iejee
INTERNATIONAL ELECTRONIC
JOURNAL OF ELEMENTARY EDUCATION

www.iejee.com

December 2019 Volume 12 Issue 2

T&K ACADEMIC

iejee

INTERNATIONAL ELECTRONIC
JOURNAL OF ELEMENTARY EDUCATION

Editor in Chief

Kamil ÖZERK
University of Oslo, Norway

Editors

Gökhan ÖZSOY
Ordu University, Turkey

Annemie DESOETE
Ghent University, Arteveldehogeschool, Sig, Belgium

Karen M. ZABRUCKY
Georgia State University, United States

Kathy HALL
University College Cork, Ireland

Hayriye Gül KURUYER
Ordu University, Turkey

Editorial Assistants

Hasan TABAK
Gazi University, Turkey

Mustafa BAKIR
Dumlupinar University, Turkey

Emel BAYRAK ÖZMUTLU
Ordu University, Turkey

Saniye Nur GÜNDÜZ
Ordu University, Turkey

Proofreaders

H.Ozge BAHAR
Turkey

Lee COREY
United States

Graphic Design

Kura

International Advisory Board

Bracha KRAMARSKI, *Bar Ilan University, Israel*
Christian Watkin BECK, *University of Oslo, Norway*
Collin Robert BOYLAN, *Charles Sturt University, Australia*
David Warwick WHITEHEAD, *The University of Waikato, New Zealand*
Dawn HAMLIN, *SUNY Oneonta, United States*
Hayati AKYOL, *Gazi University, Turkey*
Isabel KILLORAN, *York University, Canada*
Janelle Patricia YOUNG, *Australian Catholic University, Australia*
Jeanne ROLIN-IANZITI, *The University of Queensland, Australia*
Janet ALLEN, *United States*
Kouider MOKHTARI, *Iowa State University, United States*
Lloyd H. BARROW, *University of Missouri, United States*
Lori G. WILFONG, *Kent State University, United States*
Maria Lourdes DIONISIO, *University of Minho, Portugal*
Maribel GARATE, *Gallaudet University, United States*
Naciye AKSOY, *Gazi University, Turkey*
Peter JOONG, *Nipissing University, Canada*
Ruth REYNOLDS, *University of Newcastle, Australia*
Therese Marie CUMMING, *University of New South Wales, Australia*
Wendy HARRIOT, *Monmouth University, United States*
Ziya SELCUK, *TED University, Turkey*

ISSN: 1307-9298

www.iejee.com
iejee@iejee.com

Editorial

Dear IEJEE Readers,

It is a great pleasure for us to present this issue of International Electronic Journal of Elementary Education (IEJEE). Educational challenges have become a part of our modern life – as parents, as decision makers and as educational researchers. Fortunately, they are not only challenges, but also interesting. To add a new perspective and new knowledge to the educational field also gives pleasure, and it is a good reason to be proud of as researcher.

In this issue of IEJEE, we present twelve articles from seven different countries representing three continents. As editorial team of IEJEE, we want to thank all of those researchers who submitted their papers to our journal. We also want to express our thanks to all of the peer-reviewers. Their contribution ensure high quality research publications.

As editorial team of IEJEE, we express our gratefulness to our technical staff.

We wish a happy new year to all of our contributors and readers.

On behalf of IEJEE editorial team

Dr. Kamil Özerk, Dr. Gökhan Özsoy, Dr. Hayriye Gül Kuruyer, Dr. Turan Temur

ISSN:**1307-9298**
Copyright © **IEJEE**

All responsibility for statements made or opinions expressed in articles lies with the author.

Table of Content

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **115-126**

A Pilot study of the Online Assessment of Self-Regulated Learning in Preschool Children: Development of a Direct, Quantitative Measurement Tool

Received: **24 September 2019**
Revised: **13 November 2019**
Accepted: **20 November 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.**iejee**.com

Lisa Jacob[a,*], Sandra Dörrenbächer[b], Franziska Perels[c]

DOI: **10.26822/iejee.2019257655**

Abstract

Self-regulatory abilities have been shown to be closely linked to academic success. There are a variety of measurement tools to assess self-regulated learning in pupils and students. Crucially, preschool age marks a sensible period for the maturation of self-regulated learning (SRL) and related abilities such as executive-control functions (EF). This is why the development of a direct instrument that fits the special characteristics of this age cohort is important. An adapted version of Zimmermann´s (2000) process model may serve as a theoretical basis. This pilot study intends to develop and evaluate a direct, quantitative measurement tool to assess SRL in an 'online manner'. The measurement tool was tested in 183 preschoolers of German kindergartens. After a detailed item analysis, reliability was estimated and concurrent validity was examined. Statistical analysis indicates a satisfactory reliability for the measurement tool as a whole. Additionally, validity is supported by (small) significant overall correlations with the external measure as well as EF measure. Nevertheless, the need for the optimization of the instrument is clear and the study has important implications for further research. In general, the results demonstrate that it is both plausible and possible to assess SRL in preschoolers directly at child level

Keywords: Self-Regulated Learning, Preschool Age, Direct Assessment, Executive Functions, Pro-cess Model of Self-Regulated Learning

Introduction

Self-regulated learning (SRL), that is, the ability to learn through the autonomous and self-directed application of strategies, is crucial for dealing with the fast-moving challenges and demands of everyday life (Brunstein & Spörer, 2010). Given the undeniable link of such self-regulatory, strategic skills to academic success (e.g. McClelland, Acock, Piccinin, Rhea, & Stallings, 2013), self-regulated learning has been examined primarily in students (e.g. Dörrenbächer, Russer, & Perels, 2018, Fadlelmula, Cakiroglu, & Sungur, 2015; Schnell, Ringeisen, Raufelder, & Rohrmann, 2015) and (under-) graduates (e.g. Mega, Ronconi, & De Beni, 2014; Tabuenca, Kalz, Drachsler, & Specht, 2015, Leidinger & Perels, 2012). However, from a developmental perspective, it seems essential to expand the research focus to earlier stages of the lifespan, too: importantly, preschool age has been shown to mark the sensitive period for the maturation of SRL and closely related abilities, such as the development of executive control functions (EF; Hofmann, Schmeichel, & Baddeley, 2012; Lockl & Schneider, 2007; Zelazo, 2015). However, the assessment of SRL, or EF, respectively, in preschool age requires specific measurement tools that match the particular characteristics of this age group (Hoyle & Dent, 2018), e.g. the restricted reading abilities or limited memory capacity (Van Den Broek, Kendeou, Lousberg, & Visser, 2011). Kindergarten teacher ratings have become established for these age ranges (Howse, Lange, Farran, & Boyles, 2003). The sole application of such external ratings has to be been deemed critical due to the missing possibility for countervalidation. There is, however, a lack of instruments that measure SRL directly at the child level. Hence, the aims of the present study are (1) to take the first steps towards the development of an instrument for the direct and quantitative (online-) assessment of SRL in preschoolers at the child level and (2) to evaluate its psychometric quality.

Self-Regulated Learning at Preschool Age

SRL (precursor) skills at preschool age ('Preschool age' describes the age span between 5 and 6 when German children generally attend their last year of kindergarten) predict SRL abilities in later life (e.g. McClelland et al., 2013), which implies that early limitations in SRL may amplify poor learn-ing control in adulthood. Hence, given the predictive power of SRL competencies for later 'life success', it seems worthwhile to start early in life with the measurement and instruction of stra-tegic, self-regulated activities (Montroy, Bowles, Skibbe, Mcclelland, & Morrison, 2016). Moreover, considering the high correlations with other fluid intellectual abilities (Brydges, Reid, Fox, & Anderson, 2012), well-developed SRL (precursor) skills as well as practiced EF may also foster cognitive development in general. Preschool age in particular represents a sen-sitive period for cognitive maturation: there appears to be a general shift from emotion-driven regulation to a more cognitive regulation where complex learning processes like SRL can be built upon (Zelazo, 2015). Moreover, a qualitative shift from an external regulation to a more internally guided self-regulation style can be observed (see Montroy et al., 2016). In this age range, SRL is also closely related to core developmental tasks, such as good habits and adequate peer behaviour (McClelland, Morrison, & Holmes, 2000). Thus, SRL helps to reduce im-pulsive behaviour and allows for 'thinking before acting'(Eisenberg et al., 2005), both support-ing the development of social appropriateness that may be particularly important in educational settings. In summary, self-regulation (precursor) skills seem to be a hallmark for everyday-functioning in the age group of preschoolers (Bronson, 2000; Kochanska, Coy, & Murray, 2001).

SRL in general can be defined from two different perspectives: Putting an emphasis on the temporal dimension, SRL is regarded as a dynamic cycle of different learning stages (Zimmerman, 2000). From a structural perspective, SRL is as-

[a,*]Corresponding Author: Lisa Jacob, Department of Educational Sciences, Saarland University, Saarbrücken. Campus, Building A4 2, Room 4.19, 66123 Saarbrücken, Germany. E-mail: li-sa.jacob@uni-saarland.de
[b] Sandra Dörrenbächer, Department of Educational Sciences, Saarland University, Saarbrücken, Germany. E-mail: sandra.doerrenbacher@uni-saarland.de
[c] Franziska Perels, Department of Educational Sciences, Saarland University, Saarbrücken, Germany. E-mail: f.perels@mx.uni-saarland.de

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

sumed to be composed of a set of cognitive, metacognitive and motivational learning strategies that can be applied within this dynamic learning cycle. Regarding the latter structural dimension of SRL, it has to be consid-ered that at preschool age, the cognitive system is still poorly differentiated (Brydges et al., 2012; Shing, Diamond, & Davidson, 2010), implying that the unity of SRL components or strategies disproportionately may outweigh the diversity of strategies. Consequently, SRL at preschool age may be defined more sharply on the temporal axis than on the structural axis, which should be considered when constructing a measurement tool for preschoolers.

Theoretical Considerations Regarding Self-Regulated Learning in Preschool Age

In the present study, we rely on the social-cognitive framework of SRL by Zimmerman (2000) that emphasizes the temporal, dynamic character of SRL. In this framework, SRL is defined as 'self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals' (Zimmerman 2000, p.14). According to Zimmerman (2000), throughout the SRL process, a multitude of strategies can be applied. However, given the primacy of the temporal compared to the structural (strategy-related) dimension of SRL in preschoolers (see previous section), we propose an adapted version of the framework with a focus on the temporal differentiation and a looser, more parsimonious differentiation of SRL strategies within the SRL process than in the Zimmerman model (2000; see figure 1). When selecting relevant SRL strategies, the state of development of children at preschool age was considered: (a) Children of that age group are capable of goal setting and adjustment of thinking and acting towards goals (Blaye & Chevalier, 2011; Hendry, Jones, & Charman, 2016), which represent important skills concerning the forethought phase and the performance phase of SRL; (b) Furthermore, preschoolers already show inhibitory control (Carlson, 2005; Lewis, Reeve, Kelly, & Johnson, 2017), and attention focusing skills (Bronson, 2000; Lewis et al., 2017) which are relevant abilities, especially for the performance phase; (c) preschoolers can reflect their own learning process (Zelazo, 2015) which is essential for the self reflection phase of SRL.

Executive Functioning at Preschool Age

Preschool age is simultaneously the critical period for the maturation of another class of basic cognitive skills, namely EF such as shifting, updating or inhibition (Erb, Moher, Song, & Sobel, 2017; Shaul & Schwartz, 2014). Such EF enable individuals to perform higher level cognitive operations, such as planning, problemsolving and target-oriented acting (Miyake et al., 2000) and can be thus considered comparable to SRL skills (Perry, Hutchinson, Yee, & Määttä, 2018; see also the next section for a discussion of the relationship of both concepts). For the assessment of EF in preschoolers, in contrast to the assessment of SRL, there already exists a considerable number of quantitative, direct measurement tools (Ackerman & Friedman-Krauss, 2017). A common instrument to measure higher level EF is the well-established Tower of London Test (ToL Test, Shallice, 1982) that has also been successfully administered to preschoolers (Byrd, Van Der Veen, McNamara, & Berg, 2004) and has proven to be a useful instrument to capture interindividual differences in children (Raizner, Song, & Levin, 2002). The ToL Test consists of reconstructing target configurations with the aid of coloured balls by considering a predetermined number of action steps (also see method section).

The Relationship Between Self-Regulated Learning and Executive Functioning

Higher level EF shows some conceptual overlap with SRL, both having a heterogeneous structure, and encompassing a wide and diffuse range of interrelated, yet unique abilities (Jurado & Rosselli, 2007; C. C. Ponitz, McClelland, Matthews, & Morrison, 2009). However, the precise nature of the relationship among both constructs remains elusive so far (e.g. Hofmann, Schmeichel, & Baddeley, 2012). Some authors argue that SRL can be interchangea-bly with EF (Gaskins, Satlow, Presseey, & Meltzer, 2007), while some argue that SRL can be considered as a superordinate construct, including executive basis operations (Barkley, 2001). In a recent review by Hofmann et al. (2012), EF has been subdivided into a set of subcompo-nents, including (a) working memory operations, (b) behavioural inhibition and (c) task-switching, that are directly related to a number of self-regulatory mechanisms, such as (a) the active representation of self-regulatory goals, (b) the active inhibition of 'mindless' behaviour, and (c) self-regulatory goal shifting and balancing. Lockl and Schneider (2007) consider the development of EF as a precondition for the emergence of SRL abilities.

Given the undoubtedly close relationship between both constructs, of whatever nature, and the greater availability of direct measurement tools for higher level EF for preschoolers (such as the ToL test, Shallice, 1982), such EF tasks seem well suited as a criterion, against which a newly developed SRL measure tool needs to prove itself.

Previous Attempts to Measure Self-Regulation In Preschoolers

There are at least four general challenges associated with the direct measurement of SRL in preschoolers: (a) their restricted reading and writing skills, (b) their fragile memory for past events which may impede retrospective recall of strategy knowledge (Maylor & Logie, 2010), (c) misjudgements of their own performance (Schneider & Büttner, 2008), and (d) a low test compliance for standard instructions (Stephenson & Hanley, 2010).

Previous attempts to measure self-regulation in preschoolers can be classified into two major approaches: offline and online measures (e.g. Winnie & Perry, 2005). Regarding offline methods that assess SRL before or after a learning activity, structured interviews seem feasible for the special age cohort of preschoolers, yet they need to be applied in child-appropriate ways due to the restricted language proficiency, the low test compliance in preschoolers and the lack of metacognitive abilities that enable them to verbalize their own learning process (Whitebread et al., 2009). A rare example of a successful application of such a structured interview is the study by Perels, Merget-Kullmann, Wende, Schmitz and Buchbinder

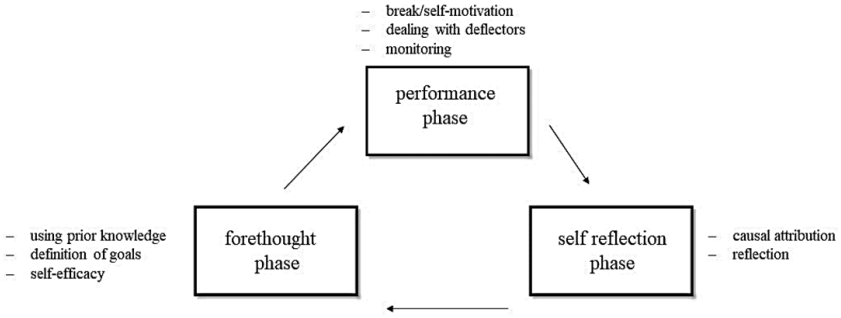


Figure 1. *Zimmerman's (2000) process model of SRL, adapted for preschoolers*

(2009). They provided preschoolers with interviews embedded into a puppet show to enhance the children's treatment compliance. However, preschoolers' tendency to overestimate the abilities they are asked about limits the results of the interviews (Schneider & Büttner, 2008). Another useful measurement method seem to be external assessment as rated by trained kindergarten teachers (Howse et al., 2003). External rating scales that are frequently used include the Child Behavior Rating Scale (Bronson, 1994), the Strengths and Difficulties Questionnaire (Goodman, 1997), or the CHILD-Checklist (Whitebread et al., 2009). However, there is a lack of reliable self-assessment in pre-schoolers to allow for a cross-validation of these indirect measures.

A useful online measure of SRL at preschool age are think-aloud protocols. It has been shown that four year old children are already capable of articulating their own thoughts when viewing a picture book (Paris & Paris, 2003; Tompkins, Guo, & Justice, 2013). However, a relevant disadvantage of thinking aloud methods as a measure of SRL is the high demand on productive language skills and metacognitive skills. Another measurement tool is observational inventories, including the Bronson's Social and Task Skills Profile (Bronson, 1994), the C.Ind.Le Coding Framework (Whitebread et. al., 2009) and the SRL observation tool using the Train Track Task (Bryce & Whitebread, 2012). However, a disadvantage of behavioural observation is that learning strategies that are known implicitly but not demonstrated during obser-vation may not be captured, thus underestimating children's strategy knowledge (Landmann, Perels, Otto, Schnick-Vollmer, & Schmitz, 2009).

In the present study, we aimed to develop a measurement tool that counteracts these disadvantages of established instruments. The online character of our tool may limit bias due to the insufficient self-estimation skills of children at that age, allows for direct measurement on child level, requires little productive language skills, captures a set of SRL learning strategies which are considered important for preschoolers, and provides quantitatively interpretable data based on a standardized evaluation protocol. The measurement tool should be evaluable by realizing cross-validation against an external SRL measurement tool and a direct EF measure-ment tool.

The Present Study: Development, Evaluation and Conceptual Alignment of a Direct, Quantitative SRL 'Online' Measurement Tool for Preschoolers

To summarize we aimed to develop an SRL online test procedure for preschoolers that meets the following criteria: First, the temporal SRL dimension should be focused. Second, we aimed to develop a quantitative rather than a qualitative tool to allow for clear interpretability and comparability. Third, the tool should address the children directly (i.e. online measure-ment), thus requiring some adaptions to the particular needs of this age group. Fourth, our tool should be cross-validated against established instruments from a familiar domain of research that already provides adequate quantitative online measurement tools for preschoolers, namely research on EF.
Our developed SRL test procedure was inspired by the direct and quantitative test of metacognition for first graders used in the German National Educational Panel Study that meets most of these criteria (Lockl, Händel, Haberkorn, & Weinert, 2016). Metacognition (to-gether with cognition and motivation) represents a core component of SRL (Boekarts, 1999) and describes the availability of 'meta-information' about many different types of cognitive processes. Similarly, knowledge about SRL means specific 'meta-information' about learning processes. Lockl et al. (2016) presented groups of first graders orally with twenty child-oriented everyday problem scenarios involving different settings and characters. Each scenario required the selection between three more or less strategic response options to solve the presented problem. This test of metacognition is tailoring towards the particular needs of the age group of first graders may still present some disadvantages for preschool age: First, the test of metacognition only focuses on the metacognitive component of self-regulation, and does not specifically address the temporal, processual character of self-regulated learning that is of primary interest in preschoolers. Second, the asymmetric reply format may allow for error of central tendency, which seems especially harmful in five to six preschoolers with a large degree of decision uncertainty (Hembacher & Ghetti, 2014). Third, alternating protagonists could lead to excessive demands on preschoolers with regard to their only partially developed ability to grasp perspectives (Gamannossi & Pinto, 2014). For the development of our instrument, we aimed to adapt the test of metacognition to the specific needs of preschoolers.

Research Questions

This study examines whether our newly developed SRL measurement tool is a reliable and valid instrument to measure self-regulated learning in preschoolers. It addresses the following research questions:

1. Does the application of a newly developed SRL measurement tool yield data indicating a sufficient reliability when regarding (a) the tool as a whole and (b) three theoretically based subscales (along the timeline of the self-regulated learning process)?

2. Can scores from the newly developed SRL measurement tool be considered valid indicators of preschoolers' SRL abilities when using two kinds of cross-validation strategies, namely (a) 'near cross-validation': comparison with the results of a SRL measurement tool that is rated externally and (b) 'far cross-validation': comparison with the performance in a EF measurement tool that is also applied at child-level?

Method

Participants

For this study, 183 preschoolers were recruited from 11 kindergartens in Germany. Nineteen children had to be excluded from the analysis, either because they refused to undergo the testing procedure (n= 17) or due to excessive missing data (n= 2). Hence, the final sample for analysis consisted of 164 children (51.5 % male and 47.3% female; mean age: 5.9, age range: 4.9 – 6.7). All parents gave their written consent for the participation of their children in the study, in accordance with national law and the protocols approved by the local ethics committee. All children had normal or corrected to normal vision, no hearing impairment and no history of any neurological diseases. Based on parents' statements, none of the children had a known learning disability or suffered from developmental delay.

Procedure and Design

The testing procedure consisted of two sessions and was conducted in separate, quiet rooms in kindergarten buildings. All tests were conducted by competent test administrators which underwent training sessions and adhered to a standardized test manual. On average, the test session took 18.4 minutes. The relevant instruments were embedded in a series of tasks. The order of task presentation was always the same: At first, the SRL measurement tool for preschoolers was administered; subsequently, children worked on an EF test (Tower of London Test; Shallice, 1982). Each child was tested individually with two administrators present. As a thank you for their participation, children received a child-friendly certificate of attendance after they had completed all tasks.

An external assessment of preschoolers´ SRL ability in the form of a questionnaire was given to the kindergarten teachers at a first informative meeting in the run-up of the testing procedure and recollected at the day of the first testing session.

Measures

Self-regulated learning in preschoolers (SRL measure tool for preschoolers). The present study applied this newly developed direct and quantitative test tool to investigate SRL in preschool children.

Cover story, structure of measurement tool and items

The testing script revolves around a background story in which a fictional protagonist called Lennie the Lion is confronted with everyday problems and tries to solve them using various strategies. The story is partly based on the cover story of an earlier study of Perels (2009). Children are instructed to assist Lennie in 'real time' in planning, performing and reflecting a chosen way of proceeding according to a predefined overarching goal (i.e. finding a present for his friend Ellie the duck on the occasion of her first day in school). Hence, the narrative is about different problem scenarios within the story's framework, throughout which the protagonist evolves and develops solution strategies in a step-wise fashion. The measurement tool captures the following SRL strategies: planning, using prior knowledge, dealing with deflectors, self-efficacy, monitoring, breaks and self-motivation, reflection and causal attribution (see figure 1, Zimmerman, 2000). Children are instructed to rate the usefulness of Lennie's proposed solution strategies to master the problem scenarios, similarly to Lockl et al. (2016). Children should rate the usefulness, in a dichotomous response format, as 'not very beneficial' or 'highly beneficial' to the objectives of the protagonist ('Do you think Lennie´s idea is a good/bad idea or a bad/ good idea'? in varying order) by tapping a happy or an unhappy face (child oriented display format of response scale). Highly beneficial solution strategies represent one amongst eight SRL strategies (i.e. 'SRL+' items) supposed to be relevant for preschool age (c. figure 1, adapted version of Zimmerman´s [2000] process model of SRL). In contrast, less beneficial solution strategies represent non-SRL strategies (i.e. 'SRL– 'items). The number of SRL (+) and SRL (-) was counterbalanced across the test procedure, and items were presented in randomized order. An example problem scenario for the SRL strategy planning (forethought phase) with two corresponding items is shown in Figure 2. Further example problem scenarios can be found in appendix A.

In sum, the measurement tool consists of 24 items. A total score was calculated by following the signal detection theory (Swets, 1996): +1 point for hits [Hits= Child taps happy face in SRL (+) item] and corrects rejections [Correct rejections= Child taps unhappy face in SRL (-) item] in each case and -1 point for misses [Misses= child taps unhappy face in SRL (+) items] and false [False alarm= child taps happy face in SRL (-) item] alarms. This procedure should prevent distortions caused by guessing or systematic response bias (Coe, Waring, Hedges, & Arther, 2012). The total score ranges from -24 (exclusively misses and false alarms) to +24 (exclusively hits and correct rejections).

Age-appropriateness

In consideration of preschoolers' lacking reading abilities, the scenarios and proposed solution strategies were presented orally by the test leaders. To improve understanding, children could follow the explanations by looking at coloured drawings. In contrast to Lockl et al. (2016), a dichotomous response format (happy vs. unhappy face) was ap-plied to prevent the error of central tendency. The protagonist and the scenarios are designed in a way that should foster self-identification with the cover story to enhance treatment motiva-tion.

Test construction process

Initially, the first version of the measurement tool to as-sess SRL in preschoolers was structured differently, since it consisted of a smaller number of problem scenarios with a higher number of corresponding items (two SRL (+) items and two SRL (-) items). The following SRL strategies were captured: planning, using prior knowledge, dealing with deflectors, self-efficacy, monitoring, breaks and self-motivation and reflection. The aim of the construction process was a preferably balanced measurement tool with a solid theoretical foundation. Consequently, the number of SRL (+) and SRL (-) items was balanced as well as the total number of items representing each learning strategy. The temporal dimen-sion of SRL was considered (c. Zimmerman, 2000). The relevant learning strategies were embedded in this structure and build on each other, leading towards an overarching goal.

Before the presented study, a pilot study was conducted with a smaller sample of *N*= 15 preschoolers of two German kindergartens who agreed on request to participate. These children were between 5 and 6 years old. The analyses of the data of this pilot study led to the following modifications which resulted in the used, modified test tool: First, three SRL (+) items, which were used to capture the SRL strategies of planning, dealing with deflectors and reflection, showed ceiling effects. A further three items showed poor discriminatory power. These were constructed to measure the SRL strategies of planning (SRL (+) item) and monitoring (SRL (+) and SRL (-) item). Second, the data indicated that children were not able to keep the initial scenario in mind when four response alternatives

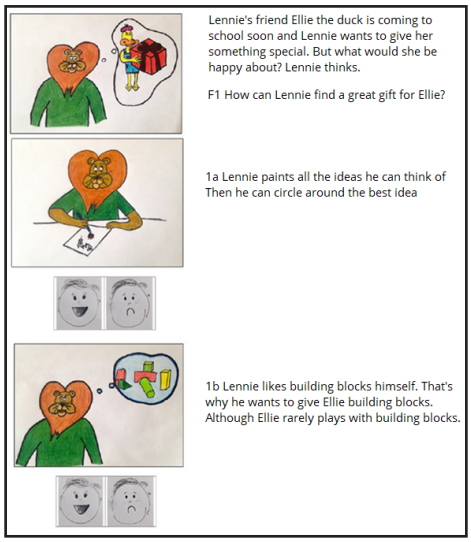


Figure 2. Zimmerman's (2000) process model of SRL, adapted for preschoolers

were presented. Consequently, the number of response alternatives was reduced from four to two responses (one SRL + and one SRL – for each scenario). Third, answering texts were shortened and a linguistic revision was made with the help of a team of experts consisting of educational scientists and psychologists, in order to ameliorate the understanding. As a consequence of the pilot study, changes at the structural and single item level were made and led to the final instrument (see section Cover story, structure of measurement tool and items).

Synthesis

In summary, different elements were useful to build the final SRL meas-ure tool presented in this study. First, Zimmerman's (2000) model of SRL served as theoretical base. Second, the adapted story used in Perels (2009) served as cover story. Third, the child-appropriate presentation of SRL problem scenarios and corresponding response was inspired by Lockl et al. (2016). Fourth, the test evaluation is based on the signal detection theory of Swets (1996). Fifth, the results of our pilot study influenced item selection, number of responses and linguistic elaboration of the final SRL measure tool.

External rating-scale of self-regulated learning (SRL rating scale)

The SRL rating scale is an external assessment of SRL in preschoolers, filled out by their kindergarten teachers as experts. On the one hand, the item pool consists of a selection of items used in two previous studies examining SRL in children, namely studies by Otto (2007) and Merget-Kullmann and Wende (2004). On the other hand, it consists of items from two established measurement tools: the Children's Independent Learning Development (CHILD 3-5) checklist (Whitebread et al., 2009) and the Child behavioural ratings scale (Rowley, 2015). Item selection is based on con-tent considerations and the results from item analysis of a former version of the SRL rating scale, used in Venitz & Perels (2018). All items of the composed measurement tool were rated on a Four Point Likert scale that ranges from 1 (never) to 4 (always). The questionnaire, which is structurally related to the SRL measure tool for preschoolers, contains 35 items, which are grouped into eight subscales operationalizing SRL learning strategies. The structure and relia-bilities of the SRL rating scale are shown in Table 1.

Table 1. *Structure and reliabilities of the SRL rating scale*

Phase	Scale	N	Cronbach´s Alpha
Forethought phase (e.g. 'in a difficult task, the child considers exactly how it wants to proceed.')	Definition of goals & planning	7	.87
	Using prior knowledge	2	.77
	Planning & organisation	3	.62
	Self-efficacy	7	.85
Performance phase (e.g. 'The child can resist dis-trac-tions.')	Breaks & self-motivation	1	---*
	Keeping up	4	.78
	Dealing with deflectors	5	.50
	Monitoring	3	.70
Self reflection phase (e.g. 'The child can talk about how something was done or learned.')	Reflection	3	.73
Overall scale	Self-regulated learning	35	.78

*N: Number of items, *Breaks and self-motivation is only represented by one item*

Executive functioning (ToL Test)

We used a modified version of the ToL Test (Shallice, 1982), a well-known and valid neuropsychological test of satisfactory to high reliability with α= .78 (Tuche & Lange, 2004), used to measure EF, in particular test takers' planning ability and problem solving ability. The version we used in this study was shortened from 20 to 10 items because the examined age cohort was of a younger age than the target group of the original ToL Test. One example problem and ten problems (or items) were administered. For each item, a stimulus card with a target configuration was presented to the child. Children were asked to rearrange three different-coloured balls on three bars in different sizes so that the target configuration turns out. The number of ball movements was predefined, so the child has to make a plan before starting the action. The range of total performance ranges from 0 to 10 points (1= Problem solved correctly in compliance with the specified number of ball move-ments, 0= Problem not solved).

Statistical Procedure

The internal consistency of the SRL measure tool for preschoolers was estimated with the Kuder-Richardson formula which can be regarded as an antecedent of Cronbach's alpha and is used to deal with dichotomous data. Concurrent validity was estimated by correlating (a) an indicator of an external measurement tool of the domain of SRL; that is, scores of the SRL external rating scale, and (b) an indicator of a measurement tool of the related domain of EF that is also applied on the child level; that is, performance and planning time in the ToL Test.

Results

Sample Test Results

The descriptive data of the SRL variables and the EF variable are shown in Table 2. Data is based on the analytic sample of *N*= 164.

Table 2. *Descriptive data of SRL variable and EF variable*

	M (SD)	Min	Max
SRL measure tool for preschoolers[a]	6.6 (5.2)	-6	19
SRL rating scale[b]	85.5 (10.1)	61	106
ToL Test[c]	6.9 (1.9)	0	10

[a]measuring range: -24 to 24, [b]measuring range: 35 to 140, [c]measuring range: 0 to 10

Item Analysis

Table 3 illustrates the descriptive item statistics, including item difficulty of the SRL measure tool for preschoolers. In eight SRL (+) items (1a, 3a, 4b, 6b, 7a, 9a, 10b,11a) ceiling effects (P_i> 80) were found, whereas one SRL (-) item (11b) showed floor effect (P_i< 20). Therefore, those items were dropped for further analysis.

When analysing the discriminatory power of the fifteen remaining items, four SRL + items showed a low (negative) item-scale-correlations (2b: *r*= -.09, 5a: *r*= -.14, 8b: *r*= -.16, 12b: *r*= -.15).

Both types of items – those items with ceiling/ground effects and those items with low discriminatory power – would impair the reliability and consequently the validity of the SRL measurement tool. In sum, all 12 SRL (+) items and one SRL (-) item were removed from further analysis. Consequently, further analyses are based exclusively on the remaining 11 SRL (-) items. Nevertheless, all SRL strategies are still captured by the measurement tool, which also means that

items from all SRL phases (forethought phase, performance phase, reflection phase) were preserved.

Reliability Analysis

The internal consistency of the final SRL measurement tool for preschoolers (including 11 items) was α= .72. The corrected item-total correlations varied between r_{it}= .17 and r_{it}= .55 (see table 3) with an average of r_{it}= .35. The internal consistency of the three theoretically plausible subscales representing the three phases of learning (each comprising four items) was α= .42 for forethought phase of SRL, α= . 58 for performance phase of SRL and α= . 40 for self-reflection phase of SRL.

'Near Cross-Validation' Using an External Srl Measurement Tool

The Pearson correlation coefficient between the total score of the SRL measurement tool for preschoolers and the SRL rating scale (M= 98.10, SD= 17.29) was r= .20 and reached significance at the .05 level (p=.03). Because of insufficient reliabilities of the assumed subscales (phases of learning) in the SRL measurement tool, further analysis on subscale level was not conducted. Based on theoretical assumptions, correlation coefficients between the single items of the SRL measure tool for preschoolers and the corresponding reliable subscales of the SRL rating scale were calculated and are shown in Table 5.

'Far Cross-Validation' Using an EF Measurement Tool Applied At Child-Level

The Pearson correlation coefficient between the total score of the SRL measurement tool for pre-schoolers and the performance in the ToL Test (M= 6.81, SD= 1.90) was r= .18 (p= .018).

Discussion

The aim of this study was to initialize the development and evaluation of a direct, quantitative (online-) measurement tool of SRL for preschoolers by considering the cognitive and linguistic development status of children at this age. This topic has been subject to little research to date. For this reason, we intended to expand the repertoire of existing SRL method-ology for the preschool age ranges (Spörer & Brunstein, 2006). The SRL measurement tool presented in this study is a time-efficient, child-friendly instrument that was developed for ap-plication in field settings such as kindergartens. The results reported in this paper indicate ini-tial empirical support for the psychometric quality of the instrument, yet may also especially indicate possibilities for optimization.

The Reliability Analysis

Statistical analysis indicated a satisfactory reliability of the overall scale of the SRL measurement tool for preschoolers after the initially constructed instrument had undergone some changes. Importantly, the SRL (-) items proved to be of appropriate item difficulty in contrast to the SRL (+) items, where many items suffered from ceiling effects. A possible explanation could be response biases in the form of acquiescence phenomena (Coe, Waring, Hedges & Arther, 2012) which describes children´s tendency to agree with the test leader or protagonist of a cover story. For instance, Cleveland, Quas, and Lyon (2016) demonstrated children's sensitivity for acquiescence in interviews at preschool age. Even though we intended to reduce distortions by adequate formulations of test instruction ('Do you think Lennie´s idea is a good/bad idea or a bad/ good idea'? in varying order) we, presumably, could not counteract the sensitivity for response bias in this age group. Evaluating

Table 3. *Descriptive item statistics and item difficulty*

Item	Phase	Learning strategy	Content	Mean	*Sd*	P_i^a
1a		Using prior knowledge	SRL (+)	.76	.66	88.0
1b			SRL (-)	.02	1	51.0
2a		Planning	SRL (-)	-.56	.83	22.0
2b			SRL (+)	.52	.86	76.0
3a			SRL (+)	.81	.60	90.5
3b			SRL (-)	.27	.97	63.5
4a		Self-efficacy	SRL (-)	.15	.99	57.5
4b			SRL (+)	.79	.61	89.5
5a		Breaks/self-motivation	SRL (+)	.58	.82	79.0
5b			SRL (-)	-.53	.85	23.5
6a		Breaks/self-motivation	SRL (-)	.24	.98	62.0
6b			SRL (+)	.81	.59	90.5
7a		Breaks/self-motivation	SRL (+)	.68	.73	84.0
7b			SRL (-)	-.38	.93	31.0
8a		Dealing with deflectors	SRL (-)	-.19	.99	40.5
8b			SRL (+)	.59	.81	79.5
9a		Monitoring	SRL (+)	.75	.67	87.5
9b			SRL (-)	-.03	1	48.5
10a		Reflection	SRL (-)	-.43	.91	28.5
10b			SRL (+)	.81	.59	90.5
11a		Reflection	SRL (+)	.76	.66	88.0
11b			SRL (-)	-.66	.75	17.0
12a	forethought phase	Attribution	SRL (-)	.37	.93	68.5
12b			SRL (+)	.51	.86	75.5

$^aP_i = (x_i - x_{min} / x_{max} - x_{min}) * 100$

Table 4. *Item total correlations of the 11 items considered in reliability analysis*

Item	Self-regulated learning strategy with wording item	r_{it}
1b	using prior knowledge SRL (-), 'Lennie likes building blocks himself. That´s why he intends to give Ellie building blocks. Although Ellie rarely plays with building blocks.'	.38
2a	planning SRL (-), 'Lennie says, "I´ll get right to it. It´s much faster without a craft book!'	.16
3b	planning SRL (-), 'Lennie rashly takes everything out of the craft cupboard. It does not matter whether he needs all those things.'	.41
4a	self-efficacy SRL (-), 'Lennie thinks he´s not even starting to make the school cone. He is not very good at cutting out.'	.28
5b	breaks SRL (-), 'Lennie does not take a break. He´s tired, but without a break it does not take so long.'	.30
6a	self-motivation SRL (-), 'Lennie says to himself, "I´m fed up! I just have to keep going."'	.39
7b	self-motivation SRL (-), 'Lennie could give crayons to Ellie. Then he does not have to continue tinkering.'	.38
8a	dealing with deflectors SRL (-), 'Lennie says: "Let´s go! I´m going to play along with you!" Playing football is more fun than doing handicrafts.'	.54
9b	monitoring SRL (-), 'Lennie tells himself: "I don´t know if I do it exactly as it is said in the craft book." It takes far too long to look it up in the craft book!'	.33
10a	reflection SRL (-), 'Lennie does not check whether his school cone looks correct. He puts the school cone aside quickly and walks away to play.'	.40
12a	causal attribution SRL (-), 'Lennie believes he is the reason – he´s just not good at doing handicrafts.'	.34

Table 5. *Correlation coefficients between subscale of the SRL rating scale and single items of the developed measure tool*

SRL rating scale	SRL measure tool for preschoolers	Validation
Subscale	Content of item	Correlation Coefficient
Using prior knowledge	1b Lennie wants to give Ellie building blocks although she rarely plays with those.	.24**
Definition of goals & planning	3b It´s much faster without a craft book.	.28**
Planning & organisation	2a Lennie takes all materials, no matter if they are useful.	.02
Self-efficacy	4a Lennie refuses to start with work because he is not good at cutting out.	-.02
Breaks and self-motivation	5b Lennie does not take a break because it would take too long.	-.09
Keeping up	6a Lennie ignores that he loses interest in doing handicrafts.	.20*
Keeping up	7b Lennie thinks about another kind of present for his friend.	.10
Dealing with deflectors	8a While working, Lennie decides to play football.	---[a]
Monitoring	9b Lennie does not want to check if he proceeds correctly.	.06
Reflection	10a Lennie does not check the result of his work.	.21*
---[b]	12a Lennie blames himself.	

***p= .001, *p< .05, [a]subscale not reliable (see section 'measures'), [b]no corresponding subscale in SRL rating*

items as 'highly beneficial' (or 'good idea') could explain the ceiling effects in specifically those SRL (+) items, where 'highly beneficial' is the correct answer and consequently rated as a hit. Potentially, the SRL (-) items, which showed a good item difficulty, were able to counteract response biases and, additionally, made greater demands on children – they need to inhibit an automatic response tendency such as 'agreeing'. Probably, SRL (-) items represent a type of item that is more differentiating and appropriate to explore SRL on the child level with the kind of measure tool we used.

Contrary to our assumptions, the reliability of subscales, also on the time axis based on Zimmerman's (2000) process model of SRL (forethought phase, performance phase, self reflection phase), was limited in our preschool sample. The specific developmental status of the exam-ined age cohort may serve as an explanation. To be precise, there are two possible explanations as to why the application of our measurement tool might have failed to yield the expected subscale structure: (a) The sensitive period of preschool age is characterized by critical cognitive maturation processes that enable individuals to regulate their thinking and behavior (Montroy et al., 2016; Zelazo, 2015). Potentially, our tested children might, however, have just started to apply particular learning strategies which may have crossed the sequential order as assumed in the SRL process model. The integration into a holistic learning process could then evolve at a later point in time. Consequently, the process model of SRL (Zimmerman, 2000) would not be as easily applicable as in other age groups such as, for example, students (Leidinger & Perels, 2012) or university students (Dörrenbächer & Perels, 2016; Schmitz, Klug, & Schmidt, 2011). (b) The assumption that the use of intuitive learning strategies does not fit the process model (Zimmerman, 2000) does not necessarily render preschoolers unable to integrate the learning strategies into a holistic process. Rather, they may be in need of special support through programmes with a focus on SRL. Training studies in combination with multi-methodological measurement of change are essential to test this hypothesis and may shed more light on the developmental progress of SRL in preschoolers.

The Validity Analysis Using 'Near and Far Cross Validation'

Results of the validity analysis, using two established instruments with good psychometric quality as criterions, suggest that the newly constructed tool as a whole seems to measure SRL-like abilities: Both the total scores of a structurally similar external measure and the structurally dissimilar EF measure show significant correlations with the newly developed test. Additionally, analyses on the single item level gathered more information on the validity of our instrument: In sum, four items (1b /using prior knowledge, 3b/planning, 6a/self-motivation and 10a/reflection) showed significant correlations with the corresponding sub-scales of the external rating scale. This demonstrates that the at-

tempt to cover different SRL-relevant learning strategies may have been successful and supports the idea that the particular SRL strategies – possibly without support – evolve in a more independent manner than as-sumed in the SRL process model (Zimmerman, 2000). In this context, it might be of interest to examine particular learning strategies more deeply by using a larger item pool with the aim to (a) replicate our findings that certain SRL strategies (using prior knowledge, planning, self-motivation and reflection) are indeed already measurable on the child level and (b) ameliorate problem scenarios and corresponding items to operationalize the particular SRL strategies of our SRL measurement tool for preschoolers.

Limitations and Outlook

Naturally, there are limiting factors and unanswered questions regarding this study. First, the test results on the child level are based on only one measurement point. Consequently, the results possibly represent a 'snapshot' which may be influenced by the way children felt on the day of testing as well as outside factors such as, for example, interruptions while playing for the purpose of testing. Contrary to the direct measure of SRL, the indirect measure via external ratings by the kindergarten teachers is based on many observation moments in the every-day life of kindergarten. In future research, assessing the constructs of interest on at least two occasions would be useful. Second, properties of the kindergarten teachers limit the results: (a) the external ratings are subject to the response behaviour of the respective kindergarten teacher which filled out the questionnaire; (b) even though kindergarten teachers were introduced to the topic of SRL in the run-up to the filling out of the questionnaire, their knowledge after this instruction was not systematically examined, so a different degree of expertise and sensitivity to the detection of SRL abilities is conceivable; and (c) the time period during which the kindergarten teachers attended the respective child was not recorded, but could assumedly have influenced the validity of the rating. Third, the age range of the examined preschoolers is approximately two years because the status of 'preschoolers' was chosen as the inclusion criterion instead of the numerical age. This procedure may have resulted in a loss of information concerning interindividual developmental differences and corresponding SRL abilities in the wide age range. Therefore, future research in the field of SRL in preschoolers should restrict the age range.

Summary and Practical Implications

In summary, the present findings indicate that it seems both plausible and possible to assess SRL online at the child level in an objective and quantitative manner. Further research is needed (a) to make valid statements about the fit of the underlying theoretical model that was considered in our test construction process, (b) to justify an appropriate selection of SRL strat-egies that are already measurable at preschool age (intuitively or after SRL intervention programs) via direct measurement, and (c) to optimize test instructions and item construction with regard to difficulties that may arise from the particular response behaviour in preschool children.

The further development of the SRL test tools is important for the realisation of adapted educational tasks in kindergartens which do not dispose of a structured, well-defined curriculum for the preschool year (as it is the case in Germany). A preferably simple and standardized applicability of such a tool is important to allow a) the execution by external trainers visiting kindergarten in the context of intervention programs as well as b) the execution by kindergarten teachers. An uncomplicated application with no need of special equipment and less spatial conditions (only a quiet room to test children one by one) should allow for usage in kindergarten setting. Direct SRL assessment tools of high psychometric quality are a necessary precondition to develop and empirically verify programmes aiming to promote SRL in intervention settings (Hoyle & Dent, 2018). In this context, the usage of an SRL test tool as a performance measure before and after an SRL interventions is thinkable. Furthermore, a SRL test tool allows to track progress in SRL through repeated measurement (formative assessment).

Finally, the overarching goal to do research on early SRL assessment in preschool children is to facilitate the transition from kindergarten to primary school. The assessment and promotion of basic skill such SRL represents an important pillar due to the documented association between SRL with both academic and life success (e.g. Eisenberg et al., 2005; McClelland et al., 2013).

Funding

This study was funded by Deutsche Forschungsgemeinschaft (DFG) (grant number PE 1176/13-2).

Acknowledgements

We thank Efsevia Kapsali and Nathalie Zetzmann for their help in the construction process. Furthermore, we thank Lisa Dörr and the whole team of student assistants for their help in data collection. Additionally, we want to thank all preschoolers and their parents as well as all kin-dergarten managements for their participation.

References

Ackerman, D. J., & Friedman-Krauss, A. H. (2017). Preschoolers' executive function: Importance, contributors, research needs and assessment options. *ETS Research Report Series, 1*, 1–24.

Barkley, R. A. (2001). The executive functions and self-regulation : An evolutionary neuropsychological perspective. *Neuropsychology Review, 11*(1), 1–29.

Blaye, A., & Chevalier, N. (2011). The role of goal representation in preschoolers' flexibility and inhibition. *Journal of Experimental Child Psychology, 108*(3), 469–483.

Boekarts, M. (1999). Self-regulated learning: Where we are today. *International Journal of Educational Research, 31*(6), 445–457.

Bronson, M. B. (1994). The usefulness of an observational measure of young children's social and mastery behaviors in early childhood classrooms. *Early Childhood Research Quarterly, 9*(1), 19–43.

Bronson, M. B. (2000). *Self-regulation in early childhood: Nature and nurture.* New York: Guilford Press.

Brunstein, J. C., & Spörer, N. (2010). Selbstgesteuertes Lernen. In D. H. Rost (Ed.), *Handwörterbuch pädagogische Psychologie* (pp. 751–759). Weinheim, Basel: Beltz.

Bryce, D., & Whitebread, D. (2012). The development of metacognitive skills: Evidence from observational analysis of young children's behavior during problem-solving. *Metacognition and Learning, 7*(3), 197–217.

Brydges, C. R., Reid, C. L., Fox, A. M., & Anderson, M. (2012). A unitary executive function predicts intelligence in children. *Intelligence, 40*(5), 458–469.

Byrd, D. L., Van Der Veen, T. K., McNamara, J. P. H., & Berg, W. K. (2004). Preschoolers Don't Practice What They Preach: Preschoolers' Planning Performances With Manual and Spoken Response Requirements. *Journal of Cognition and Development, 5*(4), 427–449.

Carlson, S. M. (2005). Developmentally sensitive measures of executive function in preschool children. *Developmental Neuropsychology, 28*(2), 595–616.

Cleveland, K. C., Quas, J. A., & Lyon, T. D. (2016). Valence, implicated actor, and children's acquiescence to false suggestions. *Journal of Applied Developmental Psychology, 43*, 1–7.

Coe, R.; Waring, M.; Hedges L.V.; Arther, J. (2012). *Research Methods & Methodologies in education.* London: SAGE Publications.

Dörrenbächer, L., & Perels, F. (2016). More is more? Evaluation of interventions to foster self-regulated learning in college. *International Journal of Educational Research, 78*, 50–65.

Dörrenbächer, L., Russer, L., & Perels, F. (2018). Selbstregulationstraining für Studierende : Sind quantifizierte qualitative Lerntagebuchdaten zur Wirksamkeitsüberprüfung geeignet ? *Zeitschrift Für Hochschulforschung, 1*, 40–56.

Durrett, M. E. (1959). The relationship of early infant regulation and later behavior in play interviews. *Child Development, 30*(2), 211–216.

Eisenberg, N., Sadovsky, A., Spinrad, T. L., Fabes, R. A., Losoya, S. H., Valiente, C., … & Shepard, S. A. (2005). The relations of problem behavior status to children's negative emotionality, effortful control, and impulsivity: Concurrent relations and prediction of change. *Developmental Psychology, 41*(1), 193–211.

Erb, C. D., Moher, J., Song, J.-H., & Sobel, D. M. (2017). Cognitive control in action: Tracking the dynamics of rule switching in 5- to 8-year-olds and adults. *Cognition, 164*, 163–173.

Fadlelmula, F. K., Cakiroglu, E., & Sungur, S. (2015). Developing a Structural Model on the Relationship among Motivational Beliefs, Self-Regulated Learning Strategies, and Achievement in Mathematics. *International Journal of Science and Mathematics Education, 13*(6), 1355–1375.

Gamannossi, B. A., & Pinto, G. (2014). Theory of mind and language of mind in narratives: Developmental trends from kindergarten to primary school. *First Language, 34*, 262–272.

Gaskins, I. W., Satlow, E., Pressley, M., & Meltzer, L. (2007). Executive Control of Reading Comprehension in the Elementary School. In L. Meltzer (Ed.), *Executive function in education: From theory to practice* (pp. 194–215). New York: The Guilford Press.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: a research note. *Journal of Child Psychology and Psychiatry, 38*(5), 581–586.

Hembacher, E., & Ghetti, S. (2014). Don't Look at My Answer: Subjective Uncertainty Underlies Preschoolers' Exclusion of Their Least Accurate Memories. *Psychological Science, 25*(9), 1768–1776.

Hendry, A., Jones, E. J. H., & Charman, T. (2016). Executive function in the first three years of life: Precursors, predictors and patterns. *Developmental Review, 42*, 1–33.

Hofmann, W., Schmeichel, B. J., & Baddeley, A. D. (2012). Executive functions and self-regulation. *Trends in Cognitive Sciences, 16*(3), 174–180.

Howse, R. B., Lange, G., Farran, D. C., & Boyles, C. D. (2003). Motivation and self-regulation as predictors of achievement in economically disadvantaged young children. *The Journal of Experimental Education, 71*(2), 151–174.

Hoyle, R. H., & Dent, A. L. (2018). Developmental trajectories of skills and abilities relevant for self-regulation of learning and performance. In D. H. Schunk & J. A. Greene (Eds.), *Handbook of Self-regulation of Learning and Performance* (pp. 49–63). New York: Taylor & Francis.

Jurado, M. B., & Rosselli, M. (2007). The elusive nature of executive functions: A review of our current understanding. *Neuropsychology Review, 17*(3), 213–233. https://doi.org/10.1007/s11065-007-9040-z

Kochanska, G., Coy, K. C., & Murray, K. T. (2001). The Development of Self-Regulation in the First Four Years of Life. *Child Development, 72*(4), 1091–1111.

Landmann, M., Perels, F., Otto, B., Schnick-Vollmer, K., & Schmitz, B. (2009). Selbstregulation und selbstreguliertes Lernen. In E. Wild & J. Möller (Eds.), *Pädagogische Psychologie* (pp. 45–62). Berlin Heidelberg: Springer.

Leidinger, M., & Perels, F. (2012). Training Self-Regulated Learning in the Classroom: Development and Evaluation of Learning Materials to Train Self-Regulated Learning during Regular Mathematics Lessons at Primary School. *Education Research International, 2012*, 1–14. https://doi.org/10.1155/2012/735790

Lewis, F. C., Reeve, R. A., Kelly, S. P., & Johnson, K. A. (2017). Evidence of substantial development of inhibitory control and sustained attention between 6 and 8 years of age on an unpredictable Go/No-Go task. Journal of Experimental Child Psychology, 157, 66–80. https://doi.org/10.1016/j.jecp.2016.12.008

Lockl, K., Händel, M., Haberkorn, K., & Weinert, S. (2016). Metacognitive Knowledge in Young Children: Development of a new test procedure for first graders. In H. P. Blossfeld, J. von Maurice, M. Bayer, & J. Skopek (Eds.), *Methodological Issues of Longitudinal Surveys: The Example of the National Educational Panel Study* (pp. 465–485). Wiesbaden: Springer.

Lockl, K., & Schneider, W. (2007). Knowledge about the mind: Links between theory of mind and later metamemory. *Child Development, 78*(1), 148–167. https://doi.org/10.1111/j.1467-8624.2007.00990.x

Maylor, E. A., & Logie, R. H. (2010). A large-scale comparison of prospective and retrospective memory development from childhood to middle age. *Quarterly Journal of Experimental Psychology, 63*(3), 442–451. https://doi.org/10.1080/17470210903469872

McClelland, M. M., Acock, A. C., Piccinin, A., Rhea, S. A., & Stallings, M. C. (2013). Relations between preschool attention span-persistence and age 25 educational outcomes. *Early Childhood Research Quarterly, 28*(2), 314–324. https://doi.org/10.1016/j.ecresq.2012.07.008

McClelland, M. M., Morrison, F. J., & Holmes, D. L. (2000). Children At Risk for Early Academic Problems: The Role of Learning-Related Social Skills. *Early Childhood Research Quarterly, 15*(3), 307–329. http://doi.org/10.1016/S0885-2006(00)00069-7

Mega, C., Ronconi, L., & De Beni, R. (2014). What makes a good student? How emotions, self-regulated learning, and motivation contribute to academic achievement. *Journal of Educational Psychology, 106*(1), 121–131.

Merget-Kullmann, M., & Wende, M. (2004). *Konzeption, Durchführung und Evaluation eines Erzieherinnentrainings zum Thema "Lernen lernen mit Vorschulkindern."* unpublished diploma thesis, Technische Universität Darmstadt.

Miyake, A., Friedman, N. P., Emerson, M. J., Witzki, A. H., Howerter, A., & Wager, T. D. (2000). The Unity and Diversity of Executive Functions and Their Contributions to Complex "Frontal Lobe" Tasks: A Latent Variable Analysis. *Cognitive Psychology, 41*(1), 49–100. https://doi.org/10.1006/cogp.1999.0734

Montroy, J. J., Bowles, R. P., Skibbe, L. E., Mcclelland, M. M., & Morrison, F. J. (2016). The Development of Self-Regulation Across Early Childhood. *Developmental Psychology, 52*(11), 1744–1762. https://doi.org/10.1037/dev0000159

Otto, B. (2007). *SELVES: Schüler-, Eltern- und Lehrertraining zur Vermittlung effektiver Selbstregulation.* Berlin: Logos Verlag Berlin GmbH.

Paris, A. H., & Paris, S. G. (2003). Assessing narrative comprehension in young children. *Reading Research Quarterly, 38*(1), 36–76. https://doi.org/10.1598/RRQ.38.1.3

Perels, F. (2009). *Mit Kindern lernen lernen: selbstreguliertes Lernen im Kindergarten anleiten.* Göttingen: Vandenhoeck & Ruprecht.

Perels, F., Merget-Kullmann, M., Wende, M., Schmitz, B., & Buchbinder, C. (2009). Improving self-regulated learning of preschool children: Evaluation of training for kindergarten teachers. *British Journal of Educational Psychology, 79*(2), 311–327. https://doi.org/10.1348/000709908X322875

Perry, N. E., Hutchinson, L. R., Yee, N., & Määttä, E. (2018). Advances in understanding young children's self-regulation of learning. In D. H. Schunck & J. A. Greene (Eds.), *Handbook of self-regulation of learning and performance* (pp. 457–472). New York: Routledge.

Ponitz, C. C., McClelland, M. M., Matthews, J. S., & Morrison, F. J. (2009). A Structured Observation of Behavioral Self-Regulation and its Contribution to Kindergarten Outcomes. *Developmental Psychology, 45*(3), 605–619. https://doi.org/10.1037/a0015365

Raizner, R. D., Song, J., & Levin, H. S. (2002). Raising the ceiling: The Tower of London-Extended Version. *Developmental Neuropsychology, 21*(1), 1-14.

Rowley, B. A. (2015). *Kindergarten assessment: Analysis of the Child Behavioral Rating Scale (CBRS)*. Eugene: University of Oregon.

Schmitz, B., & Schmidt, M. (2011). Assessing self-regulated learning using diary measures with university students. In B. J. Zimmerman & D. H. Schunk (Eds.), *Handbook of self-regulation of Learning and Performance* (pp. 251–266). New York: NY: Routledge.

Schneider, W., & Büttner, G. (2008). Entwicklung des Gedächtnisses bei Kindern und Jugendlichen. In L. Montada & R. Oerter (Eds.), *Entwicklungspsychologie* (6th ed., pp. 480–501). Weinheim: Beltz.

Schnell, K., Ringeisen, T., Raufelder, D., & Rohrmann, S. (2015). The impact of adolescents' self-efficacy and self-regulated goal attainment processes on school performance - Do gender and test anxiety matter? *Learning and Individual Differences, 38*, 90–98. https://doi.org/10.1016/j.lindif.2014.12.008

Shallice, T. (1982). Specific impairments of planning. *Philosophical Transactions of the Royal Society of London, 298*(1089), 199–209.

Shaul, S., & Schwartz, M. (2014). The role of the executive functions in school readiness among preschool-age children. *Reading and Writing, 27*(4), 749–768.

Shing, Y. L., Lindenberger, U., Diamond, A., Li, S., & Davidson, M. C. (2010). Memory maintenance and inhibitory control differentiate from early childhood to adolescence. *Developmental Neuropsychology, 35*(6), 679–697. https://doi.org/10.1080/87565641.2010.508546

Spörer, N., & Brunstein, J. C. (2006). Erfassung selbstregulierten Lernens mit Selbstberichtsverfahren: Ein Überblick zum Stand der Forschung. *Zeitschrift Für Pädagogische Psychologie, 20*(3), 147–160.

Stephenson, K. M., & Hanley, G. P. (2010). Preschoolers' Compliance With Simple Instructions: A Descriptive and Experimental Evaluation. *Journal of Applied Behavior Analysis, 43*(2), 229–247. https://doi.org/10.1901/jaba.2010.43-229

Swets, J. A. (1996). *Singal detection theory and ROC analysis in psychology and diagnostics: collected papers*. Mahwah, N.J.: L.Erlbaum Associates.

Tabuenca, B., Kalz, M., Drachsler, H., & Specht, M. (2015). Time will tell: The role of mobile learning analytics in self-regulated learning. *Computers and Education, 89*, 53–74. https://doi.org/10.1016/j.compedu.2015.08.004

Tompkins, V., Guo, Y., & Justice, L. M. (2013). Inference generation, story comprehension, and language skills in the preschool years. *Reading and Writing, 26*(3), 403–429. https://doi.org/10.1007/s11145-012-9374-7

Tucha, O.; Lange, K. W. (2004). *Turm von London - Deutsche Version TL-D*. Göttingen: Hogrefe.

Van Den Broek, P., Kendeou, P., Lousberg, S., & Visser, G. (2011). Preparing for reading comprehension: Fostering text comprehension skills in preschool and early elementary school children. *International Electronic Journal of Elementary Education, 4*(1), 259–268.

Venitz, L., & Perels, F. (2018). Promoting self-regulated learning of preschoolers through indirect intervention: a two-level approach. *Early Child Development and Care*, 1-14.

Whitebread, D., Coltman, P., Pasternak, D. P., Sangster, C., Grau, V., Bingham, S., ... & Demetriou, D. (2009). The development of two observational tools for assessing metacognition and self-regulated learning in young children. *Metacognition and Learning, 4*(1), 63–85. https://doi.org/10.1007/s11409-008-9033-1

Winne, P. H., & Perry, N. E. (2005). Measuring Self-Regulated Learning. In M. Boekarts, P. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 531–599). San Diego: Acamedic Press.

Zelazo, P. D. (2015). Executive function: Reflection, iterative reprocessing, complexity, and the developing brain. *Developmental Review, 38*, 55–68. https://doi.org/10.1016/j.dr.2015.07.001

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekarts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self regulation* (pp. 13–41). San Diego: Acamedic Press.

Appendix A

Example problem scenarios of the SRL measure tool for preschoolers (performance phase and self-reflection phase)

An example problem scenario for the learning strategy 'breaks and self-motivation' (perfor-mance phase of SRL, Figure A1) and an example scenario for the learning strategy 'reflection' (self-reflection phase of SRL, Figure A2) are listed below.

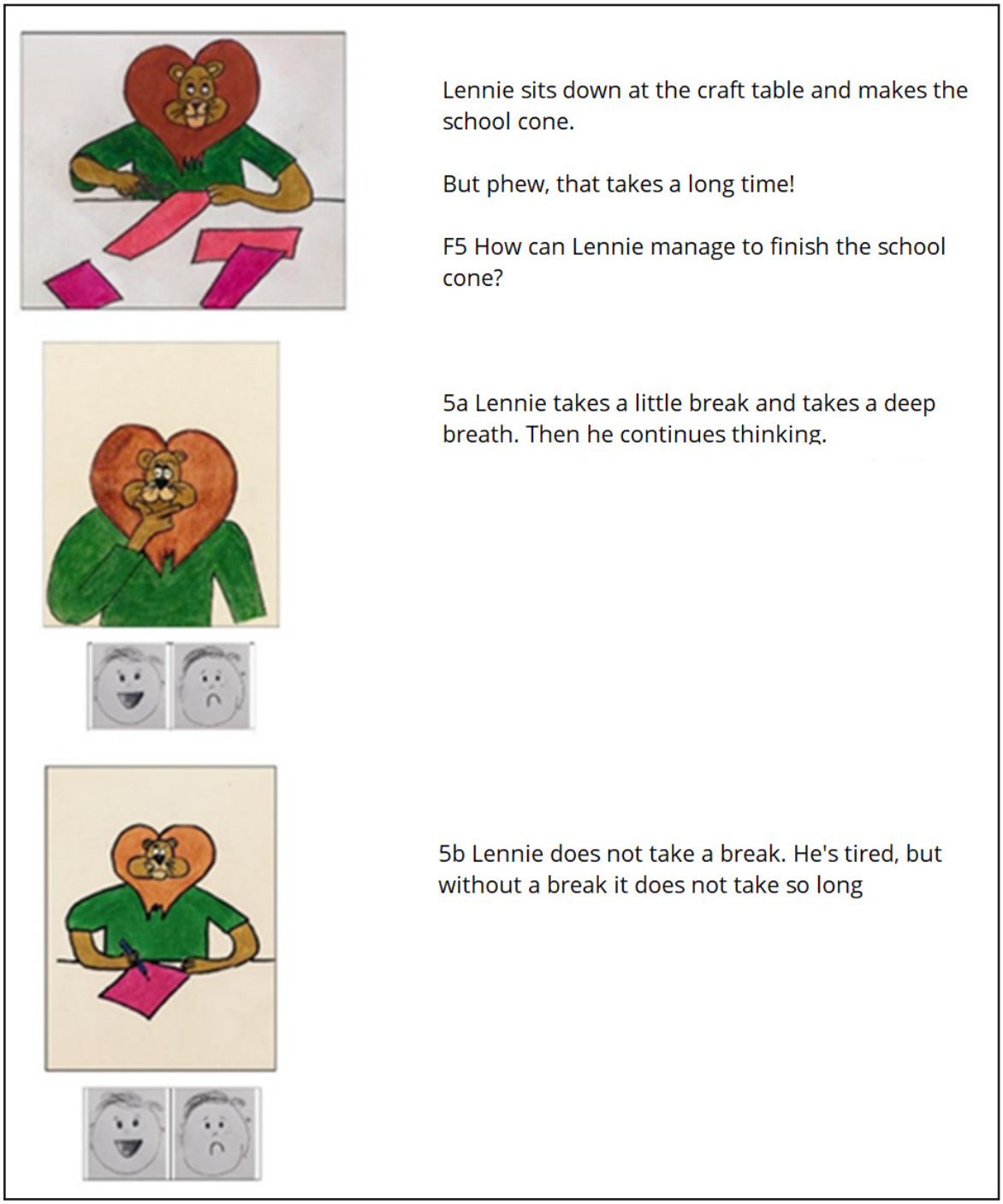


Figure A1. Example problem scenario (F5) with corresponding SRL (+) item (5a), SRL (-) item (5b) in dichotomous response format (happy vs. unhappy face)

Finally, Lennie made it. The school cone for his friend is ready!

F10 What is Lennie going to do next?

10a Lennie doesn't check if his school cone looks right. He quickly puts it aside and goes to play.

10b Lennie compares his school cone to the school cone in the handcraft book: both school cones look similar. That's why he thinks he made his school cone right.

