Education and Science

Vol 42 (2017) No 192 99-112

Writing Performance of Fourth Grade Primary School Students in Relation to Organizational Ability and Handwriting Proficiency: A Structural Equality Model

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Abstract

Organizational ability can be defined as the ability to plan ahead and organize behavior across time and space. Students need organizational ability to fulfill some of their tasks inside and outside the school. They need to represent the required sequence of cognitive and psychomotor actions at each point in time, in relation to varied spaces (e.g., bedroom, kitchen) and accessories (clothes, schoolbag, notebooks, food). This study of 114 primary school students investigates the roles of organizational ability and handwriting proficiency in writing performance. In this research study, the Questionnaire for Assessing Students' Organizational Abilities (QASOAT), developed by Lifshitz and Josman (2006), and the Handwriting Proficiency Screening Questionnaire by Rosenblum (2008), were adapted to Turkish and subjected to validity and reliability studies. Narrative and informative texts written by students are used to assess their writing performances. Research findings suggest that there are significant relationships between organizational ability, handwriting proficiency and the students' writing performances. The Structural Equality Model (SEM) shows that organizational ability and handwriting proficiency explain 45% of writing performance.

Keywords

Organizational ability
Handwriting proficiency
Writing performance
Primary school students

Article Info

Received: 02.27.2017
Accepted: 08.24.2017
Online Published: 11.05.2017

DOI: 10.15390/EB.2017.7172

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Introduction

Students make plans in their daily lives and at school and they are aware of their executive functions. Studies on the relationship between executive functions and learning and behavior (McCloskey, Perkins, & Van Diviner, 2008) state that organizational ability, as one of the executive functions, is significant in every aspect of life and related to writing performance as well (May-Benson, Ingolia, & Koomar, 2002; Godefroy, 2003). This study aims to explain the role of organizational ability and handwriting proficiency in writing performance with a structural model. Variables used, the relationship between variables and the theoretical framework of the research are introduced in detail below.

Organizational Ability

Individuals should plan their behaviors. Cognitive or psychomotor behaviors/actions require organizational ability. Organizational ability is an executive function that leads the individual to act in a purposeful, organized, strategic, self-regulated, goal-directed manner for the performance of daily living (Rosenblum, Aloni, & Josman, 2010). Executive functions and metacognitive skills are awareness directors as they oversee the thinking processes, enable the control of thoughts and behavior, and are related to self-planning, self-organizing and self-assessment skills. These activities are related with metacognitive awareness which help to organize daily life (Godefroy, 2003). Metacognition is about controlling cognitive actions in a purposeful way and consists of the monitoring, controlling and assessment processes of learning (Brown, 1980; Çakıroğlu, 2007, p. 23). Arnadottir (1990) defines organizational ability as humans' ability to organize their thoughts in a way that will enable them to perform actions in the correct sequence, with appropriate phases and timing. Temple (1997) defined organizational ability as the ability to plan ahead and organize behavior across time and space in order to fulfill goals and intentions (as cited in Rosenblum et al., 2010). Individuals have decision-making, self-care, self-management, goal-setting, independence, risk-taking, and security skills all their lives and these skills affect individual performances in various domains. In other words, organizational ability is defined as the ability to plan and execute an activity within a limited time and place objects where they would be easy to find (Lifshitz, Josman, & Tirosh, 2012).

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The Relationship between Organizational Ability and Writing

Organizational ability has a significant impact on daily life and humans are able to organize their thoughts in a way that will enable them to perform actions in the correct sequence, with appropriate phases and timing (Arnadottir, 1990; as cited in Rosenblum et al., 2010). Handwriting is one of the motor abilities that students should practice at school and out of school. Writing is a critical communication tool for psychomotor production of a letter, a word or a sentence. Skilled handwriting is a complex activity that entails an intricate blend of cognitive, kinesthetic, and perceptual–motor components (Engel-Yeger, Nagauker-Yanuv, & Rosenblum, 2009).

