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Assessment of Pre-Primary Education Pre-Service Teachers Dispositional Resistance to Change Using RCS

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ABSTRACT
Education constitutes a field subjected to a constant process of change in order to be adapted to the characteristics and requirements of society. This process requests from both present and future teachers the ability to be constantly updated and the disposition to face the changes in a positive way.

Below we present the results of a descriptive study on the resistance to change among students from the Pre-primary Education Teacher Bachelor's Degree of the University of Salamanca, in its branches of Salamanca, Ávila and Zamora.

This study had 382 participant students, who were administered the Resistance to Change Scale, aiming to assess their dispositional resistance to change.

The results of the descriptive analysis show moderate levels of resistance to change among students. The hypothesis testing barely shows any significant differences according to the year of the students and their branch.

CCS Concepts
• Social and professional topics → User characteristics.

Keywords
Dispositional resistance to change; RCS; pre-primary; attitude assessment; pre-service teachers.

1. INTRODUCTION
Change has become one of the fundamental characteristics in the knowledge society in which we live.

The fast scientific and technological development, together with the new context derived from the globalization process, demands that organizations are able to keep a constant transformation activity to adapt to the new needs arising in their environment [1].

School is not an exception to this tendency, and currently it is immersed in a phase of profound methodological and curricular transformation in order to overcome challenges such as the integration of new technologies, new assessment methods or the inclusion of students with special education needs.

Although there are some context and organizational elements that can facilitate the change process [2], teachers have a determinant role in the success or failure of educational innovation initiatives [3].

To assess the individual factors that affect the teachers' attitudes towards change constitutes an essential element for the proper advance of the modernization of education [4].

Resistance to change as a concept comes from organizational sciences and it has generated a growing interest in the scientific community in the past years [5]. However, traditionally most of the literature has been focused on context factors, leaving aside the individual variables that can explain this phenomenon. In recent years there have been studies focused on the individual variables that can account for the tolerance to changes [6].

The confrontation among the different visions of resistance to change has resulted in a lack of consensus on the definition and measurement of this concept, especially noticeable at the level of individual factor analysis [7].

This way, we can find studies that relate this concept to variables such as organizational culture [8] or self-efficacy in the management of change [9, 10].

Another recent development trend is its integration in technology adoption models, be it as a construct referencing the changes brought about by a given technology [11] or as a dimension measuring the resistance to change from one technology to another [12].

This kind of models have also been used to analyze the influence of other variables on resistance to change, such as switching costs, learning costs or switching value [13].

Oreg [14] developed his scale from the idea that although sometimes the source of resistance to change is easy to identify, given that the interests of the organization do not always coincide with the individual's [15, 16], there are individuals that resist to change although it coincides with their interests.

In order to analyze this type of attitude, Oreg developed the Resistance to Change Scale (RTS). This theoretical model proposes the concept of dispositional resistance to change (RTC), which is defined as "*an individuals' tendency to resist or avoid making changes, to devalue change generally, and to find change aversive across diverse contexts and types of change*" [14].

According to the author's approach, dispositional resistance to change is a multidimensional and complex concept that includes cognitive, affective and behavioral elements.

Specifically, Oreg establishes four dimensions:

- **Routine seeking (RS):** This dimension refers to the behavioural component and it is defined as "*the extent to which one enjoys and seeks out stable and routine environments*" [17].
- **Environmental reaction:** Along with the short-term focus, this constitutes the affective component of the dispositional resistance to change. This dimension reflects "*the extent to which individuals feel stressed and uncomfortable in response to imposed change*" [17].
- **Short-term focus:** This dimension encompasses the affective aspects related to "*the degree to which individuals are preoccupied with the short-term inconveniences versus the potential ling-term benefits of the change*" [17].
- **Cognitive rigidity:** Oreg proposes this construct to measure the cognitive aspect, and it is defined as "*a form of stubbornness and an unwillingness to consider alternative ideas and perspectives*" [17].

Aiming to measure these dimensions, Oreg designed a Likert-type scale of 17 items, which was applied and validated in different contexts [14, 18] previous to the development of a study carried out in 17 countries to check the equivalence of the scale measurements through the use of CB-SEM methodology [17]. The sample of the study was composed of university students from the different countries. The results supported the reliability and validity of the scale, as well as the goodness of fit of the data obtained.