Figure A1. Example problem scenario (F5) with corresponding SRL (+) item (5a), SRL (-) item (5b) in dichotomous response format (happy vs. unhappy face)

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **127-136**

The Impact of Metacognitive Mediation on 12-Year-Old Students' Self-Efficacy Beliefs for Performing Complex Tasks

Stéphane Colognesi[a,*], Vanessa Hanin[b], Alena Still[c], Catherine Van Nieuwenhoven[d]

Received: **26 September 2019**
Revised: **23 November 2019**
Accepted: **02 December 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.**iejee**.com

DOI: **10.26822/iejee.2019257657**

Abstract

The goal of this study is to identify the links between metacognitive mediation and students' self-efficacy belief for the performance of complex tasks. We worked for three weeks with six human sciences classes of secondary 1 students who all performed the same tasks. In two classes, metacognition was initiated by the teacher, in two others, activation of metacognition occurred between peers and in the remaining two, there was no metacognitive mediation. Our goal is to compare the three conditions in terms of changes in students' self-efficacy belief through a pretest-posttest comparison among the 85 students who took part in the study. In addition, we interviewed four students in each condition where metacognition was used. The quantitative results showed that self-efficacy improved in classes where metacognition was introduced, which was not the case in the classes where students did not receive any metacognitive prompting. In addition, the comparison of classes "with metacognition" showed that regardless of the agent (the teacher or peers), prompting of metacognition led to improvement in aspects related to active mastery experiences and psychological states of self-efficacy. The difference between these two conditions lay in the strategies available to students to succeed in the tasks.

Keywords: Metacognition, Metacognitive Mediation, Self-Efficacy Beliefs, Task

Introduction

Hattie's (2009) meta-analysis, which synthesized more than 800 studies on the influences on school-age students' academic performance, showed that among the 30 most important variables out of 138 affecting student achievement, the teaching of metacognitive strategies ranks 9th (after items such as formative assessment, goal setting, teacher clarity, adapting instruction to individual student needs/abilities, peer learning, feedback, teacher relationship, which are aspects coming from much research). This echoes the work on measures of effective teaching (Creemers 1999; Ko et al. 2014; Scheerens 2008) which explains that effective teachers teach metacognitive strategies to their students and give them the opportunity to master these strategies. The importance of metacognitive skills for success has been demonstrated in several studies: they lead students to greater autonomy, better memorization, conscious practice and better succeed in tasks (Lafortune et al. 2000) Furthermore, metacognition has been identified as a characteristic of effective learning (Kauffman 2004). In addition, metacognition also play a role in self-efficacy beliefs (Colognesi & Van Nieuwenhoven, 2016; Hanin & Van Nieuwenhoven, 2018), because such practices give students the opportunity to take a look at their work, at the development of their skills, and at their understanding of school subjects, thereby allowing them to become aware of their progress and to improve their relation with knowledge. This is particular the case because depending on the learner's self-efficacy beliefs about performing a task or learning a discipline, his/her motivation may vary and, consequently, he/she may be involved at different levels in his/her school work (Denoncourt et al. 2004).

Nevertheless, success in thinking at a meta level, that is, reflecting on one's own cognition, is not innate. It requires the acquisition of specific strategies (Weil et al. 2013), and intervention on the part of the teacher can support students in the development of these strategies. However, it appears that few teachers take metacognition into account in their instructional practices (Lafortune & Fennema 2013); on the one hand, they do not always see the direct added value it can bring, and on the other hand, they are not necessarily trained in doing this.

This has led us to seek to identify the links between metacognitive mediation and students' self-efficacy belief for the performance of complex tasks. Our two research questions are as follows: to what extent can the use of metacognitive mediation influence (1) students' self-efficacy beliefs and (2) students' use of cognitive strategies in the context of complex tasks?

To answer these questions, we worked for three weeks with three classes of secondary 1 students who performed the same tasks in their human sciences classrooms, a discipline chosen for the fact that it requires students to be able to process information, reflect on the area studied and also reflect on their own approaches.

In the first class, activation of metacognition was initiated by the teacher (condition A), in the second class, activation of metacognition occurred between peers (condition B) and in the third class, there was no metacognitive mediation (condition C). Our goal is to compare the three conditions in terms of changes in students' self-efficacy belief related to task performance and their use of metacognitive strategies, through

[a,*]Corresponding Author: Stéphane Colognesi, Faculty of Psychology and Educational Sciences, IPSY : Psychological Sciences Research Institute, Université catholique de Louvain, Louvain-la-Neuve, Belgium. E-mail: stephane.colognesi@uclouvain.be
[b] Vanessa Hanin, Faculty of Psychology and Educational Sciences, IACHOS: Institute for the Analysis of Change in Contemporary and Historical Societies, Université catholique de Louvain, Louvain-la-Neuve, Belgium. E-mail: Vanessa.hanin@uclouvain.be
[c] Alena Still, Faculty of Psychology and Educational Sciences, IPSY: Psychological Sciences Research Institute, Université catholique de Louvain, Louvain-la-Neuve, Belgium. E-mail: Alena.still@uclouvain.be
[d] Catherine Van Nieuwenhoven, Faculty of Psychology and Educational Sciences, IACHOS: Institute for the Analysis of Change in Contemporary and Historical Societies, Université catholique de Louvain, Louvain-la-Neuve, Belgium. E-mail: catherine.vannieuwenhoven@uclouvain.be

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

a pretest-posttest comparison among the 85 students who took part in the study. To nuance and refine the quantitative results obtained, we followed four students in each group where metacognition was used.

Metacognition

Currently, self-regulated learning is considered to be one of the fundamental concepts in education (Muijs et al. 2014). It is the individual's attempt to achieve the personal goals she has set for herself in relation to a task, by producing thoughts, actions and sensations to use in that attempt (Boekaerts 2002). Self-regulated learning has three dimensions: motivation, behavior and metacognition (Muijs et al. 2014; Noël & Cartier 2016; Zimmerman 2008). Muijs et al. (2014) highlighted why self-regulated learning is necessary, but not sufficient, for learning and academic success, stressing that the role of metacognition is essential in this process, as it allows learners to monitor their levels of knowledge and skills, but also, among other things, to use their resources in the best possible way.

Desoete and Ozsoy (2009), accorging to Flavell (1979) explain that "the concept has been introduced to describe and explain how people gain control over their learning and thinking, particularly in the case of cognitive failures and difficulties they meet when dealing with information processing and problem solving" (p. 1).

There are three facets to metacognition : metacognitive knowledge, metacognitive experiences and metacognitive skills (Desoete & Ozsoy, 2009; Efklides, 2001, 2008; Flavell, 1979). Flavell's (1979) early work defined metacognitive knowledge as knowledge and beliefs accumulated with experience and stored in long-term memory. Flavell (1979) distinguished three categories of declarative meta-knowledge: individual-related (ways of learning, strengths and weaknesses, skills, competencies, etc.); task-related (nature of the information to be processed and task requirements) and strategy-related (means to achieve the objective).

Metacognitive experiences refer to what a person becomes aware and feels when they discover a task and process the related information (Efklides, 2008). These may include metacognitive feelings, metacognitive judgments/estimates and knowledge about online tasks. What distinguishes metacognitive knowledge from metacognitive experiences is the kind of monitoring each involves. Metacognitive knowledge is related to offline monitoring of cognition, whereas metacognitive experiences represent online monitoring of cognition (Efklides 2008; Efklides et al. 2006).

Metacognitive skills refer " to the voluntary control people have over their own cognitive processes" (Desoete & Ozsoy, 2009). Colognesi and Van Nieuwenhoven (2016), based on the work of Deschênes (1991), Veenman (Veenman 2012; Veenman et al. 2005) and Efklides (2008), identified six metacognitive skills; two for each of these phases of task completion. Before the task, the skills of orientation (thinking about the task and developing goals) and planning (identifying necessary strategies and planning steps) come into play. These two skills involve anticipation. During the task, the skills of verification (detecting execution errors) and regulation (modifying, correcting the approach) are needed. These two skills activate explanation of actions, critical distance, and self-questioning. After the task, the skills of evaluation (taking stock of what has been achieved) and self-regulation (reviewing the entire process and projecting yourself into another version of the task) are called for. These two skills generate explanation of its opinion and self-assessment.

Indeed, Veenman et al. (2005) and Veenman's (2012) work identified three points during which metacognition can be promoted in school situations: before, during and after an action, when students can be asked to express themselves in relation to what they think they will be doing (before), what they are doing and why (during), and what they think about their actions or what they would do in a next iteration of the task (after).

Self-Efficacy Beliefs

Self-efficacy beliefs are a component of a broader concept, the self-concept, defined as "the perception (knowledge) and assessment (judgment) that an individual has of his or her personal characteristics" (Paradis & Vitaro 1992, as cited in Galand & Gregoire, 2000, p. 3). Self-concept is a "global and relatively stable representation" (Desmette et al. 2001, p. 4) which varies from one person to another and, for the same person, from one field to another (Galand & Grégoire 2000). Self-concept comprises self-efficacy beliefs, also called feelings of competence (Ahmed et al. 2012), that is, an individual's judgment of his/her personal ability to organize and execute a course of action in order to attain self-set goals (Bandura 1997). Two aspects should be noted: the feeling of effectiveness is specific to a task and/or a subject-matter (Galand & Vanlede 2004/5) and includes the notion of likely success, which encourages a person to engage, or not, in a task.

In this regard, much research has focused on the relationship between self-efficacy beliefs and motivation in the school environment. Authors such as Galand and Vanlede (2004/5) and Perreault, Brassart and Dubus (2010) have shown that the learner's level of belief in her chances of success impacts her behavior and level of engagement in a task, as well as her actual performance. In addition, depending on the perception of her competence, the learner seeks to avoid a situation or activity perceived as threatening or, conversely, invests significantly if she believes in her chances of success (Perreault et al. 2010).

Similarly, a learner with strong self-efficacy beliefs perceives complex tasks as a challenge, sets challenging goals and invests more in their achievement. If the situation becomes more complex, the learner increases her efforts. On the other hand, a learner with low self-efficacy beliefs will tend to be less diligent and quickly give up, as her motivation is quite low. Although she has sufficient skills and abilities, she does not know how to use them and is influenced by her belief in her own abilities (Lecomte, 2004). In this way, self-efficacy beliefs play a significant role in the student's learning process.

A review of the literature (Bandura 1997; Conway & Pleydell-Pearce 2000; Galand & Vanlede 2004/5) shows that self-efficacy beliefs are developed through four sources of information: active mastery experiences (i.e., the influence of background, school history and past academic performance), vicarious experiences (i.e., being aware of others' success or failure in tasks can influence one's own self-efficacy beliefs, so that the perceived level of competence in others also influences the construction of one's self-efficacy beliefs), verbal persuasion (i.e., the impact of encouragement, words of support, or any other message given to the learner) and physiological and emotional states (Hanin, Grégoire, Mikolajczack, Fantini-Hauwel, & Van Nieuwenhoven, 2017).

Associations Between Self-Efficacy Beliefs and Metacognition

The work of Schunk and Pajares (2015), Zimmerman (2008) and Cosnefroy (2010) has shown the link between self-efficacy beliefs and develop of metacognitive skills. The more the individual believes in her abilities, the more she uses effective strategies, engages in difficult tasks, makes efforts and spends time studying. From an iterative perspective, we have shown (Colognesi & Van Nieuwenhoven 2016; Hanin & Van Nieuwenhoven, 2018) that metacognition leads to positive modification of the learner's self-efficacy belief and to an increase in performance. Further, Perreault et al. (2010) also pointed out that the learner's metacognitive capacity, that is, the ability to reflect on his or her own approaches and on his/herself, pre-

dicts how he or she will make a judgment about his skills. Thus, it seems that metacognition and self-efficacy beliefs interact with each other. The question is whether the implementation of metacognitive mediation influences self-efficacy beliefs.

Method

The present study pursues a dual objective. First, we sought to characterize the impact of three modalities of metacognitive mediation on first-year secondary students' self-efficacy beliefs. Second, we would like to know if the nature and number of cognitive strategies used by the students evolve differently if the metacognitive questions are asked by the teacher (condition A) or by peers in a subgroup (condition B), as compared to a condition without metacognitive prompting (condition C).

To carry out this study, we have chosen to combine quantitative and qualitative analysis, thus opting for a mixed-method approach that combines two axes: quantitative analysis that establishes links between various variables through the use of empirical data, together with qualitative analysis that focuses more on understanding the relationships between those variables (Creswell & Plano Clark 2007).

Sample

Our sample consisted of six first-year secondary classes (two classes per condition) from the same school in Brussels, French-speaking Belgium. The characteristics of the participants in the three conditions are presented in Table 1. In condition A, it was the teacher who enacted metacognitive mediation, in condition B, it occurred between peers and in condition C, there was no metacognitive prompting.

Table 1. *Information on the sample*

Item	Total	Girls	Boys	M age (SD)	Results (/20)
Condition A	26	17	9	12.4 (0.71)	11.3
Condition B	32	15	17	12.1 (0.42)	12.6
Condition C	27	15	12	12.5 (0.64)	12.5

Note. Result = Average score in Human Sciences on the report card issued prior to the intervention

To be able to analyze in detail how students respond to metacognitive mediation, we followed four randomly selected students each in conditions A and B, throughout the intervention.

The Intervention

For three weeks, the six classes experienced a course sequence aimed at working on "food over time", and more precisely, during four major periods of history. The two main objectives of the sessions were: formulating a research question and selecting information through the study of how people eat over time. A schematization of the whole course sequence is proposed in Figure 1.

The first task took place without prior instruction to allow the teacher to identify the students' initial representations. 2 x 50 minutes were spent on each task, as well as on the intermediate lessons.Three progressive and complex tasks were assigned to the students as they went along, based on using a complete collection of paper documents provided by the teacher. Using these documents, the three tasks were to complete a summary table, make a mind map and write a summary tracing the evolution of food over time (progressive development in what humans had available/ used as food)..The tasks and activities were identical in all six classes, which were taught by the same teacher. The only variable was the introduction or not of the metacognitive intervention, and the agent by whom metacognition was introduced (by the teacher or between peers).

Metacognitive Mediation

Table 2 presents the metacognitive intervention (Colognesi & Lucchini, 2016; Colognesi & Van Nieuwenhoven, 2016, 2017) enacted in conditions A and B. In practice, in condition A, metacognitive mediation went through the teacher; some students answered questions orally, while others benefited from the responses of others. In condition B, following the work of Gagnière, Bétrancourt, and Détienne (2007), the allo-confrontation technique was applied; namely, students explained to each other, without interaction with the teacher, the aspects prompted by the questions presented on the board. Students share in pairs there had some groups of three if there was an odd number of students. In both conditions, metacognitive mediation was repeated at three time points: before, during and after the task.

Table 2. *Metacognitive intervention performed in each experimental condition*

Point time	Metacognitive intervention in condition A: questions are asked by the teacher and students answer in large groups	Metacognitive intervention in condition B: questions are recorded on the board, and students share in pairs (students grouped themselves), without the teacher's involvement
Before the task is completed	Can you explain the instructions again in your own words? How do you plan to carry out the task?	Explain the instructions and share strategies that could be used to achieve the task.
During the task	What are the difficulties you are facing? What strategies do you use to move the task forward?	Explain the difficulties encountered and the strategies used to overcome them or to progress in the task.
After the task is completed	What do you think of your product? Next time, what could you do to be more effective?	Explain your opinion of your product. Explain what can be put in place next time to be more effective.

As a reminder, in condition C, the "metacognition" variable was neutralized, so that students had no metacognitive intervention at any time.

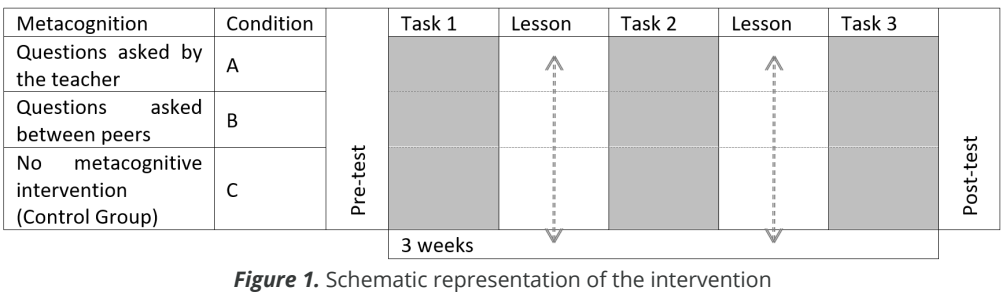


Figure 1. Schematic representation of the intervention

The intervention presented in Table 2 was further developed for all four students to collect additional data. The aim was to be able to understand how students in the "metacognition" condition groups felt about the intervention, to have their opinions on how it was going, their difficulties, etc. During classtime, the researcher sat next to each of them to gather his information in the form of a discussion. All the data collected by audiorecording were transcribed.

Measures and Data Processing

Self-efficacy beliefs

For the mixed-method approach mentioned above, two data collection instruments were used: a questionnaire and specific qualitative follow-up with eight students in the two experimental conditions. We adapted Boekaerts' (2002) Online Motivation Questionnaire to assess students'self-efficacy beliefs. It includes 14 items that refer to three facets of self-efficacy belief, as shown in Table 3. Students were asked to rate their level of agreement for each item on a Likert scale ranging from 0 (strongly disagree) to 3 (strongly agree). The questionnaire was administered before (pretest) and after (posttest) the intervention (see Figure 1), and was read aloud by the teacher, who emphasized that this questionnaire does not seek to evaluate students' work or to judge how they perceive the human sciences course, but rather to determine to what extent they feel competent, or not, in this discipline. The internal consistency was very good (Time 1: α= .87, Time 2: α= .84).

Cognitive strategies

We added an additional question to the questionnaire (item 15), aimed at measuring the strategies that students can explain when asked about the performance of complex tasks in the human sciences course. It is an open-ended item having three sub-questions : (1) when I have a task to perform in human sciences, I proceed in such a way... ; (2) when I complete a task in human sciences, I... ; (3) when I perform a task in human sciences, I can use the following strategies... In order to characterize the evolution of the learner's explicit strategies, a count of the strategies identified by the students before and after the intervention in response to these three sub-questions was carried out in the three conditions.

Metacognitive mediation

A content analysis (Miles & Huberman, 1994) was applied to the data collected through interviews with the 8 students (4 from group A and 4 others from group B). In addition, we also recorded and transcribed whole class conversations. A researcher was present for all classes in all classrooms.

Main Results

The main results are presented in two stages. First, the results regarding changes in students' self-efficacy beliefs in the three conditions are presented. Then come the results pertaining to changes in the number and nature of the cognitive strategies they used.

Regarding the quantitative approach it is worth mentioning that, prior to analysis, checks of the theoretical assumptions underlying analysis of variance were undertaken including normality, homogeneity of variance and independence. The report showed that the assumptions were met.

Comparison Between the Three Conditions in terms of Self-Efficacy Belief

Quantitative approach

Descriptive statistics are available in the Appendix. In order to check for any baseline difference at pretest between the three groups, a univariate ANOVA was performed for the variables under consideration (F(2,82)= 2.27,p= .11).

The results of the repeated measures ANOVA show a significant difference in changes in self-efficacy belief between the three groups (F(2,82)= 36.85,p< .001,η^2= 0.47). As seen in Figure 2, the two experimental conditions show an increase in their self-efficacy belief between the beginning and the end of the intervention. This suggests that activation of metacognition, no matter how it is initiated, improved students' self-efficacy beliefs. Nonetheless, Bonferroni post-hoc tests highlighted no significant differences between the three conditions.

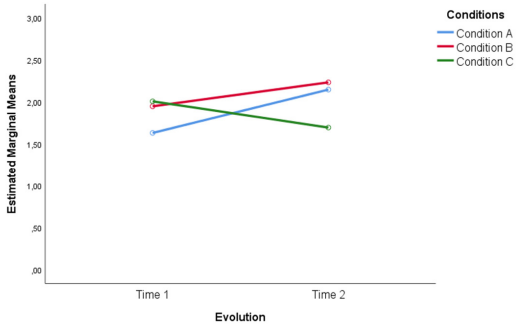


Figure 2. Mean self-efficacy belief over time by condition

Let us deepen this analysis by looking at the change within each group separately. A significant increase in self-efficacy belief between Time 1 and Time 2 was evident in condition

Table 3. *Questionnaire and reference concepts*

N	Items	Reference concepts
1	I think I am competent.	Active mastery experiences
2	I feel more competent than the other students in the class.	Vicarious experiences
3	No matter what I do, there are things I will never understand in this course .	Active mastery experiences
4	When I think about the course, I feel stressed/anxious.	Physiological states
5	I know I can do well.	Active mastery experiences
6	I am sure I understand the course material.	Active mastery experiences
7	By studying, I will be ready for the exam.	Active mastery experiences
8	I like this class.	Physiological states
9	No matter what I think about the course, I am trying to get involved.	Active mastery experiences
10	I believe I can do as well or even better than the other students in the class.	Vicarious experiences
11	I think I have the facilities to succeed in this subject.	Active mastery experiences
12	If I get to the bottom of the course, I know I can succeed.	Active mastery experiences
13	I feel like I have the strategies to do well.	Active mastery experiences
14	When I have human sciences class, I don't want to go.	Physiological states

Note: Items 3, 4 and 14 were reverse coded.

A, where activation of metacognition was introduced by the teacher ($t(25)= -6.43$, $p< .001$), as well as in condition B, where activation of metacognition was introduced by peers ($t(31)= -4.15$, $p<.001$). In contrast, condition C, without metacognitive prompting, displayed a significant decrease in self-efficacy belief between the two measurement times ($t(26)= 5.78$, $p<.001$). This suggests that activation of metacognition, no matter how it was initiated, improved students' self-efficacy belief in this context.

Let us refine and complete these initial observations by consideration of the verbatim comments collected from the four students in conditions A and B.

Qualitative approach

The analysis of the data collected from students made it possible to highlight particular functioning in classes with conditions A and B.
In condition A, when students were asked whether they were satisfied with their work, students mainly talked about care, writing and readability. The appearance of their work therefore seemed to them to be an important indicator of success (in the quoted material, RES indicates the researcher).

> *AA: Look at her [speaking of her neighbor], it's great. And look at me.*
> *RES: This is really not a big deal.*
> *AA: Yes, it is a big deal.*
> *RES: Why?*
> *AA: Look at her, it looks like she wrote a clean copy. (Task 2)*

Another indicator of success that emerged from our analyses was the amount of information that students say they have written.. When a student made little progress, we see that his self-efficacy belief was weak.

> *RES: So JE, everything's fine? What have you already done?*
> *AA: I haven't done anything yet.*
> *RES: Nothing at all? There's nothing on your sheet?*
> *AA: Yes, there is.*
> *RES: What have you already written?*
> *AA: Consumption. It's the only word that's written. And that's not much.*
> *RES: Well, keep going then.*
> *AA: And if it's not much, it means that I'm not good. (Task 2)*

Finally, it was exchanges with the teacher that led the student to be sure of himself.

> *RES: And you're sure that's a good way to do it?*
> *AB: Yeah. Well, we talked about it yesterday. I explained how I was going to do it. Madam said it was a good idea. (Task 2)*

In condition B, it seemed that students' self-efficacy belief differed from one student to another. One student expressed that he had no difficulty, contrary to reality. Reading his remarks, one gets the impression that he is not necessarily aware of it and this was the case throughout the intervention.

> *Well, I don't know... I don't have any difficulties. (BA, Task 1)*
> *Uh... well, I don't actually have one. What about you? (BA, Task 3)*

On the contrary, another student showed more fragile self-efficacy belief and expressed herself largely about the obstacles encountered, with, as we can read, a willingness to complete the tasks correctly.

> *The difficulties I encountered were... the difficulty of putting all the information in the same place. (BB, Task 2)*
>
> *My difficulty is time. I don't have enough time because I write more than I expected. (BB, Task 2)*

The last two students appeared to have a self-efficacy belief that gradually improved over the course of the tasks.

> *Well, I still have trouble finding stuff in documents. (BC, Task 1) I could do it, but I'm lazy to look (laughs). I don't know, there are times I can't find it. (BD, Task 1)*
>
> *My difficulty is that when I had to write texts, they are too long. [silence and laughter] The texts were too long and as we should not produce too long texts, I have difficulty shortening them. (BC, Task 2)*
>
> *Well, I don't have any difficulties because we noticed everything last time and I just have to reduce the sentences a little and write them down. (BC, Task 3)*

Comparison Between the Three Conditions in terms of Metacognitive Behavior

Quantitative approach

Descriptive statistics concerning cognitive strategies are available in the Appendix. There were no baseline differences between the three conditions ($F(2,82)= 1.28$, $p= .29$).

The results of the repeated measures ANOVA showed a significant difference in changes in number of cognitive strategies between the three conditions ($F(2,82)= 22.48$, $p< .001$, $\eta^2= 0.35$). Figure A highlights an increase for condition B, consistency for condition A and a decline for condition C.

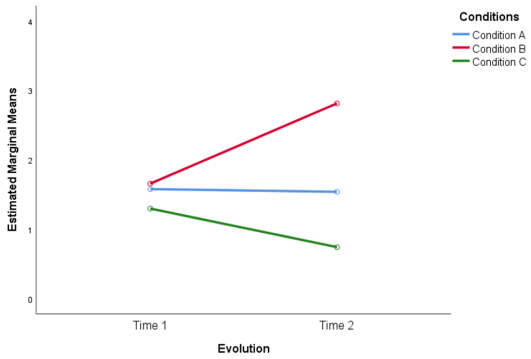


Figure 3. *Mean cognitive strategies used over time by condition*

Bonferroni's post-hoc tests make it possible to refine these observations. The two experimental conditions distinguished themselves significantly, to their advantage, from condition C (condition A: $MD= .54$, $p= .003$; condition B: $MD= 1.22$, $p< .001$). Further, condition B, where metacognition was prompted by peers, presents a significantly higher increase than that observed in condition A, where metacognition was prompted by the teacher ($MD= -.68$, $p< .001$).

Let us refine these initial results by looking at the changes within each condition. Results indicate that condition A showed no significant increase between Time 1 and Time 2 ($t(25)= .21$, $p= .83$), unlike condition B, which displayed a significant increase in the number of cognitive strategies used between the two measurement times ($t(31)= -6.05$, $p< .001$). Condition C showed a significant decrease in the use of cognitive strategies between the beginning and the end of the intervention ($t(26)= 2.85$, $p= .008$).

Let us further refine and complete these initial observations by consideration of the verbatim comments collected from students.

Qualitative approach

First, we analyzed and compared the nature of the exchanges in the two experimental conditions (for the whole class). In condition A, some students answered the teacher while

others listened. While more and more students asked for the floor to answer questions throughout the intervention, only volunteers were interviewed by the teacher. It was therefore not possible to ensure that every student had a chance to reflect on the presented prompts, and was also able to verbalize his comments. However, the data show that in condition A, the teacher pushed the student who expressed himself to go further in his answers and in his self-questioning, as as illustrated in the following emblematic extract. Jeremiah, the student, spoke during the whole-class discussion, and the teacher is asking these questions in front of everyone.

> *TEACHER: Jeremiah, can you explain to me again, in your own words, the instructions?*
> *JEREMIAH: No*
> *TEACHER: Why not?*
> *JEREMIAH: Because I didn't follow it too much.*
> *TEACHER: Ah, well, try it anyway.*
> *JEREMIAH: Well... you have to do it on the big sheet, on the timeline.*
> *TEACHER: And what do you have to do?*
> *JEREMIAH: [he reads the criteria on the sheet] It is necessary to note the basic foods of Antiquity, the Middle Ages, Modern Times and the Contemporary Era. The differences between social classes of all periods, meals and eating habits of all periods.*
> *TEACHER: And do you understand what that means?*
> *JEREMIAH: Yes. It's what they usually eat.*
> *TEACHER: Then what?*
> *JEREMIAH: Preservation methods.*
> *TEACHER: What does that mean?*
> *JEREMIAH: How they kept the food. And the cutlery, what they ate with.*
> *TEACHER: How are you going to work? Will you do a draft first or will you write directly in the table?*
> *JEREMIAH: I'm going straight to the pen.*
> *TEACHER: Why?*
> *JEREMIAH: Because I write better with a pen.*
> *TEACHER: All right. And you will do this version directly as the clean copy?*
> *JEREMIAH: Yes.*

Further, we can see that in condition A the teacher was trying to make the students specify the different stages through which they thinks they are going, and pushed them to mention aspects relating to self-regulation, as shown in the following extract:

> *TEACHER: Yes, Erika, can you explain how you work?*
> *ERIKA: First I make a draft. Then after that, I'll put it clean on the sheet.*
> *TEACHER: All right. How do you do it?*
> *ERIKA: I put as I go along what I read in the documents. (...)*
> *TEACHER: So, for the next time you have the same task, are you going to do it the same way?*
> *ERIKA: No, I won't make such an elaborate draft. I think I'm wasting too much time.*
> *TEACHER: How will you do it, then?*
> *ERIKA: I think I'll make a draft, but not with that much. I will put words and then make sentences by myself.*

In contrast to condition A, in condition B, all the students were given the opportunity to express themselves. Thus, even if they did not have, like the teacher, the idea of further reflection and verbalization, students questioned themselves by following the prompts presented on the board. So they all had to talk and give an answer:

> *J: Well, what strategies do you use?*
> *N: I highlighted the text in full color, and then I put keywords, with what was important. What about you?*
> *I: The same as you, but I put highlighting in the text and I grouped everything I highlighted so as not to make too big texts.*

We also see in students' discussions that they explained how they manage to accomplish the task, and to verify their work:

> *N: How do you know if it is good?*
> *J: Well, you see in the documents, it says Middle Ages and so on, and then sometimes, in the documents, it is written in bold and I look first at what is written in bold to see if it is details.*

In sum, even if peers were as competent at getting a friend to think about his or her strategies, they did so less thoroughly than the teacher.
In addition, the analysis of the verbatim comments of the students in condition B highlights an aspect that seems interesting to us: these students were concerned about who would listen to the recordings and what they would be used for. Despite the fact that this procedure was explained at the beginning of the process (that only the researcher would have access to the comments), the students asked the teacher several times about this subject (Madam, who will listen to what we say?). This suggests that students also appreciate sharing just among themselves about the difficulties and strategies they use, without the teacher's control.

What about the four students followed in each class? In this respect, the analysis shows that the students in condition A did not easily find the words to express themselves and answered several times, "I don't know", or rather vague strategies, such as "I read and searched" (AA, Task 1), "I read everything and found the words" (AA, Task 1), "I will read the document" (AC, Task 1). The fourth student differed from the others, because this student managed to highlight the difficulty of the exercises, in particular the difficulty of being able to select the essential information, and then nuanced his/her remarks by explaining that once the task is launched, it then seems less complex. This student also manage to put words to the strategies mobilized:

> *I think I'm going to make a draft, but not with so many things. I will put words and then make sentences by myself. (AB, Task 1)*

> *"Well, I'm not going to put all the information in, so as not to waste too much time. And so I'm going to surround the information instead. (AB, Task 2)*

On the contrary, in condition B, the four students easily explained to the researcher concrete strategies implemented to complete the tasks, certainly because they had done it with their peers throughout the intervention.

> *I first highlight the important elements of the documents before I start working. (BA, Task 1)*

> *I first read all the documents and then I look for all the little details in them. And I bring them together to make a nice sentence. (BB, Task 1).*

> *I read all the documents. Because I didn't read everything there. (BD, Task 1)*

Second, we conducted a content analysis of the students' comments to item 15 in order to have a more fine-grained understanding of the difference identified between the two experimental conditions. It follows that, in condition A, the strategies mentioned by the students before and after the intervention were on the order of "document review" and "review the instructions". In the posttest, only two new items appeared: the "rereading of answers", proposed by six students, and the "creation of a table or mind map", mentioned by eight students. In condition B, the strategies at the beginning of the intervention were: "questions/considerations review", "drafting a draft", "highlighting keywords in documents", "writing a summary of what has been understood". In the posttest, though these same strategies were still present, another category appeared massively in students' responses, that of verification: "verify if the answer corresponds to the instructions", "verify the accuracy of the information", "verify if the answers are possible", "verify by using bold words", and so forth. The verification strategy was not mentioned by the students in condition A. This leads us to hypothesize that the metacognition generated by mediation between peers played a role in this development and that the exchanges confined between students encouraged them to exchange more freely about strategies for verifying their responses (related to the previous verbatim

comment where the student asks the other what he/she does to know if it is good). In addition, in condition C, where there was no metacognitive intervention, the vast majority of learners mentioned "document and instructions review" as a strategy used, both before and after the intervention. However, although the strategies were almost identical at the two measurement times, the students' responses on the posttest are shorter, less elaborate than at the pretest. Therefore, we wonder if not having any metacognitive prompting during the three tasks could have influenced this behavior. Indeed, the fact that there was no prompting for students to analyze their functioning means that they may not have been stimulated to develop complete answers and reflect on their approaches.

In conclusion, on the basis of the verbatim comments collected throughout the intervention and the content analysis carried out for item 15, there appear to be common characteristics within the four students for conditions A and B. In addition to that, it should be noted, that differences appear between conditions A and B for one student. This student is a student with difficulties. In condition A he was more efficient in answering the researcher's questions. The hypothesis is that since he has difficulty expressing the strategies he mobilizes, he needs the teacher's specific questions to do so.

Conclusion

Through a mixed-method approach, combining quantitative and qualitative analysis, this work aimed to study the extent to which metacognitive mediation influences the self-efficacy beliefs of secondary I students in Human Sciences.

This study confirms, for our sample, the impact of metacognition on self-efficacy beliefs. Indeed, the quantitative results show that in classes where metacognition was introduced, self-efficacy beliefs improved, which was not the case in the classes where students did not receive a metacognitive intervention.

In addition, the comparison of classes "with metacognition" showed that regardless of the agent by whom it is activated (by the teacher or by peers), mediations metacognitive leads to a gain in aspects related to active mastery experiences and psychological states of self-efficacy. The difference between the two "with metacognition" conditions lies in the strategies available to students to succeed in the tasks. Thus, the study found that when metacognitive mediations are managed between students, they are able to discuss more strategies for successful tasks than when the teacher asks them, and that the precise difference is in terms of verification strategies.

One could therefore wonder if it was the fact of having discussed between themselves, in a more "confined" situation and without the teacher's perspective, that led to this modification in students' awareness of this strategy. Each student had the opportunity to express him/herself orally to a peer. In this case, the expert (the teacher) was not "present" in the exchange and could not lead the students to specify one or the other aspect or push them to verbalize more deeply about their functioning. This could be an interesting avenue for intervention and research: to encourage students to develop their metacognitive skills, both in explanation and in questioning.

There are limitations of this study to be identified, which make it possible to consider prospects for future research. First, we worked in just a few classes, which does not allow us to generalize the results or to value one approach over another. This study should be replicated by multiplying the number of classes in order to validate or qualify its contributions. Second, we worked on the basis of the questionnaire and the verbatim comments collected. Another possible perspective is to be able to cross-reference these data with the students' results on each of the tasks. Third, we tested two separate approaches for encouraging metacognitive activation. It now seems interesting to consider what can be achieved by a "mixed" approach to metacognition in educational systems, that is, where prompts are provided by the teacher or by peers.

References

Ahmed, W., Minnaert, A., Kuyper, H., & Van der Werf, G. (2012). Reciprocal relationships between math self-concept and math anxiety. *Learning and Individual Differences, 22*(3), 385-389.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York, NY: W. H. Freeman and Company.

Boekaerts, M. (2002). Bringing about change in the classroom: Strengths and weaknesses of the self-regulated learning approach. *Learning and Instruction, 12*, 589-604.

Brown, A. L. (1987). Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In F. E. Weinert & R. H. Kluwe (Eds.), *Metacognition, motivation, and understanding* (pp. 65-116). Hillsdale, NJ: Lawrence Erlbaum.

Colognesi, S., & Lucchini, S. (2016). Le rapport à l'écrit des élèves : focalisation sur la dimension métascripturale [Students' relationship to writing: focusing on the metascriptural dimension]. *Nouveaux cahiers de la recherche en éducation, 19*(2), 33–52. https://doi.org/10.7202/1042848ar

Colognesi, S., & Van Nieuwenhoven, C. (2016). La métacognition comme tremplin pour l'apprentissage de l'écriture [Metacognition as a springboard for learning to write]. In S. Cartier et B. Noël (Eds.), *De la métacognition à l'apprentissage autorégulé* [From metacognition to self-regulated learning]. (pp. 111-126). Bruxelles : De Boeck Supérieur.

Colognesi, S., & Van Nieuwenhoven, C. (2017). Développer des habiletés de relecture critique des productions des pairs [Develop skills in peer review of written productions]. *Education & Formation, e-307*(02), 7-25.

Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review, 107*, 261-288.

Cosnefroy, L. (2010). *L'apprentissage autorégulé* [Self-regulated learning]. Paris: L'Harmattan.

Creemers, B. P. M. (1999). The effective teacher: What changes and remains. *Asia-Pacific Journal of Teacher Education and Development, 2*, 51-64.

Creswell, J., & Plano Clark, V. (2007). *Designing and conducting mixed methods research.* Thousand Oaks, CA: Sage.

Denoncourt, I., Bouffard, T., Dubois, V., & Mc Intyre, M. (2004). Relations entre les facteurs du profil motivationnel d'élèves de sixième année du primaire et leurs anticipations envers le secondaire [Relationships between the motivational profile factors of grade 6 elementary school students and their expectations of high school]. *Revue des Sciences de l'Éducation, 30*(1), 71-89.

Deschênes, A-J. (1991). *Les métaconnaissances [*Meta-knowledge]. Montréal, Québec: Télé-Université.

Desmette, D., Jaminon, C., & Herman, G. (2001). Le sentiment d'efficacité personnelle de chômeurs en formation, un construct dynamique? [The feeling of personal efficiency of unemployed people in training, a dynamic construct?]. *Revue Européenne de Psychologie Appliquée, 51*(3), 217-228.

Desoete, A., & Özsoy, G. (2017). Introduction: Metacognition, more than the lognes monster. *International Electronic Journal Of Elementary Education, 2*(1), 1-6.

Efklides, A. (2001). Metacognitive experiences in problem solving: Metacognition, motivation, and self-regulation. In A. Efklides, J. Kuhl, & R. M. Sorrentino (Eds.), *Trends and prospects in motivation research* (pp. 297-323). Dordrecht, the Netherlands: Kluwer.

Efklides, A. (2008). Metacognition: Defining its facets and levels of functioning in relation to self- and co-regulation. *European Psychologist, 13*, 277-287.

Efklides, A., Kourkoulou, A., Mitsiou, F., & Ziliaskopoulou, D. (2006). Metacognitive knowledge of effort, personality factors, and mood state: Their relationships with effort-related metacognitive experiences. *Metacognition and Learning, 1*(1), 33-49.

Flavell, J. (1979). Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist, 34*, 906-911.

Gagnière, L., Bétrancourt, M., & Détienne, F. (2007). La méthode d'allo-confrontation comme incitation métacognitive dans des situations d'apprentissage.[The allo-confrontation method as a metacognitive incentive in learning situations] In C. Chauvin & A. Tricot (Eds.), *Actes des 4èmes journées d'étude en Psychologie Ergonomique EPIQUE 2007* (pp. 27-33). Nantes: Université de Nantes.

Galand, B., & Grégoire, J. (2000). L'impact des pratiques scolaires d'évaluation sur les motivations et le concept de soi [The impact of school assessment practices on motivation and self-concept]. *L'Orientation Scolaire et Professionnelle, 29*(3), 431-452.

Galand, B., & Vanlede, M. (2004/5). Le sentiment d'efficacité personnelle dans l'apprentissage et la formation : quel rôle joue-t-il ? D'où vient-il ? Comment intervenir ? [The impact of school assessment practices on motivation and self-concept] *Savoirs, Hors série,* 91-116.

Hanin, V., Grégoire, J., Mikolajczack, M., Fantini-Hauwel, C., & Van Nieuwenhoven, C. (2017). Children's Emotion Regulation Scale in Mathematics (CERS-M): Development and Validation of a Self-Reported Instrument. *Psychology, 8,* 2240-2275.

Hanin, V., & Van Nieuwenhoven, C. (2018). Évaluation d'un dispositif d'enseignement- apprentissage en résolution de problèmes mathématiques: Évolution des comportements cognitifs, métacognitifs, motivationnels et émotionnels d'un résolveur novice et expert [Evaluation of a teaching and learning system in mathematical problem solving: Evolution of cognitive, metacognitive, motivational and emotional behaviours of a novice and expert solver]. *Évaluer. Journal international de recherche en éducation et formation, 4*(1), 37-66.

Hattie, J. A. C. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. London, UK: Routledge.

Kauffman, D. F. (2004). Self-regulated learning in web-based environments: Instructional tools designed to facilitate cognitive strategy use, metacognitive processing and motivational beliefs. *Journal of Educational Computing Research, 30*, 139-161.

Ko, J., Sammons, P., & Bakkum, L. (2014). *Effective teaching: A review of research and evidence.* Hong Kong: Hong Kong Institute of Education and Reading, UK: CfBT Education Trust.

Lafortune, L., & Fennema, E. (2003). Croyances pratiques dans l'enseignement des mathématiques [Practical beliefs in mathematics education]. In L. Lafortune, C. Deaudelin, P. A. Doudin, & D. Martin (Eds.), C*onceptions, croyances et représentations en maths, sciences et technos* [Concepts, beliefs and representations in math, science and technology] (pp. 29-57). Sainte-Foy, Québec: Presses de l'Université du Québec.

Lafortune, L., Mongeau, P., Daniel, M. F., & Pallascio, R. (2000). Approche philosophique des mathématiques et affectivité: premières mesures. [Philosophical approach to mathematics and affectivity: first steps] In R. Pallascio & L. Lafortune (Eds.), *Pour une pensée réflexive en éducation* [For reflective thinking in education] (pp. 181-208). Sainte-Foy, Québec: Presses de l'Université du Québec.

Lecomte, J. (2004). Les applications du sentiment d'efficacité personnelle [The applications of the feeling of self-efficacy]. *Savoirs, 5*, 59-90.

Miles, M. & Huberman, A. (1994). *Qualitative Date Analysis.* Thousand Oaks, CA: Sage Publications.

Muijs, D., Kyriakides, L., van der Werf, G., Creemers, B., Timperley, H., & Earl, L. (2014). State of the art – teacher effectiveness and professional learning. *School Effectiveness and School Improvement, 25*(2), 231-256.

Noël, B. (1997). *La métacognition.* Bruxelles: De Boeck.

Noël, B., & Cartier, S. (2016). *De la métacognition à l'apprentissage autorégulé* [From metacognition to self-regulated learning]. Bruxelles: De Boeck.

Paradis, R., & Vitaro, F. (1992). Définition et mesure du concept de soi chez les enfants en difficulté d'adaptation sociale: une recension critique des écrits [Definition and measurement of the concept of self in children with social adjustment difficulties: a critical review of the literature]. *Revue Canadienne de Psycho- Education, 21*, 93-114.

Perreault, B., Brassart, D. G. & Dubus, A. (2010). Le sentiment d'efficacité personnelle comme indicateur de l'efficacité d'une formation. Une application à l'évaluation de la formation des enseignants [The feeling of self-efficacy as an indicator of the effectiveness of a training program. An application to the evaluation of teacher education]. In Actes du congrès de l'Actualité de la recherche en éducation et en formation (AREF) (pp. 1-8). Genève: Université de Genève.

Scheerens, J. (2008). *Review of research on school and instructional effectiveness.* Netherlands: University of Twente.

Schunk, D. H., & Pajares, F. (2009). Self-efficacy theory. In K. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 35-54). New York, NY: Taylor Francis.

Veenman M. (2012). Metacognition in science education: Definitions, constituents, and their intricate relation with cognition. In A. Zohar & Y. J. Dori (Eds.), *Metacognition in science education – Trends in current research* (pp. 21-36). London: Springer.

Veenman, M., Van Hout Wouters, B., & Afflerbach, P. (2005). Metacognition and learning: conceptual and methodological considerations. *Metacognition and Learning, 1*, 3-14. doi: 10.1007.s11409-006-6893-0

Weil, L., Flemming, S., Dumontheil, I., Kilford, E., Weil, R., Rees, G., ... & Blakemore, S. J. (2013). The development of metacognitive ability in adolescence. *Consciousness and Cognition, 22*, 264-271.

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal, 45*(1), 166-183.

Appendix

Mean and standard deviations for the two variables under study for the three conditions

	Min	Max	Condition A(N=26)		Condition B(N=32)		Condition C(N=27)	
			Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
			M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)
Self-efficacy belief	0	3	1.63 (.53)	2.15 (.36)	1.95 (.52)	2.23 (.46)	1.88 (.59)	1.69 (.48)
Cognitive strategies	0	4	1.58 (.50)	1.54 (.65)	1.66 (.90)	2.81 (.74)	1.30 (1.11)	.74 (.45)

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **137-143**

Investigation of Early Literacy Skills in Preschool Children With Deaf and Hard of Hearing*

Pelin Pıştav-Akmeşe[a,**], Destina Sezgin[b], Fatih Öğüt[c]

Received: **5 July 2019**
Revised: **28 October 2019**
Accepted: **22 November 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.iejee.com

DOI: **10.26822/iejee.2019257659**

Abstract

In this study, it is aimed to compare the early literacy skills of children with cochlear implants with 60-72 months of preschool and / or special education to the results of children with normal hearing. For this purpose, the following questions were sought. In this study, "Demographic Form" containing the general information of volunteer families and children was included in the study and Early Literacy Test-EROT was applied to evaluate the early literacy skills of children. As a result, word knowledge between two groups, receptive and expressive language, general naming, knowledge of function scores were statistically different; in the phonological awareness sub-tests, the difference between separating the word into syllable, combining syllables, eliminating the first sound of words results with cochlear implants were statistically significant between two groups. However, there was no statistically significant difference between groups in terms of rhyme awareness, matching the first sound of words, matching the last sound of words, separating the sentence into words, eliminating the last voice of words and total phonological awareness scores; moreover, it was found that CI users had lower scores in the knowledge of letter, listening comprehension subtests and EROT total scores, and the difference between the groups was significant.

Keywords: Cochlear Implant, Hearing Loss, Deaf, Early Literacy, Preschool Children

Introduction

One of the goals of the education of hearing-impaired children is to develop language skills and verbal /auditory communication skills according to their chronological age. It is essential for children to have a sense of hearing in order to develop their receptive and expressive language skills and to adapt to social life (Gündüz & Karabulut, 2015). With the development of these skills, children with hearing loss have access to educational opportunities with their normal hearing peers. As the level of hearing loss of the child increases, it is difficult to achieve these goals.

Children with deaf and hard of hearing are in the risk group in terms of serious language difficulties in early stages and literacy difficulties in the school period. In recent years, in parallel with the developments in new born hearing screening programs, hearing aids and cochlear implantation technology, positive predictions have begun to be made for children with deaf and hard of hearing. It has been reported that many of these children are detected by new born screening and that speech perception and language skills increase due to advances such as: Cochlear implant technology, early diagnosis and very early education (Geers, Nicholas, & Sedey, 2003).

In recent years, cochlear implant (CI) has become a preferred method in the hearing technology of advanced and very severe hearing loss (Lachowska, Pastuszka, Łukaszewicz-Moszy, Mikołajewska & Niemczyk, 2016; Utrup & Schafer 2016). Developments in cochlear implant technology have increased the success rate of early rehabilitation of children with severe hearing loss and their opportunity to receive education with their peers. At this point, a comprehensive assessment of communication, language and speech skills of children using cochlear implants has become more important (Blamey et al., 2001).

The most important difficulties of the hearing problem, which can be reduced by early cochlear intervention are verbal language input and necessity of special education assistance. In this way, children with severe hearing loss can have similar language development with their peers. Tezer and Akar (2009), stated that the listening skills have increased with the special education received after the implantation. At the same time, the rate of children's understanding of spoken language is stated to be over 80%.

Pıştav-Akmeşe (2015) stated that children's communication type and type of school were related to language results as well as intensive auditory verbal education, and children who participated in inclusive education, had significantly higher scores in language areas. Although, children with hearing loss who attend mainstream schools are good in language areas, they have significant difficulties in the syntactic processes of certain morphological structures, the main elements of the story and the narration of the story; even though their participation in the mainstreaming program makes them good in general language areas, the emphasis is that they should be supported by special intervention programs focusing on specific language structures (Pıştav-Akmeşe 2015; Pıştav-Akmeşe & Acarlar 2016). Considering the relationship between early language skills and advanced literacy skills; in these special education programs, such as early literacy program, as explained in detailed in below, it is important to support the basic skills of reading and writing in pre-school period. Because, in early childhood, children go through the fastest stage of their development, where not only their personality is built but also they are strongly affected by their immediate environments and open to any kind of learning (Öztürk & Demir 2018). Hence, in this early childhood period certain basic skills mentioned above could be developed since children are open to any kind of learning.

The basic skills of pre-school literacy are considered as early literacy. Early literacy is defined as the skills and attitudes that started in infancy and are supported and developed during early childhood (Yazıcı & Kandır, 2018). Early literacy begins with children's natural environments at home and in kin-

* This research was generated from the master thesis which the second writer completed in Ege University Institute of Health Sciences Audiology and Speech Disorders Program of Department of Otolaryngology

[a,**]Corresponding Author: Pelin Pıştav Akmeşe, Department of Special Education, Faculty Education, Ege University, Bornova, İzmir, Turkey. E-mail: pelinakmese@gmail.com
[b] Destina Sezgin, IKEM Isik Private Education and Rehabilitation Center, İstanbul, Turkey. E-mail: destina.sezgin@gmail.com
[c] Fatih Öğüt, Department of Otolaryngology, Faculty of Medicine, Ege University, İzmir, Turkey. E-mail: fatihogut@gmail.com

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

dergarten, with children's reading and writing knowledge acquired before they are formally exposed to reading at school. It includes various skills such as early literacy, grammar, phonological awareness and orthographic (writing) awareness. These skills predict children's academic achievement in school (Kargın, Ergül, Büyüköztürk, & Güldenoğlu, 2015). Most, et al., (2006) reported that skills of phonological awareness in kindergartens predicted future success in gaining reading and writing skills, Kargın, Ergül, Büyüköztürk and Güldenoğlu, (2015) stated that the first year of primary school aims to improve reading-writing skills, however studies in the literature stated that the children start school without necessary attitude and skills and have difficulty in learning reading and writing. The importance of pre-school literacy is emphasized in order for children to acquire the skills they need for school (Snow, 2008). Moreover, it is stated that there is a strong relationship between early literacy skills and reading and academic achievement of children, and that children with good literacy skills in preschool period are successful in both academic and social fields (Kargın, Ergül, & Güldenoğlu, 2018).

However, there are limited number of studies on early reading basic skills for young children with deaf and hard hearing in Turkey according to Atlar and Uzuner. It is determined by Atlar and Uzuner (2018) that a child with hearing loss needs to be considered in the context of developing literacy experiences in preschool period. Recent studies have shown that young children with deaf and hard of hearing and with proper language, develop phonological awareness but are less likely to develop than those with normal hearing. Easterbrooks, Lederberg, Miller, Bergeron and Connor (2008) investigated the phonological awareness skills of children aged 5-10 years with cochlear implants and hearing aids; for children with cochlear implants, hearing test results which are compatible with hearing loss have been obtained. It was stated that children with cochlear implant surgery after preschool period showed more syllable, phonemic and alert awareness than the children who had implanted at an older age. Easterbrooks, Lederberg, Miller, Bergeron and Connor emphasized that rhyme awareness skills of children with cochlear implants predicted word recognition scores in preschool period (5-7 years). Geers, Nicholas and Sedey has reported that low literacy is frequently seen in students with severe hearing loss and this is partly due to the contradiction between expressive language and the learning based on a speech-based system (Geers, Nicholas, & Sedey, 2003). In Mayer's study of early literacy development, 2 children with severe hearing loss were found to have similar results to their hearing peers, however, 50% of hearing loss students graduated from secondary school with a level of reading of fourth grade or even lower, hence, 30% is underlined to leave the school without being able to learn functional reading and writing. At this point, it was stated that there was a close connection between language acquisition and subsequent literacy development, and it would be relatively easier for children who start school to have a better level of language skills than the transition to text-based literacy (Mayer, 2007). Early literacy is defined as the knowledge and skills acquired by children before learning reading and writing (Kargın et al., 2015). It is important to evaluate the language skills of preschool children who are normally developing and do not have hearing problem and who has hearing problem and at risk for language development before starting primary school. Assessing the readiness of preschool children with hearing problem to school in terms of language development and the positive role of cochlear implantation in this process will support their academic achievement.

Therefore, in this study, it is aimed to compare the early literacy skills of children with cochlear implants with 60-72 months of preschool students and / or attending special education (support for certain designated hours of the week for language and literacy development) to the results of children with normal hearing. For this purpose, the following questions were sought.

1. Does the EROT (Test of Early Literacy -TEL) vocabulary sub-test scores of children in the CI (cochlear implant) and ND (normal development) group differ?

2. Do EROT phonological awareness sub-test scores of children in CI and ND group differentiate?

3. Do the EROT letter knowledge sub-test scores of children in the CI and ND group differ?

4. Is there any difference in the EROT listening comprehension sub-test of children in the CI and ND group?

5. Do the EROT total test scores of children in the CI and ND group differ?

6. Is there a relationship between sex, maternal education level and age of diagnosis of hearing loss and EROT subtests?

Method

The aim of the study was to investigate the early literacy skills of preschool children who had undergone cochlear implant surgery before 4 years of age and to compare them with children with normal hearing; and to search the effects of early implant on language development.

The research was conducted between July 2018 - December 2018. After the approval of the ethics committee, volunteer children aged 5-6 years (60-72 months) who applied to Ege University Medical Faculty Otorhinolaryngology Department were included in the study. For the study group: Children aged 5-6 years who had undergone cochlear implant surgery at Ege University School of Medicine, Department of Otorhinolaryngology; For the control group: Ege University Faculty of Medicine Department of Otorhinolaryngology, no ear pathology was detected as a result of the tests, children with normal hearing 5-6 years old were included.

In this study which was planned according to descriptive survey method, "Demographic Form" containing the general information of volunteer families and children were included in the study and Early Literacy Test-EROT was applied to evaluate the early literacy skills of children.

Data Collection Tools

Demographic form

The demographic form is formed by the researchers, including questions about the children's families and children's demographic information. Information was obtained by means of individual interviews with the families who volunteered to participate in the study.

Test of early literacy (TEL/ EROT)

Turkish validity and reliability of the test was performed by Kargın, Ergül and Güldenoğlu and EROT (Test of Early Literacy, TEL). EROT test consists of three main booklets. These are vocabulary; phonological awareness; the knowledge of alphabet and listening comprehension booklet. The first part consists of four subtests. Sub-tests of this section are; receptive and expressive language, general naming and knowledge of function. The receptive-expressive language sub-test consists of 1 sample item and 15 questions. General naming and function information consists of 1 sample item and 10 questions. The second part is composed of four sub-tests in a similar way as phonological awareness; rhyme awareness, matching according to the first voice, matching according to the last voice, dividing the sentence into words. The subtests in this section consist of 2 samples and 4 question items. The third chapter is the alphabet knowledge and listening comprehension booklet. In this part letters in receptive and expressive language is asked. In the listening comprehension section, a short story is told and 6 questions are asked to the participant. The researcher asks the children questions according to the instructions in the test battery (Kargın, Ergül, Büyüköztürk, & Güldenoğlu, 2015). The EROT test, consisting of seven different subtests, was per-

formed in a quiet room in the study. The evaluation period lasted approximately 30 minutes. When children were bored during the test or were distracted, 10 minutes of breaks were given and the test was administered as two sessions.

Data Analysis

Research data were analysed with SPSS 25.0 package program. The data were analysed by the Shapiro Wilk analysis to see if it conforms to normal distribution. CI and ND children were analysed by Mann Whitney U test to see whether the data differs from school readiness test EROT. Spearman correlation test was done in order to find whether there was a relation between EROT and the study's independent variables.

Results

The study included 20 CI children aged between 5 and 6 years and 20 ND children matched by age and gender. Table 1 provides information on the demographic characteristics of children.
In Table 1, a total of 40 children were evaluated. 20 of the children are boys and 20 of them are girls. There are 10 boys and 10 girls in both groups. It was observed that 4 of the children in the CI group solely continued their special education and 16 of them continued to both special education centre and kindergarten. All children in the ND group go to kindergarten. Fourteen (70%) of the children were diagnosed with new born hearing screening, 5 (25%) were diagnosed between 6-12 months and 1 (5%) were diagnosed over 2 years of age. Of the children, 9 (45%) had undergone CI surgery in 18 months, 6 (30%) had between 19-24 months, and 5 (25%) had undergone surgery after 2 years of age. The mean age of the participants in the study group was 66.70 ± 5.31 months (min: 57 months, max: 72 months). Mean age of children with ND who were matched for ± 3 months was 65.45 ± 4.24 months (min: 59 months, max: 71 months). The mean age of the CI children were 33.85 ± 4.24 years (min: 26, max: 43) and the mean age of the children with ND was 33.20 ± 4.79 (min: 23, max: 39) years. When mothers are examined according to their education levels; 9 (45%) of the mothers of CI children with primary and secondary school, 7 (35%) high school and 4 (20%) university graduates. 3 of the mothers of ND children (15%) were elementary and middle school, 6 (30%) were high school and 11 (55%) were university graduates. In terms of occupations, 17 (85%) mothers of CI children are housewives and 3 (15%) work. Moreover, 10 (50%) mothers of ND children are housewives and 10 (50%) mothers work.

Table 2 shows the EROT vocabulary scores of the children in the CI and ND group, which is the first sub-objective of the study.

When table 2 is examined, the vocabulary of the two groups in the receptive language (U= 98.50, p< .05), the vocabulary in the expressive language (U= 104, p< .05), the general naming (U= 118, p< .05), knowledge of function (U= 105, p< .05) and total vocabulary (U= 92, p< .05) sub-tests showed that there was a significant difference between the CI and ND groups.

For the second sub-objective of the study, the results of the analysis for the question "Do EROT phonological awareness sub-test scores of children in CI and ND group differentiate?" are given in Table 3.

Table 1. *Demographic Characteristics of CI and ND Children*

Variables	CI		ND	
	n	%	*n*	%
Boy	10	50.0	10	50.0
Girl	10	50.0	10	50.0
Type of School				
Special Education	4	20.0	-	-
Kindergarten and Special Education	16	80.0	-	-
Kindergarten	-	-	20	100
Age of Diagnosis				
New Born Hearing Screen	14	70.0	-	-
6-12months	5	25.0	-	-
2 years and older	1	5.0	-	-
Age of CI Surgery				
18 months before	9	45.0	-	-
Between 19-24 months	6	30.0	-	-
25 month and older	5	25.0	-	-

Table 2. *Mann Whitney U Test Results in EROT Vocabulary Sub-Tests of CI Group and ND Group*

	Group	*n*	Mean Rank	Sum of Ranks	*U*	*p*
EROT Receptive Vocabulary Knowledge	CI	20	15.43	309	998.50	.006*
	ND	20	25.58	512		
EROT Expressive Vocabulary Knowledge	CI	20	15.70	350	1104	.009*
	ND	20	25.30	470		
EROT General Naming	CI	20	16.40	328	1118	.024*
	ND	20	24.60	492		
EROT Knowledge Function	CI	20	15.75	315	1105	.009*
	ND	20	25.25	450		
EROT Total Vocabulary Knowledge	CI	20	15.10	302	992	.003*
	ND	20	25.90	518		

*p< .05

Table 3. *The Mann Whitney U Test Results in EROT Phonological Awareness Sub-Tests of the CI and ND Group*

	Group	*n*	Mean Rank	Sum of Ranks	*U*	*p*
EROT Rhyme Awareness	CI	20	18.28	366	156	.217
	ND	20	22.73	455		
EROT Matching First Sound of Words	CI	20	20.85	417	193	.815
	ND	20	20.15	403		
EROT Matching Last Sound of Words	CI	20	20.88	417	193	.789
	ND	20	20.13	403		
EROT Separating the Sentence into Words	CI	20	19.00	380	170	.384
	ND	20	22.00	440		
EROT Separating the Word into Syllable	CI	20	16.10	322	112	.008*
	ND	20	24.90	498		
EROT Combining Syllables	CI	20	15.68	314	103	.004*
	ND	20	25.33	207		
EROT Eliminating First Sound of Words	CI	20	22.50	450	160	.038*
	ND	20	18.50	370		
EROT Eliminating Last Voice of Words	CI	20	21.00	420	190	.317
	ND	20	20.00	400		
EROT Phonological Awareness	CI	20	17.38	348	138	.090
	ND	20	23.63	473		

**p< .05*

Table 4. *Mann Whitney U Test Results of EROT Alphabet Sub-Tests of the CI and ND Group*

	Group	*n*	Mean Rank	Sum of Ranks	*U*	*p*
EROT Receptive Letter Knowledge	CI	20	15.88	317	108	.007*
	ND	20	25.13	5502		
EROT Expressive Letter Knowledge	CI	20	16.78	335	126	.022*
	ND	20	24.23	4484		
EROT Total Score of the Letter Knowledge	CI	20	15.88	317	108	.007*
	ND	20	25.13	5502		

**p< .05*

Table 5. *The Mann Whitney U-Test Results of EROT- Listening Comprehension Test of the CI and ND Group*

	Group	*n*	Mean Rank	Sum of Ranks	*U*	*p*
EROT Listening Comprehension	CI	20	17.05	341	131	.054
	ND	20	23.95	479		

When Table 3 is examined, rhyme awareness (*U*= 156, *p*> .05), matching the first sound of words (*U*= 193, *p*> .05), matching the last sound of words (*U*= 193, *p*> .05), separating the sentence into words (*U*= 170, *p*> .05), eliminating the last voice of words (*U*= 190, *p*> .05) and total phonological awareness (*U*= 138, *p*> .05) shows no significant difference between CI and ND group; hence, separating the word into syllable (*U*= 112, *p*< .05), combining syllables (*U*= 103, *p*< .05) and eliminating the first sound of words (*U*= 160, *p*< .05) shows a significant difference between the two groups.

For the third sub-objective of the study, the results of the Mann Whitney U Test for the question "Do the EROT letter knowledge sub-test scores of children in the CI and ND group differ?" are presented in Table 4.

Table 4, in the receptive letter knowledge (*U*= 108, *p*< .05), in the expressive letter knowledge (*U*= 126, *p*< .05) and the total score of the letter knowledge (*U*= 108, *p*< .05) shows a significant difference between CI and ND groups.
For the fourth sub-objective of the study, the results of the Mann-Whitney U Test for the question "Do the children in the CI and ND groups differ according to the EROT?" are presented in Table 5.

In Table 5, the mean of the CI group in the listening test was 17.05 and the ND group has an average of 23.95. There was no significant difference between the group with CI and the group with ND (*U*= 131, *p*> .05).

For the fifth sub-objective of the study, the results of the test for the question "Is there any difference in the EROT listening comprehension sub-test of children in the CI and ND group?" are given in Table 6.

When Table 6 is examined, it is seen that the average of the CI group in EROT is 16.10, while the average of ND group is 24.90 and there is a significant difference between the group with CI and ND group (*U*= 190, *p*< .05).

When the test results of the EROT test's subscales and overall total scores are evaluated in detail: In the vocabulary sub-test of the recipient language, 70% of the children with CI needs support and 30% of the children are in the normal limits of early literacy skills. In the ND group, the number of children in need of support was 40% and 60% were within normal limits. 85% of the children in CI group in the vocabulary expressive sub-test were in need of support and %15 were in normal limits. In the control group, support was required for 60% children

Table 6. *Mann Whitney U-Test Results in EROT Total Scores of CI and ND Group*

	Group	*n*	Mean Rank	Sum of Ranks	*U*	*p*
EROT Total Score	CI	20	16.10	322	112	.017*
	ND	20	24.90	498		

*p< .05

Table 7. *Correlation between Gender, Maternal Education Level, Age of Diagnosis of Hearing Loss and EROT Subtest*

	Group	*r-p*	EROT Receptive Vocabulary Knowledge	EROT Phonol. Awareness	EROT Knowledge Letter	EROT List. Comp.	EROT Total
CI	Gender	*r*	.087	.289	.000*	.231	.165
		p	.716	.217	1.00	.327	.487
	Mother Education	*r*	.541	.378	.187	.518	.471
		p	.014*	.100	.430	.019*	.036*
	Age of Hearing Loss	*r*	.099	.378	.322	-.121	.197
		p	.678	.160	.166	.611	.405
ND	Gender	*r*	.166	.201	-.097	-.201	-.017*
		p	.484	.395	.685	.934	.942
	Mother Education	*r*	.536	.176	.106	-.158	.402
		p	.015*	.459	.656	.505	.079

*p< .05

and 40% did not need support. In the general naming sub-test, 65% children in the CI group needed support while 35% were in the normal range. In the control group, 45% children needed support in the general naming area and 55% children were within normal limits. In the function of knowledge sub-test, 60% in CI group were below the cut-off point and 40% were in the normal range. In the ND group, 15% children were in need of support and 85% did not need support in this part of the test. In the phonological awareness subscales, it was seen that 75% children needed support in the group with CI and 25% were within the normal limits, while in the ND group, 18 (90%) children's phonological awareness skills needed support, 10% of the children were within normal limits. In alphabet knowledge, 80% of the children in the CI group had the need for support and 20% were within the normal limits, while in the ND group, 45% of the children's alphabet knowledge skills needed support and % 55 of the children were in the normal range. In the listening comprehension subtest, 75% of the children in the CI group needed support and 25% were in the normal range and in the ND group, 80% children needed support and 20% children were within normal limits. In the EROT total score, 75% children in the study group and 55% children in the control group were below the cut-off point and needed to support early literacy skills.