Previous studies indicated that 10–34% of school-aged children are failing to develop the efficient handwriting performance required to cope at school (Smits-Engelsman, Niemeijer, & Van Galen, 2001; as cited in Yıldız, 2013). Those children are defined as dysgraphic who cannot write properly and may have difficulty keeping up with the required pace of writing in class, especially when copying from the blackboard. Furthermore, doing homework requires continuous long hours and results in frustration (Sovik, Arntzen, & Karlsdottir, 1993). Developmental coordination disorder (DCD) is defined as having difficulty in daily activities requiring motor performances, such as self-care skills, activities, and duties at home; sports activities; and varied school tasks, as well as with handwriting (Yıldız, 2013).

Rosenblum et al. (2010) explored the relationship between handwriting performance and organizational ability in school-aged children. Participants were 58 males, aged 7–8 years, 30 with dysgraphia and 28 with proficient handwriting. Research results suggest that there is a relationship between daily organizational ability and handwriting proficiency of students. Smits-Engelsman et al. (2001) state that serious handwriting problems of students are accompanied by fine motor deficits. The writing difficulty of these students affects the quality and fluency of their compositions (Berninger & Graham, 1998). While children need to invest energy in the organization of letter forms, as well as their location on the paper, they are not available to think and plan the writing content (Graham, Struck, Santoro, & Berninger, 2006). Research suggests that time spent in producing letters, which is a mechanic aspect of writing, is inversely correlated with the time spent in content. Students need to plan to show their real performance, whether they write informative or narrative texts. Koutsoftas and Gray (2012) compared narrative and expository writing of students with and without language-learning disabilities using analytic and holistic rubrics. The study results suggest that there are significant differences between groups in the texts written and this difference is more significant in narrative text writing. Nelson and Van Meter (2007) state that students with language-learning disabilities have more grammar mistakes and misspelling compared with students with no difficulties in informative and narrative text writing. Scott and Windsor (2000) found that children with writing disorders write shorter and less fluent texts and produce fewer words.

Despite the importance of organizational abilities for daily living and their influence on successful academic performance (Levin, 1994), little evidence can be found in the literature regarding the relationships between children's organizational abilities and their actual performance. Rosenblum et al. (2010) suggest that further research is required to gain insight regarding the relationships between children's organizational ability and their actual handwriting performance. Previous studies focused on students with writing difficulties or deficiencies, therefore this study investigates how these relationships develop in students. This study analyzes the effects of organizational ability and handwriting proficiency of primary school students on their writing performances. Accordingly, the structural model is developed to test the following hypotheses.

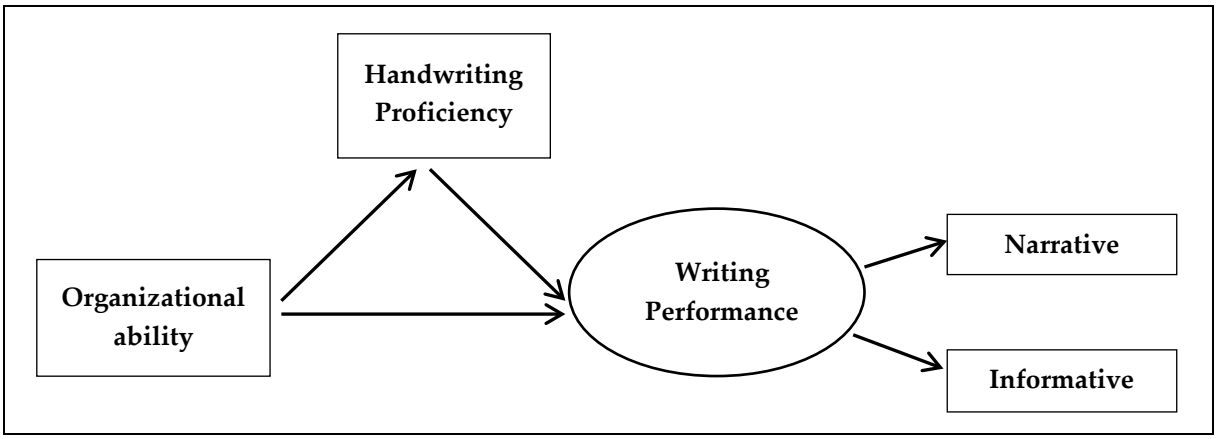

Figure 1. Theoretical Model

H_1: Organizational ability of fourth-grade primary school students has a direct effect on their handwriting proficiency.