In addition to the implementation of the model as it was proposed by Oreg, some studies have sought to integrate the scale with other pre-existing models, such as the initiative by Saksvik and Hetland [19], who proposed a model combining RCS with the Five Factor Model (FFM) [20]. There are other initiatives that use this scale to measure the effect of resistance to change on other endogenous variables, such as the study conducted by Arciniega and Maldonado[6] on the effect of RTC on the attraction exercised by companies on students.

However, its application for the assessment of attitudes within the educational field is in an initial phase and, although there have been some initiatives on the resistance to change of higher education students, we have not found any specifically focused on the analysis of the dispositional resistance to change, neither with pre-service nor in-service teachers.

This communication presents the results of a descriptive study which assesses the dispositional resistance to change of the students from the Pre-Primary Education Teacher Bachelor's Degree on the University of Salamanca. To this end, we will present a structure divided in three sections: the first one will expound the research design and methodology, the second one will be focused on the results and, lastly, the third section will recount the most interesting conclusions derived from the research.

2. METHODOLOGY

Our research starts from the hypothesis that resistance to change in future teachers determines the potential success of the innovation processes in schools.

This way, we present a problem related to the assessment of the resistance to change of students from the Pre-Primary Education Teacher Bachelor's Degree of the University of Salamanca in its different branches through the use of Oreg's resistance to change scale.

This section is dedicated to the research methodology and it is divided in three sub-sections: research model and proposed variables, population and sample of the study, and a detailed composition of the instrument used to gather the data.

2.1 Research Model and Variables

As we have previously seen, RTS proposes four factors as components of the dispositional resistance to change. For our research, we propose that this variable would be a second-order variable composed by the abovementioned four dimensions (Figure 1). This diagram has been proposed and validated in several previous studies [18].

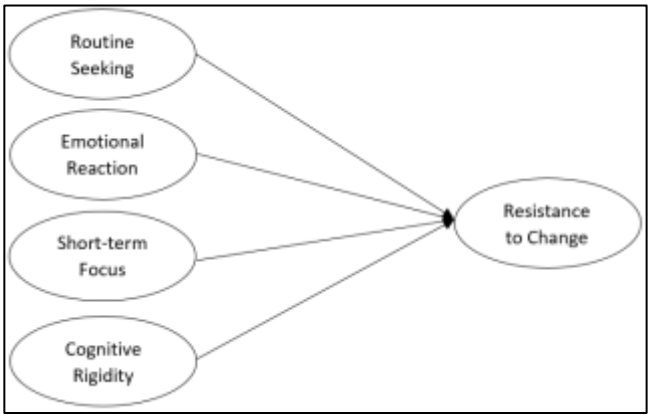

Figure 1. Resistance to Change Scale

Therefore, we propose the following variables:

- **Endogenous:** Dispositional resistance to change.
- **Exogenous:** Routine seeking, emotional reaction, short-term focus and cognitive rigidity.
- **Other explaining variables:** Age, gender, course year and branch.

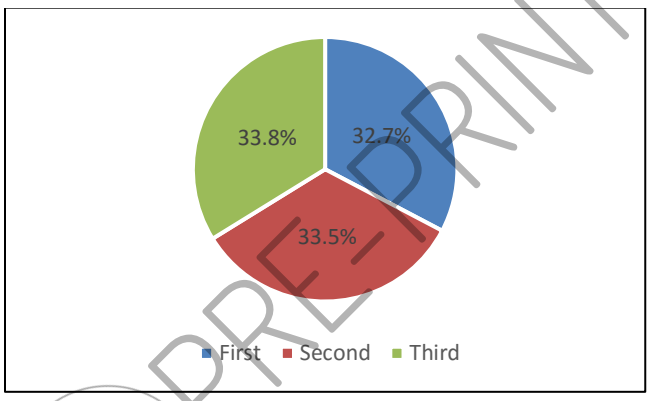

Figure 2. Distribution of the Sample by Course Year

2.2 Population and Sample

The population of the study is composed of the students of the Pre-Primary Education Teacher Bachelor's Degree of the University of Salamanca in its branches of Salamanca, Ávila and Zamora, and who are enrolled in their 1st, 2nd or 3rd year.