For the sixth sub-objective of the study, the results of the Spearman correlation analysis for the question "Is there a relationship between gender, maternal education level and age of diagnosis of hearing loss and EROT subtests?" are given in Table 7.

There is no statistically significant relationship between gender and age of diagnosis of the hearing loss with EROT subtests. There is a statistically significant relationship between EROT vocabulary, listening comprehension and EROT total scores and maternal education ($p< .05$). In the NG group, there was no significant relationship between gender with EROT subtests ($p> .05$), and there was a significant relationship between EROT vocabulary sub-test ($p< .05$).

Discussion

In this study, we aimed to compare the early literacy skills of children with cochlear implants (CI) with 60-72 months of preschool and / or special education with the results of children with normal hearing. Whether there was a difference between the CI and ND children and their scores on the EROT scale were analysed on the frame of subtests of EROT. Differences between study and control groups were examined according to sub-tests; vocabulary knowledge (receptive and expressive language, general naming, knowledge of function), phonological awareness (rhyme awareness, matching the first sound of words, matching the last sound of words, separating the sentence into words, separating the word into syllable, combining syllables, eliminating the first sound of words, eliminating the last voice of words,) alphabet knowledge (receptive and expressive alphabet knowledge) and listening comprehension. When ND children were compared with CI users according to the vocabulary knowledge subtest scores; study group was found below and there were significant differences between the groups. In the study group, 60% of them needed support in the field of receptive language, %85 in expressive language, %65 in general naming, %60 in knowledge of function, 75% in phonological awareness, 80% in the alphabet knowledge, 75% in listening comprehension and 75% needed support for all EROT skills. Supporting the results of this study, Nicholas and Geers (2007) emphasized that children with severe hearing loss had lower vocabulary than expected. Kyle and Harris (2010) emphasizes the importance of language skills for the reading of hearing-impaired children.

In this study, study group needed support in all areas of vocabulary knowledge. In control group, 40% of them needed support in receptive language, 60% in expressive language, 45% in general naming, 15% needed support in the knowledge of function. Studies in the literature show a strong relationship between early literacy skills and reading and academic achievement of children (Rohde, 2015). It has been underlined that children who have good early literacy skills in pre-school period are successful in both academic and social fields, and children with underdeveloped skills experience great difficulties in learning process (Kargın, Ergül, Büyüköztürk, & Güldenoğlu, 2015). Another study shows that there is a clear link between verbal and written language, and this link is the vocabulary knowledge. In order for a reader to understand the text, it is stated that most of the words represented by the text should be in the verbal expression of the reader, in other words, the fact that children can understand the sentence spoken in the preschool period predicts understanding in the future (Kyle & Harris 2006).

In our study, it was found that in the phonological awareness sub-tests, the difference between separating the word into syllable, combining syllables, eliminating the first sound of words results with cochlear implants were statistically significant between two groups. However, there was no statistically significant difference between groups in terms of rhyme awareness, matching the first sound of words, matching the last sound of words, separating the sentence into words, eliminating the last voice of words and total phonological awareness scores. In the detailed analysis, taking into account the cut points of the test, 90% of the children in ND needed support and 75% of the children in CI needed support. When the studies conducted in the literature are examined, it can be seen in the study of Kyle and Harris that even though hearing impaired individuals can be aware of the rhymes of words, even university students in their academic lives (rhyme awareness), they are generally more wrong and slower in reading than normal individuals (Kyle & Harris, 2006). In another study, James, Helbig, Maier, Kiefer, Radeloff and Adunka (2008) reported that children with hearing impaired were significantly lower than their peers in rhyme awareness. It is thought that the difference between the literature and the results can be caused by the fact that children in the study group with CI have received training for phonological awareness in special education programs, but children who have normal development in kindergarten in Turkey have very limited awareness of phonological awareness in education program. In addition, in the August-December period when data collection was made, there were no training done in the kindergarten education curriculum, except for separating the word into syllable and combining syllables. As a result, it can be foreseen that different results can be obtained in the other studies with the data collection for example in May or June. Therefore, it is thought that the difference between the CI and ND in the phonological awareness area may be derived from the data collection period compared to the literature.

In the knowledge of alphabet, when compared between two groups, the CI children showed lower performance than the normal hearing group. Although the difference between groups was significant in the sub-tests of knowledge of alphabet, sub-test scores of the alphabet were found to be low in both of the groups. 80% of the children in the study group and 45% of the control group needed support in the letters. It is thought that children in both groups will get higher scores if knowledge of alphabet takes more places in education programs. Easterbrooks et al., states in his study that children with severe hearing loss between 9 and 14 years of age showed high performance in matching letters, supporting the importance of education in letter knowledge (Easterbrooks, Lederberg, Miller, Bergeron, & Connor, 2008).

Another sub-skill that the EROT test considers is listening comprehension. When the groups were compared according to the comprehension scores of the EROT test, there was a significant difference between the two groups. When the results are examined in detail, the mean score of the ND group is higher. However, when the cut points of the test were taken into consideration, 80% children from ND group and 75% children from CI group need to be supported in listening comprehension. Supports the results of this study Geers (2002), stated in her research that, CI children starting primary school, performed below grade level in the areas of vocabulary knowledge and listening comprehension. In this sense, the importance of gaining listening comprehension skills before starting school is made obvious. In a study in which CI children were followed for 3 years, the process of reading mother and child interactive books was evaluated. It was stated that they received lower scores in the evaluation tests before the group interactive book reading education and they showed above average performance after the interactive book reading education. Moreover, Desjardin's study, is an important study showing that vocabulary knowledge, listening comprehension and phonological awareness skills can be developed with appropriate support and rehabilitation (Desjardin, Ambrose, & Eisenberg, 2008).

When the groups were compared according to the EROT total scores obtained by the sum of all subtests of the EROT test, a significant difference was found between the two groups. When the results are analysed in detail according to cut points; 75% children in the study group and 55% children with control group need to be supported. When the reading and writing skills are nurtured from the spoken language, the skills developed in the oral language, i.e. both the receptive and the expressive language are very important for reading and writing. In the literature, it is emphasized that there are strong predictive relationships between language skills including vocabulary and reading ability (Kyle & Harris, 2006). It is emphasized that 50% of hearing impaired students graduated from secondary school with a fourth grade reading level (Traxler, 2000) and 30% were low in literacy at school and could not even perform functional reading and writing according to age (Lang, 2002).
In this study, when the relationship between EROT subtests with gender, maternal education level and age of diagnosis is examined; It was found that there was a significant relationship between mother education levels and EROT subtests and these factors influenced children's language skills. Moreover, Altan, and Uzuner (2018) have underlined the important literal impact of the adult who spends a lot of time with the children. Supporting the results of our study, Desjardin et. reported that there was a positive correlation between speech and language development of children and maternal education and participation (Desjardin & Eisenberg, 2007). In our study, according to the history of the mothers with the study group it is related that there is a relationship between mothers education level and EROT subtests, since the mothers have stated there were the adult spending a lot of time with their children.

Conclusions

As a result, in this study, word knowledge between two groups, receptive and expressive language, general naming, knowledge of function scores were statistically different; in the phonological awareness sub-tests, the difference between separating the word into syllable, combining syllables, eliminating the first sound of words results with cochlear implants were statistically significant between two groups. However, there was no statistically significant difference between groups in terms of rhyme awareness, matching the first sound of words, matching the last sound of words, separating the sentence into words, eliminating the last voice of words and total phonological awareness scores; moreover, it was found that CI users had lower scores in the knowledge of letter, listening comprehension subtests and EROT total scores, and the difference between the groups was significant. When the children with CI were compared the EROT total score showed lower performance than the ND group and the EROT test was evaluated according to the cut-off points and as a result, in the study group 15 (%75) of the children and in control group 11 (%55) of the children needed to be supported in early literacy skills. Even though participants in the study group were early detected in their hearing losses and had the surgery, the results of this study reveal the necessity of supporting the early literacy skills in their education programs, which are prerequisite skills for reading and writing skills, in terms of children who receive both mainstreaming education and special education in the risk group and/or who continue their education in kindergarten.

Suggestions

Based on the findings of the research, the suggestions developed for advanced research and applications are as follows.

- In order to increase the generalizability of the findings obtained from the study, the same study can be repeated by comparing with a larger research group.

- A similar study can be performed with children using hearing aids.

• Different groups using hearing aid, bilateral implant and unilateral implant can be compared in terms of early literacy.

• Early literacy skills can be repeated in the same group with data collection in May, which is the period of graduating from kindergarten in Turkey.

• Parents or teachers of preschool students can incorporate early literacy skills into everyday life, to support children's future academic skills.

• Lesson plans in special education programs can be arranged according to early literacy skills to support early literacy skills of preschool children with hearing loss.

References

Atlar, H., Uzuner, Y. (2018). Examining the Emergent Literacy Experiences of a Preschool Child with Hearing Loss. *Journal of Qualitative Research in Education – JOQRE, 57*, 54-89.

Blamey, P.J., Sarant, J.Z., Paatsch, L.E., Barry J.G., Bow C.P., Wales R.J., Wright, M., Psarros C., Rattigan K. & Tooher R. (2001). Relationships among speech perception, production, language, hearing loss, and age in children with impaired hearing. *Journal of Speech Language and Hearing Research, 44*(2), 264-285.

DesJardin, J.L. & Eisenberg, L.S. (2007). Maternal contributions: Supporting language development in young children with cochlear implants. *Ear and Hearing, 8*(4), 456-469.

Desjardin, J.L., Ambrose, S.E. & Eisenberg, L.S. (2008). Literacy skills in children with cochlear implants: the importance of early oral language and joint storybook reading. *Journal of Deaf Studies and Deaf Education, 14*(1), 22-43.

Easterbrooks, S.R., Lederberg, A.R., Miller, E.M., Bergeron, J.P. & Connor C.M. (2008). Emergent literacy skills during early childhood in children with hearing loss: strengths and weaknesses. *Volta Review, 108*(2), 91-114.

Geers, A.E. (2002). Factors affecting the development of speech, language, and literacy in children with early cochlear implantation. *Language Speech and Hearing Services in Schools, 33*(3), 172-183.

Geers, A.E., Nicholas, J.G. & Sedey A.L. (2003). Language skills of children with early cochlear implantation. *Ear and Hearing, 24*, 46-58.

Gündüz, M., & Karabulut, H. (2015). *Odyolojide Temel Kavramlar ve Yaklaşımlar*. Ankara, Nobel Kitap Evleri.

James, C.J., Helbig, S., Maier, N., Kiefer, J., Radeloff, A. & Adunka, O.F. (2006). Ipsilateral electric acoustic stimulation of the auditory system: Results of long-term hearing preservation. *Audiol-Neurotol, 11*, 57-62.

Kargın, T., Ergül, C., Büyüköztürk, Ş. & Güldenoğlu, B. (2015). Anasınıfı çocuklarına yönelik Erken Okuryazarlık Testi (EROT). *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi, 3*(16), 237-268.

Kargın, T., Ergül, C. & Güldenoğlu, İ. (2018). *Erken okur yazarlık el kitapçığı.* Ankara: Eğiten Kitap.

Kyle, F.E., & Harris, M. (2006). Concurrent correlates and predictors of reading and spelling achievement in deaf and hearing school children. *Journal of Deaf Studies and Deaf Education, 11*(3), 273-288.

Kyle, F.E., & Harris, M. (2010). Predictors of reading development in deaf children: A 3 year longitudinal study. *Journal of Experimental Child Psychology 107*(3), 229-243.

Lachowska, M., Pastuszka, A., Łukaszewicz Moszynska, Z., Mikołajewska, L., & Niemczyk, K. (2016). Cochlear implantation in autistic children with profound sensorineural hearing loss. *Brazilian Journal of Otorhinolaryngology, 84*(1), 476-481.

Lang, H.G. (2002). Higher education for deaf students: research priorities in the new millennium. *The Journal of Deaf Studies and Deaf Education, 7*(4), 267-280.

Mayer, C. (2007). What really matters in the early literacy development of deaf children. *Journal of Deaf Studies and Deaf Education, 12*(4), 411-431.

Most, T., Aram, D., & Andorn T. (2006). Early literacy in children with hearing loss: a comparison between two educational systems. *Volta Review, 106*(1), 5-28.

Nicholas, J.G., & Geers, A.E. (2007). Will they catch up? The role of age at cochlear implantation in the spoken language development of children with severe to profound hearing loss. *Journal of Speech Language and Hearing Research, 50*(4), 1048.

Öztürk, Y.A. & Demir, M.K. (2018). An Analysis of Graduate Theses on Early Childhood Education: The Case of Turkey. *International Electronic Journal of Elementary Education, 10*(5), 583-590.

Pıştav Akmeşe, P. (2015). Doğuştan ileri/ çok ileri derecede işitme kayıplı çocukların dil becerilerine ilişkin çalışmların incelenmesi. *Ege Eğitim Dergisi, 2*(2), 392-407.

Pıştav Akmese, P., & Acarlar, F. (2016). Using narrative to investigate language skills of children who are deaf and with hard of hearing. *Educational Research and Reviews, 11*(15), 1367-1381.

Rohde, L. (2015). The comprehensive emergent literacy model: early literacy in context. *SAGE Open, 5*(1), 1-11.

Snow, C.E. (2008). What counts as literacy in early childhood? K McCartney & D Philips (Eds.). *Handbook of Early Childhood Development* (pp.274-294) Oxford, Blackwell Publishing.

Tezer, N., & Akar, F. (2009). Geç yaşta koklear implant uygulamasinin geç dönem sonuçları. *Çukurova Üniveristesi Eğitim Fakültesi Dergisi, 3*(36), 81–91.

Traxler, C.B. (2000). Measuring up to performance standards in reading and mathematics: achievement of selected deaf and hard of hearing students in the national norming of the 9th edition Stanford achievement *test.* Journal of Deaf Studies and Deaf Education, 5, 337-348.

Yazıcı, E. & Kandır, A. (2018). Erken okuryazarlık becerilerinin ev ortamında desteklenmesine ilişkin çalışmaların incelenmesi. *GEFAD, 38*(1), 101-135.

This page is intentionally left blank

www.**iejee**.com

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **145-156**

Exploring the Factors Associated with the School Dropout

Adnan Boyacı*

Received: **10 August 2019**
Revised: **22 October 2019**
Accepted: **18 November 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.iejee.com

DOI: **10.26822/iejee.2019257661**

Abstract

The aim of this study is to critically examine the sociodemographic and individual factors leading to school dropout. The study uses the Family Structure Survey (FSS) data collected in 2016 from 35.475 household members 15+ years old, by Turkish Statistical Institute (TurkStat). Appropriate variables, gender, marital status, age, work status, living away from mother, living away from father, and the residential area were chosen as the predictor variables of the odds of dropout behavior in any level of education for specific age groups. According to the binary logistic regression, being married, working in a job, living in a village or county and living away from father or in a separated family are the major sociodemographic problems leading dropout. Besides, economic issues and low achievement is the major reasons to dropout according to the participants' views by descriptive statistical analyses. In this regard, taking comprehensive actions to minimize the effect of these factors with a broad cooperation and collaboration of the national, local and institutional authorities is suggested and the need for more studies specifically designed for rural and urban areas is emphasized.

Keywords: School Dropout, Socioeconomic Background, School Dropout Factors

Introduction

School dropout is an unwanted result in one's period of education, not only because of losing individual gains sustained by education but also because of its negative collective results in the whole society (Kronick, 1994). Lots of studies show that dropouts are more likely to become unemployed, to work for low wages, to have health problems and to have criminal records than the non-dropouts (Belfield & Levin, 2007). Considering the transformative role of education, school dropout naturally hinders to achieve learning outcomes, and accordingly, causes the waste of resources allocated for education in every level (Boyacı, Karacabey, & Öz, 2018; MoNE [Turkish Ministry of National Education], 2013; Uysal, 2008).

The international debate on the school dropout is mainly focused on this unwanted behavior in the elementary and secondary education levels, figuring out the duration of compulsory education generally covers the elementary or secondary education all around the world (data.worldbank.org). Besides, the lack of access to quality elementary and secondary education in low-income countries, lead global actors like UNESCO, UNICEF and World Bank (WB), to focus on dealing with school dropout and the factors causing attainment problems in these educational levels. As an exogenic factor, the nature of higher education as a private good, is also playing a suppressive role on shifting the center of this debate from higher education to secondary and elementary education. In other words, higher education is up to individuals' will, whether they attend a university or not.

In Turkey, school dropout phenomenon is also studied same as in the international scholarship. The focus point is the elementary and secondary school dropout mainly. Most of the academic studies (Gökşen, Cemalcılar, & Gülselel, 2006; Bülbül, 2012; Karacabey & Boyacı, 2018; MoNE, 2013; Özdemir et al., 2010; Özer, Gençtanirim, & Ergene, 2011), and the national projects or programs (ikg.gov.tr; tegm.meb.gov.tr) related to school dropout and enrolment focuses on the elementary and secondary education levels. Considering the extension of compulsory education in Turkey from eight years to 12 years in 2012, and the principal of providing equal opportunities in the basic law of national education (Law Nr. 1739), the focus on the school dropout in elementary and secondary education is quite normal. Similar to the international context, dropout in higher education is often disregarded in Turkish literature. The main reason is again the higher education is often regarded as a private good and it is a non-compulsory level of education. Turkey is one of the countries in the world in which more than 100 state owned universities are free of charge.

In this study, it is aimed to identify the leading factors to dropout. But unlike the majority of studies in the literature, there isn't a specific focus on educational levels, but age categories. In this context, this study takes a broad picture of school dropout in any level by age groups. There are two main reasons by doing that.

Firstly, difficulty of defining who is a dropout in the levels of education. In secondary education level, the non-continuous structure of the new system eased the passage of students graduated from formal lower secondary schools to Open Upper Secondary Schools. And the students in the Open Upper Secondary Schools are again treated as the ones who are in formal secondary schools in the yearly national education statistics, but they are regarded as dropouts in the Electronic School System of the Ministry of National Education (MoNE, 2013). So, the proportion of the students in Open Upper Secondary Schools can give a clue about the total proportion of high school dropouts. The proportion of the students enrolled in Open Upper Secondary Education is 24.53% in 2018 (MoNE, 2018). Besides, this is not the only information on the rate of school dropouts in Turkey provided by MoNE. Early leaving rate in education is 34.81% (% of a person aged 18 to 24 who has completed at lower secondary education), while the rate of out of school student in secondary education is 5.47% (PoSD, 2017). Hence, although there are various rates of school dropouts based on various definitions, there is not a consensus of who is the actual dropout.

* Correspondance Details: Adnan Boyacı, Department of Educational Sciences, Faculty of Education, Anadolu University, Eskişehir, Turkey. E-mail: adnanboyaci2100@gmail.com

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

The second reason is the often ignorance of number of dropouts in the tertiary education and the scarcity of studies on the college dropout or persistence in the Turkish literature. Although the dropout term is often related to elementary and secondary education, the proportion of students leaving universities is actually showing incongruity to the quantitative developments in Turkish higher education in the last decade. In other words, despite the recent increase in the number of universities and enrollment rates in higher education, there is an ongoing rate of students who retake the university entrance exam while already enrolled in a university or after graduation. This is due to the fact that many students want to get access to another study area than the one they already enrolled. In 2017, there were 193,715 people graduated from a university and 523,381 students enrolled in a university retook the university entrance exam when the total number of applications was 2,265,844 (MoNE, 2018). This means 31.65% of the applications have already had a university experience, but because of various reasons they wanted to retake the exam to change their departments or universities they already enrolled as students, as mentioned earlier.

In conclusion, this study is not limited with a specific educational level when exploring the factors leading school dropout. Yet there are some limitations. The dataset used in this study is taken from the Family Structure Survey (FSS-2016) of Turkish Statistical Institute (TurkStat, 2016). So, the factors leading school dropout are restricted with the appropriate variables in the survey, since it covers a broad variety of topics regarding family structure. There are three main parts in the FSS as Main Characteristics of Household Members' Questionnaire, Household Questionnaire and Individual Questionnaire. The data was collected through the face-to-face interviews with the individuals aged 15 and over, living in the sample households. In this study, only the Individual Questionnaire was used.

Therefore, this study could make a great contribution on the identification of some certain factors leading school dropout by using a national, large-scale survey, which has a great capacity of affecting political actions towards the dropout problem.

Different Conceptual Frameworks for Explaining Dropout Phenomenon

Basically, school dropout is the change of a certain behavior, not going to school anymore. A broad variety of factors could be able to lead that behavior, considering the place of the student in a certain environment. In a broad sense, this environment refers to student's social class, and the cultural capital, human capital, division of labor and the anomies in this class could give lots of clues regarding the possible school dropout behavior (Karacabey & Boyaci, 2018). From a narrow perspective, this environment could be the family, school and the community where the student has got close social networks (Israel & Baeliu, 2004). In this regard, school dropout is the result of a developmental process consisting of lots of experience through one's educational period in those environments (Jimerson et al., 2002).

There are various models or conceptual frameworks trying to explain school dropout. But they are basically differentiating for K-12 education and post-secondary education. Frankly, most of the time these models focus on school dropout in K-12 education, and student retention or attrition in post-secondary education. So, pushing/pulling factors (Jordan, Lara, & McPartland, 1994; Stearns & Glennie, 2006) student engagement model (Newmann, Wehlage, & Lamborn, 1992), developmental-transactional model (Jimerson et al., 2000), frustration-self-esteem and participation-identification models (Finn, 1989), five theories (academic mediation theory, general deviance theory, deviant affiliation theory, family socialization theory and structural strains theory) of Battin-Pearson and others (2000) and the conceptual model of high school performance (Rumberger & Lim, 2008) consist of the dropout models or approaches in K-12 education.; whereas, student involvement theory (Astin, 1985), student integration model (Tinto, 1987), the general model for assessing change (Pascerella, 1985) and the model on dropping out of residential and commuter colleges (Braxton & Hirschy, 2005, p. 69-74) are the major models or approaches in the student engagement, retention or attrition in post-secondary education.

Models or Conceptual Frameworks of Dropout in K-12 Education

One of the approaches for school dropout can be expressed as the factors that push out of school and pull out of school (Jordan, Lara, & McPartland, 1994; Stearns & Glennie, 2006). In this regard, it is possible to talk about a number of internal and external factors that play a role in the dropout process. Pulling factors arise from the external environment of the school and the student's personal life, like financial status, work status, changes in the family structure, marriage or some other out of school factors, and could be effective on staying in the school or dropping out. However, pushing factors are composed of in-school factors. The attitude of teachers towards students, disciplinary policies, school rules, examinations, tests, and low grades could be able to push the student out of school. Hence, problems arising from the school structure is also essential for staying in school or dropping out.

Student engagement model (Newmann, Wehlage, & Lamborn, 1992) propose another approach for explaining school dropout behavior: Student engagement is able to hinder alienation and strengthen the attainment. Students engage in educational processes behaviorally, effectively and cognitively (Fredricks, Blumenfeld, & Paris, 2004). In this context, the involvement of students in curricular and extra-curricular activities, behaviors of teachers, peers and school administration towards students and students' own efforts and devoting energy for acquiring educational outputs are very important for staying in school.

According to the developmental-transactional model (Jimerson et al., 2002), school dropout behavior is a result of a process. This process covers the first day in the first educational institution till the end of educational life. So, from the early developmental period of students, they start to interact with their surroundings and these experiences are transferred to the older ages. In this regard, early period home possessions, childcare, socioeconomic status, peer relations, academic achievement in secondary grades and family's school involvement are associated with dropping out of 19-year-old at-risk students.

Frustration-self-esteem and participation-identification models are proposed by Finn (1989). The first one explains how students build the road to dropout. In order to reinforce their broken self-esteem by failure or low achievement, students tend to find an area or a network where they seek to be accepted. Most of the time this network consists of students having a similar low achievement or problematic behaviors. The second one is about the road to school completion. In this model, students participating in the classroom activities start to reach the expected educational outputs even if these activities are needed a very low level of effort. The more students become successful the more they have a high level of involvement in school as an institution or school-related activities. Such a gradual development results in school completion.

Battin-Pearson and others (2000), proposed a five different model regarding school dropout. Among these models, academic mediation theory emphasizes that the academic achievement is the most powerful predictor of school dropout. General deviance theory explores the relationship between criminal behaviors, drug abuse and early pregnancy with the

school dropout. Deviant affiliation theory emphasizes the link between school dropout and the student's network with antisocial peers. Antisocial peers have low engagement with the school and tend to dropout. Family socialization theory elaborates the association of family background and school dropout. In this context, family expectations from student education and the educational background of the family are very important. And lastly, the structural strains theory examines the link between school dropout and the sociodemographic factors such as gender, ethnicity or socioeconomic status.

The last approach for the explanation of the school dropout in K-12 education is the conceptual model of high school performance of Rumberger and Lim (2008), emphasizing that the school dropout as an output of educational performance (achievement, persistence, attainment). In this regard, educational performance is affected by individual and institutional factors. Individual factors consist of the student background, attitudes and behaviors, whereas institutional factors are composed of families, schools and communities.

Models or Conceptual Frameworks of Dropout in Postsecondary Education

As mentioned above, college dropout can be discussed in detail with the college retention theories. Frankly, college retention theories are commonly used for examining the student persistence and attrition in or departure from the college (Chen, 2008).

Tinto's (1987) student integration model is the best known and the most criticized among others. In this model, Tinto identifies a variety of external or pre-college factors that play a role in college student integration, including prior qualifications (grades, academic and social success, etc.), family attributes (social status, values, aspirations, etc.), individual attributes (gender, race, ability, etc.). He distinguishes between academic and social integration maintained by the experiences inside and outside of the classroom in an institutional environment. If social and academic interaction level increase, then does the student persistence in the college. According to Tinto (1987), there are three developmental stages for college students namely, separation, transition, and incorporation. In each period, students may decide to departure, but effective retention strategies assist students during the transition period. Although the model has been widely tested and used, it is criticized because of ignoring economic and external factors, and college types (residential and commuter colleges, two and four-year colleges) (Braxton & Hirschy, 2005; Cabrera, Nora, & Castaneda, 1993; Chen, 2008; Nora, Cabrera, Hagedorn, & Pascarella, 1996; Tinto, 2006).

According to Astin's (1985) theory of student involvement, students' experiences in academic and extra-curricular activities are very important for their persistence. In this regard, college graduation is based on three correlational items as input, environment, and output. Inputs are directly or, considering the mediating role of the environment, indirectly related to outputs. Inputs include a variety of factors such as individual characteristics of the student, pre-tertiary experiences, and expectations from education, financial status or field of study. An environment is the place where students have their experiences during higher education. Various factors such as institutional opportunities, staff, education program, organizational climate, and academic and social activities are the important features of the environment. In this environment, students' time to continue to higher education and their experiences are considered as determining factors in student participation. Outputs are the results of experiences of students at the end of the higher education (Astin, 1993). Hence, inputs and various factors in the environment could be able to affect the student persistence and graduation from the college.

Pasceralla (1985) propose the general model for assessing change in student development. In this model Pascarella examines the role of five broad factors influencing the student during the higher education as (1) background characteristics, expectations and experiences of the student before the college, (2) institutional features of the higher education organization, (3) institutional environment, (4) the quality of the effort made by student, (5) interactions with faculty, peers and others, which could enable or hinder the student's learning and cognitive development.

Braxton and Hirschy (2005), propose two other theories for residential college retention and commuter college retention. The main difference between these two theories is the student's way of living in commuter and residential colleges. Students in commuter colleges hold their primary social memberships with family, friends and colleagues off campus and they may be older students working part time or full time (Braxton & Hirschy, 2005). Hence, such factors inhibit developing relationships at college for commuter students (Alford, 1998). According to Braxton and Hirscy's theory for residential colleges, social integration has an important role directly on persistence. However, in their theory for commuter colleges, external environment and learning communities in academic communities play an important role directly on persistence.

All in all, these theories, models or approaches for explaining the dropout behavior in both K-12 and post-secondary education are complementary to each other in general, and it is obvious that none of them alone could explain the whole phenomena. However, most of them emphasize the role of individual or background characteristics of the students on the school dropout or college departure. And this study also examines these individual and sociodemographic factors as much as the data cover. Hence, the research questions are as follows:

1. What are the sociodemographic factors influencing the odds of school dropout?

2. What are the perceived factors influencing school dropout decision?

Methods

This study is designed as descriptive and correlational research, consisting the secondary analysis of FSS-2016 data. FSS-2016 identifies the structure of families, lifestyle of individuals in the family environment and values of individuals regarding family life in Turkey. It collects information on household characteristics, marriage, intrafamilial relations, relations with relatives, values and attitudes regarding children, elderly and other social issues and family problems (Family Structure Survey Micro Data Set, 2016).

Population and the Sample

The population of FSS-2016 is composed of all the people included in all the settlements in Turkey, except the institutional population living in dormitories, rest homes for elderly persons, special hospitals, military barracks and recreation quarters for officers etc. In this context, the unit of analysis is the individuals aged 15 and over. The sampling frame is based on Address Based Population Register System (ABPRS) and National Address Database (NAD). The stratified cluster sampling method was used to determine the number of households from 12 regions (NUTS 1) of Turkey. Finally, the data collected from 35,475 individuals in 17,239 households (Family Structure Survey Micro Data Set, 2016).

Variables

There are two sets of variables for each one of the research questions. In this regard, for the first research question;

• The dependent variable

-Dropout status (DROPOUT): Whether the dropped out the school or not, including higher education.

• Independent variables

-Gender (GENDER): Gender of the participant. Two categories as female or male.

-Age (AGE): Completed age the participant. Age is used as both a continues and categoric variable regarding different analysis.

-Marital status (MARRIAGE): Current marital status. Two categories as at least one marriage or never married.

-Work status (WORK): Working in a job at least one week from today. Two categories as worked or not worked.

-Residential area (AREA): Living location until the age of 15. Four categories as province, county, village and abroad location.

-Living with father (LWF): How far living away from father. Three categories as living together, living separate and not having a father or died.

-Living with mother (LWM): How far living away from mother. Three categories as living together, living separate and not having a mother or died.

-Geographical location (REGION): 12 geographical location according to NUTS 1.

For the second research question, there is only one categorical variable which is represented by only one question: What is the most important reason for you to dropout? In this context, the categories regarding the perceived reasons to dropout are as follows:

1. Economic issues

2. Disallowing from going to school by the family

3. Inadequacy of teacher/school

4. Health issues

5. Academic failure

6. Getting married, engaged, pregnant or becoming mother/father

7. Other reasons

Data Analysis

There are different types of analysis for the research questions. For the first question binary logistic regression analysis was performed. And for the second question descriptive statistics were used.

For the first research question, there are two separate models for exploring the effect of sociodemographic variables on dropout behavior. One is for the whole participants and one is for the certain age groups. For both groups of participants, the logistic regression model, $Logit(P_i)= Log[P_i/(1-P_i)]= p_i$, is the same.

For the whole group analysis there are two models. One is to control the effect of geographic location and the other one is for the full model including all independent variables. In this regard, the models are as follows:

• The first model for the analysis is $Logit(P_i)= \beta_{0i}+\beta_{1i}REGION+ r_i$

• The second model for the analysis is $Logit(P_i)= \beta_{0i}+\beta_{1i}GENDER +\beta_{2i}AGE+\beta_{3i}MARRIAGE+\beta_{4i}WORK+\beta_{5i}AREA+\beta_{6i}LWF+\beta_{7i}LWM+ \beta_{8i}REGION+ r_i$

For the age group analyses, there are again two models. One is to control the effect of geographic location and the other one is for the full model including all independent variables. Age is grouped into five categories as 15-17 years old, 18-24 years old, 25-44 years old, 45-64 years old and 65 and above ages. In this regard, the models are as follows:

• The first model for the analysis is $Logit(P_i)= \beta_{0i}+\beta_{1i}REGION+r_i$

•The second model for the analysis is $Logit(P_i)=\beta_{0i}+\beta_{1i}GENDER +\beta_{2i}MARRIAGE+\beta_{3i}WORK+\beta_{4i}AREA+\beta_{5i}LWF+\beta_{6i}LWM+\beta_{7i}REGION + r_i$

In the analysis of first research question, the purpose of using the REGION variable, despite the fact that it is not first level variable, is to obtain information about how much it predicts the likelihood of leaving school. The impact of interregional change is outside the scope of the study. By doing so, it was tried to understand to what extent the remaining variables predicted the possibility of leaving school, regardless of the differences between regions. Similarly, there are studies that use different level of variables in the same analysis together (Gumus & Bellibas, 2016).

For the second research question, there are again two different analyses for the identification of perceived reasons to dropout. One for the whole participants and one for the above age groups. In the analyses, percentages and frequencies were calculated.

In the analysis of first research question, the purpose of using the REGION variable, despite the fact that it is not first level variable, is to obtain information about how much it predicts the likelihood of leaving school. The impact of interregional change is outside the scope of the study. By doing so, it was tried to understand to what extent the remaining variables predicted the possibility of leaving school, regardless of the differences between regions. Similarly, there are studies that use different level of variables in the same analysis together (Gumus & Bellibas, 2016).

For the second research question, there are again two different analyses for the identification of perceived reasons to dropout. One for the whole participants and one for the above age groups. In the analyses, percentages and frequencies were calculated.

Findings

Before beginning the analyses, some certain assumptions and prerequisites for binary logistic regression analysis were checked (Şenel & Alatlı, 2014). First, the data set has enough number of participants by the number of independent variables. Besides, missing values and outliers were controlled. There wasn't any multicollinearity problem among the variables. VIF values were far lower than 3.00 and the tolerance values were not close to 0.00. In all models, both all age and specific age groups, Hosmer and Lemeshow goodness of fit

index was *p*> .05. Moreover, for all models, Cook's Distance was less than 1, Leverage was between 0 and 1, DFBeta for the constant and the DFBeta for the First Predictor values were again less than 1, and values for Studentized, Standardized Residuals and Deviance were again lying between the acceptable range (Field, 2009). In this regard, binary logistic regression analyses were performed.

However, before passing the specific findings regarding research questions, descriptive analyses were performed for identifying the general composition of the sample. Table 1 reveals the general characteristics of the non-dropouts and dropouts by independent variables (sociodemographic factors). In this context, only the gender has no relationship with being non-dropout or dropout for all sample. But gender was still controlled for the binary logistic regression analyses for specific age groups. Moreover, in this table region was shown as an independent variable. However, considering the focus of this study, the region is only a control/dummy variable just to control the effect of regional characteristics. In other words, the region is only used to get more information on the change of its predictive power among other independent variables.

Table 1. *Crosstabulations for Dropouts and non-Dropouts by Independent Variables*

Independent Variable	Non-Dropouts (%)	Dropouts (%)	n (Total)
Gender			
Female	81.9	18.1	19701
Male	81.4	18.6	15774
Marital status*			
At least one marriage	79.8	20.2	27903
Never married	88.8	11.2	7572
Residential area*			
Province	83.2	16.8	11989
County	80.7	19.3	9215
Village	81.1	18.9	13757
Abroad	81.5	18.5	514
Work status*			
Didn't work	82.5	17.5	21109
Worked	80.5	19.5	14366
Living away from father (LWF)*			
Same place	87.5	12.5	6903
Different place	79.4	20.6	11849
Not having a father/died	80.9	19.1	16723
Living away from mother (LWM)*			
Same place	86.0	14.0	8467
Different place	79.2	20.8	15092
Not having a mother/died	81.8	18.2	11916
Age*			
15-17 years old	93.8	6.2	2166
18-24 years old	86.2	13.8	3961
25-44 years old	78.4	21.6	13699
45-64 years old	80.2	19.8	11008
65 years old and above	85.6	14.4	4641
Region*			
TR1	82.1	17.9	4722
TR2	82.6	17.4	2231
TR3	82.2	17.8	5143
TR4	79.3	20.7	3251
TR5	84.2	15.8	4447
TR6	77.3	22.7	3673
TR7	82.0	18.0	2334
TR8	80.7	19.3	2344
TR9	81.1	18.9	1408
TRA	85.1	14.9	1271
TRB	83.7	16.3	1934
TRC	81.9	18.1	2717

**Chi square tests show significant differences between groups. (p< .001; n= 35474)*

Table 2. *Results of Stepwise Binary Logistic Regression Analysis Regarding the Relationship Between the Odds of Dropout and the Region for All Age Groups (Reference category: Being a non-dropout; n= 35475)*

Independent Variables	B (SD)	Wald	*df*	*p*	C.I. for Exp (B)		
					Lower	Exp (B)	Upper
Constant	-1.521 (.038)	1607.160	11	.000			
Region (Reference category: TR1)							
TR2	-.034 (.067)	.260	1	.610	.846	.966	1.103
TR3	-.010 (.053)	.036	1	.850	.893	.990	1.098
TR4	.179*** (.058)	9.727	1	.002	1.069	1.197	1.339
TR5	-.150*** (.056)	7.222	1	.007	.771	.860	.960
TR6	.293*** (.055)	28.593	1	.000	1.204	1.340	1.491
TR7	.001 (.066)	.000	1	.988	.880	1.001	1.139
TR8	.089 (.065)	1.891	1	.169	.963	1.093	1.241
TR9	.064 (.078)	.665	1	.415	.915	1.066	1.241
TRA	-.218* (.087)	6.232	1	.013	.678	.804	.954
TRB	-.113 (.072)	2.428	1	.119	.776	.894	1.029
TRC	.012 (.034)	.034	1	.853	.895	1.012	1.144

*R^2= .000 (Hosmer & Lemeshow), .004 (Nagelkerke). Model $X^2(11)$= 94.932, ***p< .001. **p< .01. *p< .05*

Table 3. *Results of Stepwise Binary Logistic Regression Analysis Regarding the Relationship Between the Odds of Dropout and Independent Variables for All Age Groups (Reference category: Being a non-dropout; n= 35475)*

Independent Variables	B (SD)	Wald	*df*	*p*	C.I. for Exp (B)		
					Lower	Exp (B)	Upper
Constant	-1.95 (.063)	945.467	1	.000			
Gender			1				
Male	.094*** (.028)	11.122	1	.001	1.040	1.099	1.162
Marital status			1				
At least one marriage	.912*** (.061)	220.354	1	.000	2.207	2.490	2.809
Residential area		12.114	3	.007			
County	.126*** (.037)	11.710	1	.001	1.055	1.134	1.218
Village	.076* (.035)	4.804	1	.028	1.008	1.079	1.155
Abroad	.029 (.118)	.059	1	.808	.817	1.029	1.296
Work status	----------	--------	-----	--------	--------	--------	--------
Worked	----------	--------	-----	--------	--------	--------	--------
Living away from father (LWF)		30.066	2	.000			
Different place	.292*** (.072)	16.427	1	.000	1.163	1.339	1.541
Not having a father/died	.373*** (.069)	29.112	1	.000	1.268	1.452	1.663
Living away from mother (LWM)		8.019	2	.018			
Different place	-.182** (.065)	7.916	1	.005	.734	.833	.946
Not having a mother/died	-.163* (.066)	6.007	1	.014	.746	.850	.968
Age (Continuous)	-.013*** (.001)	83.406	1	.001	.985	.987	.990
Region (To control)		93.831	11	.000			

*R^2= 9.430 (Hosmer & Lemeshow), .028 (Nagelkerke). Model $X^2(21)$= 609.593, p< .001. ***p< .001. **p< .01. *p< .05*

Findings for The First Research Question

Regarding the first research question, the first model examines the effect of region on the odds of being a dropout. This analysis is done just to see how much of the odds of being a non-dropout is explained by the region. In this context, according to the Table 2, the region is only explaining the 0.4% of the odds of being a dropout, when the sample consists of all age groups.

Table 3 reveals that region and the all other variables together explain the 2.8% of the odds of dropout. According to this percentage, contribution of region in the explanation of the odds of dropout is very low (.04%). When compared with the other variables, region is only contributing to the 1/7 part of this explanation.

According to Table 3, gender, marital status, residential area, living away from mother and father have significant relationships with the odds of being a dropout like the region for all age groups. In this context, male dropout 1.10 times more than females. Individuals made at least one marriage dropout 2.49 times more than the individuals never married. Individuals lived in counties until the age of 15 dropout 1.13 times and individuals lived in villages until the age of 15 dropout 1.08 times more than individuals lived in provinces until the age of 15. Individuals living in a different place from father dropout 1.34 times, individuals not having a father or if their

Table 4. *Results of Stepwise Binary Logistic Regression Analysis Regarding the Relationship Between the Odds of Dropout and Independent Variables by Age Groups (Reference category: Being a non-dropout)*

Independent Variables	Age Groups									
	15-17 (*n*= 2166)[1]		18-24 (*n*= 3961)[2]		25-44 (*n*= 13699)[3]		45-64 (*n*= 11008)[4]		65+ (*n*= 4641)[5]	
	B	Exp (B)	B	Exp (B)	B	Exp (B)	B	Exp (B)	B	Exp (B)
Constant	-3.251	.039	-2.438	.087	-1.691	.184	-1.125	.325	-1.479	.228
Gender										
Male	----	----	----	----	----	----	.217***	1.242	.233***	1.263
Marital status										
At least one marriage	3.434***	30.995	.851***	2.342	.503***	1.654	----	----	----	----
Residential area										
County	-.128	.88	----	----	.229***	1.257	.034	.614	-.179	.836
Village	.579**	1.784	----	----	.208***	1.232	-.139*	.019	-.338**	.713
Abroad	1.642	5.164	----	----	.065	1.067	-.069	.706	-.661*	.516
Work status										
Worked	1.551***	4.716	.447***	1.563	-.178***	.837	-.125*	.882	----	----
Living away from father (LWF)										
Different place	----	----	.475***	1.608	----	----	----	----	----	----
Not having a father/died	----	----	.824***	2.279	----	----	----	----	----	----
Living away from mother (LWM)										
Different place	----	----	----	----	-.216**	.806	-.258**	.772	----	----
Not having a mother/died	----	----	----	----	-.022	.978	-.258**	.773	----	----
Region (To control)	----	----	----	----	***	***	***	***	***	***

*p< .05; **p< .01; ***p< .001

[1] R^2= 6.030 (Hosmer & Lemeshow), .120 (Nagelkerke). Model $X^2(5)$= 99.049, p< .001. [2] R^2= 4.319 (Hosmer & Lemeshow), 0.073 (Nagelkerke). Model $X^2(4)$= 162.913, p< .001. [3] R^2= 6.230 (Hosmer & Lemeshow), .016 (Nagelkerke). Model $X^2(18)$= 139.490, p< .001. [4] R^2= 10.436 (Hosmer & Lemeshow), 0.017 (Nagelkerke). Model $X^2(18)$= 118.046, p< .001. [5] R^2= 7.104 (Hosmer & Lemeshow), .021 (Nagelkerke). Model $X^2(15)$= 54.630, p< .001.

fathers are dead dropout 1.45 times more than individuals living with their fathers respectively. On the contrary, older individuals don't dropout 1.5% more than the youngers and individuals living in a different place from mother and individuals not having a mother or if their mothers are dead don't dropout 1.20 times and 1.18 times respectively more than the individuals living with their mothers. Work status is not a significant predictor of the odds of being a non-dropout when the sample composed of all age groups.

When the specific age groups are examined, all of the independent variables could show significant relationships with the odds of being a dropout. Table 4 shows a detailed examination of the independent variables.

For the individuals between 15-17 years old, marriage is increasing the odds of being a dropout 31.00 times (legally, a man or woman cannot marry unless he or she turns 17 in Turkey), while working is increasing the odds of being a dropout 4.72 times. Similarly, living in a village until 15 years old is increasing the odds of being a dropout 1.78 times. For the 18-24 age group, marriage is again increasing the odds of dropout, but this time, 2.34 times more. Similarly, working in a job at least for one week again increases the odds of being a dropout 1.56 times more. Besides, living in a different place from father and if he is dead increase the odds of being a dropout 1.61 times and 2.28 times more respectively. For the individuals between 25-44 years old, marriage is again increasing the odds of being a dropout 1.65 times. Living in a county and living in a village until the age of 15 raise the odds of being a dropout 1.26 and 1.23 times more than living in a province until the age of 15. But this time work status, decrease the odds of being a dropout 1.19 times. Similarly, living in a different place from mother drops the odds of being a dropout 1.24 times. For the 45-64 age group, a different variable, gender, comes to the forefront in explaining the dropout behavior of individuals. Being male boosts the odds of being a dropout 1.24 times more. As a contrary to its previous effect on dropout, this time living in a village decrease the odds of being a dropout 5.26 times. Similarly, work status reduces the odds of being a dropout 1.13 times. And again, living at a different place from mother and if the mother is dead decreasing the odds of being a dropout 1.30 times and 1.29 times more respectively. For the individuals, 65 and above years old, male dropout 1.26 times more than females, individual living in villages and abroad don't dropout 1.40 times and 1.94 times more respectively than the individuals living in provinces.

Moreover, when Table 5 is examined, region predicts the odds of being a dropout in a range between 0.4% and 1.5% in the above mentioned five age groups. And, there isn't any

Table 5. *Prediction of the Odds of Being a Non-Dropout by Region According to the Results of Stepwise Binary Logistic Regression Analysis in Age Groups*

Age groups	*n*	Hosmer & Lemeshow X^2	Nagelkerke R^2	Model X^2	Model df
15-17 years old	2166	.000	.015	12.466	11
18-24 years old	3961	.000	.012	26.925**	11
25-44 years old	13699	.000	.004	38.884***	11
45-64 years old	11008	.000	.011	79.611***	11
65 years old and above	4641	.000	.014	35365***	11

*p< .05; **p< .01; ***p< .001

significant relationship between region and the odds of being a dropout for the 15-17 age group. When, Table 4 and 5 thought together, all independent variables in 15-17, 18-24, 25-44, 45-64 and 65+ age groups, predict the 12.0%, 7.3%, 1.6%, 1.7% and 2.1% of, whereas the region predicts 1.5%, 1.2%, .04%, 1.1% and 1.4% the odds of dropout respectively. In this regard, the share of the region in this prediction is in 15-17, 18-24, 25-44, 45-64 and 65+ age groups are %12.5, %16.4, %25.0, %64.7 and %66.7 respectively. Actually, this could be an important point showing that the effect of the region is becoming less important for today compared with the past in the dropout behavior of individuals.

Findings for the Second Research Question

The second research question is about to reveal the general reasons for dropping out perceived by the participants. In this context, Table 6 shows the percentages and frequencies of reasons to dropout as answered in the data set. For all age groups, economic issues, disallowing from going to school by the family and academic failure is the most important reasons to dropout respectively. When the age groups are compared, in younger age groups, economic issues and disallowing from going to school by the family are getting less indicated; whereas the academic failure is getting more indicated. A similar change is seen in the inadequacy of teacher/school, which could mean recently, the inadequacy of teacher/school hasn't been an important reason to dropout when it compared with the distant past.

In order to give a detailed answer to the second research question and to see which reasons come to the forefront for male and female, Table 7 reveals the cross-tabulation results of gender by age groups. For all and specific age groups, perceived reasons show a significant relationship with the dropout behavior.

According to Table 7, economic issues and academic failure were indicated as the most important reasons to dropout for male, whereas disallowing from going to school by the family and getting married, engaged, pregnant or becoming mother were indicated as the most important reasons to dropout for female in all age groups. In detail, getting married, engaged, pregnant or becoming mother is forthcoming as an important reason to dropout for female in the 15-24 age group more than other ages. However, as the age of the participants increases, economic issues are indicated more by male than female. On the contrary, as the age increases, disallowing from going to school by the family is indicated more by female than male. However, this reason is actually notable for males in older ages despite any male don't indicate this is a valid reason to dropout in 15-17 age group.

Table 6. *Numbers and Percentages of Perceived Factors Influencing School Dropout Decision by Age Groups*

	Age Groups											
	All Age Groups		15-17 Years Old		18-24 Years Old		25-44 Years Old		45-64 Years Old		65 Years Old and Above	
Reasons to Dropout	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Economic issues	2835	43.6	31	23.0	207	37.8	1393	47.0	955	43.8	249	37.2
Disallowing from going to school by the family	1647	25.4	13	9.6	91	16.6	643	21.7	635	29.1	265	39.6
Inadequacy of teacher/school	355	5.5	5	3.7	26	4.8	123	4.1	125	5.7	76	11.3
Health issues	[165]	2.5	6	4.4	18	3.3	77	2.6	53	2.4	11	1.6
Academic failure	726	11.2	69	51.1	122	22.3	309	10.4	190	8.7	36	5.4
Getting married, engaged, pregnant or becoming mother/father	395	6.1	3	2.2	41	7.5	259	8.7	70	3.2	22	3.3
Other reasons	373	5.7	8	5.9	42	7.7	[160]	5.4	152	7.0	11	1.6
Total	6496	100	135	100	547	100	2964	100	2180	100	670	100

Table 7. *Crosstabulations of Gender by Age Groups for Perceived Factors Influencing School Dropout Decision*

	Age Groups											
	All Age Groups		15-17		18-24		25-44		45-64		65+	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Total (n)	3561	2935	73	62	339	208	1703	1261	1104	1076	342	328
Reasons to Dropout	%	%	%	%	%	%	%	%	%	%	%	%
Economic issues*	30.7	59.4	32.9	11.3	35.4	41.8	34.8	63.5	27.1	61.0	16.7	58.5
Disallowing from going to school by the family*	40.0	7.6	17.8	.0	24.8	3.4	33.4	5.9	49.3	8.5	62.6	15.5
Inadequacy of teacher/school*	4.7	6.4	2.7	4.8	4.1	5.8	3.9	4.5	5.2	6.3	7.9	14.9
Health issues*	2.8	2.2	4.1	4.8	3.5	2.9	2.5	2.7	3.2	1.7	2.3	0.9
Academic failure*	7.4	15.7	35.6	69.4	14.5	35.1	6.9	15.2	5.5	12.0	3.5	7.3
Getting married, engaged, pregnant or becoming mother/father*	9.9	1.4	2.7	1.6	11.8	0.5	13.6	2.1	5.4	.9	5.8	0.6
Other reasons*	4.5	7.3	4.1	8.1	5.9	10.6	4.9	6.0	4.3	9.7	1.2	2.1
Total	100	100	100	100	100	100	100	100	100	100	100	100

**Chi square tests show significant differences between groups. (p< .001)*

Discussion

According to the findings of the study, different variables show significant relationships with the odds of dropping out in all and specific age groups when the regional characteristics are controlled. In this regard, region explains a considerably low proportion of being dropout in lower age groups, but in older age groups like 45+ region has gotten more percentage of prediction in the odds of dropping out. Specifically, in the 15-17 age group, there is not a significant relationship between region and the odds of dropout. In this regard, although the examination of the effect of different characteristics of the regions on the dropout behavior isn't the focus of this study, it should be noted that dropout behavior could be explained by different factors in different regions in Turkey (AÇEV, 2006; Boyacı & Karacabey, 2018).

Another important factor in the explanation of the relationship between dropout and the sociodemographic factors is the gender, despite the crosstabulations in Table 1 shows no significant relationship between groups. Findings of gender reveal that in all and some specific age groups, male dropout more than female, especially in older ages as (45+). However, the role of gender on the dropout behavior is actually a controversial issue in the literature. In some studies (Andrei, Profiroiu, Profiroiu & Jacob, 2011; MoNE, 2013; Sum et al., 2003; Uysal & Şahin, 2009) male dropout more, but in other studies (AÇEV, 2006; Battin-Pearson et al., 2000; Rumberger, 2001) female dropout more. Furthermore, in some studies, gender doesn't make a significant difference in dropout behavior (Cataldi & KewalRamani, 2009; Lan & Lanthier, 2003).

Marital status, however, shows significant relationships in overall and younger age groups. In all these age groups, marriage, even it is only one time, increases the odds of dropout. Specifically, marriage is very disadvantageous to continue the education in 15-17 age group since it increases the odds of dropout 31 times more, but after 45 years and above age, marital status hasn't got any significant relationship with the odds of dropout. In this regard, marriage in younger ages, causing early transition into adult roles, increases the likelihood of dropout (Apel et. al., 2008; Epp & Epp, 2001; Hupfeld, 2007; MoNE, 2013; Rumberger, 2004).

Moreover, findings show that residential area (individuals' location lived until the age of 15), plays an interesting role in the explanation of dropout behavior. For the younger age groups (15-24), in other words, for the recent past, living in counties or villages increases the odds of dropout. However, for the older age groups (45+), or for the distant past, living in villages decreases the odds of dropout compared with the living in provinces. Similar results could be seen in the literature regarding such a contradictory role of the residential area on dropout. For example, using the same dataset Roscigno and Crowle (2001) found that students in rural areas have lower achievement and higher dropout rates than the students in urban areas, whereas Fan and Chen (1999) proposes the opposite (Jordan, Kostandini, & Mykerezi, 2012).

Different from all other independent variables, work status, doesn't have any significant relationship with the odds of dropout, and it isn't included in the stepwise regression model for all individuals. But, for the specific age groups, working in a job, boosts the odds of dropout in 24 and younger age groups, whereas it drops the odds of dropout in the ages between 25 and 64. For 65 and older groups, the role of work status is insignificant in dropout behavior. For the 25 and above ages, such a finding is quite reasonable because these ranges are very appropriate to work for normal individuals. However, in younger ages, especially in high school years, working increases the likelihood of dropping out (Boyacı & Karacabey, 2018; Rumberger, 2004; Warren & Cataldi, 2006). Besides, working in younger ages could also be taken into consideration as a factor in easing the transition into adult roles, which also produce negative results for the students (Hupfeld, 2007).

Leaving away from father and mother are taken as two different variables in the study. Although they are similar to each other, they play a different role in explaining the dropout behavior. Living in different places from father and not having a father or if he is dead, the odds of dropout is increasing in the 18-24 age group; however, in the 25-64 age group, living in different places from mother and not having a mother or if she is dead, the odds of dropout is decreasing. This could be the result of the composition of the sample. In the sample of this study, the ratio of living away from father in the group of individuals living with their mothers in the same place is much more than the ratio of living away from mother in the group of individuals living with their fathers in the same place, especially in older ages. In other words, individuals living in the same place with mother, living in separate families much more than the individuals living in the same place with father and this become much more apparent in older age groups. Hence, living away from mother could be effective in decreasing the odds of dropout. Below Table 8, shows these ratios for all of the sample.

In this regard, different studies found similar results showing that living in families other than biological parents, single-parent families or stepparent families raise the odds of dropout and sustain low achievement both in Turkish and international literature (Alkan, 2014; Kaufman et al., 1992; Rumberger & Lim, 2008; Teachman et al., 1996).

Considering the findings about the perceived reasons to dropout, especially for the younger age groups, economic issues and academic failure become more apparent in explaining the dropout behavior for all the individuals in the sample. Actually, low academic achievement and economic issues are represented as the major factors leading school dropout in a broad range of literature (AÇEV, 2006; Alexander et al., 2001; Allensworth & Easton, 2007; Battin-Pearson

Table 8. *Crosstabulation Results Between Living Away from Mother (LWM) and Living Away from Father (LWF)*

			Living Away from Father (LWF)			
			Same place	Different place	Not having a father/dead	Total
Living Away from Mother (LWM)	Same place	*n*	6517	478	1472	8467
		%	77	5.6	17.4	100
	Different place	*n*	70	10016	5006	15092
		%	.5	66.4	33.2	100
	Not having a mother/dead	*n*	316	1355	10245	11916
		%	2.7	11.4	86.0	100
Total		*n*	6903	11849	16723	35475
		%	19.5	33.4	47.1	100

et al., 2000; Boyacı & Karacabey, 2018; Christensen & Thurlow, 2004; Dynarski & Gleason, 2002; Mahuteau & Mavromas, 2014; MoNE, 2013; Randolph, Fraser & Ornthner 2006; Rumberger & Lim, 2008; Tunç, 2011). Similarly, for both female and male in younger age groups, inadequacy of teacher/school is becoming a less indicated reason.

Moreover, there are different reasons to dropout for female and male. Specifically, disallowing from going to school by the family is a distinctive reason for females. Also, the AÇEV (2006) report emphasized this situation, but in this study, in younger age groups disallowing from going to school by the family is less emphasized by the female participants. Similarly, most of the time, economic issues an important reason to dropout for male. As a conclusion, for younger groups, it could be said that the reasons for dropout is becoming more convergent regarding the gender. In other words, for the recent past, economic issues and academic failure are existing as major factors to dropout, replacing others.

Conclusion

When all the independent variables examined one by one, region is a significant predictor of the odds of being a dropout for the individuals 25+ years old. Similarly, considering prediction percentages of region in Table 5 and the prediction percentages with other variables in Table 4, beginning from the 25-44 age group, region is becoming the major independent variable explaining the odds of being a dropout. However, its percentage of prediction is going down in the younger age groups. Hence, once again the effect of regional characteristics or differences is becoming less effective in explaining the dropout behavior among individuals in recent past.

Moreover, gender is only a significant predictor of dropout for the individuals 45 and above years old. This could mean in recent past the education system has become more inclusive compared with at least 40 or 50 years ago. Actually, schooling rates are quite similar between girls and boys in K-16 education. Marital status, however, is not a significant predictor of dropout for the individuals 45 and above years old, but for younger generations. Actually, this is quite reasonable thinking the latest theoretical education year is about 30 years.

Residential area until the age of 15, is another important variable showing the background characteristics of individuals could affect the dropout behavior in coming years. In other words, for the individuals 45 and above years old living in villages or abroad are advantageous for school completion, but for younger generations provinces is advantageous to continue the education. A possible explanation of this change could be massification in the number of schools and students in provinces. In other words, in provinces individuals have more chances to access to school and educational material. Actually, crosstabulations between perceived reasons to dropout and residential area show that even in the recent past inadequacy of teacher/school has been decreased and it was more apparent in all age groups for individuals living in villages and counties.

Work status, or working in a job, decreases the risk of dropping out in the 25 years and above; whereas it boosts the risk of dropping out among the individuals 24 years and under. Such findings are quite reasonable again considering the working age is considered in between 15 and 65 years of age by OECD (data.oecd.org); however, in younger ages than 25, it is quite risky for school completion.

Living with father is quite important to continue the education in 18-24 age group. However, living away from mother is promoting not to dropout for the individuals between 25-64 years of age. Frankly, this is a very interesting finding. However, the crosstabulations between living away from father and mother reveals that, individuals living with their fathers, also have a greater ratio of living together with their mothers, but individuals living with their mothers, have a greater ratio of most of living separated from their fathers and this becomes clear in older ages. In other words, in the scope of the sample of this study, living together with father means living as a whole family more than living with mother. Living as whole family is more advantageous to continue the education than living in a separated family.

Regarding perceived reasons to dropout, economic issues, disallowing from going to school by the family and academic failure is the major obstacle for school completion for all individuals in the sample. However, in all age groups, economic issues and academic failure are the most important reasons to dropout for male, whereas disallowing from going to school by the family and getting married, engaged, pregnant or becoming mother are the most important reasons to dropout for female. When compared with the older age groups, economic and issues and academic reasons come to forefront among other reasons in younger age groups. In other words, reasons are converging in recent years. Besides, inadequacy of teacher/school is again less emphasized in recent past.

Suggestions

According to the findings of the study, different factors could be affective on dropout behavior in different age groups. Since this study covers dropout both in K-12 and post-secondary education, and thinking the at most theoretical education age is about 30, it could be said that any suggestions based on the results of this study should focus on the possible solutions of the dropout problem in younger age groups. In this regard, being married, working in a job, living in a village or county and living away from father or in a separated family are the urgent sociodemographic problems leading dropout. Besides, economic issues and low achievement is the major reasons to dropout according to the participants who dropped out.

In this context, for the elimination of the negative effect of sociodemographic factors, there is needed a collective action planned by different ministries of the government at the national level. Because, school dropout is actually a broad problem not only for the individual or the family, but for the whole society. Hence, firstly, an action plan should be prepared for the collective campaign to reduce the dropout rates in the whole country, supported by the government at high level.

Moreover, the findings of this study suggest that individuals living in separated families, working in a job and living in rural areas until the age of 15 are automatically at high-risk group for dropout. In this regard, at the institutional level, school managers or principals should be aware of these students and take care of them closely with an effective use of guidance and consultancy services in schools. Besides, these efforts should not only focus on enhancing the social conditions of the students but also school authorities should focus on eliminating the low academic achievement, figuring out the academic failure is very substantial to dropout. Similarly, in the local level, municipalities or other local authorities should support the families of these students, in collaboration with schools, considering the economic issues is one of the most important reason to dropout, especially in younger age groups. But these efforts should be extended until reaching to the smallest residential area.

School dropout is an important challenge in the Turkish educational system. More research is needed to investigate the common factors causing dropout in general, but even more important task may be to identify the local factors in different geographical areas. A close research collaboration with local public-school authorities and universities can enhance our research-based knowledge base and can contribute to research-based decision making to combat dropout in the future.

References

Alexander, K. L., Entwisle, D. R., & Horsey, C. S. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education, 70*(2), 87-107.

Alkan, E. Ö. (2014). *Parçalanmış Aile Modelindeki Öğrencilerin Eğitimdeki Başarı Durumları* (Trabzon Örneği). Unpublished Doctoral Dissertation. Inonu University, Malatya, Turkey.

Allensworth, E. M., & Easton, J. Q. (2007). What Matters for Staying On-Track and Graduating in Chicago Public High Schools: A Close Look at Course Grades, Failures, and Attendance in the Freshman Year. Research Report. Consortium on Chicago School Research and perceptions of school and self before dropping out of schools. *Journal of Education for Students Placed at Risk, 8*(3), 309-332.

Andrei, T., Profiroiu, A., Profiroiu, M., & Iacob, A. I. (2011). School dropout in Romania at the level of disadvantaged groups. *Procedia-Social and Behavioral Sciences, 28*, 337-341.

Apel, R., Bushway, S. D., Paternoster, R., Brame, R., & Sweeten, G. (2008). Using state child labor laws to identify the causal effect of youth employment on deviant behavior and academic achievement. *Journal of Quantitative Criminology, 24*(4), 337-362.

Astin, A. W. (1985). *Achieving educational excellence.* San Francisco: Jossey-Bass.

Battin-Pearson, S., Newcomb, M. D., Abbott, R. D., Hill, K. G., Catalano, R. F., & Hawkins, J. D. (2000). Predictors of early high school dropout: A test of five theories. *Journal of educational psychology, 92*(3), 568-582.

Belfield, C. R., & Levin, H. M. (Eds.). (2007). *The price we pay: Economic and social consequences of inadequate education.* Brookings Institution Press.

Boyacı, A., Karacabey, M. F., & Öz, Y. Açık Meslek Liselerinin Okul Terkleriyle Başa Çıkma Kapasitesini Zorlayan Örgütsel Sorunlar. *Turkish Online Journal of Qualitative Inquiry, 9*(1), 1-25.

Braxton, J. M., & Hirschy, A. S. (2005). Theoretical developments in the study of college student departure. In E. Siedman (Ed.) *College student retention: Formula for student success,* (pp. 61-87). Westport: Praeger Publishers.

Bülbül, T. (2012). Yükseköğretimde okul terki: Nedenler ve çözümler. *Eğitim ve Bilim, 37*(166), 219-235.

Cabrera, A. F., Nora, A., & Castaneda, M. B. (1993). College persistence: Structural equations modeling test of an integrated model of student retention. *Journal of Higher Education, 64*(2), 123-139.

Cataldi, E. F., & KewalRamani, A. (2009). High School Dropout and Completion Rates in the United States: 2007 Compendium Report. NCES 2009-064. National Center for Education Statistics, U.S. Department of Education. https://nces.ed.gov/pubs2009/2009064.pdf (Accessed on 05/11/2018)

Chen, R. (2008). Financial aid and student dropout in higher education: A heterogeneous research approach. In J. C. Smart (Ed.), *Higher Education: Handbook of Theory and Research* (pp. 209-239). Netherlands: Springer.

Christenson, S. L., & Thurlow, M. L. (2004). School dropouts: Prevention considerations, interventions, and challenges. *Current Directions in Psychological Science, 13*(1), 36-39.

Epp, J. R., & Epp, W. (2001). Easy exit: School policies and student attrition. *Journal of Education for Students Placed at Risk, 6*(3), 231-247.

Family Structure Survey Micro Data Set. (2016). http://www.tuik.gov.tr/MicroVeri/Aile_2016/english/meta-data/purpose/index.html (Accessed on 05/11/2018)

Fan, X., & Chen, M. J. (1998). Academic Achievement of Rural School Students: A Multi-Year Comparison with Their Peers in Suburban and Urban Schools.