H_2: Handwriting proficiency of fourth-grade primary school students has a direct effect on their writing performance.

H_3: The mediation role of handwriting proficiency is significant in the influence of the organizational ability of fourth-grade primary school students' writing performance.

Method

Research Model

This study analyzes the impact of organizational ability and handwriting proficiency of primary school students on their narrative and informative text writing performances, as well as the relationships between them. For these reasons, the research is conducted with a Relational Screening Model for comparison and correlation purposes. This model aims to determine the existence of co-changing between two or more variables and establish the degree of change (Karasar, 2012, p. 81). The research focuses on the relationships between variables. Therefore, a Structural Equation Model (SEM) was developed to test the causal relationships between dependent and independent variables in order to reach the aim of this study and test the hypotheses.

Study Group

In the fall semester of 2016, the entire study group consisted of a total of 114 fourth-grade students from a state primary school in Giresun. Depending on the purpose of the research, typical case sample method was used in determining the study group. The choice of this sampling method has been influenced by the idea that in a city center, a state school where middle socio-economic level learners is better suited for the purposes of research. There were 54% (n=62) female students and 46% (n=52) male students.

Data Collection Tools

In this study, data was collected from students through the Questionnaire for Assessing Students' Organizational Abilities: for the Teacher to assess organizational ability, the Handwriting Proficiency Screening Questionnaire to assess handwriting proficiency, the 6+1 Analytical Writing and Assessment Scale, and the Scale for Scoring the Inclusion and Quality of the Parts of a Story to assess their writing performances.

Questionnaire for Assessing Students' Organizational Abilities: for the Teacher (QASOAT)

Organizational ability is the observed variable in this research. The Questionnaire for Assessing Students' Organizational Abilities was developed by Lifshitz and Josman (2006). Originally written in Hebrew, this questionnaire was translated into English with Dr. Lifshitz preparing an English version of the questionnaire with the support of her colleagues. Then, this version was translated into Turkish by two translators. This translated version was evaluated by four specialists and took its final shape. As the scale had high levels of language equivalence, validity and reliability studies were conducted. To adapt the scale, data was obtained from 141 primary school students between 8-12 years old in the spring semester of 2015, with 25 teachers completing the questionnaires for their students. This questionnaire includes 21 statements scored on a Likert-type scale from never (0), rarely (1), often (2), to always (3).

Validity. Exploratory Factor Analysis (EFA) was performed to provide the structural validity of the Organizational Ability Questionnaire, to see which items were grouped together under which factors and to define factor variances. EFA results indicated that the items in the questionnaire were grouped under one factor and the Kaiser-Meyer-Olkin (KMO) value was calculated as .903. The value obtained from the KMO test is excellent as it approaches 1, and below 0.50 is unacceptable (Tavşancıl, 2002). This KMO value indicates that the sample is sufficient for factor analysis. The result of Bartlett's test of sphericity showed that it was (sig.= 0.000) highly significant ($p<0.05$) which indicated that the factor analysis was correct and suitable for testing multidimensionality.

In principal components analysis, there are three factors with eigenvalues greater than 1; a vast majority of items are grouped under the first factor, with fewer items grouped under the second and third factors. As this is a one-factor questionnaire in its origin, the eigenvalue was noted as 2 and the analysis was revised. Thereby, the questionnaire is grouped under one factor. As a result, a one-factor questionnaire consisting of 21 items, with an eigenvalue of 11,33, and total variance of 53,92% was obtained. Factor loadings of the scale are presented in Table 1.