There was a total of 382 students: 125 first-years (32.7%), 128 second-years (33.5%) and 129 third-years (33.8%) (Figure 2).

As for the distribution according to gender, almost all the simple is composed by female students (97.4%), with only 10 male students having participated in the study. On the other hand, if we observe the variable age, we see that the mean age of the participants is 21.3, with a standard deviation of 3.008 and a mode of 20 years old.

Lastly, the sample is distributed as follows according to the branch of the students: 50.8% of the students attend the Faculty of Education in Salamanca, 24.9% of them belong to the School of Education and Tourism of Ávila, and 24.3% of students attend the University School of Teacher Training in Zamora (Figure 3).

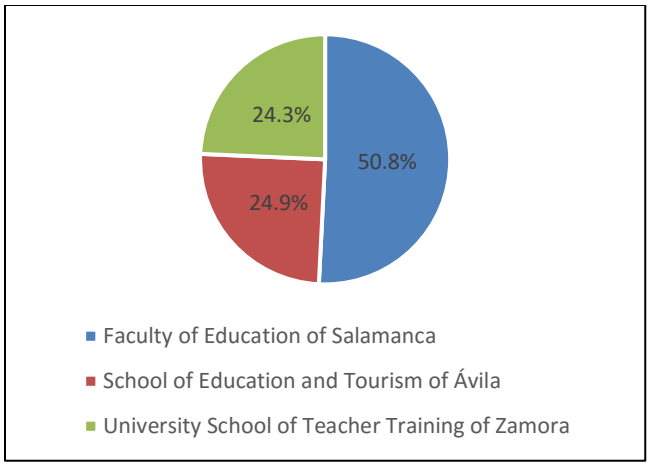

Figure 3. Distribution of the Sample by branch

2.3 Instrument

The instrument employed in our study is divided in two sections. The first one consists of a series of questions aimed at gathering the participant's identification data (age, gender, year and branch).

The second part is composed of a Likert-type scale of 6 intervals (1-7) with the 17 items proposed by Oreg (2003). Because we conducted the study in the Spanish context, we used the translated version that was developed and validated by Arciniega and González (2008) for the study carried out simultaneously in 17 countries mentioned above. The ítems included were the following:

- **Routine Seeking:** *I generally consider changes to be a negative thing (RS_01); I'll take a routine day over a day full of unexpected events any time (RS_02); I like to do the same old things rather than try new and different ones (RS_03); Whenever my life forms a stable routine, I look for ways to change it (RS_04); I'd rather be bored than surprised (RS_05).*
- **Emotional reaction:** *If I were to be informed that there's going to be a significant change regarding the way things are done at school, I would probably feel stressed (ER_01); When I am informed of a change of plans, I tense up a bit (ER_02); When things don't go according to plans, it stresses me out (ER_03); If one of my professors changed the grading criteria, it would probably make me feel uncomfortable even if I thought I'd do just as well without having to do any extra work (ER_04).*
- **Short-term focus:** *Changing plans seems like a real hustle to me (SF_01); Often I feel a bit uncomfortable even about changes that may potentially improve my life (SF_02); When someone pressures me to change something, I tend to resist it even if I think the change may ultimately benefit me (SF_03); I sometimes find myself avoiding changes that know will be good for me (SF_04).*
- **Cognitive rigidity:** *I often change my mind (CR_01); I don't change my mind easily (CR_02); Once I've come to a conclusion, I'm not likely to change my mind (CR_03); My views are consistent over time (CR_04).*

3. RESULTS

Once the information was gathered, we carried out the data analysis. We started by calculating the reliability of the scale with Cronbach's alpha, obtaining a global score of .843, which indicates a high reliability.

After that we analysed the descriptive statistics. Table 1 reflects the average, standard deviation and percentage of valid responses in each interval of the item. Indicators CR_01 and RS_04 were re-coded on account of their negative formulation.