Field, A. (2009). *Discovering statistics using SPSS.* Sage Publications.

Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research, 59*, 117-142.

Gleason, P., & Dynarski, M. (2002). Do we know whom to serve? Issues in using risk factors to identify dropouts. *Journal of Education for Students Placed at Risk, 7*(1), 25-41.

Gökşen, F., Cemalcılar, Z. & Gülselel, C.F. (2006). *Türkiye'de ilköğretim okullarında okulu terk ve izlenmesi ile önlenmesine yönelik politikalar*. İstanbul: AÇEV, ERG, KADER, AB.

Gumus, E., & Bellibas, M. S. (2016). The effects of professional development activities on principals' perceived instructional leadership practices: multi-country data analysis using TALIS 2013. *Educational Studies, 42*(3), 287-301.

Hupfeld, K. (2007). *Resiliency skills and dropout prevention: A review of the literature.* Denver: ScholarCentric.

Israel, G. D., & Beaulieu, L. J. (2004). Laying the foundation for employment: The role of social capital in educational achievement. *The Review of Regional Studies, 34*(3), 260–287.

Jimerson, S. R., Ferguson, P., Whipple, A. D., Anderson, G. E., & Dalton, M. J. (2002). Exploring the association between grade retention and dropout: A longitudinal study examining socio-emotional, behavioral, and achievement characteristics of retained students. *The California School Psychologist, 7*(1), 51-62.

Jimerson, S., Egeland, B., Sroufe, L. A., & Carlson, B. (2000). A prospective longitudinal study of high school dropouts examining multiple predictors across development. *Journal of School Psychology, 38*(6), 525–549.

Jordan, L., Kostandini, G., & Mykerezi, E. (2012). Rural and urban high school dropout rates: Are they different? *Journal of Research in Rural Education (Online), 27*(12), 1.

Jordan, W. J., Lara, J., & McPartland, J. M. (1996). Exploring the causes of early dropout among race-ethnic and gender groups. *Youth & Society, 28*(1), 62-94.

Karacabey, M. F., & Boyacı, A. (2018). Okulu Terkeden Ortaöğretim Öğrencilerinin Okulu Terk Etme Nedenleri ve Sosyo-Ekonomik Profilleri: Şanlıurfa Örneği. *Kuram ve Uygulamada Eğitim Yönetimi Dergisi, 24*(2), 247-293.

Kronick, R. F. (1994). The imperative of dealing with dropouts: theory, practice and reform. *Education, 114*(4), 530-538.

Lamborn, S., Newmann, F., & Wehlage, G. (1992). The significance and sources of student engagement. In F.N. Newmann (Ed.), *Student engagement and achievement in American secondary schools,* pp. 11-39. New York: Teachers College Press.

Lan, W., & Lanthier, R. (2003). Changes in students' academic performance.

Mahuteau, S., & Mavromaras, K. (2014). An analysis of the impact of socio-economic disadvantage and school quality on the probability of school dropout. *Education Economics, 22*(4), 389-411.

MoNE. (2013). Ortaöğretimde sınıf tekrarı, okul terk sebepleri ve örgün eğitim dışında kalan çocuklar politika önerileri raporu. http://www.meb.gov.tr/earged/unicef/Sınıf%20Tekrarı,%20Okul%20Terki%20Politika%20Raporu.pdf (Accessed on 05/11/2018)

Nora, A., Cabrera, A., Hagedorn, L. S., & Pascarella, E. (1996). Differential impacts of academic and social experiences on college-related behavioral outcomes across different ethnic and gender groups at four-year institutions. *Research in higher education, 37*(4), 427-451.

Özdemir, S., Erkan, S., Karip, E., Sezgin, F., & Şirin, H. (2010). *İlköğretim okulu öğrencilerinin okulu terk etme nedenleri ve çözüm önerileri.* Ankara: TÜBİTAK Proje No: 107K453. http://gef-egitimbilimleri-egitimyonetimi.gazi.edu.tr/posts/download?id=31921 (Accessed on 05/11/2018)

Özer, A., Gençtanirim, D., & Ergene, T. (2011). Türk lise öğrencilerinde okul terkinin yordanması: aracı ve etkileşim değişkenleri ile bir model testi. *Education in science: the bulletin of the Association for Science Education, 36*(161), 302-317.

Pascarella, E. T. (1985). College environmental influences on learning and development: A critical review and synthesis. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (1st ed.). New York, NY: Agathon.

Randolph, K. A., Fraser, M. W., & Orthner, D. K. (2006). A strategy for assessing the impact of time-varying family risk factors on high school dropout. *Journal of Family Issues, 27*(7), 933-950.

Roscigno, V. J., & Crowle, M. L. (2001). Rurality, institutional disadvantage, and achievement/attainment. *Rural Sociology, 66*(2), 268-292.

Rumberger, R. W. (2001). Why students drop out of school and what can be done. Paper Presented for Conference: Dropouts in Americe: How severe is the problem? What do we know about intervention and prevention? Harvard Graduate School of Education, Cambridge, MA.

Rumberger, R. W., & Lim, S. A. (2008). Why students drop out of school: A review of 25 years of research. *California Dropout Research Project, 15*, 1-3.

Şenel, S., & Alatlı, B. (2014). Lojistik regresyon analizinin kullanıldığı makaleler üzerine bir inceleme. *Eğitimde ve Psikolojide Ölçme ve Değerlendirme Dergisi, 5*(1), 35-52.

Stearns, E., & Glennie, E. J. (2006). When and why dropouts leave high school. *Youth & Society, 38*(1), 29-57.

Sum, A., Harrington, P., Bartishevich, C., Fogg, N., Khatiwada, I., Motroni, J., Palma, S., Pond, N., Tobar, P., & Trub'skyy, M. (2003, February). The hidden crisis in the high school dropout problems of young adults in the U.S.: Recent trends in overall school dropout rates and gender differences in dropout behavior. Boston, MA: Center for Labor Market Studies, Northeastern University, prepared for The Business Roundtable.

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition.* Chicago: University of Chicago Press.

Tinto, V. (2006). Research and practice of student retention: What next? *Journal of College Student Retention: Research, Theory & Practice, 8*(1), 1-19.

Tunç, A. İ. (2009). Kız çocuklarının okula gitmeme nedenleri (Van ili örneği). *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi, 6*(1), 237-269.

Uysal, A. (2008). Okulu bırakma sorunu üzerine tartışmalar: çevresel faktörler. *Milli Eğitim, 178*, 139-150.

Uysal, A., & Şahin, Y. (2007). Ortaöğretimde Okulu Bırakma Olgusunu Tetikleyen Yapısal/ Çevresel Faktörler, 16. Eğitim Bilimleri Kongresi, Osmangazi Üniversitesi, Tokat, Türkiye.

Warren, J. R., & Cataldi, E. F. (2006, March). A historical perspective on high school students' paid employment and its association with high school dropout. In Sociological Forum (Vol. 21, No. 1, pp. 113-143). Springer US.

http://tegm.meb.gov.tr (Accessed on 05/11/2018)

http://www.ikg.gov.tr/ozellikle-kiz-cocuklarinin-okullasma-oranlarinin-artirilmasi-operasyonu/ (Accessed on 05/11/2018)

https://data.oecd.org/emp/employment-rate-by-age-group.htm (Accessed on 05/11/2018)

https://data.worldbank.org/indicator/SE.COM.DURS?end=2017&start=2016&view=chart (Accessed on 05/11/2018)

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **157-165**

Aggressive Behavior in Online Games and Cybervictimization of Teenagers and Adolescents

Elena Aleksandrovna Makarova[a,*], Elena Lvovna Makarova[b]

Received: **4 May 2019**
Revised: **19 October 2019**
Accepted: **22 November 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.**iejee**.com

DOI: **10.26822/iejee.2019257663**

Abstract

This article discusses the impact of online games on children's lives by violence imposing and manipulation. Online gaming features are highlighted and statistic data are presented based on surveys of Russian teenagers who have been victims of online violence. The research goals are to study reasons for cybervictimization and psychological factors to suggest measures for intervention and prevention violence in the Internet. The subject of research is the role online games play in teenagers' violence development. Methods used are resources analysis, questionnaires and survey, acceptance of self and others scale (W. Fey) and Buss-Durkee inventory for assessing different kinds of hostility. The survey was conducted among 273 young boys and girls aged 14 to 20 years old (schoolchildren and freshmen), equally covering all age categories of both sexes examining teenagers behavior in the virtual space and network communication features. Based on the analysis of resources several principles for intervention, prevention programs development, cybervictimization combating were identified. According to the results of our study, we can conclude that cybervictimization in online games is a really urgent problem, because today's teenagers and adolescents cannot survive without gadgets, so they are vulnerable to online threats, intimidation, manipulation and other kinds of aggression.

Keywords: Cybervictimization, Online Games, Violence, Manipulation, Aggression

Introduction

In the modern world, as many aspects occur in the field of information technology, so many questions arise about the relationship man-computer. The Internet is a huge information bank, the basics of which are very multifaceted, it provides a tremendous opportunity for users, but at the same time it gives unlimited freedom to create information that can harm other people or can be dangerous. Information and communication technologies provide people with means of transforming information into knowledge, contributing to the process of socialization, identity development, and create space for active social interaction and actions, experiment and self-expression in the whole diversity of their manifestations. In the Internet, people can communicate with each other regardless of their gender, social identity, external attractiveness or unattractiveness. All this testifies to the fact that certain communicative barriers cease to exist for interlocutor (Cherkasenko, 2015).

Information and communications technology, the Internet and mobile phones are now a part of teenagers and adolescents' lives. With the development of technology, many psychological phenomena acquire a new context. This also applies to the phenomenon of aggression. Violence, the impulse to death is an integral part of each person, including teenagers and adolescents. "This is part of our animal nature," says French psychologist Jean-Luc Aubert (Aubert, 2001). In the modern world, many aspects occur in the field of information technology, so many questions arise about the relationship man-computer-man. The Internet is a huge information bank, the basics of which are very multifaceted; it provides a great opportunity for users not only for work, but also for entertainment. However, at the same time it gives unlimited freedom and opportunities to create information that can not only be misleading and incorrect, but also be dangerous harm and other people.

The role of cybervictimization was discussed in researches in the fields of psychology, sociology and education, in which it was proven that adolescents are more likely to experience greater distress from cyber threats than from traditional bullying.

Cybervictimization risk studies cover social, demographic, psychological, family, educational and technological factors. Most of the results obtained are contradictory, especially for age and gender. More consistent results are observed regarding psychological factors (self-esteem and social anxiety are associated with the likelihood of cybervictimization). As in case of teenagers and adolescents, the risk of victimization reveals a correlation with the intensity of the use of the Internet and the specifics of virtual interaction. Adolescents who actively participate in online games are more prone to victimization from online violence (Kowalski et al., 2014). Due to the almost endless possibilities of reaching the users, the victim of cyberbullying does not know how many people are involved in harassment. The audience to which messages are distributed may be almost unlimited. It is publicity that is one of the most significant factors associated with the experience of distress in adolescents.

Internet online games have become a subject of interest for psychologists, since dependence on them is an element worthy of further consideration. Internet online games have been the subject of considerable research, with the result that two opposing opinions have arisen about the negative effects compared with the positive effects of this type of games. One point of view is that participation in online gaming using violent content increases the players' level of hostility and cruelty. Other point of view is that such games can be a valuable educational tool, and gamers benefit from communicating with other players. This research summariz-

[a,*]Corresponding Author: Elena Aleksandrovna Makarova, The Humanities Faculty, Department of Scientific-Technical Translation and Professional Communication, Don State Technical University, Rostov-on-Don, Russia Federation. E-mail: makarova.h@gmail.com
[b] Elena Lvovna Makarova Institute of Management in Economical, Ecological and Social Systems Management and Innovative Technologies Department, Southern Federal University, Taganrog, Russia Federation. E-mail: elmakarova@sfedu.ru

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

es the results of different studies that examined the impact of violent content of Internet games on the level of aggression among teenage gamers, and also presents the proposed assessment and methods to combat it.

As in online games people can communicate with each other anonymously or using a fake identification, they feel no restrictions, no moral or ethic limitation, so they can be abusive, use obscene vocabulary and do not have to hide aggression and evil intent. In this regard, we can talk about surrogate communication in online games. Education, culture, socialization help to "tame" aggression in real life, but with the change in the rules of online game, the problem of violence becomes more acute. In the world of games, social rules and frameworks change quite significantly: the institute of the family, school and society are undergoing serious transformation. The phenomenon of aggression takes on new forms, such as cybervictimization, based on the complex structure of interactions between the gamers. Often bullies in virtual space do not identify themselves as pursuers (Howlett-Brandon, 2014). What some people understand as a violation of the norms of communication, others may not perceive as such. The perception of risk is a fundamental factor in the acquisition and maintenance of actions related to cybersecurity, mainly as a shield against present dangers; those associated with unsafe behaviour in which minors incur voluntarily (Catalina et al., 2014). The researchers are in agreement in pointing out that access to the Internet offers an infinite number of opportunities, but at the same time, exposure to risks is also greater (Kowalski et al., 2014), especially the risk of cyber-aggression or cybervictimization. It is well known that children are mostly merciless, unburdened by high moral principles. Therefore, they often victimize classmates because they can do this. Having matured, such aggressors often repent and even look for an opportunity to apologize to the victim. Others justify their own behavior, believing that the victimized peer "asked for it". Researchers identify two main factors provoking bullying in the school team:

1. Improper family education. Many aggressors are either brought up in families where corporal punishment is used on a regular basis or taught to protect themselves against bullies using brute force. Parents are convinced that the child should be able to stand up for themselves, but they are too zealous in their desire to raise a tough guy or girl. Another type of aggressor is a child leader, who seeks to manage the team according to his\her own rules.

2. Teachers' misunderstanding. Sometimes teachers unintentionally provoke harassment, highlighting the negative traits in a particular child. But more often, teachers simply do not notice the beginning of bullying due to "pedagogical blindness". There is some kind of connivance on the part of the teaching staff.

Victim's physical or mental impairment is not necessarily the cause of harassment or the source of the behavior problem. Handicapped children are not to blame. Absolutely any child can be found guilty if you are looking for flaws, but this does not mean they should be pursued and bullied (Onur, 2017).

In 2006, a group of experts from the US formulated the nature and extent of e-aggression and discussed recommendations for addressing this issue by public health organizations, including considering proposals for future research (Ybarra, et al., 2006). They discussed the problem of cybervictimization (for example, offensive experiences in the Internet due to bullying, sexual harassment, disaster, etc.) reported by young people. Risky online behaviors are becoming the norm for teenage Internet users (Ybarra, et al., 2007). The nature and extent of violence in the youth environment and aggression is seen in healthy, sensible people. The purpose of this study is to improve the health of adolescents, to prevent diseases caused by victimization, also physical and mental health problems and suicidal attempts associated with unintentional injuries, violence in the net, etc.

Teenagers use social networks such as MySpace, Facebook, VKontakte and other sites to be connected and to communicate with peers, they also participate in online games to be the a member of some team, some social group. For example, interacting with classmates online, blogging, publicizing, browsing online diaries, exchanging instant messages (IM), text messaging, chatting, e-mailing, sharing videos help teens to stay in touch with friends, to make new friends, to flirt with other sex and make plans for the future. There is a certain concern about the negative pressure that leads to Internet threats that may lead underestimation of one's abilities, inferiority complex, and poor state of physical, mental and social health.

Also nowadays, it has become quite popular to exercise manipulation and distribute fake information with the help of "trendy" social networks. What is manipulation? What is it used for? Manipulation is the imposition of one's will in the form of a hidden psychological influence by a manipulator. The basis of manipulation is human emotions' mistreatment. Social networks help transmit manipulation actions "uncensored", publish them instantly and quickly distribute them within the net. Moreover, it is much more difficult to distort or make it stop distributing any information in the Internet than in any other modern media. Not all forms of cybervictimization are recognized as such by respondents of the surveys. In recent years, there has been a surge of interest to cybervictimization (Whittaker, Kowalski, 2015). Some researchers are increasingly talking about a special "cyberbullying culture" (Vandebosch, Van Cleemput, 2009) and even call it a "disease of the 21st century" (Chisholm, 2014).

All the researchers come to a conclusion that a new phenomenon of Internet communication - cybervictimization, has become a distinct social problem and needs to be discussed and researched in order to better understand the phenomenon and to develop a certain preventive program.

Our research is not a pioneering study as a lot of works both by Russian (Andreeva, 2015 ; Baranov, Rozhin, 2015; Cherkasenko, 2015; Berezina, 2015; Makarova, 2016) and European researchers (Brush, 2014; Hester, 2012; Van Ingen, 2014) have been already published devoted to the problem of cyberbullying, violence in online communication and cybervictimization.

Method

Categories for Methodological Study

Violence in cyber space

Violence in cyber space is understood as a certain kind of harassment, cybervictimization, defined as deliberate aggressive actions, systematically carried out for a certain time by a group of people or an individual using electronic forms of interaction and directed against the victim, who cannot defend himself (Bastiaensens et al., 2014). Most often, the aggression appears in studies as a single category. However, in a number of works different types of aggressive behavior are distinguished and their specificity in a virtual environment is analyzed. K.C. Runions (Runions, 2013) considers four forms of cyberbullying according to two dimensions: self-control and affective violence. The most common is the distinction between reactive and instrumental aggression. If the first arises as a reaction to frustration, the second type is intentionally planned behavior that uses aggression to achieve a certain goal. Reactive aggression is associated with negative emotions (anger, fear) and is aimed at reducing them. Exciting motives are dealing with positive emotions that a person receives from

aggressive behavior. The combination of two dimensions provides a scheme of four types of aggressive behavior: impulsive-reactive, controlled-reactive, controlled-exciting, impulsive-exciting.

Impulsive-reactive aggression

Impulsive-reactive aggression arises as a reaction to frustration and is characterized by an impulsive response to a threat. It involves two processes: the activation of a hostile scheme and the violation of self-control. Attribution of hostile intentions is particularly sensitive to the uncertainty factor characteristic of the Internet. Online interactions are characterized by the incompleteness of semantic signals due to the absence of non-verbal, paralinguistic signs. Incomplete information can increase uncertainty, which in turn can lead to more likely attribution of hostile intentions. But the activation of a hostile scheme is not enough for impulsive aggression. The second component is low self control. In addition to individual traits, situational factors, such as fatigue, lack of sleep, are important for self-control, which is important for adolescents who stay behind the monitor after midnight. In addition, the Internet provides the ability to instantly ease stress (because the special chronotope of the Internet allows sending messages at any time, as soon as the need arises).

Controlled-reactive type of aggressive behavior

Controlled-reactive type of aggressive behavior associated with the control of attention, the possibility of suppressing anger and impulsive reaction and the accumulation of aggression. This type is characterized by high self-control in situations of provocation, thus avoiding an immediate aggressive response. Sometimes anger and desire for retribution subside over time. However, the processes of rumination ("rethinking" of the incident) can lead to a delayed impulsive reaction or controlled reactive aggression. One of the key features of information technology is the constant fixation of digital information. Traumatic data remain in the network forever. Constant appeal to it heats the rumination, which in turn increases the likelihood of aggression. This type of aggressive behavior is associated with a special form of cyberbullying, in which adolescents who are victims of traditional bullying and other forms of aggression use the Internet to revenge and dispense justice (König, 2010).

Controlled agitating aggression

Controlled agitating aggression is intentional, planned behavior is aimed at achieving goals (for example, improving social status) and using violence as a means. Cyber bullies belonging to this category more often consider themselves to be experts in information technologies and are proud of their "achievements" in cyberbullying, in using technological, communication and social skills in cyber-aggression. The bully may be well aware of the existing moral standards, but this does not stop harassment. This behavior is associated with impaired empathy and moral consciousness (Fedunina, 2015).

Impulsive aggression

The motive for this type of cyber-aggression is striving for immediate experience of excitement, joy, pleasure, as well as overcoming routine and boredom. It is listed as one of the most common motives (Compton et al., 2014). No wonder many offenders justify their aggressive actions, saying that they simply had fun and did not want any harm done. The Internet is becoming a search space for new exciting experiences, thrills in the field of interpersonal relationships. Anonymity and distance lead to an underestimation of the seriousness of what is happening and the difficulty of anticipating the consequences of their behavior. This type is often characterized by the absence of a formed intent to cause harm and the predominance of the motive of entertainment. In the absence of social signals that could reinforce the empathic reaction (both emotional and cognitive), young people may believe that their jokes and comments fit into the norms of what is permissible and just funny.

Methodology of Cybervictimization Identification

The main purpose of cybervictimization is the deterioration of the emotional sphere of the victim and / or social relations destruction. Cybervictimization includes a range of different forms of behavior, from playful or friendly teasing to threats, insults or even psychological virtual terror, all of them causing stress, depression or even suicide.

Facts and Analysis of Resources

Facts that prove that cybervictimization is indeed a serious problem to consider are:

1. Teenagers and adolescents have certain experience with traditional bullying at school or neighborhood before they face challenge related to cyber space, so they can use this experience against their rivals,

2. Teenagers and adolescents show a higher prevalence of threats and violence related to bullying using the Internet (for example, social networks, Skype, instant messaging, online games, etc.) than adults who prefer using cell phones for these purposes (for example, text messages, photos, video, etc.),

3. Negative relationships exist between children and parents related the Internet use for cybervictimization, because parents notice that something is disturbing their children, they notice that their physical and psychological health is changing. Teenagers usually protect their privacy by hiding phones, putting passwords on a computer and changing passwords to social networks.

American scientists have identified three features of cybervictimization and called them the principle of the three "A" - anonymous, accessible, affordable (anonymity of the Internet, accessibility of social networks and online games and low price for participation). Anonymity in online games makes cybervictimization much easier for the offenders, since they cannot be identified and do not see the emotional response of the victim. The offender is not always aware that a real people read messages and their feelings are hurt. The offender sees it as a part of the game and the victim is just an opponent (rival) in the game. Thus, we can say that the real life is replaced with the virtual one, in connection with this fact communication can be distorted on both sides. The availability of the Internet has become almost ubiquitous, and thanks to mobile devices and wireless networks, the user gets the opportunity to communicate in social networks 24 hours a day, 7 days a week. This allows the gamer to either interrupt the main activity (school or work) or to distract from it. Most often, teenagers and adolescents of school age who are addicted to online gaming often fall under the influence of their peers or classmates (peer pressure) and become victims of cyber violence.

Principles of Combating Cybervictimization

Based on the analysis of resources and our own study, we identify the following principles of combating cybervictimization:

- to organize the widespread introduction of training programs for law enforcement officials, school teachers and parents of teenage children. Courses, seminars and conferences should inform those interested in this problem about the essence of cyber threats and measures to combat them;

- to develop software services that will allow to control and prevent the distribution of malicious content, to quickly identify those who violate the law when using the Internet;

- to provide users with appropriate tools and technologies. Any user should know the telephone number of the hotlines, own tools with which you can report the illegal behavior of other users;

- to create of a rapid response system for content and service providers, telecom operators, law enforcement agencies on the illegal activities of the Internet.

For preventing cyberbullying, teenagers should not share their personal information; should not share their page with strangers; keep track of information posted online; should not send messages with images that may offend someone; should not post embarrassing pictures or videos of themselves.

The analysis of victimization factors is associated with the development of preventive programs aimed mainly at developing social skills, increasing self-esteem and reducing social anxiety. For example, a program can be aimed at increasing the power of the ego, the ability to preserve identity, emotional stability, critical thinking and purposeful behavior in situations of stress and emotional confusion. The study shows that this kind of competence can help potential victims of cyberbullying to cope with dangerous social situations. Brochures and tutorials for teens are being actively developed that teach them how to protect their personal information in the net and how to cope with cyberbullying. Many brochures use real or typical stories of teenagers who have been victims of cyberbullying, as well as their experience in coping with this problem. Fiction related to the phenomenon of cyberbullying, as well as scripts and theatrical performances of adolescents, also helps.

Data Collection Tools

An adapted questionnaire on school aggression Buss - Durkee Hostility Inventory (BDHI) (Buss, Durkee, 1957), standardized by A.A. Khvan, Y.A. Zaitsev and Y.A. Kuznetsova (Khvan et al., 2006), the purpose of which is to determine the level of aggressiveness of schoolchildren in an educational institution. Under aggressiveness refers to the property of the person, characterized by the presence of destructive tendencies, mainly in the field of subject-object relations. The survey was conducted anonymously, socio-demographic aspects included age, gender, socio-economic situation, the nature of the institution (private or public) and others.

The questionnaire consists of 36 points with two possible answers - “yes” and “no”. Respondents must answer questions that are formulated in such a way as to most lessen the influence of public approval of the answer to the question.

As a result, differentiating manifestations of aggression and hostility were identified in the form of the following reactions. Questionnaire questions are divided into eight factors and are evaluated on 8 scales:

1. Physical aggression - the use of physical force against another person.

2. Indirect - aggression, in a roundabout way directed at another person or not directed at anyone.

3. Irritation - readiness for the manifestation of negative feelings at the slightest excitement (short temper, rudeness).

4. Negativism is an oppositional manner in behavior from passive resistance to active struggle against established customs and laws.

5. Offense - envy and hatred of others for real and imaginary actions.

6. Suspiciousness ranges from mistrust and caution towards people to the belief that other people plan and cause harm.

7. Verbal aggression - the expression of negative feelings through the form (cry, squeal), and through the content of verbal responses (curses, threats).

8. Guilt - expresses the subject's possible conviction that he is a bad person, that evil is doing, as well as remorse of conscience felt by him.

This technique shows that aggression, as a property of a person, and aggression, as an act of behavior, can be understood in the context of a psychological analysis of the motivational-need sphere of a person. Therefore, the Bass-Darki questionnaire should be used in conjunction with other techniques, in our study it was Acceptance of Others Scale (Fey, 1954), designed to diagnose the level of acceptance of other people, especially among schoolchildren and first-year students. The questionnaire was applied by a research team during the school day of participating schools.

Data Collection

The questionnaire was used in educational institutions in which there was a written consent of the director of the institution and the parents. The data were processed using the program (Table 1).

Table 1. *Acceptance of Others Scale questionnaire results (William F. Fey)*

Gender and age correlation	High	Medium with tendency to high	Medium with tendency to low	Low
Females (20 years old)	9	33	46	12
Males (20 years old)	28	41	23	8
Females (18 years old)	38	36	20	6
Males (18 years old)	41	39	17	13
Females (16 years old)	16	37	33	14
Males (16 years old)	19	42	22	17
Females (14 years old)	11	26	44	19
Males (14 years old)	7	38	29	26

First, we obtained calculations of the frequency of all socio-demographic questions, elements of the Fey scale, as well as the percentage of answers, the mean and standard deviation of each of the options.

Secondly, the link between violence using ICT (cyberbullying) and traditional bullying, for which the Pearson correlation

between factor 8 (violence using ICT) and the other factors of the questionnaire was calculated, was processed. In addition, for each factor, mean and standard deviations were calculated to determine the most common types of aggression.

Findings and Results

Diagnostics of the experiment on the survey among 263 young boys and girls aged 14 to 20 years old (school children and University freshmen), equally covering all age categories of both sexes examining behavior of adolescents and teenagers in the virtual space and the features of the network communication was conducted in 2018 in the city of Taganrog, Russia. At this initial stage of the experiment, 135 pupils from senior secondary schools in the city of Taganrog and 128 first-year college students at the Taganrog Institute of Management and Economics were the participants. The experiment involved 48.15% (*n*= 65) of schoolgirls and 51.85% (*n*= 70) of schoolboys; 42.97% (*n*= 55) of student girls and 57.03% (*n*= 73) of student boys. Most subjects were from 14 to 20 years old (Table 2-5).

Table 2. *Verbal bullying location among teenagers and adolescents*

Gender and age correlation	Classroom	Playground	School	Street	Internet
Females (*n*= 55) (20 years old)	51	0	27	4	18
Males (*n*= 73) (20 years old)	30	11	2	28	29
Females (*n*= 21) (18 years old)	34	8	32	16	10
Males (*n*= 24) (18 years old)	39	4	32	15	9
Females (*n*= 22) (16 years old)	34	11	11	11	33
Males (*n*= 23) (16 years old)	19	12	18	13	38
Females (*n*= 22) (14 years old)	35	3	35	8	19
Males (*n*= 23) (14 years old)	26	4	21	22	27

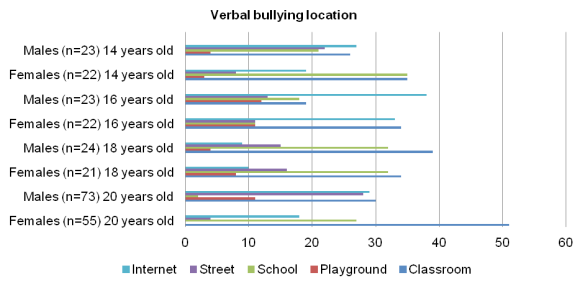


Figure 1. Verbal bullying location among teenagers and adolescents

Table 3. *Physical bullying location among teenagers and adolescents*

Gender and age correlation	Classroom	Playground	School	Street	Internet
Females (*n*= 55) (20 years old)	26	12	27	4	35
Males (*n*= 73) (20 years old)	20	2	38	28	40
Females (*n*= 21) (18 years old)	18	22	37	16	23
Males (*n*= 24) (18 years old)	18	26	38	15	18
Females (*n*= 22) (16 years old)	11	18	33	11	38
Males (*n*= 23) (16 years old)	18	18	28	13	36
Females (*n*= 22) (14 years old)	18	15	13	8	54
Males (*n*= 23) (14 years old)	18	16	30	22	36

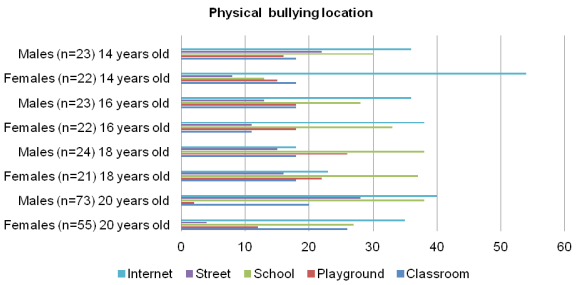


Figure 2. Physical bullying location among teenagers and adolescents

Table 4. *Verbal bullying frequency among teenagers and adolescents*

Gender and age correlation	Often	Sometimes	Once	Never
Females (*n*= 55) (20 years old)	5	32	45	18
Males (*n*= 73) (20 years old)	9	45	18	28
Females (*n*= 21) (18 years old)	13	37	31	19
Males (*n*= 24) (18 years old)	4	35	38	23
Females (*n*= 22) (16 years old)	7	30	44	19
Males (*n*= 23) (16 years old)	7	47	20	26
Females (*n*= 22) (14 years old)	17	45	23	15
Males (*n*= 23) (14 years old)	11	50	23	16

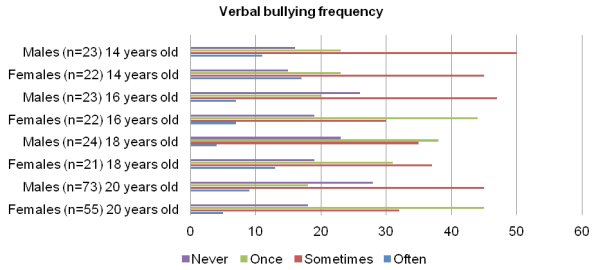


Figure 3. Verbal bullying frequency among teenagers and adolescents

Table 5. *Physical bullying frequency among teenagers and adolescents*

Gender and age correlation	Often	Sometimes	Once	Never
Females (*n*= 55) (20 years old)	0	9	14	77
Males (*n*= 73) (20 years old)	0	9	18	73
Females (*n*= 21) (18 years old)	2	4	20	74
Males (*n*= 24) (18 years old)	0	11	23	66
Females (*n*= 22) (16 years old)	4	4	7	85
Males (*n*= 23) (16 years old)	13	20	40	27
Females (*n*= 22) (14 years old)	1	4	24	71
Males (*n*= 23) (14 years old)	13	13	29	45

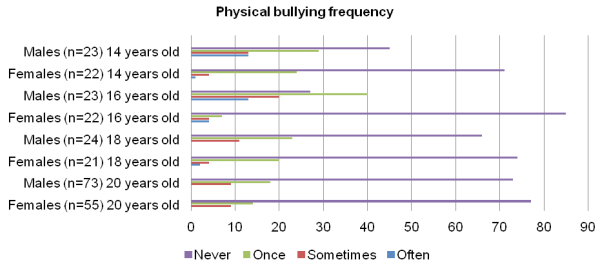


Figure 4. Physical bullying frequency among teenagers and adolescents

According to the questionairy results, different manifestations of aggression and hostility were identified: physical and verbal forms of aggression. Physical aggression is the use of physical force against another person. As for traditional forms of school bullying they can be encountered in the street, in a classroom, in different parts of school building, in the school yard and playground, in the street and even at home. Verbal aggression is typical for most places where children and adolescents spend their time and also it is encountered in the social networks and online games. Verbal aggression is the expression of negative feelings through the form (yelling, squealing, shouting), and through the content of verbal responses (curses, threats, offensive nicknames and even abusive language which is taboo for most children and adolescents). Verbal cyber-bullying (i.e., bullying in the Internet environment) has become a growing form of social aggression because it uses the anonymity of the Internet, its incredible speed of information spreading and impunity for the perpetrator. Anonymity places bullies at an unfair advantage over their victims, technological skills paired with social anonymity facilitates social aggression in social networks and online games.

As for the frequency of physical and verbal aggression, over 80% of the examined males and females have never faced physical bullying in reality, but from 30 to 50 % of both males and females have experienced verbal bullying in virtual world, i.e., in social networks, online gaming and while communicating with peers via E-mail.

Among verbal forms of aggression we can identify negative comments exchange, personally or in social group, insulting or unauthentic posts, fake information and facts, embarrassing photos or videos with compromising information or content, denigration presenting false and derogatory information to others, impersonation, which occurs when the perpetrator poses as the victim and conveys hurtful messages to others.

In the survey conducted, adolescents reported using a computer and / or other electronic device from 1 to 3 hours per day (79.5%, *n*= 209), and also state that they have their own mobile phone (98.1%, *n*= 253). The survey results are shown in Figure 5 & Figure 6.

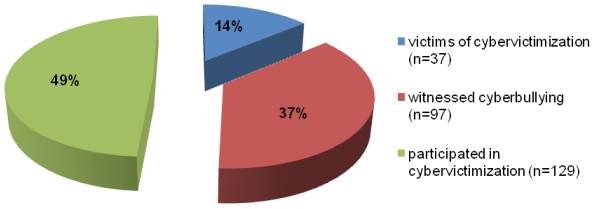


Figure 5. Participation in cybervictimization

According to the survey, among teenagers and adolescents between the ages of 14 and 20 who used the Internet, only 14,07 % (*n*= 37) admitted they were victims of cybervictimization in online games or other activities in cyber space, 36,88 % (*n*= 97) of respondents witnessed cyberbullying (victimization and harassment in the network), 49,05 % (*n*= 129)confirmed that they participated in cybervictimization as a part of a group or individually.

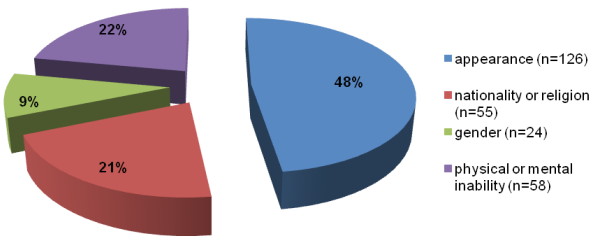


Figure 6. Reasons for cybervictimization

The reasons for cybervictimization mentioned by the interviewed teenagers and adolescents of school age were: appearance – 47,91% (*n*= 126), nationality or religion – 20,92% (*n*= 55), gender – 9,12% (*n*= 24), physical or mental inability – 22,05% (n=58).

Discussion

We believe these are not the real reasons for cybervictimization, but rather the way adolescents try to establish themselves by insulting or humiliating each other, paying particular attention to weaknesses of their victims. The real reasons for cybervictimization are the following:

1. Striving for excellence. This is an innate feeling and human beings will never get free of it, because this striving is the result of evolution. This process begins at the age of five, when a life purpose is formed as well as the focus of children's aspiration. Later in life it becomes a source of motivation, organizing life and giving it a certain meaning. Excellence can be achieved by taking negative and positive steps. The positive one takes into account the well-being of other people and the desire to assist in its achievement. The negative one is inherent in selfish people with weak ability to adapt, who struggle for superiority with anti-social or even deviant behavior. An example of striving for excellence in adolescents is their struggle for social status of a leader or superior position in a peer group.

2. The sense of inferiority, or inferiority complex - a set of psychological and emotional sensations of a person, expressed in the sense of their own inferiority and irrational belief in the superiority of others.

3. Envy is the same as hidden rivalry; teenagers seek to win, but compete inside themselves, scoring even when the imaginary rival does not suspect it.

4. Revenge - actions taken from the prompting to respond adequately to real or imagined injustice caused earlier. Revenge begins with a fit of indignation, similar to an internal explosion, which is caused by unexpected and unfair events or attitudes towards them.

5. Cybervictimization in games or entertainment can start with a regular joke, but jokes may be different, some people's jokes may be harmless, contributing everyone's mood, so to speak without victims, others ironically trick people around, not seriously offending anyone, and the third sort of people are being sarcastic in their jokes, the object of such humor is not a joke. Humor is a way to elevate oneself, because the object of laughter is ridiculous, and the subject of a joke is considered witty. Laughing at other people is considered to be self-elevating at the expense of others.

Conclusions

Thus, according to the results of our study, we can conclude that cybervictimization in online games is a really urgent problem, because today's teenagers and adolescents are the information generation and cannot survive without gadgets, laptops, navigators and cell phones for a minute. Also, with the help of social networks and the Internet, intimidation, manipulation, victimization and threats sneak among teenagers and adolescents who cannot stand up for themselves. It is necessary to take measures to solve this problem and take precautions that will help teenagers and adolescents who surf the Internet every day not to fall victims to cyber threats. Studies show that victimization due to cyberbullying can have the most serious consequences for the health of young digital users and can lead to depression, anxiety and even suicidal behavior. Victims of cyberbullying have lower rates of physical and mental health, are more likely to show a tendency to psychosomatic problems, delinquent and aggressive behavior, social anxiety. The risk of mental disorders in cyberbullying victims is considered in the context of risk factors for the development of mental and physical disorders due to trauma and stress.

A person, who becomes a victim of cyberbullying, faces a challenge and undergoes mental changes, nervous system break. The consequences of this can be very deplorable, up to serious mental illnesses.

It is assumed that experimental results can contribute to both empirical research and cybervictimization prevention programs. A more differentiated view on cybervictimization can not only deepen our understanding of this phenomenon, but also allow developing more effective preventive programs.

Today two main areas of victimization research can be identified: identifying risk factors and describing the impact of cybervictimiztion on teenagers and adolescents. Almost any publication on cybervictimization directly or indirectly addresses the issue of negative impact, but there are not enough empirical studies that would research the peculiarities of the psychic reality of adolescents who resort to interpersonal aggression on the Internet, not just state its behavioral manifestations. A more profound study of this phenomenon is needed. What are the psychosocial characteristics and perceptions of cyberbullying associated with each type of cyber-aggression? Are there any socio-demographic differences in the prevalence of different types of cybervictimization? How effective can general preventive strategies for cybervictimization be?

It is generally recognized that victims of cyber-aggression can easily become aggressors, and the observer (by-stander) can easily become a pursuer by joining the persecution and supporting the bully by simply pressing the "forward" or "I like" message that degrades another person. However, research is needed that would provide a more differentiated picture of these processes.

Intervention and prevention programs against bullying have had positive results regarding reduction of victimization rates but not in terms of perpetration rates. From the point of view of Psychology, it is essential to understand the adversary to resolve any conflict. In this connection, in order to predict cyberbullying and to introduce preventive actions, it would be necessary to take into account personal and social variables of those adolescents who perpetrate cyberbullying. Most studies have considered the victims' point of view, and just a few have focused on analyzing cyberbullies. For this reason, we believe more studies are necessary that would focus on cyberbullies specifically, also on witnesses' (watchers) profile and relationship.

To stop cyberbullying is possible and necessary. Psychologists can not prescribe how to stop victimization and bullying in each particular situation at school. But it is important to take into consideration that in most cases we are talking about mobbing or collective harassment, in this case it is impossible to solve the problem in the "victim-aggressor" plane. Classmates, even if they are not directly involved in bullying, and teachers are also involved in this process, so it is necessary to work with them. The main and the only possible way to stop the harassment is to create a psychologically healthy atmosphere in the team.

As a solution to the problem joint activities that unite the entire class, teamwork on a common project, team building through extracurricular activities should be considered. But for these activities to be successful, the support of a qualified psychologist and the active involvement of teachers is required.

The most important step is letting children understand that harassment, aggression, mockery, are not harmless fun, but a serious problem with not less serious consequences. Adults should indicate that they have noticed the actions of the aggressors and intend to stop them.

Addiction to social networks and online games is a problem of modern life, especially for children and adolescents. Moreover, they depend on the Internet in their school studies, so it is important to make the cyber space safe and secure and to teach children how to deal with those who create dangerous

situations in and around the Internet environment and how to avoid cybervictimization. An important practical activity is raising adults' awareness. Many adults of the current generation (parents and teachers) are not aware of the diverse potential of the Internet to the same extent as their children and schoolchildren. An obvious measure is introduction of anti-bullying strategies and methodologies to teachers in order to combat bullying at schools; as well as lecturing, providing information and practical training classes to parents and recommendations to children and adolescents for them to be ready to face a perpetrator and fight back.

The results obtained in the study will allow creating a preventive program, which should be based on the ideas of team building and support, should be characterized by the individualization of educational activities, and involve all the participants in the educational environment. It should also be a scientifically-based, planned and purposeful system of interaction between schoolchildren, teachers and parents. Such a preventive program should become not only socially significant, but also a psychologically necessary event, as the psychological and pedagogical support of potential participants of bullying (either traditional or cyberbullying) will create conditions for self-awareness of children and adolescents not only in the educational environment, but in the cyber space as well.

Acknowledgements

The current study is supported by RFBR project № 18-29-2209X.

References

Andreeva, A.O. (2015). *Internet manipulation.* Information Security and Prevention of Cyber Extremism among Youth. – 21-28.

Aubert, J-L. (2001). *La violence dans les ecoles.* Paris: Odile Jacob. 208 p.

Baranov, A.A., Rozhina, S.V., (2015) Psychological analysis of the causes of adolescent cyberbullying. Bulletin of the Udmurt University − № 3. – 5-8.

Bastiaensens, S., Vandebosch, H., Poels, K., Van Cleemput, K., DeSmet, A., De Bourdeaudhuij, I. (2014) Cyberbullying on social network sites. An experimental study into bystanders' behavioural intentions to help the victim or reinforce the bully. *Computers in Human Behavior, 31*(1), 259–271. https://doi.org/10.1016/j.chb.2013.10.036

Berezina, O.S. (2015) *Social prevention of cyberbullying among teenagers.* Information Security and Prevention of Cyber Extremism among Youth. – 63-67.

Brush, S. R.G. (2014) *Cyberbullying: Characteristics, administrators' responsibilities, and effective communication strategies.* United States: Ann Arbor. 122 p.

Buss, A. H. & Durkee, A. (1957). An inventory for assessing different kinds of hostility. *Journal of Consulting Psychology, 21*, 343-349. http://dx.doi.org/10.1037/h0046900

Catalina, B., Lopez-de-Ayala, M.C., & Garcia, A. (2014) Los riesgos de los adolescentes en Internet: los menores como actores y victimas de los peligros de Internet. *Revista Latina de Comunicacion Social, 69*, 462-485. https://doi.org/10.4185/RLCS-2014-1020

Cherkasenko, O.S. (2015). *Social network as a kind of social communication.* Materials of the 36th international conference: issues of pedagogy and psychology. − №3. – p. 141.

Cherkasenko, O.S. (2015). *The phenomenon of cyberbullying in adolescence.* Personality, family and society: issues of pedagogy and psychology.− № 6. – 52-54.

Chisholm, J.F. (2014). Review of the status of cyberbullying and cyberbullying prevention. *Journal of Information Systems and Education, 25*(1). 77–87.

Compton, L., Campbell, M.A., Mergler, A. (2014). Teacher, parent and student perceptions of the motives of cyberbullies. *Social Psychology of Education, 17*, 383–400. https://doi.org/10.1007/s11218-014-9254-x

Fedunina N.Y. (2015). Representations of the triad "The pursuer - the victim - the observer" in cyberbullying in English literature. Psychological studies. 8(41). p.11.

Fey, W.F. (1954). Acceptance of self and others, and its relation to therapy readiness. *Journal of Clinical Psychology, 10*(3), 269-271. https://doi.org/10.1002/1097-4679(195407)10:3<269::AID-JCLP2270100318>3.0.CO;2-E

Hester, W.P. (2012). *Cyberbullying intervention: A case study analysis of stakeholder perceptions regarding the authority of school administrators in addressing cyberbullying issues.* Dissertation. United States: Ann Arbor. – 156 p.

Howlett-Brandon, M. (2009) *Cyberbullying: an examination of gender, race, ethnicity, and environmental factors from the national crime victimization survey, student crime supplement.* Dissertation. Virginia Commonwealth University. –108 p.

Khvan, A.A., Zaitsev, Y.A., Kuznetsova, Y.A. (2006). *A standardized questionnaire for measuring aggressive and hostile reactions of A. Buss and A. Durkee.* Guidelines. – Kemerovo - 66.

König, A., Gollwitzer, M., Steffgen, G. (2010). Cyberbullying as an act of revenge? *Australian Journal of Guidance and Counselling, 20*(2), 210–224. http://dx.doi.org/10.1375/ajgc.20.2.210

Kowalski, R.M., Giumetti, G.W., Schroeder, A.N., Lattanner, M.R. (2014). Bullying in the digital age: A critical review and meta-analysis of cyberbullying research among youth. *Psychological Bulletin, 140*. 1073–1137. http://dx.doi.org/10.1037/a0035618

Makarova, E.A., Makarova, E.L., Mahrina, E.A. (2016) Psychological features of cyberbullying as a form of internet crime. *Russian psychological journal. M. "Credo", 13*(3). 293-313. http://dx.doi.org/10.21702/rpj.2016.3.17

Onur Sezer, G. (2017). The Effect of Compensation Studies on Disadvantaged Children's Bully Behaviours. *International Electronic Journal Of Elementary Education, 10*(2), 215-223.

Runions, K.C. (2013) Toward a Conceptual Model of Motive and Self-Control in Cyber-Aggression: Rage, Revenge, Reward, and Recreation. *Journal of Youth and Adolescence. 42*(5). 751–771. https://doi.org/10.1007/s10964-013-9936-2

Van Ingen, B.G. (2014) I*nvestigating Entity Theory as a Mediator Between Peer Victimization and Cyberbullying.* Dissertation. United States: Ann Arbor. – 151 p.

Vandebosch, H., Van Cleemput, K. (2009) Cyberbullying among youngsters: profiles of bullies and victims. *New Media and Society, 11*(8), 1349–1371. https://doi.org/10.1177/1461444809341263

Whittaker E., Kowalski R.M. (2015) Cyberbullying Via Social Media. *Journal of School Violence, 14*(1), 11–29. https: //doi.org/10.1080/15388220.2014.949377

Ybarra, M. L., Mitchell, K. J., Wolak, J., and Finkelhor, D. (2006). Examining characteristics and associated distress related to Internet harassment: Findings from the Second Youth Internet Safety Survey. *Pediatrics, 118*(4), 1169-1177. https://doi.org/10.1542/peds.2006-0815

Ybarra, M., Mitchell, K., Finkelhor, D., and Wolak, J. (2007). Internet prevention messages: Targeting the right online behaviors. *Archives of Pediatrics & Adolescent Medicine, 161*, 138-145. https://doi.org/10.1001/archpedi.161.2.138

This page is intentionally left blank

www.**iejee**.com

iejee INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **167-182**

Investigation of Decision-Making Skills of Fourth Grade Students According to Student and Teacher Opinions

Işıner Sever[a,*], Ali Ersoy[b]

Received: **27 August 2019**
Revised: **10 October 2019**
Accepted: **19 November 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.iejee.com

DOI: **10.26822/iejee.2019257664**

Abstract

Studies focus on the importance of developing decision-making skills, which are among thinking skills, at early ages and highlight that these skills, if not developed at early ages, lead to some problems at the later stages of individuals' lives. Curricula on the level of primary school in Turkey, based on their visions, aim to train individuals with decision-making skills. In reaching this objective, it is important to determine what type of problems are experienced in the process, to what extent objectives can be reached and what the factors that affect the process are. With this mixed method study, it was aimed to examine the problems experienced in and the existing situation of development of decision-making skills. The design of the study was adopted as the convergent parallel design. The participants of the study consisted of 9 teachers who served as 4th grade teachers and 543 4th grade students from different socioeconomic levels. As the data collection instruments, the study utilized a "Student Personal Information Form", the "Decision-Making Skills Scale", "Decision Rules Implementation Test", "Choices and Outcomes Activity" and semi-structured interviews developed by the researcher. The results of the study showed that the teachers needed information and guidance in terms of teaching decision-making, they experienced problems related to the curricula and families in the process, and approximately half of the students had difficulties in terms of defining-expressing decision-related problems. Additionally, in teaching decision-making, problems based on the teacher, the curricula and the families were experienced, and these problems had negative effects on the development of the decision-making skills of the students.

Keywords: Primary Education, Decision-Making Skills, Primary School Curriculum, Mixed Method Studies.

Introduction

Choices we make in our daily life from among options may be insignificant situations or turning points that direct our life. With a simple definition, decision-making is the choice of one of situations in cases where there are multiple options. A decision offers two or more options that are easy or not easy for the decision-maker to choose. In order to make the best decision, the decision-maker has to select one of these options or create a new option (Halpern, 1984 cited in Marzano et al., 1988). While deciding upon the option to be preferred, being aware of the situation one is in, gaining information about the options, assessment of the options and inquiring upon the situation are directly related to the suitability of the decision to be made.

The decision-making process includes several thinking skills such as critical, creative, analytical and dialectical thinking (Nardi & Wales, 1985). There are more than 20 theories on decision-making in the literature. These are categorized as normative-rational decision theories, descriptive decision theories, both rational and descriptive decision theories and developmental decision theories (Çolakkadıoğlu, 2010). While normative decision theories explain how decisions should be made, descriptive decision theories explain who decisions are made in practice (Hansson, 2005). Normative decision theories state how decisions need to be made in a rational framework. However, the human factor, which is the decision-maker, is ignored here. Descriptive decision theories criticize normative decision theories at this point. They defend the idea that a person making a decision cannot always make decisions based on logic, and the context is important in the decision to be made, while they try to describe how people make decisions. Decision theories that are both descriptive and normative are based on theories that are in the two other categories and try to explain decision-making behaviors. Finally, a developmental decision theory argues that other theories dwell more on questions regarding the irrational decisions of adults, questions on whether or not decision-making skills develop by age are ignored, and it tries to find answers to such questions.

Mettas and Norman (2011), in their study where they examined decision-making and factors influential in development of decision-making, stated that curricula have a central role in development of decision-making skills. The teacher's implementation of the curriculum, perspective on learning-teaching and instruction materials and resources are variables that are affecting in developing the decision-making skills of children. Additionally, the child's age, peer effects, skills of transferring learning, strategies used in decision-making, motivation, information sources the child uses and assessment criteria are other variables that are influential on development of decision-making skills. Other variables that are influential on decision-making and development of decision-making skills are information, skills and values related to the own nature of decision-making or the issue of decision-making. Klaczynski et al. (2001) reported that decision-making cannot be explained alone by cognitive capacities such as intelligence, reasoning and using information, and real-life decisions are a combination of emotional and social-cognitive skills, values, beliefs and motivation.

At school, decision-making skills have a tendency to be taught via a topic, a class or a course. However, decision-making is a skill that goes beyond this tendency. Decision-making skills should be provided on all levels and in all curricula in an integrated, direct and clear way (Nardi & Wales, 1985). In in-class activities for development of decision-making skills, realistic problem situations should be created. While making decisions on these problem situations, students should be ensured to use the steps of decision-making and assess

[a,*]Corresponding Author: Işıner Sever, Department of Elementary Education, Faculty of Education, Hakkari University, Hakkari, Turkey. E-mail: isinersever@gmail.com
[b]Ali Ersoy, Faculty of Education, Anadolu University, Eskişehir, Turkey E-mail: alersoy@anadolu.edu.tr

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

their decisions. This way, permanent learning may take place. Some studies (Davidson, 1991; Hagen & Hale, 1973; Howse et al., 2003) reported that difficulties of children in decision-making are related to their difficulties in collecting information relevant to the decision situation and assessing options. Children who encounter negative information in an option and are able to eliminate that option may make better decisions from among fewer options (Davidson, 1991). For this reason, while developing decision-making, paying careful attention to the steps of collecting information on the options and assessing the options contribute to the development of this skill. Studies have shown that skills of young children to assess options may be improved by training provided for them (Gelman, 1969; Howse, et al., 2003; Klaczynski, et al., 2001). Nardi and Wales (1985), and it is emphasized that decision-making is a complex process, and suitable materials need to be used in teaching it. In addition to this, students should be provided with open-ended problem situations and asked to reach the result by using the steps of decision-making. Development of thinking processes and skills is an important problem of education. Studies have shown that thinking is learnable and improvable (Doğanay, 2011). In this context, decision-making, which is a thinking skill, may also be learned.

As deficiency in decision-making skills at early ages will predict different behavioral problems (such as risky decision-making) in the later stages of life, the decision-making skills of children with weak skills in this aspect should be improved (Weller et al., 2014). Encouragement of the child to take a role in family-related decisions affects the development of the child's self-esteem, self-confidence and moral reasoning skills (Eccles at al., 1996). As individuals who make effective decisions and are satisfied with their decisions have high satisfaction from their lives, this skill should be provided to children from early ages (Cenkseven, 2012).

The National Council for the Social Studies [NCSS] collected the skills students need to gain in the social sciences under the title of "Skills Necessary for the Social Sciences" (Johnson, 2010). One of such skills is decision-making. In effective citizenship education, decision-making and problem-solving are two important skills. Children of the age 11 need decision-making skills, and this age is a significant period in development of this skill (NCSS, 1998). In this context, it may be stated that it is important for these students to gain decision-making skills at primary schools.

Decision-making skills on the primary school level in Turkey are among the common skills included in the Turkish, Mathematics, Science and Technology, Social Studies and Social Sciences curricula put into practice in 2005 (MEB, 2008). Due to their visions, the curricula aim to train individuals with decision-making skills. Considering the curricula, it may be stated in general that not many targeted learning outcomes related to decision-making are included. In the Social Studies curriculum, which includes the highest number of outcomes, there is a total of 11 outcomes belonging to three years of education. The course on Social Sciences, which is the successor of the course on Social Studies and has an important position in citizenship education, does not include any targeted outcomes related to decision-making skills, while it states directly that it is a skill that is to be gained but does not go further than the topics of electing-being elected/voting.

In the curricula put into practice in Turkey in 2018, these skills are included with two outcomes in each of the courses on Social Studies, Social Sciences and Human Rights and Citizenship and Democracy. There is no targeted outcome related to these skills in other curricula. In this context, it may be mentioned that, in comparison to the curricula in 2005, the place of decision-making skills among both contents and targeted outcomes has decreased even further with the curricula of 2018.

There is a need for studies that examine the factors effective on development of decision-making skills (curriculum, teacher, student, social environment, etc.) in detail, determine the problems experienced in the process and reveal the existing situation of students. It was determined that some studies in the literature on decision-making skills and development of these skills were in the form of descriptive studies (Goloğlu, 2009; Gömleksiz & Kan, 2007; Karakaş Günal, 1999; Kaşkaya et al., 2017; Öncül, 2013; Tekin & Ulaş, 2016) and had experimental designs (Akdaş, 2013; Bronstein, 1992; Çakmakçı, 2009; Kardaş, 2013; Köseoğlu, 2013; Nicolaou et al., 2009; Tetik, 2013). Among these studies, it was observed that a comprehensive work was not carried out towards the effectiveness of existing curricula, problems that are experienced and solution recommendations, the effectiveness of different methods on development of decision-making skills was examined in general, and the existing curricula were used as the control variables. For these reasons, it is believed that a study that comprehensively examines the factors effective in the development of decision-making, problems that are experienced in the process and the existing situation of students with a mixed method will contribute to the literature.

The purpose of this study is to investigate the decision-making skills of fourth-grade students based on student and teacher views. For this general purpose, answers were sought for the following questions.

1. What are classroom teachers'

    a. Views on the decision-making skills of primary school students,

    b. Practices of development of the decision-making skills of primary school students and

    c. Problems regarding teaching decision-making skills and solution recommendations about these problems?

2. What is the state of the decision-making skills of primary school fourth-grade students based on the data obtained from

    a. The Decision-Making Skills Scale,

    b. Decision Rules Implementation Test and

    c. Choices and Outcomes Activity?

Method

Research Design

This study adopted a mixed method. A mixed method is a unique method that may be used in answering research questions of qualitative and quantitative methods within the same study (Tashakkori & Teddlie, 2010). This study employed the method of "convergent parallel design" (Creswell & Plano Clark, 2014). In this design, qualitative and quantitative methods are used simultaneously and have equal statuses. The data are analyzed separately, and the findings are combined, compared and interpreted (Creswell & Plano Clark, 2014). This study aimed to both obtain in-depth information and make a generalization. The process that was followed in the study is shown in Figure 1.

The qualitative data of the study were collected with semi-structured interviews (teachers) and the "Choices and Outcomes Activity" (students), and content analysis was carried out. The quantitative data were collected by the "Decision-Making Skills Scale" and the "Decision Rules Implementation Scale" developed by the researchers, and the data obtained from the De-

	QUALITATIVE DIMENSION		QUANTITATIVE DIMENSION		
Stages	**Stage I**	**Stage II**	**Stage III**	**Stage IV**	**Reporting**
Objective	• Revelation of the views of classroom teachers on the decision-making skills of primary school students • Examination of the decision-making behaviors of students	• Examination of qualitative data	• Collection of quantitative data	• Examination of quantitative data	Comparison, Reporting and Interpretation of Qualitative-Quantitative Findings
Activities	• Semi-structured interviews with teachers • Application of qualitative measurement instruments with students	• Content analysis	• Sample Selection • Application of measurement instruments	• Descriptive statistical analyses • Analysis of Variance	

Figure 1. Research Process

cision-Making Skills Scale were relationally compared. The qualitative and quantitative findings were discussed together.

Sample

The participants of the study consisted of 9 classroom teachers who had served / were serving as 4th grade teachers and 543 4th grade students from different socioeconomic levels in the province of Eskisehir in Turkey. The purposive sampling method of maximum diversity sampling was used to determine the students to be included in the study. In order to optimally represent the population, students were selected from lower (179), medium (191) and higher (173) socioeconomic levels. In the pilot interviews, it was seen that the interviewed teachers were not sufficiently knowledgeable regarding decision-making skills and experienced problems in providing opinions regarding the topic. This is why the participating teachers were selected as those who had postgraduate degrees. In addition to this, in order to be able to discover different points of view, attention was paid to select the teachers from schools with different socioeconomic backgrounds. Table 1 shows the seniority, experience of teaching fourth grade and their educational history of the teachers who were interviewed.

Research Instruments and Procedures

Explanations regarding the instruments that were used for data collection in the study are given under different titles.

Student personal information form

This form included items that collected information on the age, sex of the students, number of siblings in the family and whether or not the students' opinions were included at school and in family.

Decision-making skills scale

The scale was developed by the researchers with the purpose of determining the decision-making skills of students. The factor loads of the 15 items under a single factor in the scale varied between .53 and .74, its Cronbach's alpha relia-

Table 1. *Information on the interviewed teachers*

Participant*	Seniority	Experience of Teaching Fourth Grade (after 2005)	Educational History
Duru	12 years	2 times	Bachelor's: Form Teaching Master's: Form Teaching PhD: Research methods and statistics
Beste	6 years	2 times	Bachelor's: Form Teaching Master's: Form Teaching PhD: Form Teaching (ongoing)
Fatma	18 years	1 time	Bachelor's: Form Teaching Master's: Educational administration and inspection PhD: Form Teaching
Esra	5 years	2 times	Bachelor's: Form Teaching Master's: Form Teaching PhD: Form Teaching (ongoing)
Derya	14 years	2 times	Bachelor's: Form Teaching Master's: Form Teaching
Ahmet	5 years	1 time	Bachelor's: Form Teaching Master's: Form Teaching PhD: Form Teaching (ongoing)
Aslı	13 years	3 times	Bachelor's: Form Teaching Master's: Form Teaching
Hasan	13 years	2 times	Bachelor's: Form Teaching Master's: Educational administration and inspection PhD: Form Teaching (ongoing)
Mustafa	11 years	3 times	Bachelor's: Form Teaching Master's: Form Teaching PhD: Philosophy of education (ongoing)

**Pseudonym was used.*

bility coefficient was .89, and it explained 40.078% of the total variance. The goodness of fit indices of the model tested with CFA were within acceptable limits as X^2/df: 2.02, RMSEA: .075, RMR: .030, SRMR: .059, NFI: .93, NNFI: .96, CFI: .97, GFI: .88 and AGFI: .85 (See Sever & Ersoy, 2019).

Decision rules implementation test

The test was used to examine the skills of students to implement decision rules. In the case-based test, the student is expected to reach a decision by assessing criteria. The student who examines the comparison table containing the different features of three products is asked to make a decision based on the situations given in the questions. The test also included an open-ended question that allowed obtaining qualitative data on the decision-making process of the student. The test was developed by utilizing the psychometric test that was developed by Weller, Levin, Rose and Bossard (2012) for examining the decision-making skills of children at ages 10-11. In order to determine the validity and reliability of the test, item total correlations, upper-lower % 27 points scores and Cronbach Alpha were examined. Item total correlations ranged from .40 to .61 and upper-lower %27 points scores were significant (p< .001). Cronbach Alpha coefficient was calculated as .72.

Choices and outcomes activity

The activity was utilized to obtain qualitative information about examination of the decision-making behavior of the student. While developing the activity, the student activities in the decision-making program of the "Road to Success (www.roadtosuccess.org)" initiative was utilized. The activity was developed for the purpose of data collection and examination about skills of being aware of - defining the decision situation and possible options, being able to create alternatives and being able to predict possible outcomes of choices.

Semi-Structured Interview Form: The form was developed for the interviews carried out with the teachers. With the form, it was aimed to reveal the factors effective in the development of skills of decision-making and problems related to the process. The semi-structured interview form that was prepared was tried out in a pilot implementation after being submitted for expert opinion and subjected to necessary adjustments. It took its final firm with the adjustments that were made after the pilot application.

Data Analysis

For the purpose of making sense of raw data obtained from the interviews with the teachers, revealing patterns and analyzing them, content analysis was used, and the results were grouped under themes. Boyatzis (1998) defined content analysis as a method that is used for defining, analyzing and reporting the patterns (themes) in raw data and expressed it as the process of coding qualitative information. The semi-structured interview form that was developed as a result of obtaining expert opinions and pilot implementations was used in the interviews that were conducted with the teachers.

Before the interviews, the participating teachers were firstly given informed consent forms, and the necessary explanations about the process was made. The interviews were recorded by using an audio recorder and then transcribed. Direct quotes were included to achieve reportability, and purposive sampling was utilized in determination of the participants. For confirmability, raw data and analyses were subjected to expert opinion. The same procedures were repeated for the qualitative data obtained from the students with the case-based activity.

In the process of developing the Decision-Making Scale, the literature was reviewed, items of behavior indicating the aforementioned skill were formed, and the scale's structure was presented by exploratory and confirmatory factor analyses. After this, analyses on the validity and reliability of the scale were carried out. For the purpose of making relational comparisons with the data obtained from the measurement instruments that were developed, analysis of variance (t-test, One-way ANOVA) was carried out, and additionally, descriptive statistics were examined. Finally, the qualitative and quantitative findings that were obtained were combined and discussed in a comprehensive approach.

Results

Views of Classroom Teachers on the Decision-Making Skills of Primary School Students

Regarding the decision-making skills of primary school students, the teachers mentioned the factors influential on the development of decision-making, difficulties experienced in decision-making and the developmental processes of decision-making. These dimensions are shown in Figure 2.