Table 1. Summary of Exploratory Factor Analysis Results for the Organizational Ability Measure

Items	Arithmetic Mean	Standard Deviation	Factor Loadings
OOB1	2.54	.57	.69
OOB2	2.61	.54	.76
OOB3	2.58	.55	.73
OOB4	2.66	.55	.81
OOB5	2.65	.49	.77
OOB6	2.27	.69	.81
OOB7	2.35	.67	.81
OOB8	2.51	.64	.77
OOB9	2.40	.67	.72
OOB10	2.49	.63	.68
OOB11	2.33	.69	.73
OOB12	2.42	.67	.78
OOB13	2.82	.39	.52
OOB14	2.85	.36	.56
OOB15	2.47	.68	.86
OOB16	2.48	.64	.76
OOB17	2.73	.54	.71
OOB18	2.46	.69	.72
OOB19	2.51	.68	.72
OOB20	2.82	.42	.68
OOB21	2.76	.47	.65

The rotated component matrix table shows that all items in this analysis had primary loadings over .5. If the researcher wishes the factors to be composed of strong substances, the load values can be based on at least .5. In this direction, .5 to .6 are good, .6 to .7 are high and .7 and above factor loads are perfectly classifiable as factor loadings. (Gürbüz & Şahin, 2015, p. 304). As a result, a one-factor 21-item questionnaire with a good structural validity was obtained.

Reliability. A Cronbach Alpha internal consistency coefficient calculated to define the reliability level of the Questionnaire for Assessing Students' Organizational Abilities: for the Teacher was found to be .96. This coefficient indicates that the internal consistency between the scores obtained from the scale is very high and that the measurements are reliable.

Handwriting Proficiency Screening Questionnaire (HPSQ)

Handwriting proficiency is the observed variable of this research. Rosenblum (2008) developed Handwriting Proficiency Screening Questionnaire to measure this ability. This questionnaire was originally written in English. This version was translated into Turkish by two translators and it was evaluated by four specialists before taking its final shape. Since the scale had high levels of language equivalence, validity and reliability studies were conducted. To adapt the scale, data was obtained from 141 primary school students between 8–12 years old in the spring semester of 2015, with 25 teachers completing the questionnaires for their students. This questionnaire included 10 statements for teachers scored on a Likert-type scale from never (0), rarely (1), sometimes (2), often (3), to always (4).

Validity. Exploratory Factor Analysis (EFA) was performed to provide the structural validity of the Handwriting Proficiency Questionnaire, to see which items were grouped together under which factors and to define factor variances. EFA results indicated that the items in the questionnaire were grouped under one factor and the KMO value was calculated as .825. According to Tavşancıl (2002), this value shows that sampling is sufficient for factor analysis. The result of Bartlett's test of sphericity

shows that it is (sig.= 0.000) highly significant ($p<0.05$) which indicates that the factor analysis is correct and suitable for testing multidimensionality.

In principal components analysis, there were three factors with eigenvalues greater than 1, a vast majority of items are grouped under the first factor and fewer items were grouped under the second and third factors. Since this is a one-factor questionnaire in its origin, the eigenvalue was noted as 2 and the analysis was revised and the questionnaire was grouped under one factor. As a result, a one-factor questionnaire was obtained consisting of 10 items with an eigenvalue of 5,14 and total variance of 51,41%. Factor loadings of this scale are presented on Table 2.

Table 2. Summary of Exploratory Factor Analysis Results for Handwriting Proficiency

Items	Arithmetic Mean	Standard Deviation	Factor Loadings
OEYY1	3.33	.82	.83
OEYY2	3.43	.72	.83
OEYY3	3.36	.79	.82
OEYY4	3.09	.79	.62
OEYY5	2.75	.79	.81
OEYY6	3.38	.93	.41
OEYY7	3.31	.81	.63
OEYY8	3.35	.89	.72
OEYY9	2.57	.96	.50
OEYY10	3.12	.92	.84

The rotated component matrix table shows that all items in this analysis had primary loadings over .4. As a result, a one-factor 10-item questionnaire with a good structural validity was obtained.