Table 1. Descriptive of the Items of the RTS

	AVG	STD	MED	% Valid							N
				1	2	3	4	5	6	7	
CR_01	4.52	1.635	5	2.9	10.8	15.8	16.4	21.6	21.1	11.3	379
CR_02	4.01	1.799	4	12.3	11.3	14.2	19.7	16.8	19.2	6.6	381
CR_03	4.17	1.551	4	4.7	10.8	18.9	22.6	20.5	17.1	5.5	381
CR_04	4.57	1.374	5	2.4	5.8	12.9	22.6	29.4	21.8	5.2	381
ER_01	3.39	1.595	3	15.5	15.7	22.0	18.9	19.7	5.2	2.9	381
ER_02	3.67	1.550	4	10.6	13.5	21.9	20.3	22.4	9.0	2.4	379
ER_03	3.89	1.662	4	10.1	11.7	20.3	17.6	21.9	13.9	4.5	375
ER_04	3.30	1.517	3	15.0	17.1	20.8	26.6	12.9	5.5	2.1	380
RS_01	2.47	1.516	2	33.4	28.6	13.5	11.7	8.2	3.2	1.3	377
RS_02	2.75	1.642	2	30.4	20.9	18.5	13.0	9.3	6.3	1.6	378
RS_03	2.01	1.304	2	46.2	28.3	15.5	3.4	2.9	2.6	1.0	381
RS_04	2.93	1.355	3	14.5	26.6	29.3	16.1	9.5	2.6	1.3	379
RS_05	1.58	1.012	1	64.5	22.9	6.7	3.2	1.3	1.1	.3	375
SF_01	3.08	1.524	3	16.9	24.8	18.7	20.6	12.9	4.2	1.8	379
SF_02	2.47	1.423	2	30.9	29.1	17.1	12.3	6.9	3.2	.5	375
SF_03	2.72	1.522	2	24.9	27.3	20.5	11.5	11.3	2.4	2.1	381
SF_04	3.44	1.687	3	16.3	16.5	20.5	15.2	20.2	7.9	3.4	381

As we can see the students from the University of Salamanca present a moderately open attitude towards change, with average scores under 4 in most items.

If we notice the median (figure 4), the construct with higher scores is cognitive rigidity, with scores ranging from 4 to 5. On the other hand, the construct with the lowest scores is routine seeking, with scores of 2 in most items.

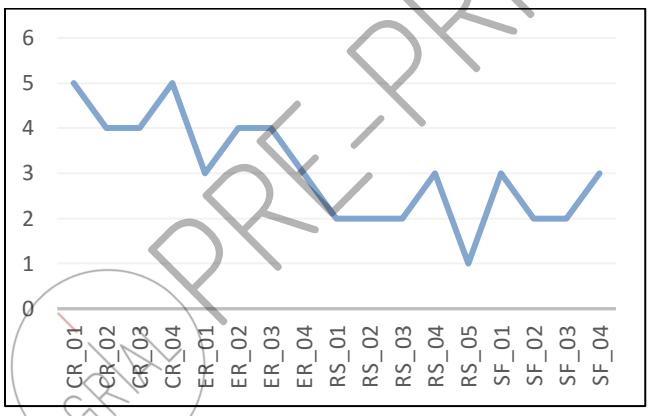

Figure 4. Median of the Items

After analysing the global data, we studied whether there were any significant differences at an indicator level according to the proposed explaining variables. Given the scarce presence of men, both in the population and the sample, and the proximity of the students' ages, we decided to carry out the comparative according to the course year and branch of the students.

Before this analysis we conducted the normality test of Kolmogorov-Smirnov and Shapiro-Wilk (table 2) to check whether there is normality on the sample distribution in order to select the most suitable statistical test.