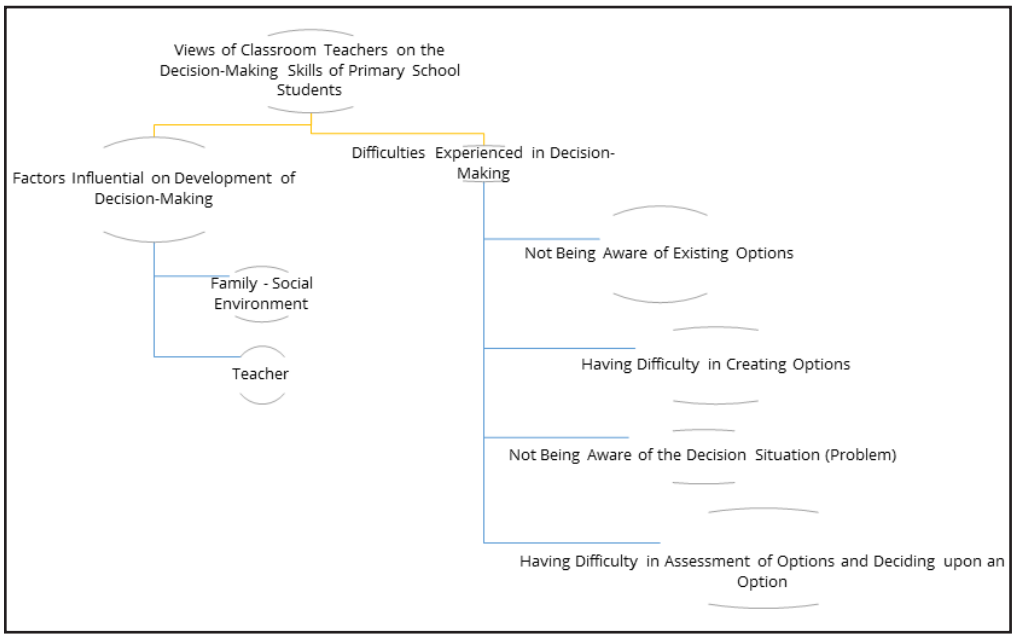


Figure 2. Views of classroom teachers on the decision-making skills of primary school students

According to the statements of the teachers, the factors that are influential on the development of decision-making skills consist of the dimensions of family - social environment and the teacher. These dimensions provide the child with experiences such as "creating decision-making experiences for the child / including the child in decision-making processes", "bringing up the child in a democratic environment / allowing the child to self-express." The family, the teacher and the social environment have a common role in the development of the decision-making skills of the child. Teacher opinions regarding this issue are presented below:

> *I believe, when there is an authoritarian teacher, the child, who grows up in a classroom where everything is decided upon by the teacher, cannot make their own decisions or in a home where only the decisions of the mother or the father are valid without sharing a thought, will not be able to make much affective decisions and will be completely dependent, unable to make their own decisions. Social environment is the same, just like friendship structures. They are all pillars of this issue.* (Ahmet)

> *If the family environment is a democratic setting, this helps the child understand what decision-making is. However, if the family is not a democratic place but a place where only one authority is dominant, the child cannot make decisions. As someone, somehow makes decisions for the child, the child becomes either dissatisfied or used to a given situation.* (Mustafa)

According to the teacher opinions above, being able to make their own decisions in the school, family and social environment by the child, as well as the child's participation in decision-making processes, are effective in the development of the decision-making skills of the child. In addition to this, the teachers mentioned that the factors that are effective in the development of decision-making should be considered together. In order for thinking skills to develop, thinking opportunities should be created for individuals. Considering that experiences have significant effects on learning, it may be stated that development of decision-making skills, among thinking skills, will be positively influenced by the experiences of the child. In achievement of these thinking experiences, democratic and thought-friendly environments have a critical significance. Furthermore, the idea that the family is firstly effective in development of decision-making skills, and the teacher is a complement of this was expressed, and it was stated that there is not much possibility of intervening with the family. A teacher opinion regarding the issue is shown below:

> *Family first... It comes from the family anyway. Things that are thought in primary school stay ambiguous if they are not supported in the family. Let us say, we are discussing democracy in the family, discussing the decision-making process. Do you attend decisions in your family, do they take your opinion, let us say, did you provide your opinion while registering for this school? If most students say 'no', it is already not possible to establish democracy in the family. We might be able to establish the idea of in-school democracy, but if we take on the concept of democracy and the decision-making process as a whole, you cannot interfere with the family much, maybe with family trainings, but to a limited extent.* (Fatma)

According to Fatma, the school environment may be relatively improved by teachers, but the desired productivity cannot be obtained from the system as the teacher cannot be effective in the family environment, and the problems in the family environment cannot be solved. Considering that the family, the social environment and the teacher have a mutual effect on the development of the decision-making skills of the child, it may be stated that it is necessary to have a comprehensive point of view towards the solution of current problems.

In terms of the problems experienced in decision-making, the classroom teachers thought that students are not aware of the options they have, and they experience problems in terms of creating options. They argued that students should be provided with a framework about the decision situation by providing them with relevant options. Teacher opinions regarding this issue are presented below:

> *You should provide some options. I believe students should be guided, especially at early ages. There should be a limitation, and I observe they are not much aware of this at early ages anyway. ...but at later ages, coming to the fourth grade, I have actually also taught fifth graders, they become more aware of their options, and they start to inquire more.* (Beste)

> *They cannot analyze different situations in their heads, or they only make a choice from only among the given situations. That is, it is definitely being needed to provide them with options.* (Mustafa)

Additionally, it was stated that difficulties in decision-making are observed more frequently in situations related to daily life - practice:

> *It is relatively better in classes as we constantly see this is mathematics, this is Turkish and all, but when we come to their social lives, when we ask for an action towards putting the situation into practice for a different thing, there is more interruption there.* (Mustafa)

In the quotes above, the teachers emphasized that students are not aware of the existing options for decision situations, and they have difficulty in creating options. This is possible considering the ages and developmental characteristics of students. Drawing a framework of the decision situation may be useful in activities to be carried out with students. Nevertheless, in addition to this, encouraging students to create other options outside the existing options and including these in activities may affect the decision-making skills of the child positively.

The teachers stated that students experience difficulties in understanding the decision situation, examining options and deciding upon an option. Moreover, it was also stated that students consider criteria that are not related to the decision situation and do not have an idea about the decisions they make. Teacher opinions regarding this issue are presented below:

> *Why was this decision made? Nope, there is only a decision, they made it. This is the only noticeable thing.* (Mustafa)

> *While selecting a person for a position like a class prefect or library staff, instead of choosing individuals who can do that job, they get influenced by their friends such as selecting a friend they like, being concerned that this person would be offended if not selected, that person likes this and that...* (Aslı)

The teachers thought that students are likely to accept decisions being made for them, they avoid making decisions and experience indecisiveness. Teacher opinions regarding this issue are presented below:

> *Students usually want someone to make decisions instead of them. I guess, you know, they choose the easy way. It makes them happy when the other kid makes decisions instead of themselves.* (Ahmet)

> *There is a situation like they do not want to make a decision first, they want their teacher or friend to make a decision. When they make a decision, they are not actually decisive either. They make decisions, but they show an attitude like they could immediately change their response, their decision.* (Duru)

While the difficulties mentioned above that are experienced by children in decision-making are suitable for their ages and developmental characteristics, it may be considered that the deficiency of the child in decision-making is effective on the emergence of the aforementioned difficulties. In

parallel to this idea, the teachers stated the reasons that could be effective in the emergence of these problems as failure to create decision-making experiences for students, exclusion of students from decision-making processes and failure to provide a democratic environment for students. Teacher opinions regarding this issue are presented below:

> *There are incredible students. Those who make the correct, appropriate decisions... They say they want to take this course, there are courses of 3 credits, 4 credits. They say, if they take this for 2 hours, they could take that for 3 hours. ...but when the child goes home, the family says no, you will not take that course. I believe family is very influential, not only for school life. The child chooses their friends, they decide to do something together, but the family does not let them. Their future lives turn into a situation of 'no matter what I decide upon. Others are deciding for me.' That have to live based on other people's truths. They turn into individuals with lack of self-esteem, those who are dependent on others' decisions.* (Beste)

> *...their ideas have not been asked. Children have always lived in a stable, fixed manner. This is why children do not bother getting into a mentality on how they could make decisions here, how they could follow a different path.* (Esra)

According to the teacher views above, protective and authoritarian attitudes are observed in families. Authoritarian and protective family attitudes lead to issues such as failure to provide the child with a democratic environment, deprivation of the child from decision experiences and taking responsibility and lack of respect for the decisions - views of the child. Such situations may have a negative effect on the development of the decision-making skills of the child.

Practices of Classroom Teachers towards Development of the Decision-Making Skills of Primary School Students

The dimensions of the practices of classroom teachers towards development of the decision-making skills of primary school students are shown in Figure 3.

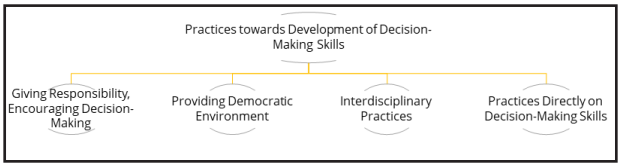


Figure 3. Practices of classroom teachers towards development of the decision-making skills of primary school students

While developing the decision-making skills of students, the classroom teachers gave them responsibility and encourage them to make decisions. Teacher opinions regarding this issue are presented below:

> *First of all, I absolutely support the decisions they make and try to guide them in this matter by speaking to both them and their families for students to be always able to make their own decisions.* (Duru)

> *In the simplest example, when we are about to create a food list, we submit it for a vote. Other than this, I have practices of electing a classroom representative every month each year.* (Hasan)

The teacher views given above show that, while improving their decision-making skills, the classroom teachers provided students with opportunities to make their own decisions and encourage them to make decisions. While this practice is important in terms of providing students with decision-making experiences, it will not be sufficient in development of the skill. It is important that the decision opportunities created towards improvement of this skill contain decision-making steps. In experiences of decision-making, it is important to employ thinking-related activities on what the situation to be decided upon is, what the existing options are – whether or not an option outside these options can be created, what the positive and negative aspects of options are, utilization of previous experiences while decision-making and assessment of the selected option in the process.

The teachers believed that creating a democratic setting where students can express their opinions is important in the development of this skill. The participating teachers provided students with a democratic environment to improve their decision-making skills. An example of opinions about this issue is given below:

> *I try to provide a democratic classroom environment. We try to get their opinions and make them aware that their opinions are important for us. We try to establish the idea that they can also have an opinion, and this should be so in the family, too. While determining classroom rules, when we include students in the decision, the child is already taking responsibility for something that is decided upon together. That is, if you include children in such processes, it is easier for them to adopt it and internalize it.* (Fatma)

In the quote above, the teacher stated that she created a democratic classroom environment. A democratic classroom environment where students can express their opinions is important in development of thinking skills. However, these environments should be guided with purposive activities towards development of thinking skills. It may be seen in the quotes below that purposive activities were usually not used in development of this skill. In development of the decision-making skills of students, the teachers mostly resorted to multidisciplinary practices rather than activities directly about decision-making. Teacher opinions regarding this issue are presented below:

> *Not as an in-person training, but we provide it in the presented environment and within other skills we mentioned. ...in naturally developing processes.* (Aslı)

> *I think it is a process. For example, we have guidance counselling courses and some values in these courses. When we discuss these values, I include this skill in this topic. You know, they say multidisciplinary, like utilizing mathematics in Turkish courses.* (Derya)

Based on the quotes above, the teachers usually did not utilize purposive activities towards improving decision-making skills, they took on decision-making skills superficially, and they even reduced decision-making to activities such as allowing the student to speak or vote. As an exception to this situation, two teachers reported that they conducted activities directly related to decision-making steps. Teacher opinions regarding this issue are presented below:

> *There was a guidance counselling course last year. We had good activities in relation to this. A psychological counsellor, a guidance counsellor was visiting in relation to decision-making. We could conduct some activities with them and the students. We conducted relevant activities with the guidance counsellor up to the first 3 grades. Not like the activities in the curriculum, but there were some activities towards developing this skill in the field of psychological guidance and counselling.* (Beste)

> *For example, they worked for about a week in preparation for the activity 'the program on which channel is suitable for us', they watched television. Then, they decided upon the program that was suitable for themselves. In Social Sciences, there is the topic of 'my needs and wants'. For example, what to decide on first? Their needs, or their wants? There have been practices towards implementing their decision-making skills about these issues.* (Beste)

According to the teacher views above, the said teacher used more specialized activities towards decision-making. These activities were purposive activities that included steps of decision-making and aimed to develop decision-making skills. It may be stated that using such activities in developing decision-making skills would be more effective.

Problems Experienced by Classroom Teachers in Teaching Decision-Making Skills and Solution Recommendations

Figure 4 shows the dimensions of teacher opinions on the problems they experienced regarding teaching decision-making skills.

The teachers stated that decision-making skills were not clear in the curricula, they did not encounter many activities, and they did not have awareness of the place of this skill in the curriculum. Teacher opinions regarding this issue are presented below:

> *I did not encounter an activity that included decision-making skills. I do not know, maybe I am not aware of it.* (Ahmet)

In the quote above, the teacher stated that he did not encounter an activity related to decision-making. There are, although a few, activities related to decision-making in curricula. The reason for this result may be the lack of clear explanation of decision-making in curricula and the failure in raising awareness in teachers regarding this skill.

In the curricula, it was expressed that decision-making would be taken on with an interdisciplinary approach, but no sufficient information was included about teaching it. Whether or not the existing activities were related to decision-making could not be identified by the teachers. It was believed that the necessary importance could not be paid to decision-making skills which were discussed based on a multidisciplinary approach, and this skill was allowed to slide in the course of the education process. The following quotes also agreed with this situation.

> *There are examples I did in this topic, you know, towards improving the decision-making skills of children. I do not think many teachers would sit down, think of developing the decision-making skills of children and conduct such activities. I do not think there is such an awareness either.* (Ahmet)

> *Maybe, the teacher also does not think that they are developing decision-making skills while teaching it, maybe it is a naturally developing process.* (Aslı)

The teachers stated that they needed guidance and information processes regarding decision-making, and the curricula did not guide them. Teacher opinions regarding this issue are presented below:

> *The teacher thinks it is very important for the student to make decisions, but the teacher needs to be guided in order to know how the student should do so, with which activity and in which course the student is involved in they could do this the right way. I do not think there are many clear explanations. This is also applicable for other skills, too.* (Beste)

> *It is provided to children in general in the curriculum, but what to do specifically for it, this is more ambiguous.* (Ahmet)

Similarly to the statements of the teachers, the curricula did not provide sufficient explanations regarding teaching decision-making skills. The teachers who did not have knowledge about how to provide this skill stated that they experienced problems in the process. In addition to this, the teachers also stated that there were shortcomings in the curricula regarding targeted outcomes and activities towards development of decision-making skills. Teacher opinions regarding this issue are presented below:

> *When I look at the curricula, I do not think there are many targeted outcomes within the course towards decision-making skills. There may be related outcomes, but I do not remember having reported an outcome directly related to decision-making skills.* (Ahmet)

> *Considering especially the Social Sciences curriculum, I look at the topics as a fourth-grade teacher. In fact, activities towards the decision-making in students may be carried out in many topics, but when I look at the outcomes, I do not see many. (Beste)*

> *Decision-making skills should be more noticeable in the curricula, and directly related activities should be included...* (Aslı)

In the curricula, decision-making skills are among the skills that need to be directly provided with a multidisciplinary approach. However, considering these curricula, it may be stated that sufficient information is not provided on what decision-making is, how instruction of it should be carried out and how it should be assessed. In addition to this, it may also be stated that there are not sufficient targeted outcomes and activities related to decision-making. All problems stated by the teachers regarding teaching decision-making on a curricular level were in agreement with this situation.

In the dimension of the problems experienced in teaching of decision-making, the teachers also mentioned problems experienced due to families and the environment in addition to those originating from the curricula. The teachers believed that the family and the environment had negative effects on the development of the decision-making skills of students. This negative effect is in the form of failure to provide a democratic setting where the child can express opinions in the family and social environment, lack of collaboration of the family with teachers in development of these skills and lack of support for the teacher. Teacher opinions regarding this issue are presented below:

> *...social environment, parents, I believe these are influential. The child learns something at the school for four-five hours, but the existing order continues in the family. The child takes what they see from their mother and father.* (Ahmet)

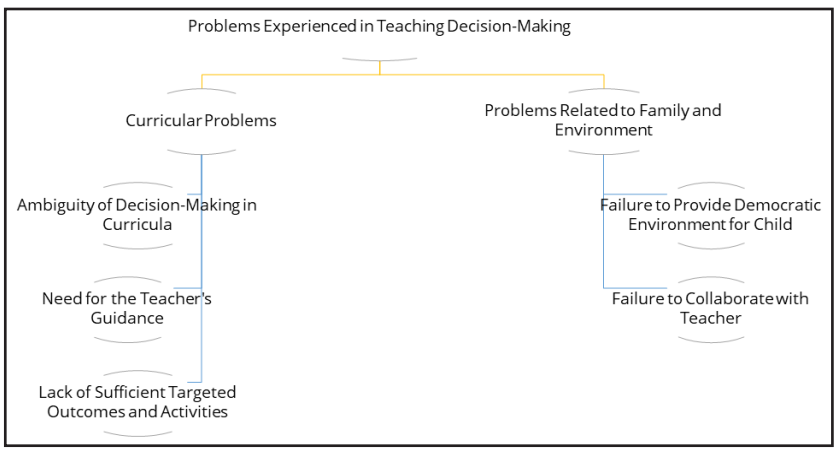


Figure 4. Views of classroom teachers on the problems experienced in teaching decision-making skills

> *The student is very aware, conscious, makes decisions, you make decisions together, but after a day, you see that the family has obstructed it. This interrupts my instruction process. This is a problem that we have not managed to establish a view mutually with the family.* (Beste)

In development of decision-making skills, it is important to provide a democratic setting for the child where the child can express their ideas and create decision-making experiences for the child. In achievement of these environments at and outside the school, it is needed for teachers and families to collaborate for decision-making skills to be developed.

The recommendations of the teachers regarding development of decision-making skills and solutions of the problems experienced in this process are given in Figure 5.

The teachers stated that it would be useful for them to receive training regarding decision-making skills. Teacher opinions regarding this issue are presented below:

> *The professional capacities of teachers may be investigated. In order for the decision-making skills of a child to develop, firstly the coordinator of that curriculum should be able to achieve this. The teacher may be informed in this sense.* (Esra)

> *Training teachers is highly important. For example, the curricula changed in 2005 for teachers, but they did not receive any proper training on how to apply these curricula.* (Fatma)

The teachers reported that the curricula did not guide them, they had lack of knowledge regarding decision-making, and they did not have awareness of the issue. As seen in the quotes above, the teachers thought that they needed training to overcome the aforementioned shortcomings. Additionally, some of the teachers mentioned that awareness should be raised in families regarding provision of a democratic environment for the child.

Firstly, family education is important. For a child who grows up in a healthy, democratic family in a setting where they can participate in decisions, what we do here is merely adding onto what the child already has. However, if the child has not seen such things, what we do here becomes meaningless. (Fatma)
One teacher among the participants stated that there should be cooperation with whoever is around the child in terms of development of this skill by formation of a mutual opinion with them as the following:

> *In fact, there is a need to form a collaboration, a common view for this skill. With whom? The family, the child's environment, their teacher. Actually, with whoever it is that is involved in the child's life.* (Beste)

The teachers emphasized the importance of providing the child with environments that will develop decision-making skills. A teacher stated that there is a need for the child to express themselves freely in these democratic environments as the following:

> *I believe a democratic environment is especially very important in development of decision-making skills. The child would not be able to express their decision when such an environment is not provided. I want to mention the importance of a liberal setting where the child could express decisions.* (Hasan)

The teachers' curriculum-related recommendations in development of decision-making skills were as clear definition of skills in curricula, making explanations on how to provide these skills, association of skills with more targeted outcomes and activities and making explanations on how to measure skills. Teacher opinions regarding this issue are given below:

> *The teacher should be guided within the curriculum. Teachers need a guide in teaching skills. That is, for example, what is this skill? These skills can be defined. More targeted outcomes... That is, a skill is not something that can be gained or measured with three targeted outcomes. More outcomes could be formed. For example, how will we measure whether or not this skill is gained? I do not think the instruction process is much clear.* (Beste)

> *There may be more activities, different, interesting activities. Not every teacher can produce these activities, because they are not creative, or they cannot or would not spare time for them.* (Mustafa)

In the theoretical part of the study, some assessments were made regarding the place of decision-making skills in the curricula. It was observed that these assessments and teacher opinions were in agreement. In this context, it is seen important to make the decision-making skills in curricula much clearer, represent the skill with more targeted outcomes and activities and guide teachers in this direction.

Findings on the Decision-Making Skills of Primary School Fourth Grade Students

This section presents the findings obtained from the quantitative data.

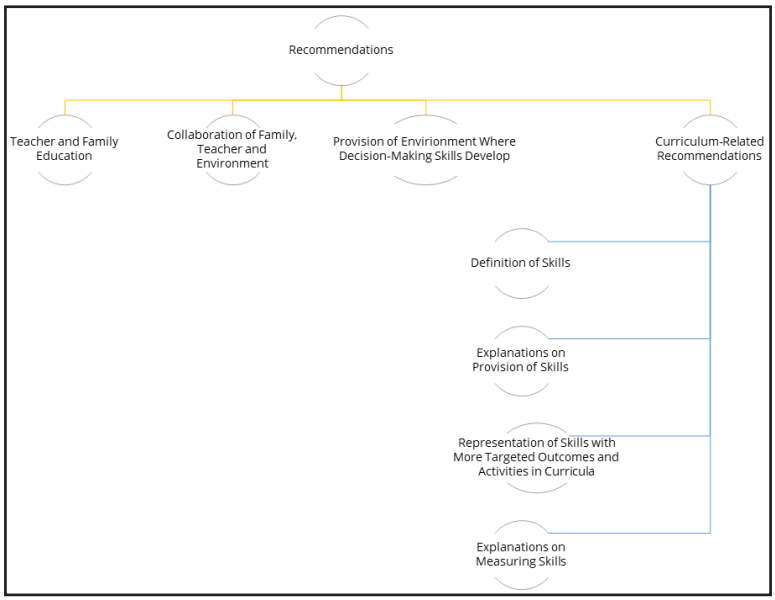


Figure 5. Recommendations on development of decision-making skills and solution of problems

The *t*-test results on the scores of the students in the Decision-Making Skills (DMS) Scale based on their sexes are given in Table 2.

Table 2. *t-test results on the DMS scale scores based on sex*

Sex	*N*	*M*	SD	DF	*t*	*p*
Female	275	50.31	7.09	537	3.427	.000*
Male	264	48.14	7.58			

** p< .01*

The results of the analysis showed that the scores of the students in the scale differentiated significantly based on sex ($t_{(537)}$= 3.427, *p*< .01). The female students (*M*= 50.31) had a significantly higher mean score than the male students (*M*= 48.14).

The *t*-test results on the scores of the students in the Decision Rules Implementation (DRI) Test based on their sexes are given in Table 3.

Table 3. *t-test results on the DRI test scores based on sex*

Sex	*N*	*M*	SD	DF	*t*	*p*
Female	275	6.69	1.60	537	-.016	.987
Male	264	6.67	1.67			

The scores of the students in the test did not differ significantly based on their sex. When the mean scores were compared, it was seen that the scores of both the boys and the girls were almost equal.

Table 4 shows the descriptive statistics of the students in the DMS Scale, while Table 5 shows the results of the one-way analysis of variance (ANOVA) based on age.

Table 4. *Descriptive statistics of the scores in the DMS scale based on age*

Age	*N*	*M*	SD
9	145	48.97	7.30
10	366	49.40	7.48
11	29	49.07	7.29

Table 5. *ANOVA results of the scores in the DMS scale based on age*

Source of Variance	Sum of Squares	DF	Mean Squares	*F*	*p*	Significant Difference
Inter-group	21.119	2	10.560	.191	.826	-
Intra-group	29624.705	537	55.167			
Total	29645.824	539				

When the scores in the DMS scale were examined based on the variable of age, no significant differentiation was observed. Based on this finding, it may be stated that, for the same grade level, the variable of age was not a significant variable in terms of DMS scale scores.

Table 6 shows the descriptive statistics of the students in the DRI Test, while Table 7 shows the results of the one-way analysis of variance (ANOVA) based on age.

Table 6. *Descriptive statistics of the scores in the DMS scale based on age*

Age	N	M	SD
9	145	6.74	1.65
10	366	6.67	1.63
11	29	6.86	1.48

Table 7. *ANOVA results of the scores in the DMS scale based on age*

Source of Variance	Sum of Squares	DF	Mean Squares	*F*	*p*	Significant Difference
Inter-group	1.311	2	.656	.248	.780	-
Intra-group	1418.487	537	2.642			
Total	1419.798	539				

When the scores in the DRI test were examined based on the variable of age, no significant differentiation was observed. Based on this finding, it may be stated that, for the same grade level, the variable of age was not a significant variable in terms of DRI test scores.

The t-test results on the scores of the students in the DMS scale based on the number of children in their families are given in Table 8.

Table 8. *DMS scale t-test results based on the number of children in families*

Number of Children	*N*	*M*	SD	DF	*t*	*p*
One or Two	442	49.55	7.42	534	2.116	.035*
More than Two	94	47.76	7.48			

** p< .01*

The results of the analysis showed that the scores of the students in the scale differentiated significantly based on the numbers of children in their families ($t_{(534)}$= 2.116, *p*< .05). Accordingly, the children with no siblings or one sibling in their family (*M*= 49.55) had a higher mean score than those with two or more siblings (*M*= 47.76).

The t-test results on the scores of the students in the DRI test based on the number of children in their families are given in Table 9.

Table 9. *DRI test t-test results based on the number of children in families*

Number of Children	*N*	*M*	SD	DF	*t*	*p*
One or Two	442	6.81	1.57	534	3.873	.000*
More than Two	94	6.10	1.77			

** p< .01*

The results of the analysis showed that the scores of the students in the scale differentiated significantly based on the numbers of children in their families ($t_{(534)}$= 3.873, *p*< .01). Accordingly, the children with no siblings or one sibling in their family (*M*= 6.81) had a higher mean score than those who had two or more siblings (*M*= 6.10).

Table 10 shows the descriptive statistics on the scores of the students in the DMS Scale, while Table 11 shows the results of the one-way ANOVA on the scores based on socioeconomic levels.

Table 10. *Descriptive statistics on the scores of the DMS scale based on socioeconomic levels*

Socioeconomic Level	*N*	*M*	SD
Higher	173	48.06	7.45
Medium	191	51.32	7.20
Lower	179	48.13	7.27

According to the results of the ANOVA, it was observed that the DMS scale scores differentiated significantly based on socioeconomic levels ($F_{(2\text{-}540)}$= 12.073). According to the results of the Scheffe test that was carried out to determine the groups between which this difference was obtained, it

may be stated that there was a significant difference between the medium and higher and between the medium and lower socioeconomic levels in the favor of the mid-level socioeconomic status.

Table 11. *ANOVA results on the scores of the DMS scale based on socioeconomic levels*

Source of Variance	Sum of Squares	DF	Mean Squares	*F*	*p*	Significant Difference
Inter-group	1287.018	2	643.509	12.073	.000*	Mid-High
Intra-group	28782.535	540	53.301			Mid-Low
Total	30069.553	542				

** p< .01*

Table 12 shows the descriptive statistics on the scores of the students in the DRI Test, while Table 13 shows the results of the one-way ANOVA on the scores based on socioeconomic levels.

Table 12. *Descriptive statistics on the scores of the DMS scale based on socioeconomic levels*

Socioeconomic Level	*N*	*M*	SD
Higher	173	7.13	1.35
Medium	191	6.99	1.58
Lower	179	5.93	1.67

Table 13. *ANOVA results on the scores of the DRI test based on socioeconomic levels*

Source of Variance	Sum of Squares	DF	Mean Squares	*F*	*p*	Significant Difference
Inter-group	152.761	2	76.381	32.091	.000*	High-Low
Intra-group	1285.261	540	2.380			Mid-Low
Total	1438.022	542				

** p< .01*

According to the results of the ANOVA, it was observed that the DRI test scores differentiated significantly based on socioeconomic levels ($F_{(2-540)}$= 32.091). According to the results of the Dunnet C test that was carried out to determine the groups between which this difference was obtained, it may be stated that there was a significant difference between the lower socioeconomic level and the other levels against the favor of the lower socioeconomic level.

In the data collection instrument, the students were additionally asked two Likert-type questions regarding the frequency of being asked their opinion in decisions made in the family and at school. With these questions, it was aimed to determine the perceptions of the student regarding the aforementioned situations. Whether or not there was a significant difference in the scores of the students in the DMS Scale and DRI test based on these perceptions was investigated. The descriptive statistics of the scores of the students in the DMS Scale are given in Table 14, while the results of the one-way ANOVA on the scores based on the frequency of the children being asked their opinion in decisions made at home are given in Table 15.

Table 14. *Descriptive statistics of the scores in the DMS scale based on the frequency of the children being asked their opinion in decisions made at home*

My Family also Asks My Opinion in Decisions Made at Home	*N*	*M*	SD
Never-Rarely	136	45.18	7.27
Usually	127	46.75	6.10
Always	280	52.31	6.71

Table 15. *ANOVA results on the scores in the DMS scale based on the frequency of the children being asked their opinion in decisions made at home*

Source of Variance	Sum of Squares	DF	Mean Squares	*F*	*p*	Significant Difference
Inter-group	5677.143	2	2838.572	62.840	.000*	Always Usually
Intra-group	24392.409	540	45.171			Always Rarely
Total	30069.553	542				

** p< .01*

According to the results of the ANOVA, the scores of the students in the DMS Scale differed significantly based on the frequency of the children being asked their opinion in decisions made at home ($F_{(2-540)}$= 62.840). According to the results of the Scheffe test that was carried out to determine the groups between which this difference was obtained, it may be stated that there was a significant difference between the expression "Always" and other frequencies among the frequencies of the children being asked their opinion in decisions made at home in the favor of "always".

The descriptive statistics of the scores of the students in the DRI Test are given in Table 16, while the results of the one-way ANOVA on the scores based on the frequency of the children being asked their opinion in decisions made at home are given in Table 17.

Table 16. *Descriptive statistics of the scores in the DRI test based on the frequency of the children being asked their opinion in decisions made at home*

My Family also Asks My Opinion in Decisions Made at Home	*N*	*M*	SD
Never-Rarely	136	6.27	1.78
Usually	127	6.93	1.56
Always	280	6.79	1.55

Table 17. *ANOVA results on the scores in the DRI test based on the frequency of the children being asked their opinion in decisions made at home*

Source of Variance	Sum of Squares	DF	Mean Squares	*F*	*p*	Significant Difference
Inter-group	33.583	2	16.792	6.456	.000*	Always (Never-Rarely)
Intra-group	1404.439	540	2.601			Usually (Never-Rarely)
Total	1438.022	542				

** p< .01*

According to the results of the ANOVA, the scores of the students in the DRI Test differed significantly based on the frequency of the children being asked their opinion in decisions made at home ($F_{(2-540)}$= 6.456). According to the results of the Dunnet C test that was carried out to determine the groups between which this difference was obtained, it may be stated that there was a significant difference between the expressions "Always" and "Never-Rarely" and between the expressions "Usually" and "Never-Rarely" in the favor of "Always" and "Usually".

The descriptive statistics of the scores of the students in the DMS Scale are given in Table 18, while the results of the one-way ANOVA on the scores based on the frequency of the children being asked their opinion in decisions made in the classroom are given in Table 19.

No significant difference was found in the scores of the DMS Scale based on the frequency of the children being asked their opinion in decisions made in the classroom. Accordingly, in

DMS Scale scores, it may be stated that the factor of the frequency of the children being asked their opinion in decisions made in the classroom was not a significant variable.

Table 18. *Descriptive statistics of the scores in the DMS scale based on the frequency of the children being asked their opinion in decisions made in the classroom*

My Teacher also Asks My Opinion in Decisions Made in the Classroom	*N*	*M*	*SD*
Never-Rarely	106	49.91	7.35
Usually	134	49.33	7.43
Always	303	48.95	7.45

Table 19. *ANOVA results on the scores in the DMS scale based on the frequency of the children being asked their opinion in decisions made in the classroom*

Source of Variance	Sum of Squares	DF	Mean Squares	*F*	*p*	Significant Difference
Inter-group	75.036	2	37.518	.675	.509	-
Intra-group	29994.517	540	55.545			
Total	30069.553	542				

** p< .01*

The descriptive statistics of the scores of the students in the DRI Test are given in Table 20, while the results of the one-way ANOVA on the scores based on the frequency of the children being asked their opinion in decisions made in the classroom are given in Table 21.

Table 20. *Descriptive statistics of the scores in the DRI test based on the frequency of the children being asked their opinion in decisions made in the classroom*

My Teacher also Asks My Opinion in Decisions Made in the Classroom	*N*	*M*	*SD*
Never-Rarely	106	6.62	1.54
Usually	134	6.67	1.61
Always	303	6.72	1.67

Table 21. *ANOVA results on the scores in the DRI test based on the frequency of the children being asked their opinion in decisions made in the classroom*

Source of Variance	Sum of Squares	DF	Mean Squares	*F*	*p*	Significant Difference
Inter-group	.851	2	.426	.160	.852	-
Intra-group	1437.171	540	2.661			
Total	1437.022	542				

** p< .01*

No significant difference was found in the scores of the DRI Test based on the frequency of the children being asked their opinion in decisions made in the classroom. Accordingly, in DRI Test scores, it may be stated that the factor of the frequency of the children being asked their opinion in decisions made in the classroom was not a significant variable. Table 22 shows the descriptive statistics of the total scores of the students in the 1st-6th questions in the DRI Test.

Table 22. *DRI test 1st-6th questions total score descriptive statistics*

	N	*M*	Min.	Max.	*SD*
Questions 1-6. Total Scores	568	5.07	0	6	1.46

As seen in Table 22, the mean score of the students in their responses to the questions 1 to 6 was 5.07. The first six questions on the test consisted of two questions regarding whether or not the students read the table right and four questions measuring the skills of the students to choose the option that is suitable for the given criterion. Considering the mean score in the table, it may be stated that the students were able to choose the suitable option.

Table 23 shows the descriptive statistics of the total score of the students in the 7th-9th questions in the DRI test.

Table 23. *DRI test 7th-9th questions total score descriptive statistics*

	Number of Those Who Answered Correctly	Percentage of Those Who Answered Correctly	Number of Those Who Answered Wrong	Percentage of Those Who Answered Wrong	N
Question 7	231	40.7	337	59.3	
Question 8	362	63.7	206	36.3	568
Question 9	79	13.9	489	86.1	

As seen in Table 23, the numbers of who answered correctly were 231 (40.7%) for question 7, 362 (63.7%) for question 8 and 79 (13.9%) for question 9. The 7th question was as "If Ayşe wants the sound quality in a music player to be good, which music player should she choose?", and the students were expected to answer by thinking that the components of sound quality were CD player quality and radio quality. 40% of the students answered this question correctly. Accordingly, it may be stated that less than half of the students were successful in noticing the components forming criteria. The 8th question was as "I Ayşe wants the headphones of the music player to be comfortable and the quality to be high, which music player should she choose?", and the students were expected to respond by thinking of the scores of music players in the features given in the table together. 63.7% of the students answered this question correctly. Accordingly, most students could be considered to be successful in assessing situations involving multiple criteria. The 9th question was as "Considering the music players in the table, is there one that is clearly superior to the other? Explain your answer with your reasons." Although the music players on the table had different features, they were equal in terms of their total scores. In other words, there was no music player which was clearly superior to the other. In this question, the students were expected to see the big picture independently of their personal criteria and be able to assess situations with multiple criteria on a complex level. 13.9% of the students answered this question correctly. The students who answered this question correctly explained their response with statements as "Neither is clearly superior, because their total scores are the same" and "Has two good qualities and two bad ones, therefore equal." Those who gave wrong answers explained it with statements as "A, because it has more qualities with 5 points" and "A, because its headphones and battery are better." Another group with wrong answers used the expressions of "B, because it does not have any quality with 1-2 points" and "B, because its scores are close to each other," showing that they had a tendency of considering the music player with average scores to be better.

The 10th question of the DRI Test was as "Which music player would you choose if it were you? Explain with your reasons." In this question, the student was expected to make a decision based on own criteria and explain the reasons of this decision. Considering the answers of the students, it was seen that they could usually determine criteria unique to themselves and make their choices based on these criteria. Students in this group explained the reasons of their choices as "A, because I want a long battery life" and "B, because radio quality is important for me." Another group showed a tendency towards preferring the average in their choices

and chose B. They explained this with the statements "I would choose B, because it does not have any qualities with 1-2 points", "B, because it is medium-level", "B, because its scores are uniformly distributed" and "B, because it does not have a score lower than 3." In addition to this, a group of students had a tendency to select the music player that they thought had a high total score, rather than selecting the music player that would satisfy their needs. They explained the reasons for this without basing their decision on a tangible criterion by saying "Because it is beautiful", "because it has quality" and "because it has 5 points.

The Choices and Outcomes Activity was developed to collect and investigate data on skills of being aware of - defining the decision situation and possible options, creating alternatives and predicting the possible outcomes of choices. In the light of the data obtained from the activity, it was seen that 44% of the students either answered incorrectly or left blank the question regarding expression - definition of the decision problem. Accordingly, it may be considered that close to half of the students experienced difficulty in defining - expressing a decision problem. In addition to this, 88% of the students correctly answered the question on creating alternative options towards the decision problem on a basic level. Accordingly, it may be stated that the vast majority of the students were able to create alternative options. 79% of the students correctly answered the question on predicting the possible outcomes of choices on a basic level. Accordingly, the vast majority of the students were successful in terms of being able to predict the possible outcomes of options.

Discussion, Conclusion and Recommendations

According to the teachers, the factors of family, teacher and social environment are important in the development of the decision-making skills of students. In the framework drawn regarding the factor effective on development of decision-making in the study by Mettas and Norman (2011), curricula are at the center. It was reported that the style of the teacher in implementation of the curriculum, their perspective towards learning and teaching and instruction materials and resources are effective variables in the process of developing decision-making skills in children. Additionally, another dimension effective on decision-making and in the development of decision-making skills was determined to include the age of the child, peer effects, skills of transferring learning, strategy used in decision making, motivation, information sources that are used and assessment criteria. Moreover, it was stated that another dimension effective on decision-making and the development of decision-making skills include knowledge, skills and values regarding the nature of decision-making or the issue of making a decision. In their views on the factors effective on development of decision-making, the teachers did not mention many of the aforementioned dimensions including the curricular dimension. The views of the teachers were limited to providing the child with a democratic environment and creating decision-making experiences. The reasons for this situation are believed to be the deficiency of the awareness of the teachers on decision-making, lack of knowledge, ambiguity of decision-making skills in curricula and failure to guide teachers in this matter. Consequently, the criticisms of the classroom teachers who participated in the study regarding development of decision-making skills were towards the curricula and themselves.

The teachers stated that students experienced difficulties in the steps of understanding the decision situation, examining options and deciding upon an option, while they considered criteria unrelated to the decision situation. The finding from the decision-making activity that was applied that 44% of the students experienced difficulty in defining - expressing the decision problem was in agreement with the statements of the teachers. Howse et al. (2003) reported that small children experience problems in distinguishing the relevant and irrelevant information to be used in decision-making situations from each other, as well as eliminating options. Davidson (1991) emphasized that the skills of a child to assess information related to options develop by age, a child who can easily eliminate options with irrelevant information gets the opportunity to gain more information on the fewer options that remain, and this way, they can make better decisions. This situation might have been effective in the students' difficulties while decision-making.

The teachers thought that students wanted their decisions to be made for them, they avoided decision-making and experienced indecisiveness. The teachers stated that this result was caused by lack of decision-making experiences of students, failure to include them in decision-making processes, not including them in democratic settings and them growing up in protective family environments. Yalçınkaya-Dulkadiroğlu (2001) emphasized that protective family attitudes lead to development of a dependent personality in the child, and participation in family decisions will contribute to the child making more rational decisions at further ages.

The teachers reported that they provided their students with a democratic setting as they thought that a democratic environment where students can express their opinions is important in the development of their decision-making skills. The contribution of environment where thoughts can be freely expressed, and decision-making opportunities are created on development of the child's decision-making skills is clear. The study by Brown and Mann (1990) showed that the children of families with good communication and conflict resolution skills make more careful decisions. Nevertheless, in order to understand the extent to which teachers can offer such environments for their students, there is a need for long-term in-class observations.

The teachers stated that they mostly utilized interdisciplinary practices in development of students' decision-making skills, rather than activities directly related to decision-making steps. One may state that interdisciplinary practices are included in the curricula in terms of development of decision-making skills. However, activity-based practices where decision-making steps are taken on directly should also be employed. Nardi and Wales (1985) highlighted that decision-making is a skill that surpasses the limits of a course or discipline, and it should be provided at all stages of education in an integrated, direct and clear manner.

The teachers believed that decision-making skills were not clear in the curricula, relevant targeted outcome and activity dimensions were lacking, they did not have awareness of the position of this skill in the curricula, and they needed information and guidance regarding decision-making. Considering the curricula of primary school, it was seen that decision-making skills were mostly among the targeted outcomes of the 1st, 2nd and 3rd grade Social Studies curricula. No related targeted outcome was encountered in the 4th grade Social Studies curriculum, and it was stated that decision-making is included in skills that are to be directly provided. The 4th grade Science and Technology curriculum included one targeted learning outcome related to decision-making, but it is debatable whether or not this outcome could be included in the scope of decision-making ([the student] decides whether a being is living or inanimate by inquiry). In the curriculum of the Turkish course, decision-making skills were associated with the intermediary discipline of Human Rights and Citizenship ([the student] participated in the decision-making processes at school) under the learning area of "Reading". In addition to this, although several activities were included in the Turkish curriculum related to development of this skill, no targeted learning outcome was written. The Mathematics curriculum did not include any targeted outcome, activity or association with an intermediary

discipline. Pekdoğan (2016) argued that thinking and learning skills need to be integrated into different forms in development of decision-making skills and recommended usage of activities including rich learning experiences where different disciplines are combined. Based on the teachers' views and the research on the curricula, it may be stated that the curricula had a set of shortcomings in terms of development of decision-making skills in the dimensions of outcomes, contents and guidance of teachers.

According to the quantitative results of the study, the scores obtained from the DMS Scale were significantly different in favor of the female students, while the scores obtained from the DRI Test did not differ significantly based on sex. In the literature, there are studies which reported sex to be a significant variable in terms of decision-making (Brown & Mann, 1990; Sanz de Acedo Lizárraga, Sanz de Acedo Baquedano, & Cardelle-Elawar, 2007; Van Leijenhorst, Westenberg, & Crone, 2008), while there are also those that found it to be insignificant (Chung, 2002; Geisler & Allwood, 2015; Moschis & Moore 1979; Sonfield, Lussier, Corman & McKinney, 2001; Zhang, Pelowski, Jia & Yu, 2017). In the emergence of this situation, influential factors may include that, decision making, in a very broad perspective (strategic decision-making, logical decision-making, administrative decision-making, decision-making career selection, social decision-making, decision-making in risky situations, etc.), has a multidimensional structure (information gathering, risk perception, containment effect, ambiguity situations, implementation of decision rules, etc.), and studies have so far included the aforementioned, different contexts. However, studies in the literature that showed sex as an insignificant variable were in the majority. While the DMS Scale reveals the perceptions of students regarding themselves, the DRI Test measures the success of students in implementing decision rules independently of perceptions. Considering this issue, it may be stated that the results were in agreement with those in the literature.

The results of the study showed that the scores obtained from the DMS Scale and DRI Test did not differ significantly based on the factor of age. In general, studies in the literature stated that the factor of age is a significant variable in terms of decision-making (Crone & Van Der Molen, 2007; Levin, Hart, Weller, & Harshman, 2007), and it is in fact a developmental process (Byrnes, 1998). These studies investigated the differences among children, youths and adult groups. The participants of this study consisted of children with similar developmental characteristics who were enrolled on the same grade level and at the ages of 9-11. It is believed that this situation was effective on the finding that the age factor did not lead to a significant difference in the results of the study.

The scores obtained from the DMS Scale and DRI Test differed significantly based on the numbers of children in the families. For both measurement instruments, this difference was between the children with no siblings or one sibling and those with more than one sibling and in favor of those without siblings or one sibling. It is believed that the number of children in the family is negatively related to the time allocated per child, inclusion of the child in decision-making processes and paying importance to the views of the child. According to the results of the one-way ANOVA that was carried out based on the frequency of children being asked their opinion in decisions made at home from this perspective, there were significant differences between the children who were single children or had only one sibling (M= 3.32) and those with more than one sibling (M= 2.83) ($t_{(535)}$= 23.655, p< .001) in terms of their frequencies of being asked their opinion in decisions made at home. In parallel to this, it is also stated that the size of the family is a variable that is influential on the cognitive development of the child (Blake, 1981; Zajonc, 1976; Zajonc & Marcus, 1975). The significantly higher scores of the children with no siblings or one sibling in the DMS Scale and DRI Test in comparison to the other children may be explained by this.

The scores obtained from the DMS Scale differed significantly based on socioeconomic levels. This difference was between the medium and higher and between the medium and lower socioeconomic levels, in favor of the medium level. While there was a positive relationship among the socioeconomic levels in the study, it was observed that the mean scores of the higher and lower socioeconomic levels were very close to each other. It is believed that this situation emerged as a consequence of the structure of the DMS Scale that reveals the perceptions of students regarding themselves. According to the findings, it may be stated that the students on the lower and higher socioeconomic levels had similar perceptions.

The scores obtained from the DRI Test differed significantly based on socioeconomic levels. This difference was between the lower socioeconomic level and the other socioeconomic levels against the favor of the lower socioeconomic level. In the one-way ANOVA between the frequency of the children being asked their opinion in decisions made at home and their socioeconomic levels, a significant difference was found was between the lower socioeconomic level and the other socioeconomic levels against the favor of the lower socioeconomic level ($F_{(2.540)}$= 29.655, p< .001). In other words, the children from a lower socioeconomic background thought that their opinions were asked in the family less frequently in comparison to the other children. Considering these two findings together, it may be stated that the children on a lower socioeconomic level thought they were asked their opinion less frequently in their families and received lower scores in the DRI test. Brown and Mann (1990) reported that individuals on a higher socioeconomic level were more careful in terms of decision-making in comparison to those on a lower socioeconomic level. In this sense, it may be argued that the finding of the study was in agreement with the literature.

The scores obtained from the DMS Scale DRI Test differed significantly based on the frequency of the children being asked their opinion in decisions made at home. Based on this finding, it may be stated that the children who thought their opinions were asked more frequently at home also received higher scores in the scale and the success test. Doğanay (2011) reported that children learn thinking not by observing or memorizing others' thought but by interacting with their environment and other materials. Byrnes (2005) stated that children who are allowed to make their own decision and experience the outcomes of decisions (in a safe environment) will sooner or later internalize strategic approaches related to decision-making and develop decision-making skills. The high decision-making scores of the children whose opinions are cared for at home may be considered to be related to the thinking-friendly environments and decision-making opportunities offered to the child.

The scores obtained from the DMS Scale DRI Test did not differ significantly based on the frequency of the children being asked their opinion in decisions made in the classroom. In the ANOVA conducted to interpret this finding, no significant difference was found among the schools on different socioeconomic levels in terms of inclusion of the opinions of the children. This finding may be interpreted as that the teachers in the sample prioritized the opinions of the students on the same level regardless of the differences in their socioeconomic levels. This may explain the finding that, while inclusion of the opinions of the child at home influenced their decision-making score, inclusion of the opinions of the child at school did not affect it.

In the DRI Test, the students were presented with decision-making task that asked them to consider certain criteria, and they were asked to choose the option that complied with these criteria. According to the results of the DRI Test, it may be stated that the students were successful in choosing the suitable option by eliminating the options that were not suitable for the determined criteria. It was also observed in the test that the students were able to make choices suitable for the criteria they determined themselves. Studies have shown that children who are given decision-related tasks are able to eliminate the alternatives that they find unacceptable on a certain level (Davidson, 1991; Klayman, 1985). Accordingly, it may be stated that the findings of the study agreed with those in the literature.

According to the results of the DRI Test, 63.7% of the students were successful in assessing situations involving multiple criteria on a basic level. The study by Klayman (1985) demonstrated that 12-year-old children could develop strategic approaches in assessment of options with multiple criteria. However, when the situation including multiple criteria was elevated to a complex level, the success rate dropped to 13.9%. The students were given an example of a case in the Choices and Outcomes activity, and they were asked open-ended questions related to this. Accordingly, 44% of the students experienced problems in defining - expressing the decision problem. The PISA 2012 National Report stated that the reading skill scores of Turkey were under the average value among the OECD countries (MEB, 2015). It is believed that the emergence of this result was associated with the skills of the students in understanding what they read and expressing it.

According to the results obtained from the Choices and Outcomes Activity, the students were able to create alternatives on a basic level and foresee the possible outcomes of their choices. Crone and van Der Molen (2007) stated that children experience problems in terms of predicting the possible outcomes of their choices, while this skill continues to show development from childhood towards the end of adolescence. It is considered that this difference among the studies emerged as a result of the differences in the complexity levels of the decision situations utilized in the measurement instruments.
In this study, the teachers stated that they utilized interdisciplinary practices in development of decision-making skills. Nevertheless, it may be useful to include specific decision-making activities or practices involving decision-making steps while teaching decision-making. The teachers reported that their awareness of the place of decision-making skills in the curricula was low, they needed guidance and information on the issue, and there were shortcomings in the curricula on the dimensions of targeted learning outcomes and activities. Considering the curricula, it may be argued that the teachers were right regarding the aforementioned issues. The curricula may be improved in terms of the issues of targeted outcomes, activities and guidance of teachers.

In the curricula, decision-making skills are aimed to be provided with an interdisciplinary approach, and in parallel to this, they are included among the common skills that need to be gained. Considering the existing situation in the curricula, it may be stated that these skills are not sufficiently included. In this context, employing practice-based activities where decision processes are taken on in a detailed way may contribute to development of decision-making skills. The teachers stated that they had family-related problems in developing decision-making skills. In addition to this, in the light of the information obtained from the measurement instruments, it was observed that asking the opinion of the child in decisions made at home created significant differences in the child's decision-making skills. In this context, one may argue that family trainings will provide suitable environments for decision-making skills to develop. In this study, the decision-making skills of the children were aimed to be measured by a Likert-type measurement instrument, a success test and an open-ended form with an example of a case developed by the researcher. In studies to be carried out, more in-depth data could be obtained by including clinical observations based on real cases where the decision-making processes of the child are examined.

Acknowledgments

We would like to thank Anadolu University Projects Unit for providing financial support for the conduct of the research (Project No:1506E489).

References

Akdaş, H., B. (2013). *Sosyal bilgiler dersinde güncel olaylardan yararlanmanın öğrencilerin karar verme becerilerine etkisi* [The effect of teaching activities prepared in accordance with current events in social studies lesson on student's decision making skills]. Unpublished master's thesis. Gazi University, Ankara, Turkey.

Blake, J. (1981). Family size and the quality of children. *Demography, 18*(4), 421-442.

Boyatzis, R. E. (1998). Transforming qualitative information: Thematic analysis and code development. USA: Sage Publications.

Brannen, J. (2005) Mixed methods research: a discussion paper. Retrieved October 23, 2014, from http://eprints.ncrm.ac.uk/89/1/MethodsReviewPaperNCRM-005.pdf

Bronstein, L. (1992). *The effect of a school-based parent training program on parents' and childrens' social problem-solving and decision-making skills.* Unpublished PhD Thesis. New Jersey : Rutgers The State University.

Brown, J. E. & Mann, L. (1990). The relationship between family structure and process variables and adolescent decision making. *Journal of Adolescence, 13*(1), 25-37.

Byrnes, J. P. (1998). *The nature and decelopment of decision-making: A self regulation model*. USA: Earlbaum Manwah NJ.

Byrnes, J. P. (2005). The development of judgement and decision making in children and adolescents. In J.E. Jacobs &. P.A. Klaczynski (Eds.), *In The development of self-regulated decision making* (pp. 5-38). Lawrence Erlbaum.

Cenkseven Önder, F. (2012). The influence of decision-making styles on early adolescents' life satisfaction. *Social Behavior and Personality, 40*(9), 1523-1536.

Chung, Y. B. (2002). Career decision-making self-efficacy and career commitment: Gender and ethnic differences among college students. *Journal of Career Development, 28*(4), 277-284.

Creswell J.W. & Plano Clark, V.L. (2014). *Karma yöntem araştırmaları tasarımı ve yürütülmesi* [Designing and conducting of mixed method research] (Y. Dede, S.B. Demir, Trans.). Ankara: Anı Yayıncılık.

Crone, E. A. & Van Der Molen, M. W. (2007). Development of decision making in school-aged children and adolescents: Evidence from heart rate and skin conductance analysis. *Child Development, 78*(4), 1288-1301.

Çakmakçı, E. (2009). *Karar verme becerilerinin kazandırılmasında drama dersinin ilköğretim 4. sınıf öğrencileri üzerindeki etkilerinin incelenmesi* [Examination of the effect of drama lessons on 4th grade students of primary school when bringing in the abilities of decision making]. Unpublished master's thesis Osmangazi Üniversitesi, Eskişehir, Turkey.

Çolakkadıoğlu, O. (2010). *Çatışma kuramına dayalı olarak geliştirilen karar verme beceri eğitimi grup uygulamalarının ergenlerin karar verme stillerine etkisi* [The effect of conflict theory based decision making skill training group applications on decision making styles of adolescents]. Unpublished doctoral thesis. Çukurova University, Adana, Turkey.

Davidson, D. (1991). Children's decision-making examined with an information-board procedure. *Cognitive Development. 6*, 77-90.

Doğanay, A. (2011). Etkin vatandaşlık için düşünme becerilerinin öğretimi [Teaching thinking skills for effective citizenship]. In C. Öztürk (Ed.), *Sosyal bilgiler öğretimi demokratik vatandaşlık eğitimi* [Social studies education democratic citizenship education] (s. 146-185). Ankara: Pegem Akademi.

Doğanay, A., & Sarı, M. (2012). Düşünme dostu sınıf ölçeği (DDSÖ) geliştirme çalışması [Thinking-friendly classroom scale development study]. *İlköğretim Online, 11*(1), 214-229.

Eccles, J. S., Lord, S. & Buchanan, C. M. (1996). School transitions in early adolescence: What are we doing to our young people? In J.L. Graber, J. Brooks-Gunn and A.C. Petersen (Eds.), *Transitions through adolescence: Interpersonal domains and context*. (251-284). Mahwah, N.J: Lawrence Erlbaum.

Geisler, M. & Allwood, C. M. (2015). Competence and quality in real-life decision making. *PloS One, 10*(11). doi: 10.1371/journal.pone.0142178.

Gelman, R. (1969). Conservation acquisition: a problem of learning to attend to relevant attributes. *Journal of Experimental Child Psychology, 7*, 167-187.

Goloğlu, S. (2009). *Fen eğitiminde sosyo-bilimsel aktivitelerle karar verme becerilerinin geliştirilmesi: dengeli beslenme* [Developing decision making skills with socio-scientific activities in science eduaction: Balanced (healthy) nutrition]. Unpublished master's thesis. Marmara University, Istanbul, Turkey.

Gömleksiz, M. N., ve Kan, A. Ü. (2007). İlköğretim 5. sınıf Türkçe dersi öğretim programının problem çözme ve karar verme becerilerini kazandırmadaki etkililik düzeyine ilişkin öğrenci görüşlerinin değerlendirilmesi [An assessment of students' perceptions of efficiency level of gaining problem-solving and decision making skills of fifth grade turkish language education curriculum]. *Gazi Eğitim Fakültesi Dergisi, 27*(3), 51-63.

Hagen, W. J. and Hale, A. G. (1973). The development of attention in children. *ETS Research Bulletin Series. 1973*(1), 1-37.

Hansson, S.O. (2005). *Decision theory: A brief Introduction.* Stockholm: Royal Institute of Technology.

Howse, B. R., Best, L. D. & Stone, R. E. (2003). Children's decision making: the effects of training, reinforcement and memory aids. *Cognitive Development. 18*, 247-268.

Johnson, A. P. (2010). Building a framework for social studies. In A. P. Johnson (Ed.), *Making connections in elementary and middle school: Social studies* (pp. 1-24). Thousand Oaks, CA: Sage Publications.

Karakaş Günal, E. (1999). *İlköğretim 4. ve 5. sınıf öğrencilerinin günlük yaşamlarındaki problemlerini çözmeye ilişkin karar verme becerilerini ölçmeye yönelik bir ölçek geliştirme çalışması* [Development of a scale to measure decision making skills recated to every day problems of fourth and fifth grade students]. Unpublished master's thesis. Çukurova University, Adana, Turkey.

Kardaş, N. (2013). *Fen eğitiminde argümantasyon odaklı öğretimin öğrencilerin karar verme ve problem çözme becerilerine etkisi* [The impact of argumentation focused teaching in science education on the decision making and problem solving skills of students]. Unpublished master's thesis. Osmangazi University, Eskişehir, Turkey.

Kaşkaya, A., Calp, Ş., Kuru, O. (2017). An evaluation of factors affecting decision making among 4th grade elementary school students with low socio-economic status. *International Electronic Journal of Elementary Education. 9*(4), 787-808. Retrieved from https://www.iejee.com/index.php/IEJEE/article/view/285

Klaczynski, A. P., Byrnes, P. J. and Jacobs, E. J. (2001). Introduction to the special issue the development of decision making. *Applied Development Psychology, 22*, 225-236.

Klayman, J. (1985). Children's decision strategies and their adaptation to task characteristics. *Organizational Behavior and Human Decision Processes, 35*, 179-201.

Korkut, F. (2004). *Okul temelli önleyici rehberlik ve psikolojik danışma* [School-based preventive guidance and counseling]. Ankara: Anı Yayıncılık.

Köseoğlu, E. (2014). *İlkokul 4. sınıflarda drama etkinlikleriyle işlenen derslerin öğrencilerin problem çözme ve karar verme becerileri üzerindeki etkilerinin incelenmesi* [Investigating the effects of students troubleshooting and decision making skills by teaching with drama activities at primary school fourth grades]. Unpublished master's thesis. Atatürk University, Erzurum, Turkey.

Levin, I. P., Hart, S. S., Weller, J. A. & Harshman, L. A. (2007). Stability of choices in a risky decision-making task: a 3-year longitudinal study with children and adults. *Journal of Behavioral Decision Making, 20*(3), 241-252.

Marzano, R. J., Brandt, R. S., Hughes, C. S., Jones, B. F., Presseisen, B. S., Rankin, S.C., & Suhor, C. (1988). *Dimension of thinking: A framework for curriculum and instruction*. Virginia: ASCD.

MEB. (2008). *Sosyal bilgiler dersi (4-5. sınıflar) öğretim programı ve kılavuzu* [Social studies (4th.-5th. Classes) curriculum and instruction manual]. Retrieved October 20, 2014, from http://ttkb.meb.gov.tr/program2.aspx?islem=2&kno=38

Mettas, A., & Norman, E. (2011). A grounded theory approach to the development of a framework for researching children's decision-making skills within design and technology education. *Design and Technology Education: An International Journal, 16*(2), 8-19.

Moschis, G. P. and Moore, R. L. (1979). Decision making among the young: a socialization perspective. *Journal of Consumer Research, 6*(2), 101-112.

Nardi, H. A. & Wales, E. C. (1985). Teaching decision making with guided design. In A.L. Costa (Ed.), *Developing minds: A resource book for teaching thinking* (pp. 222-225). Alexandria VA: ASCD.

NCSS (1998). A report from NCSS task force on early childhood/elementary social studies. Retrieved November 20, 2014, from http://www.socialstudies.org/positions/elementary

Nicolaou, T. C., Korfiatis, K., Evagorou, M. and Constantinou, C. (2009). Development of decision-making skills and environmental concern through computer-based, scaffolded learning activities. *Environmental Education Research. 15*(1), 39-54.

Öncül, B. (2013). *İlköğretim 4. Sınıf öğrencilerinin karar verme becerilerine ilişkin sınıf öğretmenlerinin görüşleri* [Teachers opinions about the primary 4th graders decision making skills]. Unpublished master's thesis. Anadolu University, Eskişehir, Turkey.

Pekdoğan, S. (2016). *Çocuklarda karar verme becerileri ve etkinlik örnekleri* [Decision making skills in children and activity examples]. Ankara: Eğiten Kitap.

Sanz de Acedo Lizárraga, M. L., Sanz de Acedo Baquedano, M. T. & Cardelle-Elawar, M. (2007). Factors that affect decision making: gender and age differences. *International Journal of Psychology and Psychological Therapy, 7*(3), 381-391.

Sever, I., Ersoy, A. (2019). İlkokul öğrencileri için karar verme becerisi ölçeğinin geliştirilmesi: Geçerlik ve güvenirlik çalışması [Development of decision making skills scale for primary school students: Validity and reliability study]. *Cukurova University Faculty of Education Journal, 48*(1), 662-692. Retrieved from https://dergipark.org.tr/tr/pub/cuefd/issue/44511/533443

Sonfield, M., Lussier, R., Corman, J. & McKinney, M. (2001). Gender comparisons in strategic decision-making: an empirical analysis of the entrepreneurial strategy matrix. *Journal of Small Business Management, 39*(2), 165-173.

Tashakkori, A. & Teddlie, C. (2010). Sage handbook of mixed methods in social and behavioral research. SAGE. Retrieved October 23, 2014, from http://www.sagepub.com/upm-data/34743_Chapter1.pdf

Tekin, S., ve Ulaş, A. (2016). İlkokul 4. sınıf öğrencilerinin karar verme becerilerine ilişkin bir araştırma [A research on the decision making skills of 4th grade students]. *Qualitative Studies, 11*(3), 27-38.

Tetik, A. T. (2013). *Sosyal bilgiler dersinde kullanılan probleme dayalı öğrenme yönteminin öğrencilerin karar verme becerisine etkisi* [The effect of problem-based learning method on the decision-making skills of students at the social studies lesson]. Unpublished master's thesis. Mehmet Akif Ersoy University, Burdur, Turkey.

Van Leijenhorst, L., Westenberg, P. M. & Crone, E. A. (2008). A developmental study of risky decisions on the cake gambling task: age and gender analyses of probability estimation and reward evaluation. *Developmental Neuropsychology, 33*(2), 179-196.

Weller, J. A., Levin, I. P., Rose, J. P. & Bossard, E. (2012). Assessment of Decision-making Competence in Preadolescence. *Journal of Behavioral Decision Making, 25*(4), 414-426.

Weller, J. A., Moholy, M., Bossard, E. & Levin, I. P. (2014). Preadolescent decision-making competence predicts interpersonal strengths and difficulties: A 2-year prospective study. *Journal of Behavioral Decision Making, 28*(1), 76-88.

Yalçınkaya-Dulkadiroğlu, H. (2001). *İlköğretim okulu 11-16 yaş öğrencilerinin ailede karar vermeye katılımı konusundaki görüşleri* [Views of the children, who are primary school's students in 11-16 age group, about decision making in family]. Unpublished master's thesis. Gazi University, Ankara, Turkey.

Zajonc, R. B. & Markus, G. B. (1975). Birth order and intellectual development. *Psychological Review, 82*(1), 74.

Zajonc, R. B. (1976). Family configuration and intelligence. *Science, 192*(4236), 227-236.

Zhang, M., Liu, T., Pelowski, M., Jia, H. & Yu, D. (2017). Social risky decision-making reveals gender differences in the TPJ: a hyperscanning study using functional near-infrared spectroscopy. *Brain and Cognition, 119*, 54-63.

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **183-188**

"A Physical Education Teacher Is Like…": Examining Turkish Students' Perceptions of Physical Education Teachers Through Metaphor Analysis

Hasan Sözen[a,*], Ezel Nur Korur[b]

Received: **20 September 2019**
Revised: **5 October 2019**
Accepted: **19 November 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.iejee.com

DOI: **10.26822/iejee.2019257665**

Abstract

The aim of this study was to determine middle school students' perceptions of physical education teachers (PETs) through metaphors and drawings. This was a qualitative study in which phenomenology and purposeful sampling were used. The study sample consisted of 200 middle school students in Ordu/Turkey in the 2017-2018 and 2018-2019 academic years. For data collection, participants were asked to fill in the blanks in the statement "The PET is like_____ because _____" and to draw a picture reflecting their perceptions of physical education teachers. Data were analyzed using content analysis. The steps of data analysis were naming, elimination, categorization, establishing validity and reliability, calculating the frequencies of metaphors and interpreting the drawings. Expert opinion was also used in the elimination and categorization steps. Participants' metaphors and drawings were grouped under 20 and 13 categories, respectively. Participants mostly generated metaphors under the categories of "PET as an athletic and physical force" (16%), "PET as a good person" (12.5%) and "PET as a guide" (9.5%). Participants mostly drew pictures under the categories of "PET as an athletic and physical force" (18.5%), "PET as a helpful person" (12.5%) and "PET as a good person" (11.5%). Participants' perceptions of PETs did not differ by variables considered.