Reliability. The Cronbach Alpha internal consistency coefficient was calculated to define the reliability level of the Handwriting Proficiency Questionnaire. The reliability coefficient of the Handwriting Proficiency Questionnaire is found as .88. This coefficient indicates that the internal consistency between the scores obtained from the scale is very high and that the measurements are reliable.

Writing Performance

The latent variable of writing performance was constituted by observed variables of students' narrative text writing performances and informative text writing performances. Therefore, two different scales were used in this research to define students' writing performances.

Scale for Scoring the Inclusion and Quality of the Parts of a Story: This scale was developed by Harris and Graham (1996) and adapted to Turkish by Coşkun (2005). Eight story elements were evaluated with certain points in the scale. According to the scale, a story can achieve 19 as the maximum score. The story elements in the scale are main character, space, time, precipitating incident, aim, initiative, conclusion, and reaction. Scores are between 0 and 4.

6+1 Analytical Writing and Assessment Scale: Education Northwest (2006) developed the 6+1 Analytical Writing and Assessment Model which was adapted to Turkish by Özkara (2007). The scale comprises seven key elements that define quality writing – ideas, organization, voice, word choice, sentence fluency, conventions, and presentation. Products received from students were scored by two researchers over points of 5-3 and 1 according to the criteria in the 6+1 Analytical Writing and Assessment Model, with 35 as the maximum score that a story can receive. In order to ensure measurement reliability, researchers worked independently in the process of scoring stories, independently scoring and then working together to get rid of point mismatches. According to the scale, the highest score a story can get is 35.

Data Gathering Process

The data collection process of the study is two-step scale adaptation and main application. Firstly, during the spring semester of the 2014-2015 academic year for the scale adaptation phase, researchers reached 141 students from primary school at the 2nd, 3rd and 4th grade level from a public school in Giresun. 25 teachers were interviewed to fill the scales related to the organizational abilities and handwriting proficiencies of the students. Teachers were asked to evaluate their students by giving information about the purpose of studying. Later, the main application phase of the research was carried out by researchers in the fall semester of the 2015-2016 academic year, from a state primary school in Giresun. Thus, Turkish forms of both scales were formed and researchers became acquainted with the scales. Then, during the fall semester of the next academic year (2015-2016) for the main application, the data collection process for the model test was initiated by the researchers. After obtaining the necessary permits, researchers are asked to fill in the assessment of organizational abilities and handwriting proficiencies scale for their students by contacting the teachers in the relevant classes. Teachers were informed about both scales as well as guidance on how to evaluate students. Subsequently, two lesson hours of writing work were undertaken to determine students' writing performance. Writing studies were carried out on different days, which were planned intermittently, taking into account the course schedule of the data collection classes. In the data collection process, firstly the purpose of studying the students was mentioned and information was given about the writing activity. At the beginning of the first lesson, a writing form is given for writing informative texts to present a person, place, article or any object they like. At the second lesson, a writing form for writing narrative texts is given to write a story about a good or bad day at a school of a hero of the same age.

Data Analysis

The statistical analysis was performed using SPSS 16 and AMOS. First, descriptive statistics of variables were calculated, then the correlation coefficient was used to determine the degree and direction of relations among the variables. The correlation coefficient takes a value between +1 and -1.

If the coefficient is less than .30, the relationship is weak. If it is between .30 and .70, it is moderate. If it is bigger than .70, it can be said that it is at a high level (Köklü, Büyüköztürk, & Çokluk, 2007). Causal relationships between variables were analyzed with the Structural Equation Model (SEM) which is a multivariate statistical analysis technique and a combination of factor analysis and multiple regression analysis. This model is used to test models including observable and latent variables (Gürbüz & Şahin, 2015). The SEM consists of two measurement models and a structural model. Measurement models refer to structures constituting latent variables, the structural model refers to the model testing all the relationships between latent variables (Byrne, 2010; as cited in Yıldız, 2013). The measurement models of this research are organizational ability, handwriting proficiency, and writing performance. First, the validity analysis of the measurement models is conducted and then the structural model is tested. Some fit indices are used to analyze the model. The most often used ones are Chi-Square Goodness of Fit Test, Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), the Root Mean Square Residual (RMR or RMS) and the Root Mean Square Error of Approximation (RMSEA) (Gülbahar & Büyüköztürk, 2008). X^2/sd is less than 2 means a good fit and X^2/sd is between 2 and 4 means an acceptable fit. If the RMSEA is less than .05, the model is "close fitting." The GFI, CFI and NFI values exceeding .95 and the AGFI value is over 90 indicating a good fit (Şimşek, 2007). Chi-Square Goodness of Fit Test, RMSEA, GFI, AGFI, CFI, NFI values are taken into consideration to define the goodness of fit of the model.