Table 2. Normalcy test of Kolmogorov-Smirnov and Shapiro-Wilk

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
CR_01	.152	341	.000	.934	341	.000
CR_02	.129	341	.000	.931	341	.000
CR_03	.134	341	.000	.947	341	.000
CR_04	.182	341	.000	.934	341	.000
ER_01	.122	341	.000	.936	341	.000
ER_02	.143	341	.000	.943	341	.000
ER_03	.150	341	.000	.941	341	.000
ER_04	.142	341	.000	.938	341	.000
RS_01	.243	341	.000	.844	341	.000
RS_02	.196	341	.000	.877	341	.000
RS_03	.248	341	.000	.744	341	.000
RS_04	.172	341	.000	.921	341	.000
RS_05	.366	341	.000	.614	341	.000
SF_01	.180	341	.000	.923	341	.000
SF_02	.228	341	.000	.857	341	.000
SF_03	.206	341	.000	.887	341	.000
SF_04	.140	341	.000	.929	341	.000

a. Liliefors significance correction.

The results obtained lead us to conclude the rejection of the normality hypothesis with a significance level of .05. Therefore, we will employ non-parametric statistics to analyse the data.

We will begin with the variable branch. As a previous step to the hypothesis testing we carried out a comparative descriptive study of the variables grouping the students according to the branch they were enrolled in (table 3).

Table 3. Descriptive analysis according to the variable branch

	Branch of the students								
	Ávila			Salamanca			Zamora		
	AVG	STD	N	AVG	STD	N	AVG	STD	N
CR_01	4.32	1.654	94	4.68	1.585	193	4.38	1.702	92
CR_02	3.61	1.853	95	4.24	1.714	194	3.95	1.860	92
CR_03	3.99	1.562	94	4.24	1.542	194	4.19	1.562	93
CR_04	4.45	1.486	95	4.62	1.319	194	4.59	1.376	92
ER_01	3.44	1.635	95	3.41	1.562	194	3.28	1.633	92
ER_02	3.69	1.545	94	3.64	1.514	193	3.71	1.641	92
ER_03	3.94	1.627	93	3.81	1.577	192	4.01	1.869	90
ER_04	3.43	1.562	94	3.19	1.428	193	3.42	1.644	93
RS_01	2.50	1.501	94	2.36	1.465	190	2.69	1.622	93
RS_02	2.74	1.678	94	2.83	1.639	191	2.59	1.617	93
RS_03	1.91	1.247	95	2.02	1.269	193	2.09	1.434	93
RS_04	2.87	1.347	95	2.87	1.247	192	3.09	1.566	92
RS_05	1.48	.898	95	1.53	.890	189	1.78	1.306	91
SF_01	3.09	1.516	95	2.91	1.444	191	3.42	1.644	93
SF_02	2.52	1.457	93	2.38	1.362	190	2.61	1.512	92
SF_03	2.81	1.635	94	2.60	1.378	194	2.90	1.675	93
SF_04	3.57	1.635	95	3.30	1.683	194	3.60	1.742	92

As shown in the table, there aren't great differences in the average scores of the students. However, some items such as CR_01, CR_02 or SF_01 did show some considerable differences, leading us to perform the Kruskal Wallis test to confirm whether they are significant (table 4).

Table 4. Results of Kruskal Wallis for the variable branch

	Chi squared	df	Asympt. Sig.
CR_01	3.511	2	.173
CR_02	7.891	2	.019
CR_03	1.385	2	.500
CR_04	.728	2	.695
ER_01	.645	2	.724
ER_02	.088	2	.957
ER_03	.907	2	.635
ER_04	2.235	2	.327
RS_01	3.005	2	.223
RS_02	1.657	2	.437
RS_03	1.238	2	.539
RS_04	.573	2	.751
RS_05	2.245	2	.325
SF_01	6.338	2	.042
SF_02	1.368	2	.504
SF_03	1.358	2	.507
SF_04	2.923	2	.232

The results confirm that some of the observed differences are significant, namely those of the items CR_02 and SF_01, with a significance level of .05. However, only two out of the 17 items present significant differences, which indicates that the branch of the students has little impact in the scores of the participants.

Once the analysis according to the variable branch was finished, we moved on to the analysis based on the variable year. As we did with the previous analysis, we calculated the average and standard deviation of the students from the different years to check if there were differences among the scores that could be observed at plain sight (table 5).