Keywords: Physical Education Teacher, Metaphor, Perception, Secondary Education, Physical Education Lesson.

Introduction

Metaphor is defined as using a word or concept in a manner other than accepted. Metaphor can be expressed as using another concept while explaining one concept or benefiting from the features of that concept. According to these explanations, in its most general definition, the metaphor provides the opportunity to tell the unknown through the known and to make the phenomenon known from the analogies of a phenomenon, and to see a phenomenon as another phenomenon (Yilmaz, Esenturk, Demir & Ilhan, 2017; Toptaş & Gözel, 2018). Over the past decade, research on the development of figurative language has expanded considerably. Efforts continue to show the cognitive foundations of the ability to understand figurative language and to show the role of metaphor in the development of the metaphor. Metaphor is now considered a central aspect of language and thought and is therefore a crucial variable in cognitive development. Literature supports the claim that any theory of language acquisition can no longer ignore how children can recognize the difference between what they say and what they mean, and how people can comprehend what they mean when they say what they mean (Winner, 2017). Information at the cognitive level becomes an act of speaking ability, and mental representations are embodied through communication with the help of metaphor among children (Karaırmak, 2015).

Physical education is an integral part of education and its one of the main objectives is to enable people to develop a healthy lifestyle. It encourages especially children and young people to be engaged in physical activity and teaches them athletic skills that provide them with a healthy lifestyle. It improves not only physical skills, but also social, emotional and cognitive skills and ethics (Karaşahinoğlu, 2015). Teaching physical education effectively is a complex task that requires a deep understanding of the characteristics of the students taught, how learning takes place, the content to be taught, differentiated pedagogy and curriculum (Ward, Kim, Ko & Li, 2014).

Physical education is a critical component considering the role that it plays in teaching students such social skills as cooperation, accepting defeat and fair play. Physical activity reinforces self-confidence, promotes mental health, strengthens social connections, facilitates interaction with peers and teachers, and reduces stress (Sözen, 2012; Brusseau & Hannon, 2015).

Teachers play a key role in making students good citizens who contribute to society. Only qualified teachers can raise healthy and productive people. Children and young people view certain adults as role models to learn life and develop identity, and teachers are important role models for students (Wood, 2012). Physical education focuses on education as a whole, and physical education teachers (PETs) play a critical role in this process. Therefore, PETs should have professional competence and display exemplary behavior.

Middle school is a time of transition from child to young adult. It is, therefore, critical for students, who are very energetic and mobile at that period, to be engaged in physical activity (Kaya,2010). Physical and psychomotor skills affect adolescents' self-perceptions and relationships deeply. Games and sporting events provide them with the opportunity to show that they are capable of physical activities. Egocentric (self-centered) thinking becomes adolescents' main perspective, therefore, their own thoughts and worldviews become the only things that matter to them. However, they also need adult role models to emulate in order to make good choices and to become contributing adults in society. Role models who accept adolescents for who they are, love and respect them, and give them confidence and support, contribute tremendously to their development (Erden & Akman, 2014). Considering the fact that students spend more time with their peers and teachers than their family members, teachers should be effective role models for them. Physical education discipline at early ages is an ideal foundation for health promotion and a lifelong sports habit. Physical education is

[a,*]Corresponding Author: Hasan Sözen, Department of Physical Education and Sport Sciences, University of Ordu, Ordu, Turkey. E-mail: hasansozen@odu.edu.tr
[b] Ezel Nur Korur, Department of Physical Education and Sport Sciences, University of Ordu, Ordu, Turkey. E-mail: ezelnurkorur@odu.edu.tr

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

one of the rare courses that promotes health, high quality of life, structured lifestyle and social relations. Therefore, the content, achievements and implementation of physical education course are of paramount significance for creating a disciplined and healthy society.

Teaching requires expertise; however, PETs should be more knowledgeable in their field because they help students develop cognitively, emotionally and psychomotor skills. Determining student needs and interests contributes to the success of teachers, and therefore, education. One step to achieve this is to determine students' perceptions of teachers.

There are many studies on students' perceptions of teachers (Farrell, 2006; Nikitina & Furuoka, 2008; Aykaç, 2012; Kalyoncu, 2012; Ada, 2013; Çulha-Özbaş & Aktekin, 2013; Gedikli, 2014). Unlike other branch teachers, the area of responsibility of PETs extends beyond the boundaries of school and affects students' athletic achievements in the future. It is, therefore, important to determine students' perceptions of PETs. The number of studies investigating middle school students' perceptions of PETs through metaphors is limited in Turkey. We therefore believe that this study will contribute to the literature. The aim of this study is to determine middle school students' metaphorical perceptions of PETs. To this end, participants were asked to generate metaphors and draw pictures that described their PETs.

PETs interact more closely with students, and therefore, have a different position in the eyes of other teachers, school administrators, parents and, most importantly, students themselves. Given that students view their teachers as role models, the communication between them should be proper and healthy. It is, therefore, important to determine students' attitudes towards PE lesson and their perceptions of PETs.

Method

Research Goal

In this study, qualitative design was used to determine middle school students' perceptions of PETs through metaphors and drawings. In qualitative research, perceptions and events are revealed as they are in a realistic and wholesome manner (Yıldırım & Şimşek, 2013). Phenomenology was used to answer the research question. The phenomenological study attempts to understand and attain a description from the students regarding the perception of individuals and lived experience of individuals about the phenomenon (Baytak, Tarman & Ayas, 2011). The phenomenon is PET in this study.

Sample and Data Collection

The study sample consisted of 50 fifth-, 50 sixth-, 50 seventh- and 50 eighth graders of four middle schools in Ordu/Turkey in the 2017-2018 and 2018-2019 academic years. Participants were recruited using maximum variation sampling, which is a purposeful sampling method used to make sure that the widest possible variety of subjects are represented in order to capture different themes, views and opinions on a phenomenon of interest (Büyüköztürk, Çakmak, Kılıç, Akgün, Karadeniz & Demirel, 2018). Table 1 shows the demographic characteristics of the participants.

At the first stage of data collection, demographic characteristics were recorded. At the second stage of data collection, participants were asked to fill in the blanks in the statement "The PET is like_____ because _____" and to draw a picture reflecting their perceptions of them.

The analysis of metaphors produced by the participants was carried out in six stages: (1) naming stage, (2) elimination phase, (3) category development phase, (4) validity and reliability stage, (5) calculation and interpretation of frequencies of metaphors obtained, (6) examination of drawings made. The students categorized the metaphors were created as positive or negative by the researcher.

Table 1. *Demographic Characteristics*

Student		*n*	*%*
Gender	Girl	112	56
	Boy	88	44
Grade Level	5.	50	25
	6.	50	25
	7.	50	25
	8.	50	25
Engagement in Physical Activity	Yes	82	41
	No	118	59
Total		200	100

Analyzing of Data

Data were analyzed using content analysis, which is the codification, categorization, quantification and systematic analysis of written and oral materials (Balcı, 2011). In content analysis, data are encoded and classified accordingly. Themes describing data and grouping codes under specific categories are then developed. Therefore, at the stage of data analysis, researchers were consulted to determine whether participants' metaphors and drawings represent the conceptual categories in which they are. The categories developed by two researchers who were not involved in the study and those developed by the researcher carrying out the study were compared, and interrater reliability was calculated using the formula suggested by Miles and Huberman (Miles & Huberman, 1994).

In studies with phenomenological approach, data are obtained directly after the data is obtained and important explanations, sentences and quotations are made to understand how the phenomenon is experienced. This step is called listing key phrases. Then, meaning groups are developed within the themes based on these important expressions (Creswell, 2013). The data collected in this study were analyzed by content analysis method. Content analysis is a systematic analysis of written and oral materials. Content analysis is the process of quantifying (digitizing) the people's words and their writings according to clear instructions (Straus & Corbin, 1990). The essence of this approach lies in the categorization of what is written and said (Balcı, 2011).

The data collected in the content analysis is coded and classified according to these codes. Then there are themes that can explain the data at a general level and collect the codes under certain categories. In order to find the themes, the codes are first put together and the common points between them are tried to be found. This is a thematic coding process and is the categorization of the collected data by means of codes. If the number of themes that come up after the codes are put together is too high, then it can be classified for a top theme based on the common relations of these themes. It should be noted whether the various parts of the data set are represented effectively according to the emerging themes. At this stage, it is considered useful if an external researcher reflects an adequate set of data, and that the data are analyzed effectively in accordance with these themes and make suggestions to the researcher (Yıldırım & Şimşek, 2013).

Results

Participants generated the highest number of metaphors under the category of "PET as an athletic and physical force" followed by "PET as a good person" and "PET as a guide". Some examples are as follows:

Table 2. *Participants' Metaphors for PETs and Conceptual Categories of Metaphors*

Categories	*Metaphors*	*n*	*%*
PET as an athletic and physical force	Athlete (15), Volleyball (7), Basketball (2), Ball (3), Coach (4), Mermaid (1)	32	16
PET as a good person	Cotton (3), Cotton Candy (1), Diamond (2), Flower (9), Sun (7), Fairy Godmother (3)	25	12.5
PET as a guide	Guide (3), Stars (10), Sun (6)	19	9.5
PET as an angry person	Sun (9), A Bundle of Nerves (6), Fireball (1)	16	8
PET as a friend	Friend, Pal (14)	14	7
PET as a lazy person	Basketball Hoop (7), Castle (3), Billet (1), Armchair (1)	12	6
PET as family member	Father (5), Parents (2) Mother (3)	10	5
PET as an instructor	Teacher (4), Tree Root (2), Health Instructor (4)	10	5
PET as a source of information	Light (3), Brain (1), Lighthouse (3)	7	3.5
PET as a friendly and caring person	Heart of Gold (7)	7	3.5
PET as an element of affection	A Ball of Love (3), Atatürk (2), Tree (2)	7	3.5
PET as a molder	Life Coach (3), Mirror (3)	6	3
PET as a coach	Trainer (6)	6	3
PET as a fair person	Referee (3), King (2)	5	2.5
PET as a disciplined and hard-working person	Commander (5)	5	2.5
PET as an unsteady person	Cloud (1), Chameleon (4)	5	2.5
PET as someone fun	Comedian (2), Artist (2), Summer Vacation (1)	5	2.5
PET as a hero	Superman (3), Angel (1)	4	2
PET as a source of life	Life (3)	3	1.5
PET as an unjust person	Unjust (2)	2	1
Total		200	100

Student 1- The PET is like a basketball player because he is very tall and very skillful.

Student 2- The PET is like cotton because he is very softhearted.

Student 3- The PET is like the sun because he enlightens us with his knowledge.

Student 4- The PET is like the sun because he sometimes gets mad.

Student 5- The PET is like a friend because he helps us.

Student 6- The PET is like a basketball loop because he is idle and hollow.

Student 7- The PET is like a father because he is always nice to us.

Student 8- The PET is like a teacher because he is a teacher.

Student 9- The PET is like a lighthouse because he lights the way for our future.

Student 10- The PET is like a good person because he helps everybody and never gets mad.

Student 11- The PET is like the beginning of summer vacation because he entertains me a lot.

Student 12- The PET is like a mirror because he we fix ourselves by looking at him.

Table 3. *Participants' Perceptions of PETs by Gender*

Metaphor Category	Gender			
	Girl		Boy	
	n	%	n	%
Positive	98	87.50	67	76.13
Negative	14	12.50	21	23.86
Total	112	100	88	100

Female participants generated 98 positive 14 negative metaphors while male participants generated 67 positive and 21 negative metaphors for PETs (Table 3).

Table 4. *Participants' Perceptions of PETs by Grade Level*

Metaphor Category	Gender							
	5		6		7		8	
	n	%	n	%	n	%	n	%
Positive	98	87.50	67	76.13	98	87.50	67	76.13
Negative	14	12.50	21	23.86	14	12.50	21	23.86
Total	112	100	88	100	112	100	88	100

The number of positive or negative metaphors generated by participants did not differ by grade level (Table 4).

Table 5. *Participants' Perceptions of PETs by Engagement in Sports*

Metaphor Category	Engagement in Sports			
	Yes		No	
	n	%	n	%
Positive	82	91.11	83	75.45
Negative	8	8.88	27	24.54
Total	90	100	110	100

91.11% (82) of 90 metaphors generated by participants engaged in sports were positive while 75.45% (83) of 110 metaphors generated by participants not engaged in sports were positive.

Participants mostly drew pictures under the categories of "PET as an athletic and physical force" (*n*= 37, 18.5%), "PET as a helpful person" (*n*= 25, 12.5%), "PET as a good person" (*n*= 23, 11.5%) and "PET as an angry person" (*n*= 23, 11.5%) (Table 6). Some examples are as follows:

Table 6. *Participants' Drawings and Their Conceptual Categories*

Categories	n	%
PET as an athletic and physical force	37	18.5
PET as a helpful person	25	12.5
PET as a good person	23	11.5
PET as an angry person	23	11.5
PET as a motivator	20	10
PET as a guide	14	7
PET as a lazy person	13	6.5
PET as an instructor	12	6
PET as a game partner	9	4.5
PET as someone fun	8	4
PET as an element of affection	8	4
PET as an just person	5	2.5
PET as an unjust person	3	1.5
Total	200	100

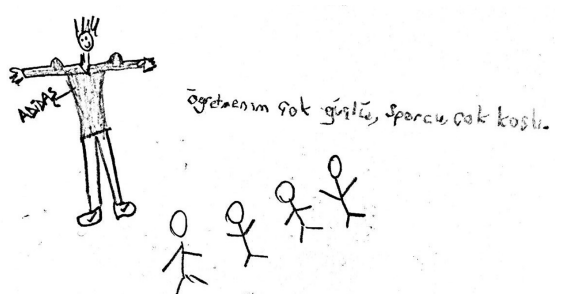


Figure 1. Student 1 – "My teacher is very strong, athletic and very muscular". PET as an athletic and physical force

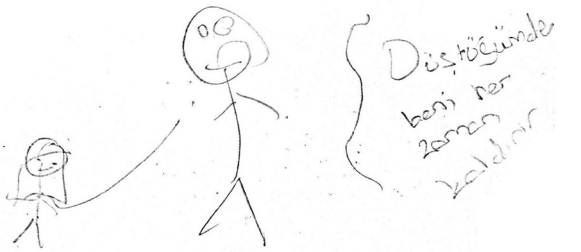


Figure 2. Student 2 – "He always lifts me up when I fall". PET as a helpful person

Figure 3. Student 3 – "Princess, flower, heart". PET as a good person

Figure 4. Student 4 – "He is always angry, he always shouts". PET as an angry person

Discussion

The highest number of metaphors that participants generated for PETs was under the category of "PET as an athletic and physical force". Participants mostly used sports terms such as volleyball, basketball, athlete etc. to describe their PETs. According to these results, enabling students to see their PET as an athlete can increase the participation of students as a role model. Research shows that students generally generate positive metaphors for PETs in the literature (Kalyoncu, 2012; Soysal & Afacan, 2012; Gedikli, 2014; Sengül, Katrancı & Cantimer, 2014; Çulha-Özbaş & Aktekin 2013; Sayar, 2014). However, Koç et al., (2015) and Karaşahinoğlu (2015) reported that the clear majority of students generated negative metaphors for PETs.

Participants generated 16 metaphors under the category of "PET as an angry person". In their explanations, they described their PET as someone who always yells at them, speaks loudly and shouts. Karaşahinoğlu (2015) reported a similar finding and concluded that this type of behavior results in fear, anxiety and alienation in students. Similarly, Ada (2013) reported that the second highest number of metaphors generated by students regarding their math teachers was under the category of math teacher as a bad person.

Girls who participated in the study produced more negative metaphors than boy students. However, the difference was not statistically significant. Ada (2013) and Karaşahinoğlu (2015) did not report any gender differences in a study they conducted.

The number and nature (positive or negative) of metaphors generated by participants did not differ by grade level. The number and nature of metaphors generated by participants did not differ by engagement in sports. This result was contrary to our expectations that students engaged in sports would be likely to have more positive perceptions of PETs than those not engaged in sports.

The highest number of pictures that participants drew to describe PETs was also under the category of "PET as an athletic and physical force". This result indicates that they have positive perceptions of PETs in general. However, the presence of negative metaphors and drawings may require further investigation. Aykaç (2012) investigated primary school students' perceptions of teachers and learning process and reported that their drawings of teachers were mostly positive, which was also observed in our study.

Participants mostly generated metaphors under the categories of "PET as an athletic and physical force" (*n*= 32, 16%), "PET as a good person" (*n*= 25, 12.5%), "PET as a guide" (*n*= 19, 9.5%) and "PET as an angry person" (*n*= 16, 8%).

The pictures that participants drew to describe PETs were under the categories of "PET as an athletic and physical force" (*n*= 37, 18.5%), "PET as a helpful person" (*n*= 25, 12.5%), "PET as a good person" (*n*= 23, 11.5%) and "PET as an angry person" (*n*= 23, 11.5%). According to these results, participants' perceptions of PETs did not differ by gender, grade level and engagement in sports.

However, the main issue in our research is to determine the role of physical education teacher in the education curriculum. It aims to follow the same educational curriculum in all schools of the Turkish education system which is within the scope of a central education. The physical education teacher has similar approaches in this training curriculum, and this is controlled within the management approach. These metaphors created by the students are metaphors against the physical education course in the middle school curriculum.

Conclusion

In this study, participants were asked to generate metaphors and draw pictures to describe PETs. As a proposal for future studies; students may be asked to ask open-ended questions and / or keep reflective diaries to increase the power of research. A similar study can be applied to students of different educational levels. In addition, students' perceptions of male and female PETs can be analyzed separately. The results from these and similar studies can be evaluated to provide information to institutions training PETs. Considering the presence of negative metaphors, in-service seminars for PETs can be revised and modified.

Acknowledgements

We would like to thank all the subjects who volunteered their time to participate in this study.

References

Ada, S. (2013). *Öğrencilerin matematik dersine ve matematik öğretmenine yönelik algılarının metaforlar yardımıyla belirlenmesi.* Unpublished Master's Thesis, Gazi University, Graduate School of Educational Sciences, Ankara, Turkey.

Aykaç, N. (2012). İlköğretim öğrencilerinin resimlerinde öğretmen ve öğrenme süreci algısı. *Eğitim ve Bilim, 37*(164), 298-315.

Balcı, A. (2011). *Sosyal bilimlerde araştırma: yöntem, teknik ve ilkeler.* Ankara: Pegem.

Baytak A., Tarman, B., & Ayas, C. (2011). Experiencing technology integration in education: children's perceptions. *International Electronic Journal of Elementary Education, 3*(2), 139-151.

Brusseau, T.A., Hannon, J.C. (2015). Impacting children's health and academic performance through comprehensive school physical activity programming. *International Electronic Journal of Elementary Education, 7*(3), 441-450.

Büyüköztürk, Ş., Çakmak Kılıç, E., Akgün, Ö.E., Karadeniz, Ş., & Demirel, F. (2018). *Bilimsel Araştırma Yöntemleri*. Ankara: Pegem Akademi.

Creswell, J.W. (2013). *Research Design Qualitative, Quantitative, And Mixed Method Approaches.* London: SAGE Publications.

Çulha- Özbaş, B. & Aktekin, S. (2013). Tarih öğretmen adaylarının tarih öğretmenliğine ilişkin inançlarının metafor analizi yoluyla incelenmesi. *Journal of Theory and Practice in Education / Eğitimde Kuram ve Uygulama, 9*(3), 211-228.

Erden, M. & Akman, Y. (2014). *Eğitim Psikolojisi.* Ankara: Arkadaş.

Farrell, T.S.C. (2006). 'the teacher is an octopus: Uncovering preservice English language teachers' prior beliefs through metaphor analysis. *RELC Journal, 37*(2), 236-248.

Gedikli, Ö. (2014). *Ortaokul 2, 3 ve 4. sınıf öğrencilerinin Türkçe öğretmenini algılayışının metaforlar aracılığıyla belirlenmesi.* Unpublished Master's Thesis, Karadeniz Technical University, Trabzon, Turkey.

Kalyoncu, R. (2012). Görsel sanatlar öğretmeni adaylarının "öğretmenlik" kavramına ilişkin metaforları. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 9*(20), 471-484.

Karaırmak, Ö. (2015). Çocukla psikolojik danışmada metaforik süreç. *Türk Psikolojik Danışma ve Rehberlik Dergisi, 5*(43), 115-127.

Karaşahinoğlu, T. (2015). *Ortaokullarda Beden Eğitimi Öğretmenine ilişkin Metaforik Algılar.* Unpublished Master's Thesis, Gazi University, Graduate School of Educational Sciences, Ankara, Turkey.

Kaya, A. (Ed.). (2010). *Eğitim psikolojisi.* Ankara: Pegem.

Koç, M., Murathan, F., Yetiş, Ü. & Murathan, T. (2015). İlköğretim 7. sınıf öğrencilerinin spor kavramına ilişkin algıları. *Akademik Sosyal Araştırmalar Dergisi, 3*(9), 294- 303.

Miles, M. B. & Huberman, A. M. (1994). *An expanded sourcebook qualitative data analysis.* California: Sage Publications.

Nikitina L., & Furuoka F. (2008). "A language teacher is like . . ." examining Malaysian students' perception of language teachers through metaphor analysis. *Electronic Journal of Foreign Language Teaching, 5*(2), 192-205.

Sayar, E. (2014). *Investigating EFL teachers' and their students' conceptions of Professional teacher identity through metaphor analysis.* Master Thesis, Abant Izzet Baysal University Institute of Educational Sciences, Bolu, Turkey.

Şengül, S., Katrancı, Y. & Cantimer, G. (2014). Ortaöğretim Öğrencilerinin Matematik Öğretmeni Kavramına İlişkin Metafor Algıları. *The Journal of Academic Social Science Studies, 25*(1), 89-111.

Soysal, D. & Afacan, Ö. (2012). İlköğretim öğrencilerinin "fen ve teknoloji dersi" ve "fen ve teknoloji öğretmeni" kavramlarına yönelik metafor durumları. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 9*(19), 287-306.

Sözen, H. (2012). The effect of physical education and sports school training on problem solving skills of the athletes. *Procedia- Social and Behavioral Sciences, 46*, 4186-4190.

Straus, A. L., Corbin, J. (1990). *Basic of qualitative research: Grounded theory procedures and techniques.* Newbury Park, CA: Sage.

Toptaş, V., Gözel, E. (2018). Investigation of the metaphorical perceptions of the parents on the concept of mathematics. *International Electronic Journal of Elementary Education, 10*(5), 621-626.

Ward P., Kim I., Ko B., Li W. (2015). Effects of improving teachers' content knowledge on teaching and student learning in physical education. *Research Quarterly for exercise and Sport, 86*(2), 130-139.

Winner, E. (Ed.). (1996). *Developmental Perspectives on Metaphor.* New York: Psychology Press.

Wood, TD. (2012). Teacher perceptions of gender-based differences among elementary school teachers. *International Electronic Journal of Elementary Education, 4*(2), 317-345.

Yıldırım, A. & Şimşek, H. (2013). *Sosyal bilimlerde nitel araştırma yöntemleri.* Ankara: Seçkin.

Yilmaz, A., Esenturk, O.K., Demir, G.T., Ilhan E.L. (2017). Metaphoric perception of gifted students about physical education course and physical education teachers. *Journal of Education and Learning, 6*(2): 220-234.

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **189-196**

Relationships Between the Dimensions of Resilience and Burnout in Primary School Teachers

Received: **4 July 2019**
Revised: **19 November 2019**
Accepted: **23 December 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.**iejee**.com

M. Inmaculada Vicente de Vera García[a,*], M. Inés Gabari Gambarte[b]

DOI: **10.26822/iejee.2019257666**

Abstract

Education professionals are very prone to burnout. Faced with this psychosocial risk, resilience is advocated as a human condition to remake itself in the face of difficulties. The objective of the study was to analyze the relationships between perceptions of burnout and resilience in a sample of 334 teachers from 35 public Primary School Education centers. The accepting sample was composed of 334 teachers (26.34% of the invited sample). It was a cross-sectional, descriptive and correlational study, which responded to a simple random sampling of 1268 teachers in the 2017/2018 academic year, through voluntary and anonymous participation. The instruments used were the Spanish versions of the Maslach Burnout Inventory-General Survey (MBI-GS) and Connor-Davidson Resilience Scale (CD-RISC). Positive relationships were found between emotional fatigue/exhaustion and depersonalization/cynicism and low levels of resilience, as well as between personal fulfillment/effectiveness and high levels of personal competence, confidence in one's intuition and positive acceptance of change, dimensions typical of the resilient response. The importance of promoting resilient coping strategies such as positivism, tolerance to frustration, locus of internal control and self-efficacy, which act as dimensions of protection against exhaustion, negative dimension of burnout, emerges.

Keywords: Burnout, Depersonalization, Emotional Tiredness, Resilience, Effectiveness, Positivism, Control Locus, Coping Strategies

Introduction

Education professionals often show loss of emotional resources, mainly caused by the physical, mental, and relational demands of teaching work. The excessive number of students in the classrooms, the excess of tasks to be performed, the temporary pressures and work overload, the lack of support teachers, the inadequacy of schedules, the excessive bureaucracy and the paperwork that derives from it, etc., are related to the emotional fatigue of this group (Longas, Chamarro, Riera, & Cladellas, 2012; Llull, Cerdà, & Brage, 2015; Rodríguez, Sola, & Fernández, 2017; Carlotto & Câmara, 2017). Additionally, the incidence of other external factors of the work environment, derived from the general and specific characteristics of the personality, family circumstances or the private and social life of the teacher, interact with personal resources and can lead to a decrease in their activity labor, mental and physical, giving rise to disorders such as burnout (Justo 2010; López & Extremera, 2017; Burgos, Paris, Salcedo, & Arriagada, 2018).

Maslach (2009) explains the dimensions of burnout with a three-dimensional model, which has the presence of three related but empirically distinct components. Galbán (2018) describes the process of the appearance of Burnout Syndrome: it begins with an imbalance between organizational demands and personal resources caused by emotional exhaustion in the worker; subsequently depersonalization or coping is experienced leading the worker to disappointment and exhaustion; It ends with the low personal accomplishment at work as a result of the inefficiency in facing the different labor stressors.

However, despite the fact that organizational events can be stressful by themselves, some subjects are more vulnerable than others to develop the syndrome (Albar et al., 2004; González, Torres, & Carreres, 2017; Martos et al., 2018). This depends, in part, on the cognitive strategies used to solve problems, the type of professional exercise and the development of resistance or protection dimensions that are linked to individual variables, such as personality type and attributes or features of it (Aldas, 2017; Vargas, Niño, & Acosta, 2017).

There are individual traits such as resilience, self-efficacy, resistance to frustration, locus of control, expectations, etc., that exert a great influence on the evaluation that people make of stressful situations based on the cognitive traits of the personality that, in turn, they condition the type of coping to respond to this stressful situation (Morales, 2017; Noreña, 2018).

Among the resources that prevent the development of burnout, resilience stands out, understood as a strength that human beings develop in the face of adversity, can resist stressful events, get rid of it, and even get stronger from experience (Bonanno, 2004). In the educational field, resilience refers to the potential that each person has (teachers/students ...). The authors who explore resilience point out that some of the characteristics of resilient people are related to cognitive flexibility, creative ability, the ability to solve interpersonal problems, the good level of self-concept and the bonds of attachment that have been forged in the childhood (Saavedra & Villalta, 2008; Ornelas, 2016).

Numerous studies corroborate that resilience reduces vulnerability to burnout (Stratta et al., 2013; Efilti, 2019), being the ability to cope with stressors one of the keys to resilience. So, the use of constructive coping strategies focused on the problem (such as the search for instrumental social support, positive reinterpretation and acceptance) prevents the development of the syndrome (Medrano, 2017). While the use of passive coping strategies focused on emotion (relief, denial and search for emotional social support) facilitates its appearance (Félix, García, & Mercado, 2018). Burnout appears when coping strategies are more focused on emotion and avoidance. Thus, resilient people maintain control over their work while remaining stable even in the presence of con-

[a,*]Corresponding Author: M. Inmaculada Vicente de Vera García, Universidad Pública de Navarra, Departamento de Ciencias Humanas y de la Educación, Edificio los Magnolios, Campus Arrosadía (UPNA), 31006 (Pamplona), Spain. E-mail: ivicentedevera@yahoo.es
[b] M. Inés Gabari Gambarte, Universidad Pública de Navarra (UPNA), Departamento de Ciencias Humanas y de la Educación, Spain. E-mail: igabari@unavarra.es

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

flicts, staying involved in the task, seeing obstacles as a challenge to overcome through greater effort, without developing burnout (Cruz & Puentes, 2017; Serrano, 2018; Vicente de Vera & Gabari, 2019).

Additionally, some research suggests that positive emotions undo the physiological effects caused by negative emotions. They underline the weight that positive emotions such as optimism, assertiveness and self-esteem, among other aspects, have in the construction of the resilient process (McKergow, 2009; Knowlden, Hackman, & Sharma, 2016; Díaz & Barra, 2017). It has been found that an optimistic attitude towards challenging situations is related to confidence and persistence in behavior, even if things get difficult (Oriol, Mendoza, Covarrubias, & Molina, 2017). On the contrary, a pessimistic attitude makes people manifest doubtful and hesitant (Pulido & Herrera, 2018). Therefore, giving a positive meaning to life events and having a coping style focused on the problem, helps generate positive emotions when adverse situations are experienced (Dawson & Pooley, 2013; Martínez & Ruch, 2017; Alarcón, 2018).

Within the positive personality, another variable that bears some similarity with the concept of resilience, is the strength of character or also called resistant personality. People with this type of personality suffer less work stress and tend to wear less professionally (González, Pelegrín, & Carballo, 2017). All this leads to that, if a stressful event occurs, the individual has more strategies to cushion it and not see it only in the negative sense, but as a challenge (Vargas et al., 2017; Carrara, 2018).

Also, recent studies assert that resilience improves or maintains, among other factors, professional effectiveness (Tejedor & Mangas, 2016). On the one hand, because self-effective people do not usually perceive environmental demands as stressful and, on the other, because they try harder (Vélez, López, & González, 2017). In fact, numerous works argue that burnout occurs as a result of successive crises of effectiveness (Vallejo, 2017; Dios, Calmaestra, & Rodríguez, 2018). These beliefs have shown their predictive potential in the development of the syndrome. The aforementioned authors explain that an involved subject, with high levels of control and prepared to face challenges, that uses the appropriate coping strategies, performs his work more effectively without giving up the demanding tasks. Therefore, the lack of self-confidence in doing the job well increases the probability of suffering burnout (Lozano & Reyes, 2017; Peña, Raso, & Ferrero, 2018). These beliefs have shown their predictive potential in the development of the syndrome.

Another of the personal variables that the scientific literature associates with the development of the syndrome is the control locus (Esteras, Sandín, & Chorot, 2016). People with internal locus of control have the belief that vital events and their consequences are controlled by their own decisions and actions. On the other hand, subjects with an external control locus are convinced that these events are controlled by external forces, other people, luck or destiny (Vargas, Briñez, Segura, & Nieto, 2016). These beliefs are relatively stable and have important implications for performance and well-being at work. That is, people with internal locus of control, when they perceive that they have dominion over situations, have more favorable expectations of coping and face the problems by carrying out actions that counteract the effects of adverse conditions (Torres & Bonilla, 2017). His experience, therefore, is less threatening to stressors than that of people with locus of external control, more prone to homelessness, vulnerability and job dissatisfaction (Islas, Gutiérrez, Castellanos, & Méndez, 2017).

Given the shortage of studies in our study environment at the primary levels of education, in contrast to the numerous literature on this subject in other contexts such as Latin America or Portugal, the work that we present below has as main objective to establish relationships between the dimensions of burnout and the resilience perceived in a sample of Primary Education teachers. As a secondary objective, we consider checking the levels of perceived effectiveness in said group and its influence against burnout. So, given the individual differences in the implementation of coping strategies under threatening or stressful conditions, it is plausible to think that resilience, as well as perceived self-efficacy, could be considered as outstanding modulators of teacher welfare.

Method

Design

A transversal design is chosen, within a descriptive and correlational model. The independent variable is belonging to a primary school teaching group. Dependent variables, perceived burnout and resilience levels, understood as:

Independent Variable:

Teachers of public Primary School: professionals who provide training between 6 and 12 years, in centers whose main entity is the administration, so that access is by opposition and their status is that of civil servant or aspiring to be.

Dependent Variables

1. Burnout: syndrome of physical and emotional exhaustion, which implies the development of negative attitudes towards work, poor self-concept and loss of interest in the activities carried out. Three subvariables:

    a. Exhaustion or emotional fatigue: component of individual stress, presence of feelings of weakness and exhaustion in the face of work demands, loss of vital energy and increasing disproportion between the work performed and the fatigue experienced.

    b. Cynicism or depersonalization: interpersonal context component, negative, insensitive or excessively apathetic response to various aspects of work, minimization of quality and level of performance.

    c. Efficacy or personal fulfillment: self-assessment component, is presented in a reduced way, diminished sense of self-efficacy and achievements at work, aggravated by lack of resources and lack of social support and opportunities to develop professionally. the workers come to have a negative consideration of themselves and others.

2. Resilience or positive adaptation to circumstances of significant adversity: an essential component for good work performance and a basic element for the protection of workers' welfare. Five subvariables or dimensions: personal competence, self-demand and tenacity; confidence in one's intuition and tolerance of adversity; positive acceptance of change and secure relationships; control; spiritual influences.

Participants

The initial contact for the field study is carried out through an interview with the Management Teams of the selected Primary Education Centers, belonging to the public education network during the 2017/18 academic year, who value the interest of the proposal and they contribute to the dissemination of the Questionnaire among the Cloisters, agreeing:

1. Sampling criteria: voluntary and anonymous participation of teachers, without identification of the educational center.

2. Online mode of data collection with a single shipment.

3. Active link for one month from the individual reception of the email, as latency time to issue the response.

The invited sample was composed of the population of teachers (*N*= 1268) of Primary School Education. The 14 surveys were excluded because they contain errors. The accepting sample consisted of 334 teachers (26.34%), with the distribution set out below.

Table 1. *Sociodemographic distribution of the accepting sample*

Variables	Man	Woman	Total	Percentage
Between 22 and 35 years	12	30	42	12.57
Between 36 and 45 years	44	64	108	32.34
Between 46 and 55 years	62	68	130	38.92
Between 56 and 65 years	28	26	54	16.17
Less than three years from	8	4	12	3.59
Three to five years from	12	10	22	6.59
Five to fifteen years between	26	70	96	28.74
Fifteen and twenty years	28	26	54	16,17
More thant wenty years	78	72	150	44.91
Official	104	132	236	70.66
Hired	16	20	36	10.78
Interim	24	32	56	16.77
Substitute	2	4	6	1.79
Married or living as a couple	108	138	246	73.65
Single	22	20	42	12.57
Others	4	10	14	4.20
(Empty)	12	20	32	9.58
No son	44	68	112	33.53
A son	30	44	74	22.15
Two children	56	64	120	35.93
Three children	14	10	24	7.19
More than three children	2	2	4	1.20

The distribution of the accepting sample was: 188 women (56.29%) and 146 men (43.71%). The highest percentage accumulated was between 46 and 55 years (38.92%). Teaching exercise experience of more than twenty years (44.91%). A high percentage (70.66%) were civil servants. Also, 73.65% of teachers were married or living as a couple. As for the offspring, he highlighted the participation of teachers with children. 66.47% of the teaching staff had a child.

Instruments

Prior agreement with the Directors of the schools, the information collection instrument used was a single online questionnaire of 46 items with a Likert response with five levels of response, with Cronbach's α reliability of .815, which allowed us to state that The collected data responded to the intended valuations, combining:

1. The MBI-GS General Services Burnout Inventory (Shaufeli et al., 1996) in the Spanish adaptation of Salanova, Schaufeli, Llorens, Peiró and Grau (2000). The 15 items of the questionnaire were distributed on three scales: Exhaustion, Cynicism and Efficiency. High scores in Exhaustion and Cynicism and low Efficiency scores mean "more burned by work. "In the original version of the MBI-GS, its authors find Cronbach's alpha coefficients ranging from .84 to .90 for Exhaustion, from .74 to .84 for Cynicism, and from, .70 to .78 for Professional Efficacy. In its adaptation to Spanish, the reliability values of the scales according to Cronbach's alpha are .83 for exhaustion .73 for cynicism and .81 for professional effectiveness.

2. The Connor-Davidson Resilience Scale Inventory (CD-RISC) prepared by Connor and Davidson (2003) based on previous work by Kobasa (1979), Rutter (1985) and Lyons (1991). The CD-RISC consists of a total of 25 items distributed in five dimensions that we have named:

- CAT: Personal competence, Self-demand and Tenacity (8 items),
- CTF: Confidence in your own intuition, Tolerance to negative effects and Strength against stress (7 items),
- ARS: Positive acceptance of change and Secure Relationships (5 items),
- CON: Control (3 items),
- IES: Spiritual Influences (2 items).

The scale is classified according to how the subject has felt during the last month. The total score ranges from 0 to 100 and the highest scores reflect greater resilience. The original version has good properties, with a Cronbach's alpha of .89 (general population) and a test-retest reliability of .87.

Likewise, 4 questions collected information on sociodemographic variables: sex, age range, marital status and number of children, and 2 other questions, on socio-labor variables of the teacher's job: seniority, stability (hired/am official/a, interim or substitute). It was decided not to request the identification of the workplace to avoid a decrease in the level of response, traditionally low on these issues.

Process

The management teams of the educational centers were contacted by telephone requesting their collaboration to disseminate the questionnaire among teachers via email. A unique questionnaire was designed, and all invited teachers were sent along with the cover letter ensuring anonymity, as well as explaining the objective that was intended to be obtained from data collection. A response receipt period of one month was established. A previous analysis was performed to rule out incomplete or erroneous questionnaires. Teachers participated voluntarily. All terms of the ethical guidelines of the Declaration of Helsinki (AMM, 2000) were respected at all times.

Analysis of Data

Descriptive statistics were made to obtain the sociodemographic data of the sample and the different variables studied. Then Spearman correlations (values of $p > .20$) were made between the three dimensions of burnout (exhaustion, cynicism and efficacy) and the five dimensions of resilience (personal competence, self-demand and tenacity; confidence in one's own intuition and tolerance to adversity; positive acceptance of change and secure relationships; control; spiritual influences), which were processed and analyzed using v22.0 of the IBM SPSS statistical package.

Significance was set at $p < .01$ and a 99% confidence level was taken into account for all operations.

Results

The highest score of the components of the burnout scale was obtained in Personal/Professional Efficacy with a mean of 5.56 (*sd*= .83), followed by Cynicism with a mean of 3.41 (*sd*= .94) and for Emotional Exhaustion with a mean of 3.11 (*sd*= 1.25).

Overall, low burnout rates (percentile < 25) were found in the group of participating subjects. Four subjects who indicated burnout were identified (2.40% of the sample), diagnosed with high exhaustion and cynicism and low efficacy. There were also 14 cases (7.18% of the sample) in which high depletion and cynicism were found with normal efficacy that led us to suspect that there could be more cases (see Table 2).

Table 2. *Evaluation of burnout in Primary School teachers (Spain) 2017/18 academic year*

Burnout cases	*n*	Percentage	Burnout index
Burnout syndrome	4	2.40	high
No burnout effectively <4	12	7.18	under
No burnout with exhaustion> 5	32	19.16	midle
No burnout with cynicism> 5	18	10.78	midle
No burnout with exhaustion> 5 and cynicism> 5	14	8.38	midle

Regarding the highest means of the components of the resilience scale, they were obtained in the CTF Dimension: Confidence in one's intuition, tolerance for negative effects and strength against stress, with an average of 3.84 (*sd*= .33); then the IES Dimension: Spiritual influences, with an average of 2.91 (*sd*= .65); The CAT Dimension followed: Personal competence, Self-demand and Tenacity, with an average of 2.8 (*sd*= 1.35); Subsequently, the ARS Dimension: Positive acceptance of change and safe relations, with an average of 2.45 (*sd*= 1.35) and, finally, the CON: Control Dimension, with an average of 2.37 (*sd*= .66).

The score of the CD-RISC items was classified as low resilience (first quartile), moderate resilience (second and third quartile) and high resilience (fourth quartile). Given that certain mental problems such as depression and a high perception of stress are associated with less resilience (Connor & Davidson, 2003) and high levels of resilience are associated with better mental health conditions (Baek, Lee, Joo, Lee, & Choi, 2010). A total of 44 participants (26.34%) were positioned in the second and third quartiles. So, the participating teachers were in the medium category of resilience index. Table 3 shows the results of the sample in relation to the various Resilience Dimensions.

Table 3. *Resilience assessment in Primary Education teachers (Spain) 2017/18 academic year*

Resilience factors	Results in each factor
Factor I: personal competence, self-demand and tenacity	182 (54.49%)
Factor II: confidence in one's own intuition, tolerance to negative effects and strength against stress	176 (52.69%)
Factor III: positive acceptance of change and safe relationships	180 (53.89%)
Factor IV: control	168 (50.30%)
Factor V: spiritual influences	176 (52.69%)

The correlation between burnout and resilience levels collected in this study is shown in Table 4.

The data reported in this study reflected the belonging of the sample to an experienced group, highlighting the low participation of the novel teaching staff and with an eventual contract against the official teaching staff that was more collaborative. Likewise, he highlighted the majority participation by women, as well as married teachers and children. Some authors, such as Albar et al. (2004) argue that having children works as a dimension of protection against the syndrome. These authors affirm that this is related to the emotional support received from the family.

The response rate found is an attitude that reflects fear or lack of interest to evidence issues related to burnout in this group and, in turn, may be the reason why it is evidenced by the number of confirmed burnout cases. Authors such as Longas et al. (2012) obtained similar results to those found in this study in an investigation with teachers in Catalonia.

Regarding the levels of resilience, it seems that it tended to develop more in women than in men, an aspect that may be at the base of their coping with adversities in the workplace, inherent in teaching work in the primary stage. In this context, Stratta et al. (2013) compared levels of resilience, finding significant differences in the sources of resilience between men and women, being higher in women, as was the case in this study. Serrano (2018) in an investigation with triathletes, reported that women turn out to be more resistant than men, although the author explains that these differences are not statistically significant.

Likewise, it was the married or living couple professors who scored the highest in resilience compared to the single. Although authors like Justo (2010), confirm that the fact that family problems occur that are distorting the normal functioning of the dynamics of the home, predisposes the person to suffer burnout.

With respect to the dimensions of burnout, the Emotional Exhaustion dimension directly and positively correlated with

Table 4. *Correlation between Burnout Dimensions with Resilience dimensions.*

Dimensions	Exhaustion	Cynism	Effectiveness	CAT	CTF	ARS	CON	IES
Exhaustion	1	.58**	-.24**	.37**	.20**	.33**	.61**	.58**
Cynism	.58**	1	-.21**	.30**	.06	.29**	.47**	.48**
Effectiveness	-.24**	- .21**	1	-.18*	.31**	-.34**	-.41**	-.31**
CAT	.37**	.30**	-.18*	1	.32**	.56**	.43**	.50**
CTF	-.20**	- .06	.31**	.32**	1	.19*	.08	.26**
ARS	-.33**	- .29**	.34**	.56**	.19*	1	-.41**	.54**
CON	.61**	.47**	-.41**	.43**	-.41**	.08	1	-.59**
IES	-.58**	- .48**	.31**	.50**	.26**	.54**	-.59**	1

***The correlation is significant at level .01 (bilateral). *The correlation is significant at level .05 (bilateral).*

Cynicism (*r*= .58, *p*< .01) and with some statements pertaining to the Dimensions of the Resilience scale that contained negative aspects of work (*r*= .37, *p*< .01; *r*= .20, *p*< .01; *r*= .33, *p*< .01; *r*= .61, *p*< .01 and *r*= .58, *p*< .01). In contrast, the correlation was negative with the Effectiveness dimension (*r*= -. 24, *p*< .01). In this order of things, the loss of emotional resources caused by the physical, mental, emotional and relational demands of the teaching work (the excessive number of students in the classrooms, the excess of tasks to be performed, the temporary pressures and the overload At work, the lack of support teachers, the inadequacy of schedules, the excessive bureaucracy and the paperwork that derives from it, etc.,) in interaction with individual resources, can negatively impact their health and decrease the teacher feelings of self-efficacy The results obtained in this dimension, confirm the studies of authors such as López and Extremera (2017), Rodríguez et al. (2017) and Galbán (2018) who state that when there are high demands and poor resources at work, this makes it difficult to achieve objectives, feelings of self-efficacy diminish in the teacher and, over time, give rise to the syndrome of burning by work or burnout; that is, emotional exhaustion, cynicism and personal/professional inefficiency.

The Cynicism dimension obtained a direct and positive correlation with the emotional exhaustion dimension (*r*= .58, *p*< .01) and with statements belonging to the dimensions of the resilience scale that contained negative aspects of the work (*r*= .30, *p*< .01; *r*= .06, *p*< .05; *r*= .29, *p*< .01; *r*= .47, *p*< .01; *r*= .48, *p*< .01). On the contrary, it correlated negatively with some judgments of the personal / professional effectiveness dimension (*r*= -.21, *p*< .01). Coinciding with these assessments, Llull et al. (2015) underline that negative interactions with students (frictions, conflicts and disputes) are related, on the one hand, positively with emotional exhaustion and depersonalization and, on the other, negatively with low personal achievement. The same opinion is expressed by Maslach (2009), Carlotto and Câmara (2017), Burgos et al. (2018) and Vicente de Vera and Gabari (2019), who report that workers with greater emotional fatigue are those who feel more cynicism and less personal fulfillment.

On the other hand, the Personal / Professional Effectiveness dimension was negatively correlated with Emotional Exhaustion (*r*= -.24, *p*< .01), with Cynicism (*r*= - .21, *p*< .01) and with some issues of Resilience that referred to some negative aspects of teaching work (*r*= -.18, *p*<.05; *r*= -.34, *p*<.01 *r*= -.41, *p*<.01; *r*= -.31, *p*<.01). Although it obtained a direct correlation with the positive aspects of the work contained in the Resilience scale (*r*=.31, *p*<.01). Thus, the positive features of the work, such as: realistic employment objectives, participation in decision-making, autonomy, organizational support, availability of resources, etc., increase the perceived effectiveness of the teacher, which allows him to control the demands and It enables you to believe in your own abilities. Tejedor and Mangas (2016) and Cruz and Puentes (2017) explain that, as self-efficacy decreases, feelings of emotional exhaustion and cynicism that cause burnout increase. Other authors, such as Peña et al. (2018) report that the subject's perception of feeling effective with the tasks he performs plays a relevant role in the development of the syndrome. They affirm that a subject involved with high levels of control and prepared to face challenges, using appropriate coping strategies, performs his or her work more effectively without surrendering to demanding tasks.

On the other hand, the Personal/Professional Effectiveness dimension was negatively correlated with Emotional Exhaustion (*r*= -.24, *p*<.01), with Cynicism (*r*= -.21, *p*<.01) and with some issues of Resilience that referred to some negative aspects of teaching work (*r*= -.18, *p*<.05; *r*= -.34, *p*<.01; *r*= -.41, *p*<.01; *r*= -.31, *p*<.01). Although it obtained a direct correlation with the positive aspects of the work contained in the Resilience scale (*r*= .31, *p*<.01). Thus, the positive features of the work, such as: realistic employment objectives, participation in decision-making, autonomy, organizational support, availability of resources, etc., increase the perceived effectiveness of the teacher, which allows him to control the demands and It enables you to believe in your own abilities. Tejedor and Mangas (2016) and Cruz and Puentes (2017) explain that, as self-efficacy decreases, feelings of emotional exhaustion and cynicism that cause burnout increase. Other authors, such as Peña et al. (2018) report that the subject's perception of feeling effective with the tasks he performs plays a relevant role in the development of the syndrome. They affirm that a subject involved with high levels of control and prepared to face challenges, using appropriate coping strategies, performs his or her work more effectively without surrendering to demanding tasks.

In sum, efficacy beliefs decrease the likelihood of a teacher experiencing stress under certain conditions (Lozano & Reyes, 2017; Vélez et al., 2017). On the contrary, people who judge themselves as ineffective value their own deficiencies more, as well as potential difficulties, so they are more likely to experience stress (Vallejo, 2017; Dios et al., 2018). So, the lack of self-confidence in performing the tasks well increases the probability of suffering burnout.

Regarding the scores reported in the Dimensions of the resilience scale, the results showed that the CAT dimension (personal confidence, self-demand and tenacity) correlated positively with emotional exhaustion (*r*= .37, *p*<.01), Cynicism (*r*= .30, *p*<.01) and with the negative aspects contained in the CTF dimension, (*r*= .32, *p*<.01), ARS dimension, (*r*= .56, *p*<.01), CON dimension, (*r*= .43, *p*<.01) and IES dimension (*r*= .50, *p*<.01) of the Resilience scale. Instead, it correlated negatively with Efficacy (*r*= -.18, *p*<.05). In line with these results, Aldás (2017) also found significant correlations in a positive sense between emotional fatigue and negative avoidance and auto-focalization strategies. On the other hand, Felix et al. (2018) point out that inappropriate strategies, of the escapist type, increase the probability of suffering burnout, as indicated by the correlations of Dimension I that we have just explained. So, when the individual uses coping strategies that are not right to deal with a certain situation, the possibility of suffering burnout increases.

The CTF dimension, confidence in one's intuition, tolerance for negative effects and strength against stress, presented a significant association with the Effectiveness dimension (*r*= .31, *p*<.01), with the ARS dimension (*r*= .19, *p*<.05), dimension CON (*r*= .08, *p*<.01) and dimension IES (*r*= .26, p<.01), of the Resilience scale. On the other hand, the association was negative with emotional exhaustion (*r*= -.20, *p*<.01) and Cynicism (*r*= -.06, *p*<.05). Referring to the correlations of this Dimension, Ornelas (2016), González et al. (2017) and Alarcón (2018) emphasize that some people are more resistant to stressors, which allows them to implement coping strategies to overcome the demands that generate stress and allows them to achieve an effective response to restore the balance of situation. They add that this enables them to implement coping strategies to overcome the demands and allows them to achieve an effective response to restore the balance of the situation. On the other hand, Medrano (2017), Noreña (2018) and Martos et al. (2018) confirm that the use of stress coping strategies focused on the problem, such as those found in this component, prevents the development of the syndrome.

The ARS dimension, positive acceptance of the change, obtained a significant association with Efficacy (*r*= .34, *p*<.01), with the CAT dimension (*r*= .56, *p*<.01), the CTF dimension, (*r*= .19, *p*<.05) and IES dimension (*r*= .54, *p*<.01). The association was negative with the CON dimension (*r*= -.41, *p*<.01) of the Resilience. In relation to these data, Dawson and Pooley

(2013), Knowlden et al. (2016), Martínez and Ruch (2017) and Oriol et al. (2017), among others, express that the experience of positive emotions is nothing more than the reflection of a resilient way of dealing with adverse situations. Previous studies by authors such as Gómez and Cavaco (2016), Díaz and Barra (2017) and Alarcón (2018) show that positive emotions mainly cause changes in cognitive activity and subsequently changes in the behavioral sphere. This favors the construction of personal resources (physical, psychological and social) to face difficult or problematic situations that foster an adaptive or resilient coping style (Bonnano, 2004; Saavedra & Villalta, 2008; Morales, 2017; Efilti, 2019). Additionally, Pulido and Herrera (2018) report that optimism exerts a differential influence in the assessment and coping with difficulties, in the development in the social and academic world and in the psychic and physical well-being of people and, they point out, that optimism and pessimism correlate significantly with self-efficacy and professional wear in a diverse way.

The CON dimension maintains a positive correlation with Exhaustion (r= .61, p<.01), Cynicism (r= .47, p<.01) and with the negative aspects contained in the CAT dimension (r= .43, p< .01). However, the correlation is negative with the Efficacy (r= -.41, p<.01), with the CTF dimension (r= -.41, p<.01) and with the IES dimension, (r= -.59, p<.01) of the Resilience. As has been described, this dimension is related to a personality trait called a locus of control that refers to the control that the subject is attributed to his actions. In this sense, Esteras et al. (2016) report that people with internal control locus perceive that they have dominion over situations and have more favorable coping expectations. As a consequence, they face problems by taking actions that counteract the effects of adverse conditions. His experience is less threatening to stressors than that of people with locus of external control, more prone to homelessness, vulnerability and job dissatisfaction. So, teachers with internal control locus, that is, who believe that the events that occur in their environment are a consequence of their behaviors and, therefore, controllable, evaluate teaching as less stressful (Torres & Bonilla, 2017). On the contrary, teachers who show locus of external control are more likely to suffer burnout. Regarding these statements, Vargas et al. (2016), among other authors, report that this affects greater emotional exhaustion and cynicism and less personal/professional effectiveness. That is, in the face of ambiguous, difficult or novel situations in which the subject believes he has little or no chance of controlling, there is a greater chance of the syndrome appearing (Islas et al., 2017).

Finally, the IES dimension, spiritual influences, reflects high scores in teachers with resilient personality. The correlation was positive with the Efficacy dimension (r= .31, p<.01), the CAT dimension (r= .05, p<.01), the CTF dimension, (r= .26, p<.01) and the ARS dimension (r= .54, p<.01). On the contrary, the correlation is negative with Emotional exhaustion (r=-.58, p<.01), Cynicism (r=-.48, p<.01) and the CON dimension (r= -.59, p<.01) of the Resilience scale. In relation to these assessments, González et al. (2017) and Carrara (2018), report that people with resilient personality are more effective in coping with stress and tend to wear less professionally, compared to those without this personality pattern.

Conclusions

The results found in this study allow establishing levels of relationship between burnout and resilience expressed. In the presence of situations of labor adversity, the most resilient teachers do not get burned, but achieve greater skills and competencies of work commitment, while having the ability to use their energy and personal involvement to overcome difficulties, adapt appropriately and experience positive emotions. On the other hand, less resilient teachers are predisposed to negative emotions, to overestimate risk, and to increase their effect with fatigue and indifference at work. It is concluded that resilience reduces vulnerability to burnout.

Likewise, some variables (eg, positivism, constructive coping strategies, high resistance to frustration, self-efficacy, etc.) with which the subject faces labor demands, act as protective dimensions against burnout. While risk dimensions (eg, emotional coping strategies, poor tolerance to frustration, negative family climate, poor job opportunities, etc.) are an important predictor in the development of the syndrome.

On the contrary, an effective response to contextual demands, such as that expressed by participating teachers, is directly related to self-efficacy, understood as that internal sensation that the person experiences, which leads him to feel and think that he is competent and enables him to believe in his own abilities. These self-efficacy judgments influence the goals that people set and their affective responses to the levels of achievement achieved. In short, when you have a strong sense of effectiveness, control over the tasks to be performed is enhanced and this control helps to perceive work as a challenger, full of meaning and purpose; to feel satisfaction when doing the tasks, motivation to do a good job. So, the positive levels of self-efficacy found in this study protect the group of participating teachers against burnout.

It is concluded that some personal variables, such as resilience and self-efficacy, protect the teaching staff of this study against burnout syndrome. From these lines, we emphasize that personal resources can be the object of the institutional approach of continuous training in the line of Health Prevention and Promotion in the educational field of Primary Education. Together with them, family cohesion and social support, among others, with which the person faces labor demands, act as protective dimensions against burnout.

The findings in this study regarding burnout syndrome and resilience need in the future the design of adequate research to know in more detail the implications that both constructs have in the work of these professionals. We emphasize the importance of the development of resilience in teacher performance to meet labor demands, as it acts as a buffer for stressors and reduces vulnerability to burnout. We also have an impact on the determining influence that self-efficacy has on the successful performance, motivation and persistence of these professionals.

Despite all of the above, this investigation is not without limitations. One of the limitations of the study points to the interest of deepening the results found transversally with a longitudinal follow-up. In addition, the sample used represents a very specific group, which makes it not possible to generalize the data to teachers of other levels (Secondary) or fields (private schools). The study opens possible lines of research to comparative approaches with other autonomous communities, intercultural or transnational studies, etc. However, the results presented may have practical repercussions in order to facilitate the welfare of Primary schools' teachers.

References

Alarcón, M. E. B. (2018). *Estrés y Burnout Enfermedades En La Vida Actual.* Palibrio.

Albar, M. J., Romero, M. E., González, M. D., Carbayo, E., García, A., Gutiérrez, I., & Algaba, S. (2004). Apoyo social, características sociodemográficas y burnout en enfermeras y auxiliares del hospital. *Enfermería Clínica, 14*(5), 281-285. doi: 10.1016/S1130 8621(04)73899-1

Aldás, A. C. (2017). *Estrategias de afrontamiento y síndrome de burnout en personal de salud* (Thesis, Universidad Técnica de Ambato-Facultad de Ciencias de la Salud-Carrera de Psicología Clínica). Recuperado de:http://repo.uta.edu.ec/bitstream/123456789/26500/2/Ana%20Carolina%20Ald%C3%A1s%20Villac%C3%ADs%20pdf.pdf

Baek, H. S., Lee, K. U., Joo, E. J., Lee, M. Y., & Choi, K. S. (2010). Reliability and validity of the Korean version of the Connor-Davidson Resilience Scale. *Psychiatry investigation, 7*(2), 109-115.

Bonanno, G. A. (2004). Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive

Bresó, E., Salanova, M., Schaufeli, W. B., & Nogareda, C. (2007). NTP Nº 732. *Síndrome de estar quemado por el trabajo Burnout (III): Instrumento de medición.* Madrid: Instituto Nacional de Seguridad e Higiene en el Trabajo, Ministerio de Trabajo y Asuntos Sociales.

Burgos, A. L. V., Paris, A. P. D., Salcedo, A. G. S., & Arriagada, A. A. (2018). Psychological well-being and burnout in primary health care professionals in the region of Los Lagos, Chile. *Acta Universitaria, 28*(3), 56-64.

Carlotto, M. S., & Câmara, S. G. (2017). Psychosocial Risks Associated with Burnout Syndrome Among University Professors. *Avances en Psicología Latinoamericana, 35*(3), 447-457. doi.org/10.12804/revistas.urosario.edu.co/apl/a.4036

Carrara, J. L. (2018). Personalidad resistente y su relación con el egreso voluntario en call centers. *Revista de Psicología, 36*(1), 239-263. doi.org/10.18800/psico.201801.009

Connor, K.M., & Davidson, J.R.T. (2003). Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and Anxiety, 1*8(1), 76-82. doi.org/10.1002/da.10113

Cruz, D. M., & Puentes, A. (2017). Relationship between different dimensions of the Burnout syndrome and the coping strategies implemented by security guards at a private corporation from Tunja (Col). *Psicogente, 20*(38), 268-281.

Dawson, M., & Pooley, J. A. (2013). Resilience: The Role of Optimism, Perceived Parental Autonomy Support and Perceived Social Support in First Year University Students. *Journal of Education and Training Studies, 1*(2), 38-49. doi: 10.11114/jets.v1i2.137

Díaz, C., & Barra, E. (2017). Resiliencia y satisfacción laboral en profesores de colegios municipales y particulares subvencionados de la comuna de Machalí. *Estudios pedagógicos (Valdivia), 43*(1), 75-86. doi.org/10.4067/S0718-07052017000100005

Dios, I., Calmaestra, J., & Rodríguez, A. J. (2018). Validación de la escala de competencias docentes organizacionales y didácticas para educadores. *Revista mexicana de investigación educativa, 23*(76), 281-302. doi.org/10.11144/Javeriana.upsy15-1.aavm

Efilti, E. (2019). Investigating the Psychological Resilience of Fathers with Mentally Handicapped Children. *International Electronic Journal of Elementary Education, 11*(4), 353-360.

Esteras, J., Sandín, B., & Chorot, P. (2016). El síndrome de burnout en los docentes: Los efectos de las variables psicosociales. In *Psicología y educación: Presente y futuro* (pp. 1177-1185).

Félix, R. O., García, C., & Mercado, S. M. (2018). El estrés en el entorno laboral. Revisión genérica desde la teoría. *CULCyT,* (64), 31-42.

Galbán, K. F. (2018). Los riesgos psicosociales en el trabajo: un reto colectivo en el desarrollo laboral cubano. *Lex Social: Revista de Derechos Sociales, 8*(1), 174-205.

Gómez, M. C. A., & Cavaco, N. A. A. P. (2016). La resiliencia del docente como Dimensión crucial para superar las adversidades en una sociedad de cambios. *Tendencias pedagógicas, 28*(1), 167-180.

González, H., Pelegrín, A., & Carballo, J. (2017). Ira y personalidad resistente en deportistas de raqueta y resistencia. *Revista Iberoamericana de Ciencias de la Actividad Física y el Deporte, 6*(2), 21-29. doi.org/10.24310/riccafd.2017.v6i2.3776

González, T. M. P., Torres, L. H., & Carreres, A. L. (2017). Fortalezas y virtudes personales del profesorado y su relación con la eficacia docente. *International Journal of Developmental and Educational Psychology (Revista INFAD de Psicología), 7*(1), 141-150. doi.org/10.17060/ijodaep.2014.n1.v7.785

Islas, R. A. C., Gutiérrez, F. J. C., Castellanos, J. L., & Méndez, K. P. (2017). Síndrome de burnout en médicos docentes de un hospital de 2° nivel en México. *Educación Médica, 18*(4), 254-261. doi.org/10.1016/j.edumed.2016.09.001

Justo, C. F. (2010). Intervención sobre los niveles de burnout y resiliencia en docentes de educación secundaria a través de un programa de conciencia plena (mindfulness) *Revista Complutense de Educación, 21*(2), 271-288.

Knowlden, A. P., Hackman, C. L., & Sharma, M. (2016). Lifestyle and mental health correlates of psychological distress in college students. *Health Education Journal, 75*(3), 370-382.

Kobasa, S. C. (1979). Stressful life events, personality, and health: an inquiry into hardiness. *Journal of personality and social psychology, 37*(1), 1-11.

Llull, D. S., Cerdà, M. X. M., & Brage, L. B. (2015). Malestar social ymalestar docente: una investigación sobre el síndrome de desgaste profesional burnout y su incidencia socioeducativa. *Aula: Revista de Pedagogía de la Universidad de Salamanca, 21*(1), 245-257. doi:10.14201/aula201521245257

Longas, J., Chamarro, A., Riera, J., & Cladellas, R. (2012). La incidencia del contexto interno docente en la aparición del Síndrome del Quemado por el trabajo en profesionales de la enseñanza. *Revista de Psicología del Trabajo y de las Organizaciones, 28*(2), 107-118. doi:10.5093/tr2012a9

López, S. M., & Extremera, N. (2017). Estado de la cuestión sobre inteligencia emocional y burnout en el profesorado por países, año de publicación, ciclos educativos e instrumentos de evaluación. *Profesorado, Revista de Currículum y Formación del Profesorado, 21*(3), 371-389.

Lozano, C. R., & Reyes, M. (2017). Docentes universitarios: Una mirada desde la Autoeficacia general y engagement laboral. *Revista Digital de Investigación en Docencia Universitaria, 11*(1), 134-148. https://doi.org/10.19083/ridu.11.503

Lyons, J. A. (1991). Strategies for assessing the potential for positive adjustment following trauma. *Journal of Traumatic Stress, 4*(1), 93-111.

Martínez, M. L., & Ruch, W. (2017). Character strengths predict resilience over and above positive affect, self-efficacy, optimism, social support, self-esteem, and life satisfaction. *The Journal of Positive Psychology, 12*(2), 110-119. doi.org/10.1080/17439760.2016.1163403

Martos, Á., del Carmen Pérez-Fuentes, M., del Mar Molero, M., Gázquez, J. J., del Mar Simón, M., & Barragán, A. B. (2018). Burnout y engagement en estudiantes de Ciencias de la Salud. *European Journal of Investigation in Health, Psychology and Education, 8*(1), 23-36. doi. org/10.30552/ejihpe.v8i1.223

Maslach, C. (2009). Comprendiendo el burnout. *Ciencia & Trabajo, 11*(32), 37-43.

McKergow, M. (2009). Positivity: Groundbreaking research reveals how to embrace the hidden strengths of positive emotions, overcome negativity and thrive. *InterAction, 1*(1), 89.