Results

This section includes findings and comments in accordance with the research hypotheses. The minimum, maximum values, and standard deviations of variables and correlation tables to present the relationships among variables are given and analysis results of the structural model are presented. Table 3 presents average values and standard deviations of variables, their minimum and maximum values and skewness and kurtosis values of variables.

Table 3. Descriptive Statistics of Variables

Variables	Min	Max	$\bar{X}$	Sd	Skew	Cur
1. Organizational ability	27.00	63.00	53.74	9.09	-.89	-.01
2. Handwriting Proficiency	14.00	40.00	31.64	6.19	-.56	-.40
3. Narrative Text Writing	7.00	35.00	18.74	6.71	.22	.00
4. Informative Text Writing	7.00	35.00	18.96	7.32	.27	-.34

Table 3 indicates that students have 54 for organizational ability, 32 for handwriting proficiency, 19 for narrative text writing and 19 for informative text writing on average. The skewness and kurtosis values are ranged between -1 and +1 as a significant evidence that the data has a normal distribution (Ak, 2008).

Table 4. Relationships Between Variables

Variables	1	2	3	4
1. Organizational ability	1.00			
2. Handwriting Proficiency	.73**	1.00		
3. Narrative Text Writing	.45**	.46**	1.00	
4. Informative Text Writing	.51**	.54**	.60**	1.00

Table 4 presents the relationships between variables and it indicates that manifest variables (narrative text writing and informative text writing) representing the latent variable (writing performance) have significant relationship with observed variables (organizational ability and handwriting proficiency). In other words, there is a significant relationship between organizational ability, handwriting proficiency of students and their narrative and informative text writing performances. Table 4 indicates that there is a positive and strong (r=.73. p<.01) relationship between organizational ability and handwriting proficiency. Table 4 also suggests that there is a positive and moderate (r=.46. p<.01) relationship between handwriting proficiency and narrative text writing performance, and there is also a positive and moderate (r=.54. p<.01) relationship between handwriting proficiency and informative text writing performance. The evaluation of relationships among variables indicates that SEM hypotheses of interrelated variables are verified.

Results from SEM Analysis

Results from the SEM analysis are presented in Figure 2. The SEM results indicate that organizational ability has a direct and significant effect on handwriting proficiency (β=.74. p<.01). Therefore, the first research hypothesis is accepted. The figure shows that handwriting proficiency of students has a direct and significant effect on their writing performances (β=.41. p<.01). Hence, the second research hypothesis is also accepted. In addition, the contribution of the handwriting competence as a mediator variable to the influence of organizational ability on writing performance (0.74 * 0.41) 0.30 ($t_{(sobel)}$=5.61; p<.01) is significant. Thus, the third hypothesis of the research is confirmed. According to the model, the organizational ability and handwriting proficiency of students explain 45% of their writing performance which is substantial (p < .01). This means that the structural model analyzed the effects of organizational ability and handwriting proficiency on writing performances in informative and narrative texts, explains the change in writing performance variable in a very significant proportion. Therefore, the third research hypothesis is accepted as well. The model is tested

and verified and the results suggest that the model has perfect goodness of fit (x^2 / df =.07. RMSEA=.000. GFI=1. AGFI=1. CFI=1. NFI=1).