Table 5. Descriptive analysis according to the variable course year

	Corse year of the students								
	1			2			3		
	AVG	STD	N	AVG	STD	N	AVG	STD	N
CR_01	4.48	1.650	124	4.34	1.676	128	4.73	1.566	127
CR_02	4.05	1.804	125	4.05	1.761	128	3.94	1.843	128
CR_03	4.18	1.571	125	4.28	1.500	127	4.05	1.585	129
CR_04	4.69	1.394	125	4.55	1.285	128	4.48	1.442	128
ER_01	3.34	1.546	125	3.63	1.557	128	3.19	1.659	128
ER_02	3.62	1.501	124	3.81	1.526	127	3.58	1.620	128
ER_03	3.97	1.629	123	4.04	1.550	127	3.66	1.787	125
ER_04	3.37	1.473	124	3.30	1.493	128	3.23	1.590	128
RS_01	2.48	1.405	123	2.47	1.511	126	2.48	1.631	128
RS_02	2.79	1.542	124	2.76	1.664	127	2.70	1.724	127
RS_03	2.13	1.403	125	1.83	1.013	128	2.06	1.446	128
RS_04	2.93	1.298	123	2.70	1.282	128	3.14	1.451	128
RS_05	1.53	.869	124	1.49	.789	125	1.72	1.294	126
SF_01	3.06	1.477	125	3.13	1.566	126	3.05	1.536	128
SF_02	2.35	1.378	122	2.36	1.289	127	2.69	1.572	126
SF_03	2.64	1.489	125	2.63	1.473	128	2.90	1.596	128
SF_04	3.46	1.739	125	3.56	1.654	128	3.30	1.671	128

Just like it happened with the variable branch, we can only observe differences in some items, although they are less clear in this case. We opted to carry out the Kruskal Wallis test to verify whether these differences were significant (table 6).

Table 6. Results of Krukal Wallis for the variable course year

	Chi squared	df	Asympt. Sig.
CR_01	3.561	2	.169
CR_02	.227	2	.893
CR_03	1.139	2	.566
CR_04	1.260	2	.533
ER_01	5.780	2	.056
ER_02	1.476	2	.478
ER_03	2.933	2	.231
ER_04	.382	2	.826
RS_01	.387	2	.824
RS_02	.723	2	.696
RS_03	1.875	2	.392
RS_04	5.774	2	.056
RS_05	.419	2	.811
SF_01	.207	2	.902
SF_02	3.056	2	.217
SF_03	2.253	2	.324
SF_04	1.517	2	.468

In light of the results obtained, we can state that there are no significant differences in the average scores of the participating students according to the year they are enrolled in.

4. CONCLUSIONS

Individual factors play a key role in determining the potential resistance to change in future teachers, which makes its assessment among pre-service teachers' fundamental in order to guide training programmes that allow them to face the transformations that they are going to encounter in their future professional life with a positive attitude.

The results obtained after the administration of the RCS reflect a moderate resistance to change in the students from the Pre-Primary Education Teacher Bachelor's Degree of the University of Salamanca. The construct with higher scores is cognitive rigidity, which indicates the need to develop educational programmes focused on the improvement of this factor.

On the other hand, if we compare the scores with other studies, the averages obtained by the students are slightly above the scores obtained in other studies, such as the ones conducted by Saksvik [19] with students from different degrees, and Arciniega and Maldonado [6] with Business students. As in our research, in all cases the construct with higher scores is cognitive rigidity.

The exploration of the causes for this pattern constitutes an interesting line of research for the future, although a possible cause could lie in the limitations derived from the use of self-reports, since the students could feel inclined to give the answers that they consider to be socially satisfactory [21]. Cognitive rigidity is close to positive aspects such as coherence or security in one's own opinions, which can explain its values higher than the rest of the factors which reference negatives attitudes towards change.

The hypothesis testing barely yielded any significant differences according to the year and branch of the participants, which indicates that the training received does not have a significant impact on the dispositional resistance to change.

In general, the behaviour of this construct presents similarities with the abovementioned resistance to change entailed by a given technology, employed in previous experiences with pre-service teachers [22]. The study of a potential relationship between these two dimensions can be an interesting field of study for future initiatives.

5. ACKNOWLEDGEMENTS

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