Medrano, F. M. (2017). Estilos de afrontamiento del estrés que aplica el profesional de enfermería en el servicio de emergencia del Hospital Nacional Daniel Alcides Carrión mayo-2016. Recuperado de: http://repositorio. upsjb.edu.pe/handle/upsjb/1368

Morales, F. M. (2017). Relaciones entre afrontamiento del estrés cotidiano, autoconcepto, habilidades sociales e inteligencia emocional. *European Journal of Education and Psychology, 10*(1), 41-48. doi.org/10.1016/j. ejeps.2017.04.001

Mundial, A. M. Declaración de Helsinki de la AMM. Principios éticos para las investigaciones médicas en seres humanos [internet]. Edimburgo, Escocia: 52. a Asamblea General; 2000 oct.[citado 10 dic. 2016].

Noreña, H. (2018). *Estrés académico y estrategias de afrontamiento en estudiantes de primer, segundo y tercer semestre de la Facultad de Ingeniería de la Universidad de Antioquia, 2017* (Doctoral dissertation, Psicologia). Recuperado de: http://200.24.17.74:8080/jspui/bitstream/fcsh/1138/1/Nore%C3%B1aHenry_2018_Estr%C3%A9sAcad%C3%A9micoEstrategias%20.pdf

Oriol, X., Mendoza, M., Covarrubias, C. G., & Molina, V. M. (2017). Emociones positivas, apoyo a la autonomía y rendimiento de estudiantes universitarios: el papel mediador del compromiso académico y la autoeficacia. *Revista de Psicodidáctica, 22*(1), 45-53. doi. org/10.1016/S1136-1034(17)30043-6

Ornelas, P. E. (2016). Estrategias de afrontamiento y resiliencia en cuidadores primarios con duelo. *Revista Psicología y Salud, 26*(2), 177-184.

Peña, J. E., Raso, P. C., & Ferrero, B. S. (2018). *El síndrome de burnout en los docentes.* Ediciones. Pirámide.

Pulido, F., & Herrera, F. (2018). Predictors of Happiness and Emotional Intelligence in Secondary Education. *Revista Colombiana de Psicología, 27*(1), 71-84. doi. org/10.15446/rcp.v27n1.62705

Rodríguez, A. M., Sola, T., & Fernández, M. (2017). Impacto del Burnout en el desarrollo profesional del profesorado universitario. Una revisión de la investigación. *Revista Electrónica Interuniversitaria de Formación del Profesorado, 20*(3), 161-178. doi.org/10.6018/reifop.20.3.275121

Rutter, M. (1985). Resilience in the face of adversity: Protective Dimensións and resistance to psychiatric disorder. *The British Journal of Psychiatry, 147*(6), 598-611.

Saavedra, E., & Villalta, M. (2008). Escala de Resiliencia SV-RES, para jóvenes y adultos. Santiago: events? *American psychologist, 59*(1), 20-28. doi: 10.1037/0003-066X.59.1.20

Salanova, M., Schaufeli, W. B., Llorens, S., Peiró, J. M., & Grau, R. (2000). Desde el burnout al engagement: ¿una nueva perspectiva? *Revista de Psicología del Trabajo y las Organizaciones, 16*(1), 117-134.

Schaufeli W. B., Leiter M. P., Maslach, C., & Jackson S. E. (1996). The Maslach Burnout Inventory: General Survey (MBI-GS). In C. Maslach, S., Jackson & M. Leiter (eds.): *Maslach Burnout Inventory Manual, 3ª ed.* (pp. 19-26). Palo Alto, California: Consulting Psychologists Press.

Serrano, J. (2018). Resiliencia, optimismo y burnout en triatletas de un club deportivo de running, trail y triathlon. Recuperado de:http://hdl.handle.net/11201/147817

Stratta, P., Capanna, C., Patriarca, S., de Cataldo, S., Bonanni, R. L., Riccardi, I., & Rossi, A. (2013). Resilience in adolescence: gender differences two years after the earthquake of L'Aquila. *Personality and Individual Differences, 54*(3), 327-331. doi:10.1016/j.paid.2012.09.016

Tejedor, E. M., & Mangas, S. L. (2016). La autoeficacia y la autorregulación como variables moderadoras del estrés laboral en docentes de Educación Primaria. *Universitas Psychologica, 15*(1), 15-28.

Torres, D., & Bonilla, L. R. (2017). Burnout académico en estudiantes de psicología. *PsicoInnova, 1*(1), 1-15.

Vallejo, M. (2017). Una aproximación al síndrome de burnout y las características laborales de emigrantes españoles en países europeos. *Revista de Psicología del Trabajo y de las Organizaciones, 33*(2), 137-145. doi.org/10.1016/j. rpto.2017.02.001

Vargas, L. D., Niño, C. L., & Acosta, J. Y. (2017). Estrategias que modulan el síndrome de Burnout en enfermeros (as): una revisión bibliográfica. *Revista Ciencia y Cuidado, 14*(1), 111-131. doi.org/10.22463/17949831.810

Vélez, A. P., López, J. J., & González, J. B. (2017). Habilidades emocionales y profesionalización docente para la educación inclusiva en la sociedad en red. Contextos Educativos. *Revista de Educación, 20*(1), 201-215. doi. org/10.18172/con.3011

Vicente de Vera, M. I., & Gabari, M. I. (2019). Liderazgo Pedagógico en Educación Secundaria: Aportaciones desde la Evaluación de Burnout-Resiliencia en Docentes. *International Journal of Educational Leadership and Management, 7*(1), 104-134. doi.org/10.17583/ijelm.2018.3519

Vicente de Vera, M. I., & Gabari, M. I. (2019). "Potential of teacher resilience before educational changes". *International Journal of Development Research, 9*(03), 26712-26718.

iejee INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **197-204**

Challenge-Oriented Behavior Types: A New Explanation

Burcu Seher Çalıkoğlu*

Received: **1 August 2019**
Revised: **26 November 2019**
Accepted: **24 December 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.iejee.com

DOI: **10.26822/iejee.2019257667**

Abstract

The purpose of this study is to broaden theoretical meaning of challenge and attain a place for its practical use in schools. Based on the purpose, a theoretical construct was developed to explain four types of challenge-oriented behavior: (a) creators, (b) choosers, (c) maintainers and (d) avoiders. 634 fifth-, sixth- and seventh-grade students in Istanbul, Turkey, participated in the study. The Challenge-Oriented Behavior Scale and the Challenge-Performance Test were the main instruments. The Challenge-Oriented Behavior Scale scores were subjected to non-hierarchical cluster analyses, which revealed four profiles. To gain ecological validity of the current understanding, an alternative method, reverse-action strategy was developed. The aim was to explain how actual student performance is defined by self-perceived challenge-orientation type. To this respect, the Challenge-Performance Test scores and other factors were examined using path analysis. The findings suggest that demonstrated performance in pursuing challenges arise from past experience, academic achievement, self-perceived challenge-orientation type and age.

Keywords: Task, Level, Performance, Difficulty, An Alternative Strategy For Ecological Validity

Introduction

Redevelopment of the Definition of Challenge

Great scientists, innovators, explorers, artists and politicians ... Their life stories have been constructed on a similar pattern, which confirms the same sequential consistency between obstacles and victories. An English philosopher William Penn's quote of "no pain, no palm; no throne; no gall, no glory; no cross, no crown" summarizes the conventional idea that 'challenge' evokes thoughts of rigor and difficulty while implying the pleasure of growth (Zakaria & Yatiml, 2013, p. 268). Difficulty and pleasure punctuated as two fundamental dimensions in the current effort for the defining challenge (Figure 1). Although this clears the air on the surface, to reach deeper meaning there is a lot to be done.

In an academic context, Ormrod (2008) uses 'challenge' to indicate a 'level' at which students believe that they will be successful if they make a sufficient effort. How much of Ormrod's 'belief in success' is required to define a challenging situation? Unlike Ormrod, Malone (1981) approaches the concept of challenge as a 'task' that requires effort and in whose outcome success is not guaranteed. Similarly, Zakaria and Yatiml (2013) emphasize the effect of the sense of uncertainty, which enables the individual to maintain his or her focus on the task.

Berns, McClure, Pagnoni and Montague (2001) observed by using functional magnetic resonance imaging that lack of predictability activate reward-related regions of brain, such as midbrain dopaminergic neurons, denser than the certain preference of reward by the participants. Their study explains why the absence of certainty or predictability provides people may stay on the task. Therefore, in a challenge context, the optimum level for the expectation of success lies between the extremes of certain success and certain failure.

As shown in Figure 1, explanations made by Malone (1981), Ormrod (2008), Berns, McClure, Pagnoni and Montague (2001) and Zakaria and Yatiml (2013) make it salient (a) need to exert an effort and (c) probability/uncertainty of success to include already included qualities of the concept. Although effort is key term for describing challenge, it should be positioned with ability for two reasons. Firstly, an (a) effort only awakens the potential or ability in person. Secondly, if (b) ability is not required, there is nothing left to talk about challenge.

Challenge in the definitions above mostly reflects the "difficulty" side, "pleasure" as a second dimension were mostly de-punctuated. Pleasure is the central emotional state to human thinking and actions (Johnston, 1999; Kringelbach,2009). Pleasure can give us answers for why we choose difficulty or delay hedonistic/instant pleasure for higher-order pleasure. "Csikszentmihalyi and LeFevre (1989) found that many of the most pleasurable moments occur when individuals are in what Csikszentmihalyi (1997) terms a state of flow". "According to the researcher, flow tends to occur when a person faces a clear set of goals that require appropriate responses. Pushing the debate further, he tells the secret of starting a good conversation with someone is to find out what the other person's goals are. Why goals are so important? Use personal imagination, regulates the state of mind (Csikszentmihalyi, 1997), helps to grow more personal meaning in life among all various possibilities.

In the book titled as "The Seven Sources of Pleasure in Life", L'Abate (2011) clearly state that the outcome of no control is chaos. And oppositely, the outcome of control is enjoyment of life.

In an ampliative view of challenge, (d) being consciousness to put a goal and (e) being independent reflects the pleasure side.

(c) Probability or uncertainty of success is the only sub-dimension refers both to difficulty and pleasure. The idea of knowing that being-successful-in-the-end will bring happiness might be satisfying; however at the same time being sure in advance that someone will be successful might also reduce happiness. The reason of the fact that while it arous-

*Correspondance Details: Burcu Seher Çalıkoğlu, Department of Special Education, İzmir Democracy University, 35140, Karabağlar/İzmir, Turkey. E-mail: burcu.calikoglu@idu.edu.tr

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

es an excitement (pleasure), it also marks a point for a person to decide whether leaving the goal he or she set or continuing (difficulty). As a summary, challenge can be re-defined: as a situation that stimulates a person to exert a (d) conscious (a) effort by own (e) free will for the opportunity of an (b) individual progress with (c) uncertainty regarding whether the desired end will be achieved (see Figure 1).

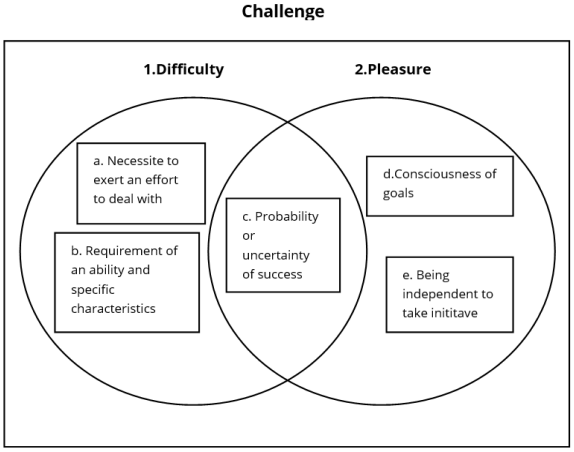


Figure 1. Deconstruction of the concept of challenge

Previous studies

In literature, challenge-oriented behavior is typically grouped into one of two categories: challenge-pursuing and challenge-avoiding behavior (Meyer, Turner, & Spencer, 1997; Rebolledo-Mendez, du Boulay, & Luckin, 2006). Challenge pursuers usually become bored with easy tasks and excited about challenging tasks. In contrast, challenge avoiders generally prefer easy tasks (Dweck, 2006; Elliot & Church, 1997).

In studies by Amabile, Hill, Hennessey, and Tighe (1994); Harter (1981); Koestner, Zuckerman, and Koestner (1987); and Lepper, Corpus, and Iyengar (2005), challenge-seeking has long been examined as a sub-dimension of intrinsic motivation. Deci and Ryan (1985) found that highly intrinsically motivated individuals prefer to work at a level above their current performance. However, regardless whether an individual is intrinsically or extrinsically motivated, challenge seekers tend to prefer challenging environments (Brophy, 1983).

Bartle (1996), classified challenge seekers into two categories: achievers and explorers. Achievers are defined as extrinsically motivated. They notice what they must do to win a game so that they can level up. In contrast, explorers are defined as intrinsically motivated because their interest in playing is aroused by curiosity. They do not hurry to finish the game.

Dweck (2006) noted the belief about the changeability of intelligence capacity as a factor that influences challenge-oriented behavior. According to Dweck, individuals with 'fixed mindsets' believe that intelligence is an innate ability. Such individuals assume that ability cannot be changed over time. Thus, they tend to avoid challenging learning environments. They perceive failure as a threat to their self-confidence. In contrast, individuals with 'mastery mindsets' believe that intelligence can be improved with a certain amount of effort. Such individuals prefer challenging environments. In his research, Dweck identified 42% of his sample as having a fixed mindset and 42% as having a mastery mindset. The mindset of the remainder of the sample (16%) could not be defined. These individuals were not included in either group.

Dweck's (2006) uncategorized 16% suggests that there might be challenge-response types other than challenge seekers and challenge avoiders. Her unidentified category also gave hope to re-formulate challenge-oriented types in this study. It is hypothesized that there are four different challenge-oriented behavior types: (a) creators, (b) choosers, (c) maintainers and (d) avoiders (Figure 2).

As shown in Figure 2, creators create their own challenges when they are not satisfied with the level of challenge in a learning environment. Choosers select challenging learning environments when challenges are offered. However, they are not as active as creators in independently pursuing challenges. Maintainers maintain their own level. They do not engage in easier or more difficult tasks. Such individuals exert the optimum effort required to sustain an acceptable regularity in their lives. They occupy a position between challenge pursuers (i.e., by avoiding failure, loss or harm) and challenge avoiders (by not pursuing achievement). Avoiders avoid challenges. They only expend effort if the task is easy to complete.

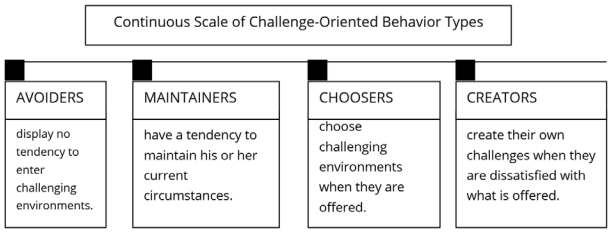


Figure 2. Challenge-oriented behavior types

In previous studies, there was no recognition of 'creators' other than Bartle's (1996) explorers. Although both 'explorer' and 'creator' center on the idea of curiosity (i.e., the desire to learn more about something or someone), they subtly differ in meaning. Explorers select from existing possibilities, as demonstrated in Bartle's (1996) research design. Bartle (1996) considers explorers to involve themselves in acquiring knowledge about the game rather than seeking to finish the game with a high number of points. However, creators create something new, such as developing a novel agent, path or piece of writing. In this context, 'challenge-creator' describes an individual who exerts an intellectual effort to create something that does not yet exist in his or her environment.

The literature strictly separates challenge-avoiding and challenge-pursuing behaviors in a manner that does not enable one to perceive the behavioral gradations that separate these two extremes. This paper assumes that challenge-oriented types of behavior are not restricted to the opposite ends of a range and suggests developmental stages in the classification process, which corresponds to a continuum.

This study aims to construct a theoretical explanation of the types of challenge-oriented behavior through observing students from two viewpoints: (a) how the students perceive themselves with respect to challenges and (b) how the students are actually behave in challenging environments. To this end, two measurement scales were developed to cross-check the data: (a) the Challenge-Oriented Behavior Scale and (b) the Challenge-Performance Test.

Research questions and hypotheses

This study's purpose was twofold: (a) to validate the challenge-oriented behavior types ('creators', 'selectors', 'maintainers' and 'avoiders') and (b) to explain actual student performance by the self-perceived challenge-oriented type. The two basic questions that this study aims to answer are as follows. (1) Is the classification of the four groups of challenge-oriented profiles valid? (2) What explains the challenge-oriented performance of students?

The significance of the study

In the literature, challenge-oriented behavior has been considered to be a subcategory of motivation (Harter, 1981; Meyer

et al., 1997). Consequently, no instrument has been developed to specifically measure the tendencies of individuals in response to challenges. This study focuses on the idea of challenge in detail using two instruments developed by the author. Examining challenge as a discrete concept enabled widening the framework by adding two behavior types to the existing categories of challenge seeker and challenge avoider.

Material and methods

Participants

In this study, the participants were 634 students in the fifth, sixth and seventh grades. The participants were selected through cluster sampling. Because this method is less disruptive than the simple random sampling, it is often used in educational research. The groups naturally formed before the research study was implemented (Borg, Gall, & Gall, 1993). In this study, the schools were chosen randomly. However, the classrooms were not.

The research was conducted in Beşiktaş and neighboring districts in Istanbul. Unfortunately, it was impossible to determine the size of the population of fifth-, sixth- and seventh-grade students in these areas. To understand the density of the population, the demographic data for the counties were reviewed. The number of schools was determined according to the population density for each county. According to 2011-12 demographic statistics, the populations of Beşiktaş, Sarıyer, Şişli and Kağıthane were 186,570, 335,598, 274,420, and 428,755, respectively (Ministry of National Education [MoNE], 2011). Figure 3 shows that the selected sample is similar to the target population. The study was conducted in three schools in Kağıthane, two schools in Sarıyer, two schools in Şişli and one school in Beşiktaş.

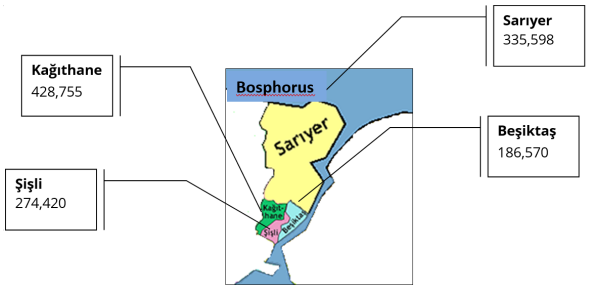


Figure 3. Population of Beşiktaş and surrounding counties in Istanbul

As shown in Table 1, the gender distribution of the sample was 315 males (49.7%) and 318 females (50.2%). One student's gender information was missing (0.2%). The ages of the participants ranged from 9 to 15 years. Of the participants, 241 were in fifth grade, 234 were in sixth grade and 159 were in seventh grade. Table 1 also shows the socio-economic profiles of the student families. Of the mothers of the participants, 25 (3.9%) were illiterate, 223 (35.2%) had graduated from primary school, 148 (23.3%) had graduated from secondary school, 111 (17.5%) had graduated from high school, 76 (12%) had graduated from university, and 32 (5%) had undergone post-graduate study. Nineteen (3%) of the participants did not provide the education level of their mothers. Of the fathers of the participants, 4 (0.6%) were illiterate, 170 (26.8%) had graduated from primary school, 193 (30.4%) had graduated from secondary school, 108 (17%) had graduated from high school, 96 (15.1%) had graduated from university and 52 (8.2%) had undergone post-graduate study. Eleven (1.7%) of the participants did not provide the education level of their fathers. Of the mothers of the participants, 255 (40.2%) were employed, 11 (1.7%) were retired and 363 (57.3%) were unemployed. Five (0.8%) of the participants did not provide the employment situation of their mothers. Of the fathers of the participants, 575 (90.7%) were employed, 29 (4.6%) were retired and 23 (3.6%) were unemployed. Seven (1.1%) of the participants did not provided the employment situation of their fathers. The number of individuals living in the student homes ranged from two to 13.

Table 1. *Demographic and socio-economic profiles of participants*

Demographics	*n*	*(%)*
Gender		
Female	318	50.2
Male	315	49.7
Not defined	1	0.2
Total	634	100
Age (years)		
9	1	0.2
10	5	0.8
11	211	33.3
12	224	35.3
13	168	26.5
14	22	3.5
15	3	0.5
Total	634	100
Grades		
5th	241	38.0
6th	234	36.9
7th	159	25.1
Total	634	100
District		
Beşiktaş	146	23.0
Kağıthane	259	40.9
Sarıyer	127	20.0
Şişli	102	16.1
Total	634	100
Mother's Education Level		
Illiterate	25	3.9
Primary school	223	35.2
Secondary school	148	23.3
High school	111	17.5
University	76	12.0
Post-graduate	32	5.0
Not defined	19	3.0
Father's Education Level		
Illiterate	4	0.6
Primary school	170	26.8
Secondary school	193	30.4
High school	108	17.0
University	96	15.1
Post-graduate	52	8.2
Not defined	11	1.7
Total	634	100
Mother's Employment Situation		
Employed	255	40.2
Unemployed	363	57.3
Retired	11	1.7

Table 1 (Cont.). *Demographic and socio-economic profiles of participants*

Demographics	*n*	*(%)*
Not defined	5	0.8
Total	634	100
Father's Employment Situation		
Employed	575	90.7
Unemployed	23	3.6
Retired	29	4.6
Not defined	7	1.1
Total	634	100
Number of family members living at home		
2	8	1.3
3	68	10.7
4	257	40.5
5	160	25.2
6	77	12.1
7	17	2.7
8	23	3.6
9	10	1.6
10	9	1.4
13	1	0.2
Not defined	4	0.6
Total	634	100

Instruments

Demographic questionnaire

The author developed the questionnaire to collect data on the age, gender, school achievements and family socio-economic status of the students.

Challenge-Oriented Behavior scale

The item pool for the questionnaire was based on studies from the literature that included the keywords 'challenge', 'achievement motivation', 'intrinsic motivation', 'extrinsic motivation', 'challenge-seeking' or 'avoiding'. The 28 x 4-item draft scale was based on a theory developed by the author (Figure 1). The scale assesses the self-perceived challenge-oriented behavior of the students.

Each item has four response options with no single correct answer (Figure 4). Although no single answer was correct, the students had to select one response for each question. The scores for each response ranged from 1 to 4 points: 1-point scores indicated 'avoiders', 2-point scores indicated 'maintainers'; 3-point scores indicated 'choosers' and 4-point scores indicated 'creators'.

Q. 3
In exams, I would like to .....
A. be asked to create our own problems to evaluate.
B. be asked questions that are not easily solved.
C. be asked questions that can be solved by most of the students.
D. be asked questions that can be solved by everybody.

Q. 5
I think that difficult content that is not taught in classes .....
A. is not that important.
B. is not worth attempting to learn.
C. is worth searching for by myself.
D. can be interesting if someone teaches me it.

Figure 4. Sample items of the Challenge-Oriented Behavior Scale

Content validity

An expert from the Turkish Language and Literature Department was asked to examine the language and expressions used in the draft scale items. Then, three experts from the Psychological Counseling and Guidance Department were consulted to determine the content validity of the items. These experts were asked two specific questions: For each item, are the choices and questions consistent with the challenge-oriented behavior, and are the items appropriate for fifth-, sixth- and seventh-grade students? The average inter-judge reliability was 0.99. The content validity ratio (CVR) was analyzed for each item, and the average CVR was 0.93.

When the scale's structure could be explained through cluster analysis, the construct validity of the Challenge-Oriented Behavior Scale was demonstrated.

The normality assumptions of the items were examined. The items exhibited skewness (which ranged from -1.076 to 0.740; p=0.00) or kurtosis (which ranged from -1.377 to 0.785; p=0.00).

The reliability of the Challenge-Type Questionnaire was tested using Cronbach's alpha. The 28-item Challenge-Type Questionnaire had a coefficient alpha of 0.83. The corrected item total correlations were examined to evaluate each item's consistency with the entire scale. Because extracting individual items did not result in any substantial changes in the scale's structure, none of the items were excluded from the draft scale form.

Challenge-Performance Test

The Challenge-Performance Test included three phases that aimed to measure student choices with respect to challenge level and their responses to the question. The Challenge-Performance Test was developed by the author to observe challenge-related behaviors of students.

For this test, the author provided each student with a sheet of paper on which seven challenge levels were written and from which the students were to choose: the easiest (level 1), very easy (level 2), easy (level 3), average (level 4), difficult (level 5), very difficult (level 6), the most difficult (level 7). The students were asked to choose only one level, on which a task was later to be performed.

Next, each student was provided a card that corresponded to the level the student had previously selected. On each card, scrambled letters appeared. The easiest level displayed three letters, for example, for the fifth grade, 'ilz'. The correct (i.e., unscrambled) answer for 'ilz' was 'zil'. 'Zil' means 'bell' in Turkish (Figure 5). With each higher level, the number of letters increased. The hardest level had nine letters, such as, for the sixth grade, 'rsreöfpo'. The correct answer for 'rsreöfpo' was 'profesör', which means professor in Turkish.

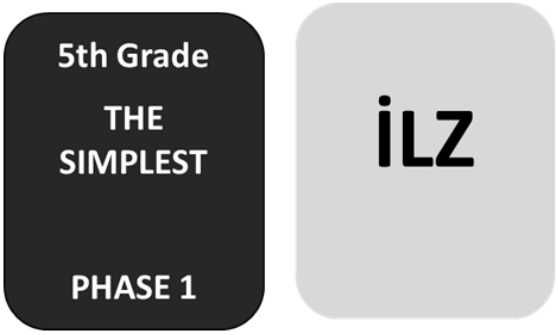


Figure 5. A Card Sample for Challenge Performance Test

The students were asked to use the letters to form only one correct word within two minutes. After two minutes, the cards were collected, and the students were asked to choose a level for a new word task. This procedure was repeated a total of three times. For each section, there were seven levels. A total of 63 words were used for all of the students.

Face Validity

Face validity is originated in the idea of Moiser's (1947) "a test should not only be valid, but it should also appear valid." (p. 192, 1947). Within the context of this study, the main question match up to the face validity of Challenge Performance Test was if the test reflects the current understanding of challenge. After Challenge Performance Test was applied, Feedback Questionnaire (Table 2) was asked feelings and opinions to be rated on 4 point rating scale (1: completely disagree, 2: disagree, 3: agree, 4: completely agree) to the volunteers among testees. The reason of why not experts of the field, but testees were asked to participate was: the questions were designed in accordance with students' own challenge level and to get authentic impressions, a person has to experience challenge in a real-setting atmosphere. According to inter-rater agreement of 126 volunteers rates, agreement among seems to be convincing to be valid in the face of volunteers.

Table 2. *Inter-rater Agreements for Feedback Questionnaire*

(1) Difficulty	*Questions of feedback questionnaire*	*Agreement*
(a) need to exert an effort	While playing did you feel that you had to put an effort?	.87
(b) requirement of ability	Do you think that the more a person talented the more score a person can get?	.96
(c) probability/ uncertainty of success	Did you feel the uncertainty while you were about to choose the level of the card?	.84
(d) consciousness of goals	Did you feel that you have to decide on a goal before you chose the card?	.91
(e) having independence to take initiative	Did you feel your independence while choosing your card?	.88

Scoring

The students received two types of scores for this activity: one for the level that they selected, the other for the result of the task. That is, if a student succeeded in the task that he or she preferred, the student received a number of points that was twice the level of preference (i.e., 2 x the level of the preference). If a student failed at the level that he or she preferred, the student received points only for the level of preference (i.e., 1 x the level of preference).

Procedure

The required permissions were obtained from the Provincial Directorate for National Education in Istanbul. The principals and teachers of the schools located in Beşiktaş, Şişli, Kağıthane and Sarıyer also granted their permission. The questionnaires were administered to the students in their own classes by the author. The students were informed regarding the aim of the research and how the scale should be answered. They were also informed that their participation was voluntary.

Data analysis

In the first step of the data analyses, SPSS 21 software was used to characterize the demographic profiles of the sample through descriptive statistics and to sort the types of challenge-related behavior using K-means cluster analysis. The K-means clustering method selects representative (K) objects to obtain a K cluster for the data set by assigning each remaining object to the nearest representative object (Kaufman & Rousseeuw, 2005, p. 40). Discriminant analysis and the split-half method have been found useful for obtaining evidence of the validation and stability of clusters. In the second stage of the study, path analyses were performed to explain the challenge-related performances of students according to other factors.

Results

Results of the first stage

To apply cluster analysis to the Challenge-Oriented Behavior Scale, the raw scores for each item were first converted into standard z-scores. K-means cluster analysis indicated that the data could be categorized into four challenge-related behavior types: (a) creators, (b) choosers, (c) maintainers, and (d) avoiders. Table 2 lists the means, standard deviations and z-mean scores for each cluster. As the hypothesis of the study posited, the creators had higher scores than the other types. The choosers had higher scores than the maintainers and avoiders but lower scores than the creators. The maintainers had higher scores than the avoiders but lower scores than the creators and the choosers. Finally, the avoiders had lower scores than the other three types.
To obtain evidence of the stability of the clusters, the sample was randomly divided into two halves, and the K-means cluster analysis was repeated for each. The correlation coefficient for the two halves was .885, which indicated that each half of the sample had a similar structure.

Using discriminant analysis, the groups determined via K-means cluster analysis were compared in terms of the following variables: total scores of the Challenge-Oriented Behavior Scale, the presence of a study room at home, mother's education level, father's education level, mother's employment situation and father's employment situation. These factors were not included either in the K-means cluster analysis or path analysis process. The following assumptions of discriminant analysis were tested in turn. (a) Homogeneity of variance: Box's M Test was statistically non-significant (p= .088), which indicated that the variances among the group variables were the same across levels of predictors. (b) Multicollinearity: The variables used in the discriminant analysis were less than 0.70, which indicated multicollinearity. (c) Normality: The Kolmogorov-Smirnov test was used to analyze the variables 'the presence of a study room at home', 'mother's education level', 'father's education level' 'mother's employment situation' and father's employment situation'. The p values were less than .00, which indicated that the number of cases at each level was not equal. The ratio of the statistical value of skewness to the standard error of the Challenge-Oriented Behavior Scale scores was between -2 and +2. The variables used in the discriminant analysis were normally distributed. The assumptions of homogeneity of variance, multicollinearity and normality were found to be acceptable.

A canonical correlation of .916 accounted for 83% of the variance. An eigenvalue of 5.235 indicated that the clusters were well discriminated. A Wilks's lambda of .153 was found to be significant at the .000001 level. Figure 6 shows that the clusters presented in the study's hypothesis were validated.

Results of the second stage

In the study's second part, a systematic analytical approach was used to test the relationships between student challenge acceptance and the variables included in the model (Figure 7). Four central considerations explained challenge-based performance: (a) past experience, (b) academic

achievement, (c) self-perceived challenge-oriented behavior type and (d) age.

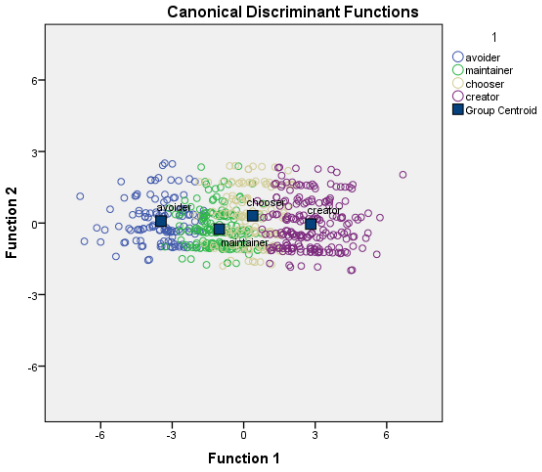


Figure 6. Four clusters explained by the variables 'total scores on the Challenge-Oriented Behavior Scale', 'the presence of a study room at home', 'mother's education level', 'father's education level', 'mother's employment situation' and 'father's employment situation' based on discriminant analysis

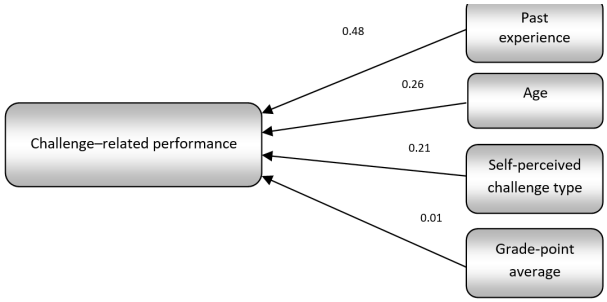


Figure 7. Path model that explains challenge-related performance by past experience, academic achievement, self-perceived challenge-oriented behavior type and age

The results indicate that past experience had the greatest effect on the challenge performances of the students (b_{PE}= 7.22; z= 14.86; SE= .48; p< .001). The second largest influence on the student challenge performance was age (b_{age}= 1.281; z= 4.84; SE= .264; p< .001). The third largest influence on the student challenge performance was perceived challenge-oriented behavior type (b_{PCT}= 1.170; z= 5.06; SE= 0.231; p< .001). Student grades had the smallest effect on the challenge performance (b_{grade}= .165; z= 10.779; SE= .015; p< .001).

Discussion

From the results of the first part of the study, four challenge-oriented profiles emerged: creators, choosers, maintainers and avoiders. As indicated in the introduction, creators not only choose challenging environments but create their own challenges when the level of challenge of tasks is insufficient. Choosers select challenges when they are offered by an authority. Maintainers do not exert more or less effort. Instead, they maintain their pre-established level of challenge. Avoiders do not expend any substantial effort to achieve.

In accord with this study's theoretical basis, the graphical representation of the results obtained by discriminant analyses (Figure 4) reveals that the four clusters represent four different patterns according to the variables 'the presence of a study room at home', 'mother's education level', 'father's education level', 'mother's employment situation' and 'father's employment situation'. Numerous studies demonstrate that socio-economic status and parental education levels prepare the way for children's achievements (Dahl & Lochner, 2005; Davis-Kean, 2005; Hardas, 2011; Mayer, 2002). As in the flow theory of Csikszentmihalyi (1997) improvement requires challenge. Thus, students with educationally unqualified parents and a disadvantaged economic status lack the support to pursue challenges for their own development.

This study's second part examined the challenge-oriented performances of the students. The results indicate that (a) past experience, (b) academic achievement, (c) self-perceived challenge-oriented behavior type, and (d) age explained these performances. Additionally, path analysis supported the existence of the four challenge-oriented behavior types postulated by the author. The self-perceived challenge-oriented behavior type was one variable that explained the actual challenge-oriented performance of the students. Although the tasks used in Challenge-Oriented Behavior Scale and Challenge-Performance Test differed in terms of particularity and generality, the findings demonstrated that self-perceived behavior in a general sense (Challenge-Oriented Behavior Scale) has an effect on a specific activity (Challenge-Performance Test).

The other factors that explain the challenge-oriented performances of the participants are discussed below:

Past experience: As mentioned in the method section, the Challenge-Performance Test included three stages. At each stage, the students had to select a level, and their prior experience directly affected the next two choices of the students. Typically, the students who experienced success in their first attempt continued to select challenging levels (Figure 5). The study's findings support the knowledge that past experience plays the most important role in shaping an individual's challenge-related behavior. Studies that compared previous achievement experiences with future success have found that past experience is a sound factor that determines the subsequent performances of students (Eskew & Faley, 1988).

Academic achievement: Grades also played a role in shaping challenge-oriented behavior in an academic context (Figure 6). Students who lacked favorable school-related experiences were more likely to avoid challenges. Although the Challenge-Performance Test is a game-like activity, the students who participated in the study might have perceived that the task concerned school learning because the test was administered at school.

Age: In the Challenge-Performance Test, the students earned points based on the challenge level that they chose and the answers they provided. Thus, the students who chose level 7 challenges (i.e., the most difficult) and could not answer the question earned fewer points (only 7 points) than the students who chose a level 4 challenge (i.e., neither difficult or easy) and could answer the question (8 points). To earn additional points, the students first had to correctly assess what they were capable of. Older students might know themselves better than younger ones and have a better ability to determine their next activity. In line with the results of the present study, metacognition-related studies demonstrate that metacognitive skills improve with age (Flavell, Flavell, & Green, 2001; Flavell, Green, & Flavell, 2009; Metcalfe & Shimamura, 1996).

Conclusions

In sum, the results of this study demonstrate that challenge-oriented behaviors can be re-defined and more accurately specified. Path analysis provides explanations of challenge-related performance. In addition, it provides conceptual support for the new categorization of challenge-oriented behavior types. In contrast to the previous view which had been offered two distinct non-continuous category (challenge-avoider and challenge-seeker; the current study suggests that there are four

different challenge-oriented behavior types that are on a continuum scale: (a) creators, (b) choosers, (c) maintainers and (d) avoiders.

These results have significant implications for students in every field of education. The Challenge-Oriented Behavior Scale can be used as a starting point to define the challenge-oriented profiles of students, and such information could be useful when developing interventions to change student choices for the better.

Although the present study demonstrated that chronological age is a significant factor in challenge-oriented behavior among children aged 10, 11 and 12 years, it remains unknown when a certain type of behavior stabilizes. This information might be important for educators, who may wish to change the self-perceived challenge-related profiles of students before they become permanent. This possibility calls attention to the need for future research on developmental aspects of challenge-oriented behaviors. As chronological age increases, does a challenge orientation change from a general characteristic to a discipline-specific one? Special interests might arise as a result of aging, and if a more challenge-oriented behavior type could be acquired before these interests develop, students could apply their habits to a specific subject of interest. In accord with this idea, the question of what types of environment positively influence the challenge-related profiles of students substantially increases in importance. Future research should examine the factors that could encourage the development of challenge-oriented behavior.

This research study was performed based on a new theoretical understanding but without investigation the major concept of motivation. The four introduced conceptual categories are projections of motivation. This theoretical understanding could be extended by relating the four categories to intrinsic and extrinsic motivation types.

The fundamental instrument used in the present study (the Challenge-Oriented Behavior Scale) specifically focuses on academic learning. Consequently, the challenge-orientation profiles of the students might not be generalizable to other areas of their lives. The scale was developed for use with fifth, sixth and seventh graders. More research is necessary before the results can be generalized to children in higher and lower grades.

References

Amabile, T. M., Hill, K. G., Hennessey, B. A. & Tighe, E. M. (1994). The work preference inventory: Assessing intrinsic and extrinsic motivational orientations. *Journal of Personality and Social Psychology, 66*, 950-967.

Bartle, R. (1996). Hearts, clubs, diamonds, spades: Players who suit MUDs. *Journal of MUD Research, 1*(1), 19.

Borg, W. R., Gall, J. P., & Gall, M. D. (1993). *Applying educational research: A practical guide.* (3rd ed.). New York, NY: Longman Publishing Group.

Brophy, J. (1983). Conceptualizing student motivation. *Educational Psychologist, 18*, 200-215.

Csikszentmihalyi, M. (1997). *Finding flow: The psychology of engagement with everyday life.* Park Avenue South, NY: Basic Books.

Csikszentmihalyi, M., & LeFevre, J. (1989). Optimal experience in work and leisure. *Journal of personality and social psychology, 56*(5), 815.

Dahl, G. B., & Lochner, L. (2005). *The impact of family income on child achievement.* Working paper 11279. Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org/papers/w11279

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology, 19*, 294-304.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behaviour.* New York, NY: Plenum Press.

Dweck, C. (2006). *Mindset: The new psychology of success.* New York, NY: Random House.

Elliot, E. S., & Church, M. A. (1997). A hierarchal model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology, 72*, 218-232.

Eskew, R. K., & Faley, R. H. (1988). Some determinants of student performance in the first college-level financial accounting course. *The Accounting Review, 63*, 133-147.

Flavell, J. H., Flavell, E. R., & Green, F. L. (2001). Development of children's understanding of connections between thinking and feeling. *Psychological Science, 12*, 430-432.

Flavell, J. H., Green, F. L., & Flavell, E. R. (2009). Development of children's awareness of their own thoughts. *Journal of Cognition and Development, 1*, 97-112.

Hardas, D. (2011). Families' social backgrounds matter: socio-economic factors, home learning and young children's language, literacy and social outcomes. *British Educational Research Journal, 37*, 893-914.

Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components. *Developmental Psychology, 17*, 300-312.

Johnston, V. S. (1999). *Why we feel: The science of human emotions.* Perseus Publishing.

Kaufman, L., & Rousseeuw, P. J. (2005). *Finding groups in data: An introduction to cluster analysis.* Hoboken, NJ: John Wiley & Sons.

Koestner, R. Zuckerman, M., & Koestner, J. (1987). Praise, involvement, and intrinsic motivation. *Journal of Personality and Social Psychology, 53*, 383-390.

Kringelbach, M. L. (2009). *The pleasure center: trust your animal instincts.* Oxford University Press.

L'Abate, L. (2011). *The seven sources of pleasure in life: Making way for the upside in the midst of modern demands.* ABC-CLIO.

Lepper, M. R., Corpus, J. H., & Iyengar, S. S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: Age differences and academic correlates. *Journal of Educational Psychology, 97*, 184-196.

Malone, T. W. (1981). Toward a theory of intrinsically motivating instruction. *Cognitive Science, 5*, 333-369.

Mayer, S. E. (2002). The influence of parental income on

children's outcomes. Wellington, New Zealand: Knowledge Management Group, Ministry of Social Development. Retrieved from http://mpsym.co.uk/images/influence-of-parental-income%20on%20chi.pdf

Metcalfe, J., & Shimamura, A. P. (1996). *Metacognition; Knowing about knowing.* Cambridge, MA: MIT Press.

Ministry of National Education (MoNE) (2011). 2011-2012 Eğitim-Öğretim Yılına Ait İstatistikleri [National Education Statistics, Formal Education 2011/2012]. Retrieved from http://istanbul.meb.gov.tr/www/istanbul-il-milli-egitim-mudurlugu-egitim-istatistikleri/icerik/329

Meyer, D. K., Turner, J. C., & Spences, C. A. (1997). Challenge in a mathematics classroom: Students' motivation and strategies in project-based learning. *Elementary School Journal, 97*, 501-521.

Merriam-Webster Online. Dictionary and thesaurus. Retrieved from http://www.merriam-webster.com/

Mosier, C. I. (1947). A critical examination of the concepts of face validity. *Educational and Psychological Measurement, 7*(2), 191-205.

Ormrod, J. (2008). *Educational Psychology: Developing Learners* (6th ed.). Pearson: Columbus, Ohio

Rebolledo-Mendez, G., Du Boulay, B., & Luckin, R. (2006, January). Motivating the learner: an empirical evaluation. In *Intelligent Tutoring Systems* (pp. 545-554). Springer Berlin Heidelberg

Zakaria, N. Z., & Yatiml, M. H. M. (2013). Measuring effectiveness of challenge characteristic in mobile education game: A review of literature. Paper presented at the World Conference on Integration of Knowledge, Langkawi, Malaysia.

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **205-212**

The Hierarchical Effects of Individual and Organizational Variables on Elementary School Teachers' Lifelong Learning Competence

Young-Sun Shin[a], JuSung Jun[b,*]

Received: **8 August 2019**
Revised: **28 October 2019**
Accepted: **16 December 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.iejee.com

DOI: **10.26822/iejee.2019257668**

Abstract

The purpose of this study was to analyze the hierarchical effects of individual and organizational variables on elementary school teachers' lifelong learning competence. The participants in this study comprised 1,077 teachers in service in 70 public elementary schools in Seoul, Korea. In this study, 70 schools were sampled using multi-stage stratified sampling, and 10 to 20 teachers were randomly selected for each school. The collected data was analyzed using hierarchical linear modeling. There are three major findings. First, gender, lifelong learning experience, learning agility, learning motivation, and positive psychological capital among the individual variables had meaningful positive effects on lifelong learning competence. Second, knowledge sharing among the organizational variables had meaningful influence on lifelong learning competence. Finally, interactions between gender and knowledge sharing and between learning motivation and learning organization culture had statistically meaningful effects.

Keywords: Lifelong Learning Competence, Individual Variable, Organizational Variable, Hierarchical Effect

Introduction

The fourth Industrial Revolution, characterized by artificial intelligence, robotics, biotechnology, big data, virtual reality, etc., signals the upheaval of the future world that we and subsequent generations will face. International organizations such as the UNESCO, the OECD, the EU, and the World Bank are emphasizing lifelong learning as the core competence of our times (Kim, Jeon, & Park, 2014; Hager & Halliday, 2006).

As the demand for and interest in lifelong learning increased in Canada, Europe, and Turkey, several researchers conducted academic discussions and empirical research on lifelong learning competence from the early 2010s, specifying indicators in such studies and tools as the European Lifelong Learning Indicators project (Hopkins, Cartwright, & Schoof, 2010), the scale of Key Competences for Lifelong Learning (Sahin, Akbasli, & Yelken, 2010), the Composite Learning Index (Canadian Council of Learning, 2010), Teachers' Lifelong Learning Competencies (Selvi, 2011), and Lifelong Learning Competence Scale (Uzunboylu & Hursen, 2012).

These studies suggest that changing schools as organizations is necessary for meeting contemporary demands of societies and that teachers also need to have the competence as lifelong learners to adapt to rapid social changes and perform their jobs effectively. In a lifelong learning society, teachers as self-directed learners must learn on their own with their own goals and have the competence to continue learning without giving up. Teachers with lifelong learning competence can become sensitive to changes in knowledge societies, both self-directing their own learning to enhance their performance as teachers but also developing lifelong learning capabilities in their students (Selvi, 2011).

In prior studies related to teachers' lifelong learning competence, both organization- and individual-level factors affect lifelong learning competence. First, among individual-level variables that affect lifelong learning competence, adult learners' gender, age, academic background, and lifelong learning experience affect their participation in lifelong learning activities and lifelong learning competence (Kim et al., 2014; Lee, Jo, & Yun, 2017; Lim, 2016). In addition, teachers' teaching careers influences their core teaching competence (Y. S. Kim, 2013; Lee, Choi, & Jang, 2009), learning motivation is the most important factor for individual learning (Kim, Kim, & Kang, 2009), and lifelong learning motivation influences lifelong learning competence through empowerment (Lee, Hu, Park, & Lee, 2017). Positive psychological capital, which has been gaining interest recently, is a powerful influence on the transfer of learning (Hyun, Riu, & Park, 2016, 10). Because future societies require new values, learning agility—the competence to learn from experience and to quickly respond to changes—is being considered a future core competence (Im, Wee, & Lee, 2017). In light of this previous research, it can be predicted that individual-level variables such as gender, education, age, teaching career, lifelong learning experience, learning agility, learning motivation, and positive psychological capital can affect the lifelong learning competence of elementary school teachers.

In addition to the individual-level variables mentioned above, researchers have identified organization-level variables that affect teachers' lifelong learning competence. Some researchers (Cutler, 2003; Gupton, 2010; Park, 2010) reported a positive correlation between a school principal's educational leadership and the school's lifelong learning outcomes, and they also found that desirable school organization cultures improved teachers' professionalism, learning, and self-directed learning ability. Because knowledge sharing within an organization helps to develop organizational learning and learning competence (M. S. Kim, 2013; Kim, 2015; Song & Chermack, 2008), in order to promote knowledge sharing, it is necessary to increase the group identity within the organization and establish trust among members (Kim, 2015). These studies show that organization-level variables such as the principal's educational leadership, learning organization culture, and knowledge sharing will likely influence the lifelong learning competence of elementary school teachers. Therefore, research on teachers' lifelong learning competence of teachers needs to address characteristics of both teachers and their schools.

[a] Young-Sun Shin, Soongsil University Korea. E-mail: sys65@sen.go.kr
[b,*] Corresponding Author: JuSung Jun, Soongsil University, Department of Lifelong Education, 369 Sangdo-Ro, Dongjak-Gu, Seoul, 06978, Korea. E-mail: jnet@ssu.ac.kr

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

Prior researchers on lifelong learning competence mostly approached the topic from a single dimension rather than considering the hierarchical nature of various variables. As members of schools, teachers grow and develop as they are influenced by their schools directly and indirectly, and because of this, there is a limit to interpreting a phenomenon only by the personal characteristics of a teacher or the characteristics of a school organization (Byun, 2016). Therefore, the lifelong learning competence of elementary school teachers should be considered not only in terms of the teachers' personal characteristics but also in the contexts of their school environments.

The purpose of this study was to examine how individual and organizational variables affect the lifelong learning competence of elementary school teachers. This two-dimensional analysis revealing the effects of individual and organizational variables on elementary school teachers' lifelong learning competence provides useful data for improving this competence in the future.

Method

Research Model

The purpose of this study was to investigate the hierarchical effects of individual and organizational variables on elementary school teachers' lifelong learning competence. The criterion of the study is lifelong learning competence, and the predictor variables are the individual and organizational variables. The individual-level variables were the teachers' demographic characteristics (gender, age, academic background, teaching career, administrative position experience, and lifelong learning experience) and socio-psychological variables (learning agility, learning motivation, and positive psychological capital), and the organization-level variables were principals' educational leadership, learning organization culture, and knowledge sharing. Analysis included two hierarchical levels, an individual level and an organizational level, where individual-level variables use individual teachers as a unit of analysis, and organization-level variables use schools as a unit of analysis. Hierarchical linear modeling (HLM) is a statistical method of analyzing multilevel data (Raudenbush & Bryk, 2002). The specific procedures for analyzing the data were as follows:

First, one-way ANOVA with random effect model (Model 1) was conducted to examine whether it is meaningful to consider not only the teacher-level variables but also the school-level variables -such as principals' educational leadership, learning organization culture, and knowledge sharing as variables affecting elementary school teachers' lifelong learning competence- in the analysis. Second, in order to investigate the influence of individual variables, a random-coefficient regression model (Model 2) was set up, with only teacher characteristics variables as input. Finally, an intercepts and slopes-as-outcomes model (Model 3) was conducted to investigate the influence of the organizational variables and of interaction between individual and organizational variables.

Figure 1 presents the research model.

Research Subjects and Data Collection

The population of this study was public elementary school teachers in Seoul, Korea (22,885 as of 2017); multi-stage stratified sampling was used to ensure the most representative sample. First, the sample size of the study was set at 1,200 teachers (5.24%) in 70 schools, and the sample schools and the teachers were proportionally allocated according to the schools' composition ratios and the number of teachers in 11 education districts of the Seoul Metropolitan Office of Education. Second, schools corresponding to the number of allocated samples were extracted using random sampling, and the number of teachers sampled was determined based on the sizes of the selected schools. Finally, 1,138 surveys were collected from teachers in 70 schools and the responding rate was 94.8%. Among the collected data, 61 surveys with unrelia-

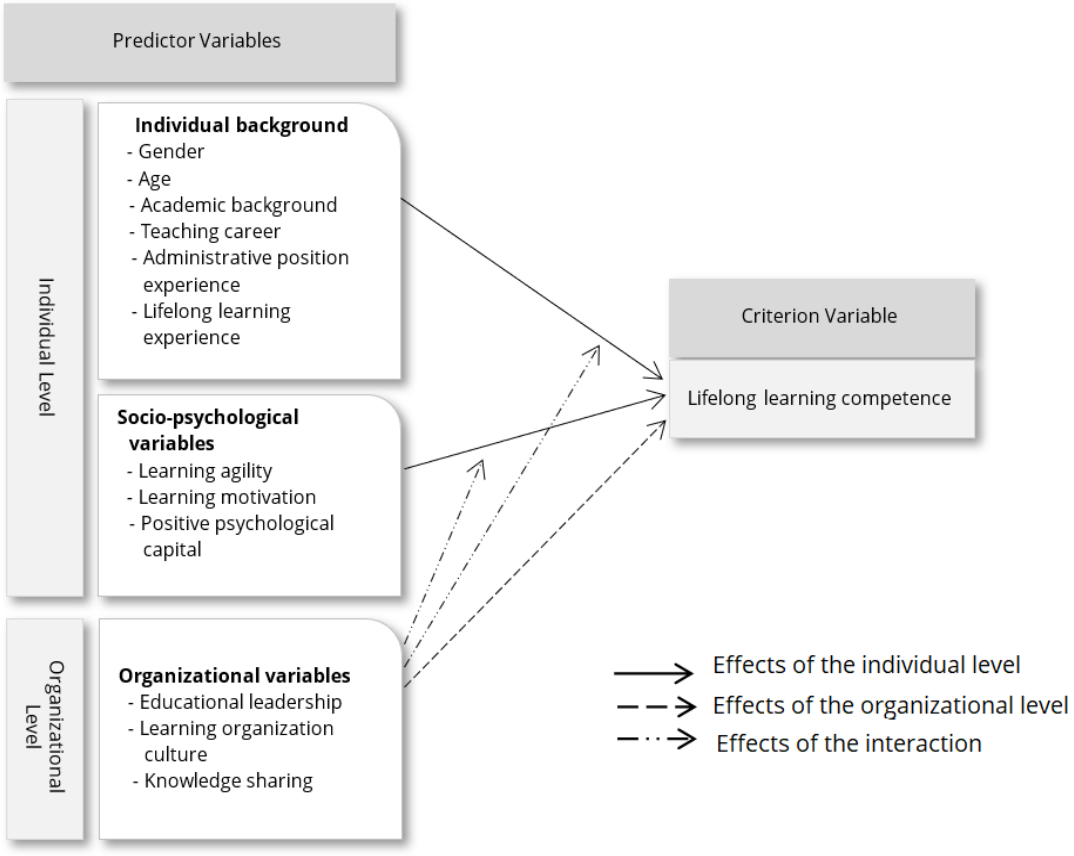


Figure 1. The research model

ble, duplicate, or missing responses were excluded, leaving data collected from 1,077 individuals for the final analysis.

Measures

Lifelong learning competence

The elementary school teachers' lifelong learning competence in this study was measured with the lifelong learning competence scale Kim et al. (2014) used based on the Delors Report (Delors et al., 1996). The scale consisted of 10 questions for each of five dimensions (learning to know, learning to be, learning to do, learning to live together, and learning to generate), for a total of 50 questions. The overall Cronbach's α was .963, and the values for each dimension were .865, .865, .898, .890, and .905.

Learning agility

Learning agility of elementary school teachers was measured by a tool developed by Im et al. (2017). The scale consists of a total 25 questions. The overall Cronbach's α was .950, and the values for each dimension were .862 for self-awareness, .889 for growth orientation, .850 for flexible thinking, .864 for reflective behavior seeking, and .912 for behavioral change.

Learning motivation

In this study, learning motivation was measured with Lee's (2015) scale. The measurement tool consists of 13 questions. The Cronbach's α was .774 for internal learning motivation, .861 for external learning motivation, and .901 for the entire questionnaire.

Positive psychological capital

The scale used to measure the positive psychological capital of elementary school teachers was first developed by Luthans, Youssef, and Avolio (2007) and modified by Kim (2016) to make some terms suit the school context. This scale consists of 21 questions with four sub-factors. The Cronbach's α values for this scale were .866 for self-efficacy, .749 for hope, .868 for optimism, .820 for resilience, and .952 for the entire questionnaire.

Principals' educational leadership

Principals' educational leadership was measured using a scale developed by Hallinger and Murphy (1985) and Sirinides (2009) and translated by Yoo (2012). This tool consists of 18 questions. The Cronbach's α was .963 for the entire questionnaire, and for the individual dimensions, reliability was .892, vision and mission sharing was .890, teaching and learning support was .928, and professionalism development support was .900.

Learning organization culture

The scale used to measure the learning organization culture of elementary schools was the tool that An (2013) translated and modified to be used for elementary school teachers, which was based on Yang's (2003) short version of the Dimension Learning Organization Questionnaire originally developed by Watkins and Marsick in 2003. The overall Cronbach's α was .962, and those for the sub-factors were .776 for continuous learning, .883 for inquiry and dialogue, .876 for team learning, .854 for system accumulation, .835 for system connection, .846 for empowerment, and .910 for leadership support.

Knowledge sharing

The scale used to measure knowledge sharing was the tool that Lee (2013) translated and adapted from studies by Bock et al. (2005) and Gupta and Govindarajan (2000). This measurement tool consists of a total of 8 questions. The overall Cronbach's α was .948, and those for the sub-factors were .914 for knowledge contribution and .909 for knowledge utilization.

Data Analysis

In this study, a hierarchical linear model analysis was conducted using maximum likelihood estimation to reveal the influence of individual and organizational variables on the lifelong learning competence of elementary school teachers.

Findings

Descriptive Statistics and Correlation of Variables

Table 1 shows the descriptive statistics of the elementary teachers' individual-level variables. Individual variables are divided into demographic (gender, age, academic background, teaching career, administrative position experience, lifelong learning experience) or socio- psychological (learning agility, learning motivation, positive psychological capital).

Pearson's correlation coefficients between predictor variables and the criterion variable are shown in Table 2.

Variances of Individual and Organizational Levels on Lifelong Learning Competence

Table 3 shows the results of the one-way ANOVA with random effects (Model 1) to determine whether the organiza-

Table 1. *Descriptive Statistics (N= 1,077)*

Variables			Mean	SD	Min.	Max.
Criterion variable	Lifelong learning competence		4.12	.479	2.44	5.00
	- Learning to know		4.30	.479	2.50	5.00
	- Learning to be		4.30	.515	2.10	5.00
	- Learning to do		4.24	.525	1.70	5.00
	- Learning to live together		3.70	.663	1.00	5.00
	- Learning to generate		4.07	.616	1.90	5.00
Predictor variables (Individual level)	Gender	Male (170)	.84	.365	.00	1.00
		Female (907)				
	Age	20s (165)	-	-	-	-
		30s (282)	.26	.440	.00	1.00
		40s (385)	.36	.479	.00	1.00
		50s and above (245)	.23	.419	.00	1.00

Table 1 (Cont.). *Descriptive Statistics (N= 1,077)*

Variables			Mean	SD	Min.	Max.
Predictor variables (Individual level)	Academic background	Male (170)	.84	.365	.00	1.00
		Female (907)				
	Administrative position experience	No (493)	.54	.498	.00	1.00
		Yes (584)				
	Teaching career	Less than 5 years (166)	-	-	-	-
		5-9 years (178)	.17	.372	.00	1.00
		10-19 years (366)	.34	.474	.00	1.00
		More than 20 years (367)	.34	.474	.00	1.00
	Lifelong learning experience	No (500)	.54	.499	.00	1.00
		Yes (577)				
	Learning agility		3.98	.546	2.23	5.00
	- self-awareness		4.33	.561	2.00	5.00
	- growth-oriented		4.14	.618	2.14	5.00
	- flexible thinking		4.00	.693	1.67	5.00
	- reflective behavior seeking		3.84	.683	1.60	5.00
	- behavioral change		3.58	.756	1.17	5.00
	Learning motivation		4.13	.560	2.00	5.00
	- internal learning motivation		4.25	.566	2.00	5.00
	- external learning motivation		4.00	.626	1.63	5.00
	Positive psychology capital		3.82	.617	1.86	5.00
	- self-efficacy		3.72	.682	1.50	5.00
	- hope		3.81	.675	1.75	5.00
	- optimism		3.86	.643	1.50	5.00
	- resilience		3.88	.664	1.40	5.00
Predictor variables (Organization level)	Educational leadership		4.06	.730	1.08	5.00
	- reliability		4.01	.815	1.00	5.00
	- vision and mission sharing		4.26	.688	1.00	5.00
	- teaching and learning support		4.07	.783	1.17	5.00
	- professionalism development support		3.92	.947	1.00	5.00
	Learning organizational culture		3.89	.700	1.29	5.00
	- continuous learning		3.90	.786	1.33	5.00
	- inquiry and dialogue		3.67	.895	1.00	5.00
	- team learning		3.76	.852	1.00	5.00
	- system accumulation		4.03	.827	1.00	5.00
	- system connection		3.89	.810	1.00	5.00
	- empowerment		3.90	.817	1.00	5.00
	- leadership support		4.12	.848	1.00	5.00
	Knowledge sharing		4.26	.683	2.00	5.00
	- knowledge contribution		4.22	.733	1.00	5.00
	- knowledge utilization		4.29	.682	2.00	5.00

Table 2. *Correlation Coefficients among Variables*

	Lifelong learning competence	Lifelong learning experience	Learning agility	Learning motivation	Positive psychology capital	Educational leadership	Learning organizational culture
1	1						
2	.268**	1					
3	.797**	.189**	1				
4	.682**	.130**	.656**	1			
5	.727**	.165**	.740**	.656**	1		
6	.364**	.075*	.346**	.324**	.383**	1	
7	.421**	.046	.419**	.410**	.453**	.826**	1
8	.400**	.077*	.360**	.325**	.342**	.495**	.640**

**p< .05, **p< .01 Note: 1-Lifelong learning competence, 2-Lifelong learning experience, 3-Learning agility, 4-Learning motivation, 5-Positive psychological capital, 6-Educational leadership, 7-Learning organizational culture, 8-Knowledge sharing*

tional (school) variables have significant effects on elementary school teachers' lifelong learning competence. The variance within schools was statistically significant with the value of .006 (χ^2= 95.178, p< .001), and the variance between schools was .224. The intra-class correlation coefficient (ICC) was .027, and out of the total variance in lifelong learning competence, 2.7% is explained as the differences between schools, and 97.3% is explained as the differences between individual teachers. This means that the variance explained by the differences between teachers is much larger than that explained by the differences between schools on the lifelong learning competence of elementary school teachers.

Table 3. *Effects of Individual and Organizational Levels on Lifelong Learning Competence*

Fixed effect	Coefficient	SE	t
Intercept	4.116	.017	243.057***
Random effects	*SD*	Variance	χ^2
Variance between schools	.075	.006	95.178***
Variance within schools	.473	.224	
Intra-class Correlation Coefficient (ICC)	.027		

***p< .001

In order to accurately analyze the effects of organizational variables, it is necessary to control all effects of individual variables. With the individual, that is, demographic and socio-psychological, variables controlled, the variance between schools was 20.3% and that within schools was 79.7% (see Table 4). The ICC was .203, and the variance explained as the difference between schools increased from 2.7% to 20.3%; correspondingly, the variance explained by the differences within teachers in the schools decreased from 97.3% to 79.7%. In addition, the between-school differences in the elementary school teachers' lifelong learning competence was statistically significant (χ^2= 335.210, p< .001). In short, this implies that characteristics of both teachers and schools affect the teachers' lifelong learning competence.

Table 4. *Variances for Lifelong Learning Competence before and after Controlling Individual Variables*

Random effects	Variance between schools	Variance within schools	χ^2
Before controlling individual variables	.006 (2.7%)	.006 (2.7%)	95.178***
After controlling individual variables	.016 (20.3%)	.063 (79.7%)	335.210***

Table 5 shows the effects of individual level, organizational level, and the interactions between the variables on the lifelong learning competence of elementary school teachers.

Table 5. *The Effects of Individual Level, Organizational Level, and Interaction on Teachers' Lifelong Learning Competence*

Fixed effect			Model 1			Model 2			Model 3		
			b	SE	*t*	*b*	SE	*t*	*b*	SE	*t*
Intercept (lifelong learning competence)			4.116	.017	243.057***	3.975	.031	130.001***	3.974	.030	132.352***
Individual Level	Gender					.063	.019	3.255**	.063	.019	3.252**
	Age	20s				-			-		
		30s				-.006	.039	-.159	-.007	.039	-.183
		40s				-.082	.046	-1.762	-.083	.046	-1.810
		50s and above				-.097	.052	-1.878	-.099	.052	-1.929
	Academic background					-.008	.019	-.416	-.007	.019	-.363
	Teaching career	Less than 5 years				-			-		
		5-9 years				.056	.039	1.445	.058	.038	1.528
		10-19 years				.078	.047	1.657	.076	.047	1.629
		More than 20 years				.091	.052	1.770	.088	.051	1.712
	Administrative position experience					.025	.021	1.211	.029	.021	1.378
	Lifelong learning experience					.117	.016	7.205***	.118	.016	7.328***
	Learning agility					.406	.027	14.902***	.406	.027	14.849***
	Learning motivation					.170	.020	8.477***	.170	.020	8.494***
	Positive psychological capital					.192	.025	7.818***	.192	.025	7.799***
Organizational Level	Educational leadership								.087	.098	.891
	Learning organizational culture								-.014	.150	-.092
	Knowledge sharing								.207	.100	2.063*
Interaction	Age × Educational leadership								-.065	.117	-.557
	Age × Learning organizational culture								-.157	.184	-.854
	Age × Knowledge sharing								.310	.139	2.238*
	Lifelong learning experience × Educational leadership								.087	.089	.984
	Lifelong learning experience × Learning organizational culture								-.156	.138	-1.136
	Lifelong learning experience × Knowledge sharing								.150	.113	1.326
	Learning agility × Educational leadership								.245	.170	1.442

Table 5 (Cont.). *The Effects of Individual Level, Organizational Level, and Interaction on Teachers' Lifelong Learning Competence*

Fixed effect		Model 1			Model 2			Model 3		
		b	SE	*t*	*b*	SE	*t*	*b*	SE	*t*
Interaction	Learning agility × Learning organizational culture							-.336	.247	-1.356
	Learning agility × Knowledge sharing							.180	.182	.987
	Learning motivation × Educational leadership							-.280	.126	-2.226*
	Learning motivation × Learning organizational culture							.456	.187	2.439*
	Learning motivation× Knowledge sharing							-.192	.138	-1.392
	Positive psychology capital × Educational leadership							-.094	.134	-.704
	Positive psychology capital × Learning organizational culture							.061	.205	.298
	Positive psychology capital × Knowledge sharing							-.161	.134	-1.198
Random effects		SD	Variance	χ^2	SD	Variance	χ^2	SD	Variance	χ^2
Variance between schools		.075	.006	95.178***	.126	.016	335.210***	.112	.012	264.661***
Variance within schools		.473	.224	-	.251	.063	-	.251	.063	-

** $p < .01$, *** $p < .001$

The effects of individual variables on lifelong learning competence

Model 2 shows the effects of individual variables (i.e., gender, age, educational background, teaching career, administrative position experience, lifelong learning experience, learning agility, learning motivation, and positive psychological capital) on the elementary school teachers' lifelong learning competence (see Table 5).

