.052 [.041-.064]	.356	.055	.897
Model 2.3.4 (ST)	106.22	36	.044 [.034-.053]	.851	.045	.928
Model 2.4.1	3362.00	1114	.037 [.036-.039]	1	.053	.890
Model 2.4.2	3312.37	1110	.037 [.036-.038]	1	.053	.893

By using modification indices and the values of expected parameter change we modified the fully mediated SEM by introducing a series of direct paths between the demographic variables and innovative behaviour. The structural part of this modified partial mediation model 2.4.2 is shown in Figure 5. The fit of this model was sufficient, Chi2 = 3312.376 with 1110 degrees of freedom; CFI = .893; RMSEA = .037; PCLOSE = 1.0; SRMR = .053.

As the fully mediated model and the partially mediated model are nested, one can use the chi squared difference test for testing the significance between the models [Bollen, 1989]. The differences in chi Square and degrees of freedom shows in the chi Square table that the fully mediated model has a significantly worse fit. Table 5 shows that age has a negative significant effect, education a positive significant effect and living in the Caucasus region a negative effect. This implies that increasing age in Russia leads directly to less innovative behaviour, whereas increasing education leads to an increase of innovative behaviour. Furthermore, men and people in the central Russian region show more. Self-employment had no significant effect. As in this well-fitting partial multiple mediation model the demographic variables have significant direct and indirect effects, which may reduce or increase the total causal effects. We present in Table 5 all the significant direct, indirect and total causal effects and their significance [Muthén, 2013].

Table 5 Standardized direct and sum of indirect effects in model 2.4.2

	Direct	**Indirect**
Region on innovative behaviour	0.167*	-0.049*
Gender on innovative behaviour	0.070*	-0.092*
Age on innovative behaviour	0.095*	-0.135*
Education on innovative behaviour	0.128*	0.108*

*$p \leq .05$

DISCUSSION

In this paper we have studied the role of values, efficacy and trust to predict innovative organizational behaviour in the Russian population. One contribution of the paper is the successful specification and test of a third-order confirmatory factor model with the new enlarged PVQ-R with 19 values in the Russian population. The use of third order factors represents adequately the theoretical ideas of Schwartz for the enlarged instrument (see Schwartz et al. 2012, Ciecuch, Davidov & Schwartz, 2014) and avoids multicollinearity problems, if one uses values as predictors. A second contribution is that in specific organizations and for a representative population survey the important role of specific values has been confirmed. More specifically, as in the literature, Openness to Change values increase innovative behaviour in organizations whereas Conservation values decrease it. A third contribution is that as Mohr (1969) postulated the effect of values which represent the motivational component of actions on innovative behaviour in organizations is modified by the perceived efficacy of respondents. This means that even when the members of an organization have high scores of Openness to Change they will not start innovations if their perceived efficacy is very low. A fourth contribution is to take the context of people into account. The type of region and the organizational context in terms of trust toward colleagues were predictors of innovative behaviour. Living in the more traditional context of the North Caucasus region diminished the amount of innovative behaviour even after controlling for individual values, efficacy, trust and other demographic variables like age, gender and education. The same was true for the effect of missing perceived trust of colleagues in the organization. Finally contrary to a lot of research (see Rogers 2003 for a summary) we found that the demographic variables like age, gender, education had direct effects and seemed to operate indirectly via individual values and efficacy. This convinced us that a partial mediated model is the most adequate model formulation. This is in accordance with most theories in social psychology, where it is argued that the effect of demographic variables is fully or at least partially mediated by psychological constructs, like efficacy, attitudes and values (Eagly & Chaiken, 1993; Fishbein & Aizen, 2011).

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Appendix

Table 5 Unstandardized(Unst.) and standardized factor loadings(Stan.), standard errors (S.E.) and significance levels (P-Value).

	Factor loadings		**S.E.**	**P-Value**
	Unst.	**Stan.**		
SDT				
V23	1.000	0.669	0.000	999.000
V1	0.901	0.444	0.077	0.000
V39	0.860	0.479	0.062	0.000
SDA				
V16	1.000	0.677	0.000	999.000
V30	1.082	0.579	0.066	0.000
V56	0.980	0.684	0.045	0.000
ST				
V10	1.000	0.626	0.000	999.000
V28	0.835	0.410	0.070	0.000
V43	0.936	0.648	0.057	0.000
HE				
V3	1.000	0.657	0.000	999.000
V36	1.131	0.696	0.076	0.000
V46	1.123	0.605	0.075	0.000
FA				
V9	1.000	0.694	0.000	999.000
V24	1.000	0.701	0.058	0.000
V49	1.005	0.696	0.061	0.000

SP				
V13	1.000	0.595	0.000	999.000
V26	1.102	0.681	0.066	0.000
V53	1.165	0.604	0.077	0.000
SS				
V2	1.000	0.584	0.000	999.000
V35	1.027	0.567	0.062	0.000
V50	1.041	0.619	0.059	0.000
TR				
V18	1.000	0.672	0.000	999.000
V33	1.154	0.744	0.054	0.000
V40	1.108	0.768	0.055	0.000
CR				
V15	1.000	0.739	0.000	999.000
V31	1.055	0.743	0.041	0.000
V42	1.057	0.773	0.040	0.000
CI				
V4	1.000	0.612	0.000	999.000
V22	1.398	0.778	0.080	0.000
V51	1.244	0.729	0.078	0.000
HU				
V7	1.000	0.492	0.000	999.000
V38	1.432	0.693	0.096	0.000
V54	0.961	0.447	0.082	0.000
INT				
C14	1.000	0.559	0.000	999.000
C122	1.608	0.754	0.193	0.000
C123	0.975	0.687	0.113	0.000
C124	0.754	0.483	0.122	0.000
EFFI				
E21	1.000	0.564	0.000	999.000
E22	2.045	0.439	0.253	0.000
E23	1.977	0.764	0.151	0.000
TRUST1				

B11	1.000	0.862	0.000	999.000
B12	0.952	0.852	0.026	0.000
B13	0.577	0.564	0.028	0.000
TRUST2				
B41	1.000	0.885	0.000	999.000
B42	0.959	0.903	0.022	0.000
B43	0.634	0.593	0.028	0.000
SELF				
SDT	1.000	1.000	0.000	999.000
SDA	0.998	0.940	0.046	0.000
SECU				
SP	1.000	0.848	0.000	999.000
SS	1.179	1.000	0.085	0.000
CONF				
CR	1.000	0.866	0.000	999.000
CI	0.826	0.910	0.056	0.000
CONSER				
CONF	1.000	0.826	0.000	999.000
SECU	0.749	0.993	0.060	0.000
TR	0.998	0.817	0.059	0.000
FA	0.951	0.881	0.058	0.000
HU	0.733	0.759	0.058	0.000
OPENTC				
SELF	1.000	0.759	0.000	999.000
ST	1.739	1.000	0.143	0.000
HE	1.249	0.753	0.115	0.000

P-Value of 999.000 means unstandardized value is not estimated because it is fixed to 1.

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