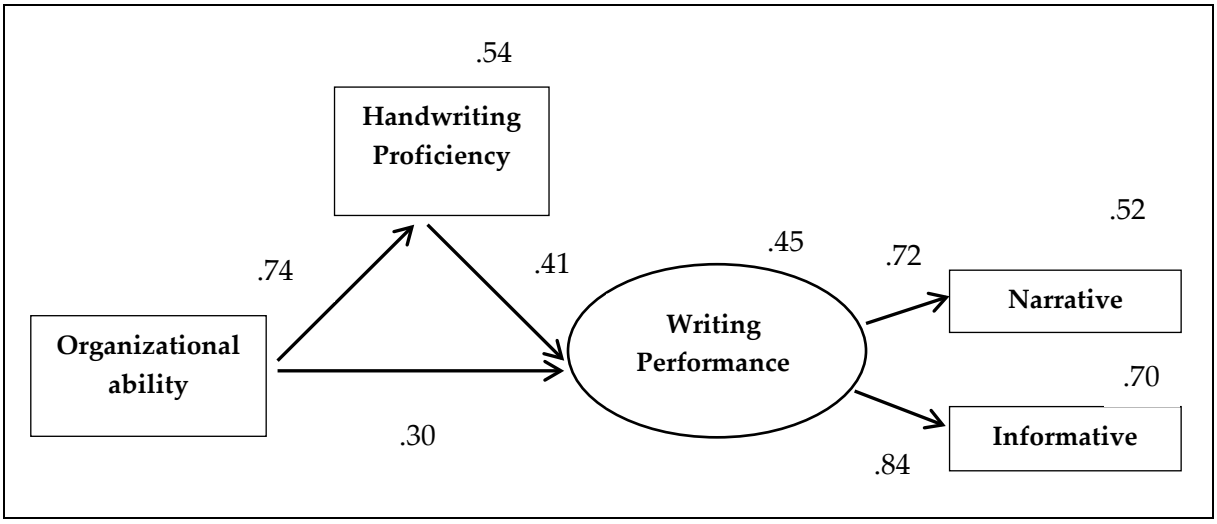

Figure 2. SEM Results of the Hypothetical Model

Conclusion, Discussion and Suggestions

Research findings indicate that the organizational ability of the fourth-grade primary school students has a direct effect, and handwriting proficiency has an indirect effect, on their writing performance. In this regard, the hypotheses are confirmed. It has been seen that organizational ability have a direct and significant effect on handwriting proficiency and writing performance, and handwriting ability directly on writing performance. In addition, it has been determined that handwriting proficiency has a significant effect on writing performance as a mediator variable. It is defined that organizational ability and handwriting proficiency explain 45% of the variance in writing performance. These findings are compatible with many studies suggesting that organizational ability is related to handwriting proficiency (e.g. Kohli, Malhotra, Mohanty, Khehra, & Kaur, 2005; Rosenblum et al., 2010). In other words, if students are careful about their daily tasks, use their time effectively and are aware of their responsibilities – if they have planning skills – their writing performance/skills will be directly affected as well. Executive functions are an umbrella term used to describe a range of higher order cognitive skills of planning, problem solving and organizational ability and they are necessary to have success in education and social aspects in childhood and adolescence (Catroppa & Anderson, 2006). Recent studies indicate that children's self-reporting of their occupational performance in daily tasks is reliable and valid (Ricon, Hen, & Keadan-Hardan, 2013).

Organizational ability enables students to have the time to write and contributes to their writing skills. Research findings suggest that organizational ability leads to the correct production of letters, words and sentences and contributes the organization of ideas in order to write properly (O'Hare & Brown, 1989). Graham and Weintraub (1996) explained the difficulties in composing experienced by slow writers and noted that handwriting difficulties may cause struggling writers to develop negative feelings about writing and their slow rate of handwriting may not be fast enough to keep up with their thoughts, causing children to forget what they intended to write. Graham and Miller (1980) stated that students with writing difficulties have inefficiencies in the time they spend on learning, some difficulties finishing their homework and cannot take notes during the lectures (as cited in Akyol, 2008). Handwriting requires the organization of continuous hand movements in space and time, while controlling with a tool on a given page space, and investing cognitive resources while considering linguistic content (Bonny, 1992; Reisman, 1993; as cited in Rosenblum, 2015).

This research aims to analyze the relationships between hand proficiency, writing performance and organizational ability of students. The data is collected from teachers to assess the handwriting proficiency of their students. Previous studies remarked that students with dysgraphia have some difficulties planning around time and space and require more learning materials. Children with learning disorders have trouble completing their tasks in school, they need more time to do their homework and have difficulties planning their time (e.g; in writing) (Levin, 1994; May-Benson et al., 2002). Kaminski, Lazar, and Bean (1993) indicated that instruction can increase student awareness of decision-making/planning strategies regarding the best means of accessing knowledge structures for expository writing. They emphasized that teachers need to be role models for their students and encourage them to make their own decisions about what options to use while writing their thoughts in daily life. Similarly, a study conducted on implementing writing instructions based on story elements, suggests that students from all ability levels understood the story elements, included them in varying degrees within their texts, and used them as cues to create more complex representations of their thinking (Watanabe & Hall-Kenyon, 2011). The literature confirms that organizational ability directly and significantly affects writing performance. Research findings suggest that organizational ability should be developed in order to allow adequate time for writing and improving writing performance. The development of students' cognitive skills in their daily lives may contribute to the development of other skills as well. These cognitive skills are directly related to literacy.

Organizational ability starts with preschool and develops in primary school. Students' self-recognition skills, awareness of their own needs, and planning their actions according to time and space, help them to plan their actions and behaviors inside and outside school. In addition, this may help teachers to understand their students in their daily lives and how they can help to organize their students' activities. Teachers may identify the actions that their students cannot plan, or fail to satisfy, in their daily lives, and they may motivate their students and help them in planning these actions. Organizational ability guides students in many aspects of their daily lives, inside and outside school, in ways that are helpful for their writing performances and self-expression. For example, children must plan their daily morning action sequence in space and time from the moment they get up in the morning until they leave home for school. They need to represent the required sequence of actions at each point in time in relation to varied spaces (e.g; bedroom, kitchen) and accessories (clothes, schoolbag, notebooks, food). At school, children require similar organizational competency that is dependent on the ability of action representations, such as arriving at class on time, finding the equipment they need for each school activity, and taking out the appropriate notebooks. Organizational ability is essential to successful activity and participation in everyday life (Rosenblum, 2015).

Planning, using their time effectively, organizing their thoughts and ideas, and the effective use of writing processes, are significant actions that increase writing performances of students (Tompkins, 2000; Graham & Sandmel, 2011; Karadağ & Kayabaş, 2011). The relationships between organizational ability, handwriting proficiency and writing performance may present detailed information for teachers and parents regarding students and may also contribute to students' school performances. As to the relationship between organizational ability and handwriting proficiency, further research may focus on the relationship between writing skills, and comprehension skills, and school performance and duty consciousness.

Limitations

The number of students reached in the study and collected data can be expressed as the limit of the research. There is a need to expand such studies with a larger sample group and to repeat students at different grade levels. However, in studies on scale adaptation, only AFA (e.g. Yılmaz & Huyugüzel Çavaş, 2007; Kara, 2008, Çopur, Şafak, & Terzioğlu, 2008), only DFA (e.g. Karadeniz, Büyüköztürk, Akgün, Kılıç Çakmak, & Demirel, 2008), it is seen that there are applications in the form of using AFA and then DFA analyzes (e.g. Akın, Akın, & Abacı, 2007; Öztürk, 2012). In this study, the most strong result of the analysis methods used for the validity studies of the scales was obtained from the AFA analyzes. The analysis and analysis process is reported in detail. In the future, researchers who want to

work with these scales can experiment with alternative analyzes of the adaptation process of scales in different and larger samples. Thus, new contributions to the literature can be made about this situation, which is the limit of research.

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