On fixed-effects analysis, learning agility (γ= .406, t= 14.902, p< .001), learning motivation (γ= .170, t= 8.477, p< .001), positive psychological capital (γ=.192, t=7.818, p<.001), lifelong learning experience (γ= .117, t= 7.205, p< .001), and gender (γ= .063, t= 3.255, p< .01) significantly affected the teachers' lifelong learning competence. Specifically, female gender, more lifelong learning experience, greater learning agility, higher learning motivation, and more positive psychological capital increased the teachers' lifelong learning competence. The random-effects analysis, meanwhile, showed that the effects of individual variables on lifelong learning competence differed among schools (γ= .016, χ^2= 335.210, p< .001). In contrast, individual variables of teachers accounted for 71.9% of the variance within schools. This means that the individual variables set out in this study had impacts on the individual differences in the lifelong learning competence of elementary school teachers working in the same school.

The effects of organizational variables on the lifelong learning competence

Model 3 shows the pure effects of organizational variables (i.e., educational leadership, learning organization culture, and knowledge sharing) on the lifelong learning competence of elementary school teachers (see Table 5).

The fixed-effects analysis revealed that only knowledge sharing (γ= .207, t= 2.063, p< .05) significantly affected the teachers' lifelong learning competence; the more active the knowledge sharing in the school, the greater the teachers' competence at learning. In contrast, the principals' educational leadership and learning organization culture did not have significant effects.

In Model 3, the individual variables (i.e., gender, lifelong learning experience, learning agility, learning motivation, and positive psychological capital) showed significant positive effects, which was consistent with the results for Model 2. This finding indicates that elementary school teachers' lifelong learning competence changes according to the level of knowledge sharing in a school when all other conditions including individual variables are the same. The random-effects analysis showed that the effects of organizational variables on lifelong learning competence differed among schools (γ= .012, χ^2= 264.661, p< .001). School organizational variables, however, accounted for 25.0% of the variance between schools, reflecting the importance of these variables in the differences in teachers' lifelong learning competence between schools.

The effects of interaction between individual and organizational variables on lifelong learning competence

The interaction effects between individual and organizational variables were analyzed using the individual variables—gender, lifelong learning experience, learning agility, learning motivation, and positive psychological capital—that had significant impacts on lifelong learning competence in Model 2. There were statistically significant interaction effects for gender and knowledge sharing (γ= .310, t= 2.238, p< .05), learning motivation and learning organization culture (γ= .456, t= 2.439, p< .05), and learning motivation and principals' educational leadership (γ= -.280, t= -2.226, p< .05).

The interaction effect between gender and knowledge sharing showed that the effect of gender on lifelong learning competence was greater for schools with active knowledge sharing if other variables were controlled for. The interaction effect between learning motivation and learning organization culture showed that the more well-established a school's learning organization culture, the more influence teachers' learning motivation had on lifelong learning competence. It is an interesting result that teachers' learning motivation had a greater influence on the teachers' lifelong learning competence in schools with weaker school principal educational leadership. In contrast, lifelong learning experience, learning agility, and positive psychological capital among individual teacher variables showed no statistically significant interaction effects with organizational variables at the school level on lifelong learning competence.

Conclusions and Implications

The following conclusions were drawn from the analysis of the hierarchical effects of individual and organizational variables on the lifelong learning competence of elementary school teachers.

First, the teachers' learning competence was more influenced by individual teacher variables than by school-level organizational variables. The individual variables of elementary school teachers had significantly positive influence on lifelong learning competence in the order of learning agility, learning motivation, positive psychological capital, lifelong learning experience, and gender. In other words, these individual variables had great explanatory power for the variances in lifelong learning competence within schools, and the influence of the teachers' socio-psychological variables was greater than that of their demographic variables. Therefore, to improve elementary school teachers' lifelong learning competence, it is necessary to enhance their learning agility, motivation, positive psychological capital, and lifelong learning experience. For instance, it is necessary for metropolitan and provincial offices of education and unit schools to expand and encourage the right to learn so that teachers can have lifelong learning experiences beyond their in-service training. In unit schools, inconveniences such as learning costs and time and environment constraints related to teacher training and job performance should be removed so that teachers are able to participate in lifelong learning activities. In addition, the national Office of Education needs to establish systems that approve the results of various types of formal and informal learning for training credits and institutional policies that can expand lifelong learning to enhance teachers' skills and professional development.

Second, the organizational variables contributed to the differences in the elementary school teachers' lifelong learning competence; for instance, knowledge sharing, one organizational variable, had a statistically significant effect. Because knowledge sharing by school teachers is based on spontaneity, it is necessary to create school climates that promote knowledge sharing. In contrast, in the hierarchical linear model analysis for this study, principals' educational leadership and learning organization culture, also organizational variables, did not have significant effects on the teachers' lifelong learning competence, although they showed significant interaction effects with learning motivation, a teacher-level individual variable.

Additionally, the stronger the learning organization culture, the greater the influence of learning motivation on lifelong learning competence, and learning motivation also had a greater influence when the school principals' educational leadership was weaker. In schools where teachers are motivated to learn, a principal's educational leadership is required to systematically guarantee and support the learning community of teachers to promote an appropriate learning organization culture. Chakravarthy et al. (1999) point out that organizational culture can vary greatly depending on top management's commitment to managerial leadership, and it is desirable to focus more on creating supportive environments than on direct intervention in individuals' behaviors.

Finally, elementary school teachers develop lifelong learning competence not only via the individual characteristics of teachers or school organizations but also by the interaction between individual and organizational variables. Specifically, with regard to the lifelong learning competence of elementary teachers, teachers' individual characteristics interact with schools' learning cultures, the educational leadership of the school head, and knowledge sharing among school members.

References

An, J. I. (2013). *Structural relationships between the variables of elementary school teacher's self-leadership, teacher efficacy, learning organization culture, self-directed learning ability, and teacher's competency as a learning-facilitator* (Unpublished doctoral dissertation). Soongsil University, Seoul, Korea.

Bock, G. W., Zmud, R. W., Kim, Y. G., & Lee, J. N. (2005). Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate. *MIS Quarterly, 29*(1), 87-111.

Byun, S. J. (2016). *Research on variables relating to the mathematical disposition of young children using hierarchical linear modeling* (Unpublished doctoral dissertation). Korea National University of Education, Chungju, Korea.

Canadian Council on Learning (2010). *The 2010 Composite Learning Index: Five Years of Measuring Canada's progress in Lifelong Learning.* Retrieved from http://www.cclcca.ca/pdfs/CLI/2010/2010CLI-Booklet_EN.pdf

Cutler, L. D. (2003). *An exploration of educational leadership that meets standards of care and quality* (Unpublished doctoral dissertation). University of New York, New York, USA.

Delors, J., Mufti, I. A., Amagi, I., Carneiro, R., Chung, F., Geremek, B.,...Nanzhao, Z. (1996). *Learning: The treasure within.* Report to UNESCO of the international commission on education for the twenty-first century. Paris: UNESCO Publishing.

Gupta, A. K., & Govindarajan, V. (2000). Knowledge management's social dimension: Lessons from Nucor Steel. *Sloan Management Review, 2*(1), 71-80.

Gupton, S. L. (2010). *The instructional leadership toolbox: A handbook for improving practice.* Thousand Oaks, CA: Corwin Press.

Hager, P., & Halliday, J. (2006). *Recovering informal learning: Wisdom, judgement and community*. Dordrecht: Springer.

Hallinger, P., & Murphy, J. (1985). Assessing the instructional management behavior of principals. *The Elementary School Journal, 86*(2), 217-247.

Hopkins, B., Cartwright, F., & Schoof, U. (2010). *The ELLI Index Europe 2010: ELLI European Lifelong Learning Indicators: Making lifelong learning tangible!* Gutersloh, Germany: Bertelsmann Stiftung.

Hyun, Y. S., Riu, J. R., & Park, J. K. (2016, 10). Reconceptualization of learning transfer from the viewpoint of lifelong education. Paper session presented at the meeting of Korea Society for Lifelong Education, Chuan-Ang University, Seoul, Korea.

Im, C. H., Wee, Y. E., & Lee, H. S. (2017). A study on the development of the learning agility scale. *The Korean Journal of Human Resource Development, 19*(2), 81-108.

Kim, J. H., Jeon, E. S., & Park, S. K. (2014). Exploratory empirical study on enterprise workers' lifelong learning competence as lifelong learners. *The Journal of Agricultural Education and Human Resource Development, 46*(1), 181-205.

Kim, M. S. (2013). An empirical study on the moderating effect of individual goal orientation and organizational characteristics on the relationships between self-directed learning ability and knowledge sharing. *Korean Corporation Management Review, 20*(4), 249-271.

Kim, M. S., Kim, Y. J., & Kang, S. (2009). Effects of individual and organizational characteristics on knowledge learning and adoption: Focused on Six Sigma education and training. *Journal of The Korean Data Analysis Society, 11*(6), 3249-3263.

Kim, Y. I. (2016). *The structural relationships between the variables of self-directed learning ability, learning agility, positive psychological capital, and job satisfaction of secondary school teachers* (Unpublished doctoral dissertation). Soongsil University, Seoul, Korea.

Kim, Y. J. (2015). *A study on the structure relation between elementary school teachers' learning community, knowledge sharing, and job performance* (Unpublished doctoral dissertation). Ewha Womans University, Seoul, Korea.

Kim, Y. S. (2013). *An analysis of structural relationship among teachers' recognized mentoring, teacher efficacy and school organizational commitment* (Unpublished doctoral dissertation). Kyungnam University, Masan, Korea.

Lee, E. J., Jo, J. E., & Yun, M. H. (2017). The effects of education for resolving the information gap on the lifelong learning competence of the middle aged. *The Journal of the Korean Society for Fisheries and Marine Science Education, 29*(5), 1313-1330.

Lee, K. H. (2015). *Structural relationships between learning organization culture, teacher's learning motivation, LMX of principal-teacher, teaching professionalism perceived by elementary school teachers* (Unpublished doctoral dissertation). Soongsil University, Seoul, Korea.

Lee, K. J., Choi, J. Y., & Jang, S. H. (2009). The analysis of the level and its difference by teaching career of elementary teachers' core competencies. *The Journal of Korean Teacher Education, 26*(3), 219-240.

Lee, R., H., Hu, S. H., Park, J. Y., & Lee, H. S. (2017). Analysis of the effect of lifelong learning motivation on lifelong learning competency: Focusing on the mediation effect of empowerment. *Journal of the Korean Data Analysis Society, 19*(2), 931-943.

Lee, S. H. (2013). *Influence of travel agency employees' knowledge sharing on their job performances* (Unpublished doctoral dissertation). Keimyung University, Seoul, Korea.

Lim, E. (2016). *International comparison of learning attitude and competence levels of Koreans* (KRIVET Issue Brief, 98). Sejong, Korea: Korea Research Institute for Vocational Education & Training.

Luthans, F., & Yousef, C. M., & Avolio, B. J. (2007). *Psychological capital.* New York, NY: Oxford University Press.

Park, R. J. (2010). *The effect of a school principal's leadership in adult education, the school's organizational culture, and teacher's learning culture on the organizational effectiveness* (Unpublished doctoral dissertation). Soongsil University, Seoul, Korea.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical liner models: Applications and data analysis methods* (2nd ed.) London: Sage.

Sahin, M., Akbasli, S., & Yelken, T. Y. (2010). Key Competences for Lifelong Learning: The case of prospective teachers. *Educational Research and Reviews, 5*(10), 545.

Selvi, K. (2011). Teachers' Lifelong Learning Competencies. International Journal of Curriculum and Instructional Studies, 1(1), 62-69.

Sirinides, P. M. (2009). *Educational leadership and student achievement: Path ways of instructional influence* (Unpublished doctoral dissertation). University of Pennsylvania, Philadelpia, USA.

Song, J. H., & Chermack, T. J. (2008). A Theoretical approach to the organizational knowledge formation process: Integrating the concepts of individual learning and learning organization culture. *Human Resource Development Review, 7*(4), 424-442.

Uzunboylu, H., & Hursen, C. (2012). Lifelong Learning Competence Scale (LLLCS): The study of validity and reliability. *H. U. Journal of Education, 41*, 449-460.

Watkins, K. E., & Marscik, V. J. (2003). Make learning count! Diagnosing the earning culture in organizations. *Advances in Developing Human Resources, 5*(2), 132-151.

Yang, B. (2003). Identifying valid and reliable measures for dimensions of a learning culture. *Advances in Developing Human Resources, 5*(2), 152-162.

Yoo, S. (2012). *Structural relationships between the variables of the principal's educational leadership, learning organization culture, teacher efficacy and teacher's learning flow* (Unpublished doctoral dissertation). Soongsil University, Seoul, Korea.

.

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **213-222**

The Effect of Argumentation-Based Social Studies Teaching on Academic Achievement, Attitude and Critical Thinking Tendencies of Students*

Nazile Yılmaz-Özcan[a] , Sanem Tabak[b,**]

Received: **24 July 2019**
Revised: **11 November 2019**
Accepted: **19 December 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.iejee.com

DOI: **10.26822/iejee.2019257669**

Abstract

Argumentation-based learning is important for individuals to gain a place in social life, to adapt themselves to social life, to solve the problems they encounter and to use critical and scientific approaches. At this point, it is considered that students should be supported to solve problems efficiently, to establish a cause-effect relationship and to research the scientific background of a problem by implementing argumentation-based learning in social studies course. Therefore, the aim of this research was determined as to reveal the effect of argumentation-based learning in the fourth-grade social studies course on the academic achievement, attitude and critical thinking tendencies of students. The study group of the research consisted of 51 fourth-grade students. This research included the embedded design from the mixed method designs. In the research, subject area achievement test, attitude towards the social studies course scale and UF/EMI Critical Thinking Tendency Scale and six activities that were developed in accordance with the argumentation-based learning approach were used as data collection tools. As a result of the research, it was determined that in social studies course with implementation of argumentation-based learning, the levels and qualities of the arguments that were developed by the students showed an increase throughout the research. Furthermore, it was concluded that with argumentation-based learning in social studies courses, positive developments were observed for academic achievement, attitude towards the social studies course and critical thinking tendencies of students.

Keywords: Argumentation-Based Learning, Social Studies, Critical Thinking Tendency

Introduction

Curricula are prepared for individuals to develop as people who pay attention to experiences, take an active part in social life and produce solutions to problems. Accordingly, social studies courses are considered an important field in keeping up with changes by ensuring students understand the world. For this reason, in order for students to understand the social studies course meaningfully, the necessity of establishing a cause-effect relationship, problem-solving and researching comes to prominence. Furthermore, possession of certain high-level thinking skills such as critical thinking, discussing, decision making, and scientific thinking are required in order for individuals to produce solutions to the problems they encounter in the present day.

Kabapınar (2014) emphasized that knowledge is a means rather than an end in the acquisition of social studies skills. For this reason, students are required to acquire knowledge about problem-solving, researching, establishing a cause-effect relationship and developing new projects in order for learning that occurs in social studies courses to be permanent and meaningful. Thus, it is suggested that students be given the opportunity to explain their opinions in an evidence-based way by using written materials in lessons. In accordance with this, it is considered that forming a basis for the social studies curricula allowing students to apply the information they learn in daily life and to transform it into skills such as problem-solving, critical thinking and decision-making will increase the effect of the social studies course on the life of the individuals (Önal & Kaya, 2011: 27). Therefore, students would gain skills such as explaining and defending their opinions, asserting new claims and defending these claims. This situation would ensure students are more active, curious, and can research and in addition, can express themselves better. It is considered that the contribution of argumentation-based learning would be significant in the efficient provision of this process (Aydın & Kaptan, 2014, s. 166).

Argumentation-Based Learning

Argumentation-based learning was developed by Toulmin (1958). Toulmin created an argument model based on his own perception. When the literature is examined, this model was discussed in several studies and it was especially used for the evaluation of arguments (Demirci, 2008; Deveci, 2009; Domaç, 2011; Erduran, Simon, & Osborne, 2004; Gültepe, 2011; Hacıoğlu, 2011; Kelly & Takao, 2002; Sadler & Fowler, 2006; Simon, Erduran, & Osborne, 2006; Yeşiloğlu, 2007). In this model, the structures that form an argument and how the relationship between them can be established is explained. Especially, claim, ground and warrant form the basis of this model. Toulmin revealed these in his research as a new discussion model as follows:

- Claim: The thesis that is asserted about the discussed subject.
- Ground: The information that is used to reach the asserted claims. In other words, the ground is evidence used for the defended claims.
- Warrant: The logical approach that provides the integrity of the claim and the ground.
- Backing: The element that completes the warrant at the point of accuracy.
- Rebuttal: The element that shows the asserted arguments to be invalid.
- Model Qualifiers: Situations in which the explained arguments would lose their validity.

* This research was produced from the master's dissertation of the first author.

[a] Nazile Yılmaz-Özcan, Merkez Ortaokulu, Altinordu, Ordu, Turkey. E-mail: tunahanozcan52@hotmail.com
[b,**] Corresponding Author: Sanem Tabak, Ordu University, Faculty of Education, Ordu, Turkey. E-mail: sanemuca@gmail.com

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

According to this model, the obtained data strengthens the claim in an argument. Reason establishes the relationship between the claim and the ground. That is, reason integrates the claim and the data. Rebuttal reveals that the argument is invalid, and the model qualifiers reveal that it is valid. The model based on argumentation and developed by Toulmin in 1958 is shown in Figure 1.

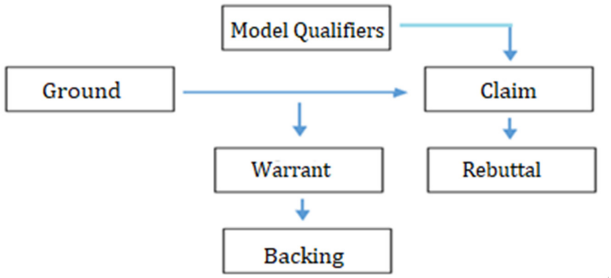


Figure 1. The Toulmin Model of Argumentation (1958)

The Toulmin model of argumentation offers alternatives in producing solutions to problems that individuals encounter in their daily lives, internalizing the argument and improving the critical thinking skill. Furthermore, in this model, the opinions of others can be agreed with and respected without the need for anyone or any source (Goodnight, 2006). For this reason, estimating, establishing a cause-effect relationship, convincing the opposing party and forming a ground are significantly important skills in this model which was developed by Toulmin (1958). With the help of this model, the argumentation and idea formulation skills of students develop in their own over time. In addition to this, most students learn which part and how they should intervene with a problem they encounter and acknowledge that criticism is, in fact, not a negative concept (Erduran, Simon, & Osborne, 2004).

With argumentation-based learning (ABL), students learn by asking questions, creating claims, supporting their claims and questioning counter-arguments. Students are observed to actively participate in lessons with this learning approach (Günel, Kıngır, & Geban, 2012: 318). With this learning approach, students gain skills such as obtaining data on the ideas they support, putting forward evidence, supporting their claims and writing the processes in relation to these (Kabataş-Memiş, 2014). Argumentation-based learning was designed in a way enables students to improve their verbal and written expression skills, to understand the nature of science and to scrutinize their ideas and skills in a critical approach (Sampson & Clark, 2007). Students can clearly express what they feel about a subject through ABL. With the help of ABL, students learn the opinions of others while stating their opinions, have opinions, adopt the opinions that are suitable for them and discard the opinions that are not suitable for them (King, 1997). Argumentation is extremely important in terms of finding a place and keeping up with society, solving problems and using critical and scientific approaches (Nutt, 2008).

The initial questions that occur about ideas asserted during the process of argumentation are “Why do you think that?”, “How do you know?” and “Why?”. The argumentation process is regarded to start with these questions because individuals who seek answers to these questions begin to produce arguments and become involved in argumentation environments (Küçük & Aycan, 2014). Therefore, students can apply decision-making methods by asking questions, revealing their evidence and comparing the claims that they created within a scientific framework (Yeşildağ-Hasançebi & Günel, 2013). The active participation of students in the learning process increases and thus, efficient learning takes place with this learning approach. Argumentation-based learning has benefits in revealing the aspects of social studies courses such as being evidence-based and not based on rote-learning, putting forward ideas with different points of view and offering solutions to social problems. In the conducted studies, it was observed that the teaching methods in the evidence-based research model do not only improve academic achievement and motivation towards efficient learning in science but also in fields such as social studies, reading-writing, mathematics, and foreign language (İlter, 2013).

Importance of Critical Thinking Skill in Social Studies Teaching

Hesapçıoğlu (1991) defines thinking as “a cognitive synthesizing and an intellectual process that reaches knowledge” and the concept of cognition as “awareness, reasoning, intuition”. Despite its importance and necessity, students cannot comprehend that thinking is one of the most important objectives of education. There is a number of students who believe that teachers should explain the answers instead of believing it is their duty to seek answers to the questions that lead to thinking. These students believe that listening to their teacher instead of thinking and producing new ideas would get them higher marks. However, the main objectives of current education approaches across the world are providing individuals with the opportunity to gain skills such as problem-solving and critical thinking (Hesapçıoğlu, 1991).

Critical thinking is a way of thinking that does not seek negative features, and is not a prejudiced approach, uncontrolled way of thinking, nitpicking, simple and meaningless or presents contradictory behavior to every opinion (Güzel, 2005). Critical thinking which is not a negative evaluation method in itself aims to “explain and evaluate a subject by revealing both the positive and negative aspects". A systematic path should be followed using certain steps while performing this.

Gürkaynak, Üstel and Gülgöz (2008) define the necessity for critical thinking under two main titles:

1. Individualization: Individuals need critical thinking skills in order to make their own decisions, to solve problems they encounter and to be independent individuals without the need to be directed by other people.

2. Citizenship: Modern societies consider critical thinking as an important quality for individuals who are aware of their responsibilities, predicate on reason and science, produce new ideas and support them, assess other ideas, establish empathy/sympathy and respect different ideas.

When all of the features of critical thinking that are stated above are considered, the necessity of possessing this skill comes to prominence. Accordingly, when the curriculum of the social studies course in Turkey, developed on the constructivist approach since 2005, is examined it can be observed that critical thinking skills are included within general skills and the aim is to acquire this skill with discipline. From this point of view, it can be stated that the social studies course is an appropriate subject field for the acquisition of critical thinking skills.

Aim and Importance of the Research

When the studies conducted in the education field are examined, it can be observed that new and different methods and techniques have begun to be used in many fields. Among these studies, studies conducted about the argumentation-based learning which is effective in the development of decision-making, argumentation and communication skills of students attract attention. Today, the argumentation-based learning method is preferred in the fields of social studies and science; however, studies and projects about this learning approach mainly focus on the field of science (Antilia, 2012; Butt, 2010; Chin & Osborne, 2010; Crowell & Kuhn, 2012; Dus-

chl & Osborne, 2002; Erduran, Simon, & Osborne, 2004; Hudson, 2010; Sadler & Fowler, 2006; Simon, Erduran, & Osborne, 2006; Thielemier, 2013; Zohar & Nemet, 2002). Studies about argumentation-based learning in social studies have begun to gain momentum in recent years (Akbaş & Çetin, 2018; Demir & Oğuz-Haçat, 2017; Larson, Britt, & Kurby, 2009; Mirza & Perret-Clermont, 2009; Nussbaum, 2002; 2008; Swartz, 2008; Torun & Şahin, 2016; Wissinger, 2012; Yazıcıoğlu, 2017). The tendencies of these studies are mainly about the argumentation process, the students' level of producing argumentation, decision-making, and problem-solving skills.

Argumentation-based learning is included in the teaching methods in the curriculum which has been applied since 2005 in Turkey. However, since there aren't many studies about social studies, this research is expected to be an example for teachers. For this reason, it is considered to contribute to the literature since the gains in the "People, Places and Environments" unit which is included in the curriculum of the social studies course are researched for the first time.

Considering the features of argumentation-based learning and critical thinking skills, it is considered that activities included in the argumentation-based learning process in the social studies course would affect the critical thinking skills of students and the aim is to reveal the changes in the achievement and attitude of students by developing sample activities which are aimed at the acquisition of this skill.

This research aimed to investigate the development of argumentation levels of students during social studies course designed with argumentation-based learning and to investigate the effect of argumentation-based learning on the academic success, attitude toward social studies course and critical thinking tendencies of students.

In accordance with this aim, the answers to the following questions were sought:

1. How have the argument levels formed by experimental group improved after the social studies course in which argumentation-based teaching is performed?

2. Is there a significant difference between the academic achievement of students in the experimental group who received argumentation-based social studies education and the students in the control group who received the standard curriculum social studies course?

3. Is there a significant difference between the attitude of students towards the social studies course in the experimental group who received argumentation-based social studies education and the students in control group who received the standard curriculum social studies course?

4. Is there a significant difference between the critical thinking tendencies of students in the experimental group who received argumentation-based social studies education and the students in the control group who received the standard curriculum of social studies course?

Method

Research Model

The research investigated the effect of argumentation-based learning on the academic success, attitude toward social studies course and critical thinking tendencies of students with the quantitative research method of pretest-posttest in a controlled experimental model. The experimental phase of the research consists of three stages: planning, introduction and conducting of the application. Accordingly, in the planning stage of the experimental application, the necessary permissions were taken from the school where the research will be conducted first. Then, the classes in the school where the application will be done were determined and preliminary application of the data collection tools of the research was made. Before the study started on the experimental group identified in the study, information about argumentation-based learning was given. During the experimental process, activities developed by researchers were applied each week and evaluated by to the "Argumentation Assessment Rubric". Experimental application stage in the study lasted six weeks in total. After the experimental process was completed, the last applications of the data collection tools of the research were made. With the aim of revealing the experimental process included in the research and investigating the argumentation levels developed by students in social science course supported by argumentation-based learning, the qualitative research method of basic qualitative research methods were included. The basic qualitative research model discusses how people perceive and interpret their lives and experiences and can be observed in all of the disciplines. In basic qualitative research, the data is obtained through interviews, observations or document review. The selected data collection tool is shaped in accordance with the theoretical framework of the research (Merriam, 2013). In this research, which is based on argumentation-based learning, the activities performed by the students were examined in detail through observations of the researcher and document review in order to determine the argumentation levels of students in the social studies course. Accordingly, since the understanding and the arguments of students about the concepts included in the "People, Places and Environments " unit in the social studies course were examined, the basic qualitative research design was preferred in this research.

During the experimental process in the research, the development of argumentation levels among students was investigated. In line with this, to support elements in the experimental model included in the research and to test the intervention during the experimental process, quantitative and qualitative data were collected simultaneously. As a result, this research included the embedded design from the mixed method designs. Creswell and Plano Clark (2011) defined the embedded design as studies with simultaneous collection of quantitative and qualitative data, where each data type is submerged within another data type.

Study Group

The study group in this research consists of two groups determined with the random method among fourth grade classes of an elementary school selected with convenient sampling in the academic year 2017-2018 in the Altınordu district of Ordu province by considering reasons such as the eager attitudes of school administration, teachers and students in assisting the researcher and decent technical infrastructure and physical conditions of the school. One of these groups were included as the experimental group and the other was included as the control group in the research. The distributions in the experimental and control groups of 51 students who participated in the quantitative dimension of the research are given in Table 1.

Table 1. *Distribution of Students within the Study Group in the Experimental and Control Groups*

Groups	*N*	%
Experimental	27	53
Control	24	47
Total	51	100

When Table 1 which illustrates the distribution of students within the study group in the experimental and control

groups is examined, it can be observed that 53% of the students were in the experimental group and 47% of them were in the control group.

Attention was taken to select groups which are close to each other in terms of variables such as academic achievement, attitude towards the social studies course and critical thinking tendencies. Accordingly, the subject area achievement test, attitude towards social studies course scale and critical thinking tendencies scale were applied to the experimental and control groups. The independent groups *t*-test was conducted in order to determine the conditions of students before the application and the results of the analysis are presented in Table 2

When Table 2 is examined, it can be observed that there was no statistically significant difference between the pre-test scores of academic achievement, attitude towards the social studies course and critical thinking tendencies of students in the experimental and control groups [$t_{ach(51)}$= .285; $t_{att(51)}$= -1.339; $t_{ct(51)}$= -2.382; p> .05]. This finding indicates that the pre-knowledge of students in the experimental and the control groups before the application is equal and there is no difference between the two groups in terms of attitude towards the social studies course and critical thinking tendencies.

The study group for the qualitative dimension of the research consists of students in the experimental group (*N*= 27) in which argumentation-based learning was applied.

Data Collection Tools

Achievement Test, Attitude towards the Social Studies Course Scale, Critical Thinking Tendency Scale, and worksheets that were developed by the researchers about argumentation-based learning were used as data collection tools.

Achievement test

Ninety multiple-choice questions which evaluate acquisitions in the "People, Places and Environments" unit were prepared by the researchers. Between 8 to 10 sub-acquisitions related to the acquisitions in the curriculum of the social studies course were prepared before the questions. Attention was paid to prepare the questions within the framework of these sub-acquisitions. In order to provide content validity of these questions, the opinions of four social sciences educators, two social studies teachers and one Turkish teacher were sought to checking the grammar. Necessary corrections were performed within the framework of these opinions. Specialists were asked to choose the questions that were appropriate to the acquisition. After all the specialist opinions were evaluated, 30 questions were suitable for the acquisitions. The validity and reliability studies of these questions were conducted with a total of 154 students in six groups from fifth grade which received education about these subjects in a secondary school in the Altınordu district of Ordu province. The answers of students were evaluated with Item and Test Analytics Program (ITEMAN). "Skewness" and "Kurtosis" values were examined in order to understand whether or not the distinctiveness index shows normal distribution and since this value was near to 0 (.96), it was interpreted that it shows normal distribution. As a result of the conducted analyses, the most difficult questions were determined as 6, 7 and 15 and questions with low item distinctiveness were determined as 6, 29, 15, 1 and 30. The 1st, 6th, 15th, 29th, and 30th questions were removed in accordance with the obtained results and the number of questions in the achievement test was reduced to 25. The Cronbach Alpha internal consistency coefficient for the test was determined as .87. The test which consisted of 25 questions was applied to both the experimental and control group as pre-test and post-test achievement test.

Attitude towards the social studies course scale

In the research, a Likert type attitude scale included in the curriculum of the social studies course (MNE, 2017) was used in order to measure the attitudes of students towards the social studies course.

UF/EMI critical thinking tendency scale

The Critical Thinking Tendency Scale is a measurement tool which was developed in the University of Florida as a tool that accurately measures the critical thinking tendency and at the same time includes fewer factors than the existing measurement tools. The scale was adapted to Turkish by Ertaş-Kılıç & Şen (2014). After the translation of Critical Thinking Tendency Scale to Turkish, the five-point Likert scale with 26 items was applied to 342 students who were studying in the ninth and tenth grade in order to determine the reliability and validity of the scale in Turkey. The examination of the scale was conducted with Confirmatory Factor Analysis (CFA) and one item was removed from the scale. According to the results, this scale is consistent, original and coherent with the data. The Cronbach Alpha values of the scale were determined as .88 for participation sub-dimension, .91 for the internal consistency coefficient of the scale, .73 for the innovativeness sub-dimension and .70 for the cognitive maturity sub-dimension (Ertaş-Kılıç & Şen, 2014). This five-point Likert scale consists of 25 items.

Worksheets

Six worksheets were prepared by the researcher in accordance with the acquisitions included in the "People, Places and Environments" unit in order to reveal the argumentation development levels of students who are in the fourth grade. Before the development of the worksheets, studies about how worksheets can be used in the social studies course are prepared (Torun & Şahin, 2016; Kardaş, 2013) were examined by the researcher and research was completed about why worksheets are important in teaching. The researcher also reviewed worksheets that were pre-prepared and used in the lessons. A total of 6 worksheets were developed in the research. The first four of the worksheets, "Students at Scout Camp, Drawing Sketch, Our Environment is Changing and How is the Weather around There", were fictionalized by the researcher. The other two worksheets, "Places in the Legends, Ballads, and Poets" and "I Am Learning Natural Disasters, Living Safe" were prepared by benefiting from the Educational Informatics Network (EIN).

In the initial sections of the worksheets, reading texts ensuring students think according to the argumentation-based learning approach were prepared in accordance with the subjects and acquisitions. In the second part, assessment questions were

Table 2. *Comparison of the Pre-Test Scores of Students in the Experimental and Control Groups*

	Groups	*N*	*M*	*sd*	*df*	*t*	*p*
Academic Achievement	Experimental Group	27	67.740	17.366	49	-.285	.777
	Control Group	24	66.166	18.234			
Attitude towards the Social Studies Course	Experimental Group	27	4.267	.592	46	-1.339	.187
	Control Group	24	4.006	.750			
Critical Thinking Tendencies	Experimental Group	27	3.510	.485	46	-2.382	.051
	Control Group	24	3.461	.499			

included which were prepared in accordance with the Toulmin Model of Argumentation (1958) aimed at understanding the reading texts.

A pilot scheme was conducted by the researcher with fourth-grade students in another group which were studying in the same school but were not included in the research. In the pre-application, it was observed that students experienced difficulty in producing qualified claims. For this reason, students were allowed to complete the activities by presenting alternative answers in the first three worksheets. Thus, an attempt was made to prevent incomprehensibility that may emerge. In the subsequent process, students were asked to create a ground to their claims and to base their claims on scientific grounds. They were asked to develop backing elements in examples that would strengthen their claims and rebuttals for the opposing ideas that they didn't agree with. In accordance with the pilot scheme results, the worksheets were reviewed by four lecturers who were employed in the department of educational sciences and necessary adjustments were made by paying attention to the suggestions.

Analysis of the Data

The normal distribution of the data is stated as a precondition for conducting statistical analyses in the studies. Accordingly, if the coefficient of skewness is "0", it shows symmetrical distribution according to the average and if the coefficient of skewness is between +1 and -1 it can be interpreted that the scores do not show a significant deviation from normal distribution (Büyüköztürk, 2007). In the analyses, the coefficient of skewness of the scores in achievement, attitude and critical thinking tendencies was calculated as .783. It is possible to state that this data is between -1 and +1 and the scores show normal distribution.

Within the scope of the research, for the analysis of the quantitative data, the statistical analyses of the independent sample *t*-test were conducted in the SPSS 21 program in order to compare the scores for academic achievement, attitude towards the social studies course and critical thinking tendencies of students in the experimental and control groups before and after the application. The significance levels of the analyses of the statistical data in the research were accepted as .05.

For the analysis of qualitative data, first, the activities students performed were examined while analyzing the arguments that were created by the students and they were analyzed according to the "Argumentation Assessment Rubric" which was developed by Torun and Şahin (2016). This rubric developed by Torun and Şahin (2016) is a modified version of the "Argumentation Assessment Scale" prepared by Toulmin (1958) and adapted to Turkish by Erduran, Simon and Osbourne (2004). Activities that were applied on the basis of this rubric (Table 3) were evaluated in terms of including the elements included in the Toulmin model of argumentation.

As can be understood from Table 3, the arguments are level one if they only have one claim, level two if they have reason and claim, level three if they have weak rebuttal, reason and claim, level four if they have claim and clearly stated rebuttal, level four if they have reason and clearly defined rebuttal and level five if they are comprehensive, have more than one rebuttal and take longer time. The arguments were coded according to their levels. The arguments in level one were coded as 1, in level two were coded as 2, in level 3 were coded as 3, in level four as 4 and in level five as 5.

In qualitative studies, one of the methods preferred to ensure the reliability of data is peer debriefing. Accordingly, the obtained data from the argumentation activities that students performed were examined in accordance with the argumentation assessment rubric with 3 teachers completing master's degrees in the field of primary education and one lecturer who was a specialist in social studies education. The level of argumentations were created by the students was determined. As a result of this evaluation conducted with specialists, a consensus was reached about the argumentation levels of students. Through the specialist examination and provision of consensus, it is considered that the reliability and validity of this research were ensured by plausibility and validity which are taken as basis for the provision of validity and reliability in qualitative research, as stated by Yıldırım and Şimşek (2016).

Findings

The first sub-problem of the research was stated as "How have the argument levels formed by experimental group improved after the social studies course in which argumentation-based teaching is performed?". In accordance with this sub-problem, the levels of arguments that were produced by the students and how many students were in each level were determined (Figure 2).

According to Figure 2, it can be observed that the levels of argumentations produced by the students increased within the application period. Six argumentation activities were developed in accordance with the Toulmin Model of Argu-

Table 3. *Argumentation Assessment Rubric (Torun & Şahin, 2016)*

ArgumentationLevel	Score	Argumentation Content (Criterion)
Level 1	1	No clear claim (Indirect claim)
	2	A simple claim
	3	A simple claim and counter-claim
Level 2	1	Claim + ground
	2	Claim + ground + reason
	3	Claim + ground + reason + backing
Level 3	1	Claim + ground
	2	Claim + ground + reason + rebuttal (Weak, unclear)
	3	Claim + ground + reason + backing + rebuttal (Weak, unclear)
Level 4	1	Claim + ground + rebuttal (Clear, explicit, strong, one)
	2	Claim + ground + reason + rebuttal (Clear, explicit, strong, one)
	3	Claim + ground + reason + backing + rebuttal (Clear, explicit, strong, one)
Level 5	1	Claim + ground + rebuttal (More than one, clear)
	2	Claim + ground + reason + rebuttal (More than one, clear)
	3	Claim + ground + reason + backing + rebuttal (More than one, clear)

mentation and named "1st week, 2nd week" were analyzed according to the "Argumentation Assessment Rubric" which was developed by Torun and Şahin (2016) and the obtained results from the analyses are presented in Table 4.

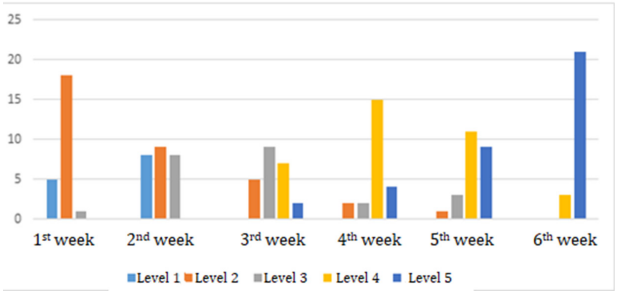


Figure 2. Argumentation Production Levels of Students according to Week

Table 4. *Argumentation Levels and Number of Students*

Application	Level 1 *N*	Level 2 *N*	Level 3 *N*	Level 4 *N*	Level 5 *N*
1st week	5	18	1	-	-
2nd week	8	9	8	-	-
3rd week	-	5	9	7	2
4th week	-		2	15	4
5th week		1	3	11	9
6th week	-	-	-	3	21

When the findings about the first sub-problem of the research are examined, the arguments of students improved through argumentation-based learning. While only claims or reasons were dominant in the initial weeks, it was observed that rebuttals and backings were added to these in the final weeks. The activities that were applied week by week about this problem were examined and the findings are summarized below:

1st Week: The first activity prepared as a result of argumentation-based teaching was applied to the students. As demonstrated in Figure 2 and Table 4, students experienced difficulties in producing arguments with this unfamiliar method in the first week. Five students produced arguments on level 1, 18 students produced arguments on level 2 and 1 student produced arguments on level 3 (Figure 2).

2nd Week: In this week in which students understood this learning method better, an improvement was observed in the levels of arguments produced. It can be observed that 8 students produced arguments on level 1, 9 students produced arguments on level 2 and 8 students produced arguments on level 3.

3rd Week: It can be observed that students no longer produced arguments on level 1. It was determined that they put forward more qualified arguments. Five students produced arguments on level 1, 9 students produced arguments on level 2, 7 students produced arguments on level 3 and 2 students produced arguments on level 5.

4th Week: The argument-producing skills of students increased as a result of the argumentation-based learning. Two students produced arguments on level 2, 2 students produced arguments on level 3, 15 students produced arguments on level 4 and 4 students produced arguments on level 5.

5th Week: Students no longer experience difficulty in producing arguments with argumentation-based learning. One student produced arguments on level 2, 3 students produced arguments on level 3, 11 students produced arguments on level 4 and 9 students produced arguments on level 5.

6th Week: In the activities that were performed in this week, students adopted argumentation-based learning. Three students produced arguments on level 4 and 21 students produced arguments on level 5.

According to this situation, it can be concluded that argumentation-based learning and group discussions performed in the classroom environment positively affected the argument-producing skills of students.

The second sub-problem of the research was stated as "Is there a significant difference between the academic achievement of students in the experimental group who received argumentation-based social studies education and the students in control group who received the standard curriculum of social studies course?". Within the scope of this sub-problem, the independent sample *t*-test was conducted in order to determine whether or not there is a significant difference between the academic achievement of students in the experimental and control groups after the application.

Table 5. *Comparison of the Academic Achievement of Students in the Experimental and Control Groups after the Application*

Groups	*N*	*M*	*sd*	*df*	*t*	*p*
Experimental Group	27	88.444	12.762	49	2.685	.010*
Control Group	24	77.666	15.555			

*$p < .05$

As can be seen in Table 5, a statistically significant difference was determined in favor of the experimental group between the posttest scores of students in the experimental and control groups [$t_{(51)} = 2.685$, $p < .05$]. This finding can be interpreted as the social studies course in which argumentation-based learning is included being effective on the achievements of students.

The third sub-problem of the research was determined as "Is there a significant difference between the attitude of students towards the social studies course in the experimental group who received argumentation-based social studies education and the students in control group who received the standard curriculum of social studies course?". Within the scope of this sub-problem, the independent sample *t*-test was conducted in order to determine whether or not there is a significant difference between the attitudes of students in the experimental and control groups after the application and the results are presented in Table 6.

Table 6. *Comparison of the Attitudes of Students in the Experimental and Control Groups after the Application*

Groups	*N*	*M*	*sd*	*df*	*t*	*p*
Experimental Group	27	4.666	.367	46	-3.309	.002*
Control Group	24	4.131	.702			

*$p < .05$

As seen in Table 6, a statistically significant difference was determined in favor of the experimental group between the attitudes of students in the experimental and control groups [$t_{(51)} = -3.309$, $p < .05$]. This finding can be interpreted as the social studies course including argumentation-based learning positively affecting the attitudes of students towards the social studies course.

Within the scope of the fourth sub-problem in the research, an answer was sought to the question "Is there a significant difference between the critical thinking tendencies of students in the experimental group who received argumentation-based social studies education and the students in control group who received the standard curriculum of social studies course?". Within the scope of this sub-problem, the independent sam-

ple *t*-test was conducted in order to determine whether or not there is a significant difference between the critical thinking tendencies of students in the experimental and control groups after the application and the analysis results are presented in Table 7.

Table 7. *Comparison of the Critical Thinking Tendencies of Students in the Experimental and Control Groups after the Application*

Groups	*N*	*M*	*sd*	*df*	*t*	*p*
Experimental Group	27	3.876	.236	46	-3.468	.001*
Control Group	24	3.485	.504			

*$p < .05$

As seen in Table 7, a statistically significant difference was determined in favor of the experimental group between the critical thinking tendencies of students in the experimental and control groups [$t_{(51)} = -3.468$, $p < .05$]. This finding can be interpreted as the social studies course including argumentation-based learning positively affecting the critical thinking tendencies of students.

Discussion, Conclusion and Suggestions

The argumentation levels of fourth-grade students, their academic achievement levels, critical thinking tendencies and attitudes towards the social studies course were examined at the end of the argumentation-based social studies teaching.

Within the first sub-problem of the research, an attempt was made to determine the levels of arguments that students produced in the social studies course including argumentation-based learning. Worksheets developed by the researchers in accordance with the argumentation-based learning were used throughout the application for the students in the experimental group. Within the framework of these worksheets, findings were obtained about this sub-problem by examining the arguments that were produced by the students. When the obtained findings about this problem are examined, it was observed that the level of arguments produced by the students started to increase after the second week. At the end of the sixth week, it was determined that the level of arguments produced by the students showed a positive increase from the first week to the last week and the level of arguments increased.

Studies were conducted by Kolsto (2006), Mirza and Perret-Clermont (2009), and Crowell and Kuhn (2012) which indicate that argumentation is both a method and a skill. As a result of the applications performed in this research, it was observed that the argumentation skill levels of fourth-grade students increased during the social studies course in which argumentation-based learning was taken as a basis. Therefore, this situation supports the findings of studies which indicate that argumentation is not only a method but also a skill.

At the start of the application with argumentation-based learning, the students contributed to the study only with simple claims they proposed. However, these students started to produce certain arguments with backings or reasons in later phases. The arguments of the students were observed to be more qualified towards the end of the application. When the literature is examined, students produce more qualified arguments as their argument levels develop in classroom environments where argumentation-based learning takes place (Crowell & Kuhn, 2012; Çetin, Kutluca, & Kaya, 2013; Kuhn & Moore, 2015; Kuhn & Udell, 2003; Sampson & Clark 2007; Wissinger, 2012). In addition, it was observed that student discussions had a positive effect on acquiring discussion and critical thinking tendencies to the students through the activities conducted as part of the study.

When the findings regarding the second sub-problem in the study are evaluated, after argumentation-based learning applications, the academic achievement levels of the students increased with activities that enabled them to produce argumentation. There are studies in the literature about the effects of argumentation-based learning on the academic achievement levels of students within the framework of this sub-problem (Altun, 2010; Ceylan, 2010; Demirci, 2008; Deveci, 2009; Kıngır, 2011). Therefore, the obtained findings are in parallel with the literature.

When the findings regarding the third sub-problem in the study are evaluated, it was seen that after argumentation-based learning applications, the attitudes of the students in the experimental group towards the social studies course became more positive compared to the students in the control group. There are studies in the literature about the effects of argumentation-based learning on the attitudes of students towards the course within the framework of this sub-problem (Özkara, 2011; Tekeli, 2009). However, the studies conducted in this context are generally about the subject of science. In this study, the social studies course, including argumentation-based learning, was evaluated and at the end of the research it was observed that there was a change in the attitudes of the students towards the social studies course. It can be stated that this is due to the activities developed within the scope of the study, the group studies conducted during those activities, and argumentation-based learning, which is included in the social studies course in a different manner.

When the findings regarding the fourth sub-problem in the study are evaluated, after argumentation-based learning applications, there was a significant difference in favor of the experimental group for the critical thinking tendencies of the experimental group and the control group. This might be due to the fact that the critical thinking tendencies of the students are developed more in a learning environment where argumentation-based learning takes place. This is due to the development of the students in the argumentation-based learning activities and the in-class discussions.

In this study, it was observed that the students' level of academic achievement, attitude towards the subject of social studies, and critical thinking tendencies improved during the social studies course where applications based on argumentation-based learning were included. Accordingly, the necessity to include an argumentation-based learning approach in the social studies course comes to prominence. It is thought that, especially by establishing discussion platforms in the social studies course, teaching can be performed more efficiently by enabling students to contemplate scientific data and use these data with their reasons through the conduction of these discussions as arguments. Accordingly, it is important to include argumentation-based learning in areas such as the social studies course where student discussions can be established.

One of the processes performed before the research was examination of the social studies curriculum and the acquisition, contents, and activities in the curriculum that are suitable for argumentation-based learning. While the curriculum is suitable in terms of content and acquisition, it is notable that the number of activities that would help the realization of argumentation-based learning is low. For this reason, activities involving argumentation-based learning should be included more in social studies curricula.

When the literature was examined, it was observed in this and many other similar studies (Patronis, Potari, & Spiliotopoulou, 1999; Nussbaum, 2002; Simon & Richardson, 2009) that the students became more interested, participated actively, and were able to produce qualified arguments

with the inclusion of real-life problems in the activities used during argumentation-based learning. Accordingly, the subjects included in the social studies curriculum should be chosen from daily life, should be contemporary, and presented in a way that attracts the attention of students. Therefore, students will be supported to produce arguments and obtain problem-solving skills in daily life.

When the literature is examined, there is a limited number of studies about argumentation-based social studies teaching. From this point of view and in the obtained results, studies that examine the effects of the social studies course based on the argumentation-based learning, the achievement levels of students and attitudes towards the social studies course should be performed.

The examined studies show that argumentation-based learning improves the argumentation levels of students and enables them to produce more qualified arguments. However, there are almost no studies in Turkey about argumentation-based learning in social studies teaching and its effect on academic achievement, attitude and critical thinking tendencies. At this point, it can be suggested that argumentation-based learning should be studied in other fields, especially in social studies teaching, rather than studies which primarily focus on the field of science education.

The effects of this learning method, which enables the use of different thinking skills at the same time, on academic achievement, attitude and critical thinking tendencies skills were revealed in this study. It is considered that this method will be effective in obtaining various skills such as reflective thinking, creative thinking, decision making and problem-solving in the social studies course. For this reason, studies that examine the effects of using argumentation-based learning in social studies teaching on reflective thinking, creative thinking, decision making, and problem-solving skills should be conducted.

References

Akbaş, M. & Çetin, P. S. (2017). The investigation of gifted students' argumentation level and informal reasoning related to socio-scientific issues. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education, 12*(1), 339-360.

Altun, E. (2010). *Işık ünitesinin ilköğretim öğrencilerine bilimsel tartışma (argümantasyon) odaklı yöntem ile öğretimi*. Unpublished Master's Thesis, Gazi University, Ankara.

Antilia, A. (2012). *The effect of an argumentation diagram on the self-evaluation of a creative solution*. Unpublished Doctoral Dissertation, Pennsylvania State University, Pennsylvania.

Aydın, Ö. & Kaptan, F. (2014). Fen-teknoloji öğretmen adaylarının eğitiminde argümantasyonun biliş üstü ve mantıksal düşünme becerilerine etkisi ve argümantasyona ilişkin görüşler [Effect of argumentation on metacognition and logical thinking abilities in science – technology teacher candidate education and opinions about argumentation], J*ournal of Educational Sciences Research, 2*(4), 164-188.

Butt, N. (2010). *Argument construction, argument evaluation and decision-making: a content analysis of argumentation and debate textbooks.* Unpublished Doctoral Dissertation, Wayne State University, Michigan.

Büyüköztürk, Ş. (2007). *Sosyal bilimler için veri analizi el kitabı.* Ankara: PegemA Yayıncılık.

Ceylan, Ç. (2010). *Fen laboratuvar etkinliklerinde argümantasyon tabanlı bilim öğrenme (ATBÖ yaklaşımının kullanımı).* Unpublished Master's Thesis, Gazi University, Ankara.

Chin, C., & Osborne, J. (2010). Students questions and discursive interaction: their impact on argumentation during collaborative group discussions in science. *Journal of Research in Science Teaching, 47*(7), 883-908.

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd Ed.). London: Sage Publications Ltd.

Crowell, A., & Kuhn, D. (2012). Developing dialogic argumentation skills: a three-year intervention study. *Journal of Cognition and Development, 15*(2), 363-381.

Çetin, P. S., Kutluca, A. Y., & Kaya, E. (2013). Öğrencilerin argümantasyon kalitelerinin incelenmesi. *Fen Eğitimi ve Araştırmaları Derneği Fen Bilimleri Öğretimi Dergisi, 2*(1), 56-66.

Demir, F. B. & Oğuz –Haçat, S. (2017) Sosyal bilgiler öğretmen adaylarının argümantasyona dayalı eğitim sürecine göre argüman düzeylerinin belirlenmesi [An exploration the status of social studies teacher candidates' oral argumentation regarding the right and responsibility issue]. *Turkish Scientific Researches Journal, 3*(1), 68-82.

Demirci, N. (2008). *Toulmin'in argümantasyon modeli temelli eğitimin kimya öğretmen adaylarının temel kimya konularını anlamaları ve tartışma seviyeleri üzerine etkisi.* Unpublished Master's Thesis, Gazi University, Ankara.

Deveci, A. (2009). *İlköğretim yedinci sınıf öğrencilerinin maddenin yapısı konusunda sosyobilimsel argümantasyon, bilgi seviyeleri ve bilişsel düşünme becerilerini geliştirmek.* Unpublished Master's Thesis, Marmara University, İstanbul.

Domaç, G. (2011). *Biyoloji eğitiminde toplumbilimsel konuların öğrenilmesinde argümantasyon tabanlı öğrenme sürecinin etkisi.* Unpublished Master's Thesis, Gazi University, Ankara.

Duschl, R. & Osborne, J. (2002). Supporting and promoting argumentation discourse in science education. *Studies in Science Education, 38*, 39-72.

Erduran, S., Simon, S., & Osborne, J. (2004). Tapping into argumentation: developments in the application of Toulmin's argument pattern for studying science discourse. *Science Education, 88*(6), 915-933.

Ertaş-Kılıç, H., & Şen, A.İ. (2014). Turkish adaptation study of UF/EMI critical thinking disposition instrument. *Education and Science, 39*(176), 1-12.

Gelen, G. (1999). *İlköğretim okulları 4. sınıf öğretmenlerinin sosyal bilgiler dersinde düşünme becerilerini kazandırma yeterliklerinin değerlendirilmesi.* Unpublished Master's Thesis, Çukurova University, Adana.

Goodnight, G. T. (2006). Complex cases and legitimation inference: extending the Toulmin model to deliberative argument in controversy. (Eds. D. Hitchcock, B. Verheij). *Arguing on the Toulmin Model*. pp. 39-48. Netherlands: Springer.

Günel, M., Kıngır, S. & Geban, Ö. (2012). Argümantasyon tabanlı bilim öğrenme(ATBÖ) yaklaşımının kullanıldığı sınıflarda argümantasyon ve soru yapılarının incelenmesi [Analysis of argumentation and questioning patterns in argument-based inquiry classrooms], *Education and Science, 37*(164), 317-328.

Gürkaynak, İ., Üstel, F., & Gülgöz, S. (2008). Eleştirel düşünme. Eğitim Reformu Girişimi. Retrieved from: http://www.egitimreformugirisimi.org/wp-content/up-

loads/2017/03/Elestireldusunme_0.pdf

Gültepe, N. (2011). *Bilimsel tartışma odaklı öğretimin lise öğrencilerinin bilimsel süreç ve eleştirel düşünme becerilerinin geliştirilmesine etkisi.* Unpublished Doctoral Dissertation, Gazi University, Ankara.

Güzel, S. (2005). *Eleştirel düşünme becerilerini temele alan ilköğretim dördüncü sınıf sosyal bilgiler öğretiminin öğrenme ürünlerine etkisi.* Unpublished Master's Thesis, Mustafa Kemal University, Hatay.

Hacıoğlu, Y. (2011). *Bilimsel tartışma destekli örnek olayların 8. sınıf öğrencilerinin kavram öğrenmelerine ve okuduğunu anlama becerilerine etkisinin incelenmesi: Genetik.* Unpublished Master's Thesis. Marmara University İstanbul.

Hesapçıoğlu, M. (1991). Etkin okul araştırmaları. Kültür Koleji Genel Müdürlüğü (Ed.), Eğitimde nitelik geliştirme: Eğitimde arayışlar sempozyumu bildiri metinleri (s. 238- 243). İstanbul: Kültür Koleji Yayınları.

Hudson, R. A. (2010). *Statistical argumentation in project-based learning environments*. Unpublished Doctoral Dissertation, University of Indiana, Indiana.

İlter, İ. (2013). Sosyal bilgiler dersinde sorgulayıcı- araştırma tabanlı öğrenme modeli: başarı ve öğrenmede kalıcılığın etkisi. *Turkish Studies, 8*(12), 591-605.

Kabapınar, Y. (2014). *Kuramdan uygulamaya sosyal bilgiler öğretimi,* Ankara: Pegem Akademi.

Kabataş- Memiş, E. (2014). İlköğretim öğrencilerinin argümantasyon tabanlı bilim öğrenme yaklaşımı uygulamalarına ilişkin görüşleri [Elementary students' ideas about on implementation of argumentation-based science learning approach], *Kastamonu Education Journal, 22*(2), 401-418.

Kardaş, N. (2013). *Fen eğitiminde argümantasyon odaklı öğretimin öğrencilerin karar verme ve problem çözme becerilerine etkisi.* Unpublished Master's Thesis, Eskişehir Osmangazi University, Eskişehir.

Kelly, G., & Takao, A. (2002). Epistemic levels in argument an analysis of university oceanography students' use of evidence in writing. *Science Education, 86*, 314-342.

Kıngır, S. (2011). *Using the science writing heuristic approach to promote student understanding in chemical changes and mixtures.* Unpublished Doctoral Dissertation, Middle East Technical University, Ankara.

King, A. (1997). Ask to think-tell why: model of transactive peer tutoring for scaffolding higher level complex learning. *Educational Psychologist, 32*(4), 221-235.

Kolsto, S. D. (2006). Patterns in students' argumentation confronted with a risk-focused socio-scientific issue. *International Journal of Science Education, 28*(1), 1689-1716.

Kuhn, D., & Moore, W. (2015). Argumentation as core curriculum. *Learning: Research and Practice, 1*(1), 66-78.

Kuhn, D., & Udell, W. (2003). The development of argument skills. Child Development, 74(5), 1245-1260.

Küçük, H. & Aycan, H. Ş. (2014). 2007-2012 yılları arasında bilimsel tartışma üzerine gerçekleştirilmiş açık erişim araştırmaların bir incelemesi [Examining open access studies on argumantation between the years 2007-2012]. *MSKU Journal of Education,1*(1), doi:10.21666/mskuefd.05345

Larson, A. A., Britt, M. A., & Kurby, C. A. (2009). Improving students' evaluation of informal arguments. *The Journal of Experimental Education, 77*(4), 339-365.

Merriam, S. B. (2013). *Qualitative research and case study applications in education.* San Francisco: Jossey-Bass Publishers.

Ministry of National Education [MNE]. (2017). *Sosyal bilgiler dersi öğretim programı (1.-8. sınıflar)* [Social studies curriculum (1st – 8th grade)]. Board of Education and Discipline, Ankara, Turkey.

Mirza, N. M., & Perret-Clermont, A. N. (2009). *Argumentation and education theoretical foundations and practices.* (Eds. Clermont), London: Springer Press.

Nussbaum, E. M., (2002). Scaffolding argumentation in the social studies classroom. *The Social Studies, 93*(2), 79-83.

Nussbaum, E. M. (2008). Using argumentation vee diagrams (avds) for promoting argument counterargument integration in reflective writing. *Journal of Educational Psychology, 100*(3), 549- 565.

Nutt, P. C. (2008). Investigating the success of decision-making processes, *Journal of Management Studies, 45*(2), 425-455.

Osborne, J., Erduran, S., & Simon, S. (2004). Enhancing the quality of argumentation in school science. *Journal of Research in Science Teaching, 41*(10), 994-1020.

Önal, H. ve Kaya, N. (2011). Sosyal bilgiler ders kitaplarının (4. ve 5. sınıf) değerlendirilmesi [The evaluation of social studies textbooks of fourth and fifth grade], *Sosyal Bilimler Dergisi, 3*(1), 179-189.

Özkara, D. (2011). *Basınç konusunun sekizinci sınıf öğrencilerine bilimsel argümantasyona dayalı etkinlikler ile öğretilmesi.* Unpublished Master's Thesis, Adıyaman University, Adıyaman.

Patronis, T., Potari, D., & Spiliotopoulou, V. (1999). Students' argumentation in decision making on a socio-scientific issue: Implications for teaching. *International Journal of Science Education, 21*(7), 745-754.

Sadler, T. D., & Fowler, S. R. (2006). A threshold model of content knowledge transfer for socioscientific argumentation. *Science Education, 90*(6), 986-1004.

Sampson, V., & Clark, D. (2007). Incorporating scientific argumentation into inquiry-based activities with online personally-seeded discussions. *The Science Scope, 30*(6), 43-47.

Simon, S., Erduran, S., & Osborne, J. (2006). Learning to teach argumentation: research and development in the science classroom. *International Journal of Science Education, 28*, 235-260.

Simon, S., & Richardson, K., (2009). Argumentation in school science: breaking the tradition of authoritative exposition through a pedagogy that promotes discussion and reasoning. *Argumentation, 23*, 469–493.

Swartz, R. J., (2008). Teaching students how to analyze and evaluate arguments in history. *The Social Studies, 99*(5), 208-216.

Tekeli, A. (2009). *Argümantasyon odaklı sınıf ortamının öğrencilerin asit-baz konusundaki kavramsal değişimlerine ve bilimin doğasını kavramalarına etkisi.* Unpublished Master's Thesis, Gazi University, Ankara.

Toulmin, S. (1958). *The uses of argument.* Cambridge: Cambridge University Press.

Torun, F. & Şahin, S. (2016). Determination of students' argument levels in argumentation-based social studies course. *Education and Science, 41*(186), 233-251.

Thielemier, B. T. (2013). *Developing emerging argumentation: using disparate forms of evidence to create instructional inroads.* Unpublished Master's Thesis, Colorado State University, Colorado.

Wissinger, D. R. (2012). *Using argumentative discussions to enhance the written arguments of middle school students in social studies classrooms.* Unpublished Doctoral Dissertation, University of Maryland, Maryland.

Yazıcıoğlu, A. (2017). *Sosyal bilgiler dersinin Toulmin tartışma modeline dayalı öğretimi.* Unpublished Doctoral Dissertation, Pamukkale University, Denizli.

Yeşildağ-Hasançebi, F., & Günel, M. (2013). Argümantasyon tabanlı bilim öğrenme yaklaşımının dezavantajlı öğrencilerin fen bilgisi başarılarına etkisi [Effects of argumentation-based inquiry approach on disadvantaged students' science achievement], *Elementary Education Online, 12*(4), 1056-1073.

Yeşiloğlu, S. N. (2007). *Gazlar konusunun lise öğrencilerine bilimsel tartışma (argümantasyon) odaklı yöntem ile öğretimi.* Unpublished Master's Thesis. Gazi University, Ankara.

Yıldırım, A. & Şimşek, H. (2016). *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayıncılık.

Zohar, A., & Nemet, F. (2002). Fostering students' knowledge and argumentation skills through dilemmas in human genetics. *Journal of Research in Science Teaching, 39*(1), 35-62.

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **223-232**

Proposed Standards for Assessing Language Skills of Adolescent Students

Juan Lagos-Luciano[a], Cynthia Lee Andruske[b], Marco Cossio-Bolaños[c], Jose Sulla-Torres[d], Leonel Coyla Idme[e], Cristian Luarte-Rocha[f], Rossana Gómez-Campos[g,*]

Received: **9 September 2019**
Revised: **6 November 2019**
Accepted: **16 December 2019**
ISSN: 1307-9298
Copyright © IEJEE
www.iejee.com

DOI: **10.26822/iejee.2019257670**

Abstract

The aim of the study was to validate an instrument and propose standards to measure the language skills of school adolescents. 2270 adolescents (1134 males and 1136 females) in the region of Maule (Chile) was studied. The age range is between 10 to 18 years. The validated instrument has three categories (verbal, paralinguistic and non-verbal) and a total of 26 items. The instrument showed to be valid after the exploratory analysis and Cronbach α (0.86 to 0.88) showed highly reliable values. The LMS method to develop percentiles, let p10, p50 and p90 calculated by age and sex. The instrument measures developed language skills valid and reliable also adopted cutoffs allow diagnose and adolescents by age and sex. These results suggest the use and application of the instrument as an everyday tool in social, cultural and educational contexts.

Keywords: Validity, Reliability, Language Skills, Adolescents, School

Introduction

During secondary education, adolescents need to participate in opportunities that provide curriculum content that develops linguistic skills (Wetherell, Botting, & Conti-Ramsden, 2007). Therefore, school is a fundamental environment for stimulating and developing communicative skills of adolescents. Many experts share the conviction that good communicative skills are innate and generally are learned intentionally, systematically, and experientially (Silverman et al., 2005; Kurtz et al., 2005). However, these skills tend to diminish over time unless they are remembered and practiced regularly (Junod Perron, Sommer, Louis-Simonet, & Nendaz, 2015).

School offers children an environment and opportunities to develop linguistic strategies in diverse areas of human knowledge. This involves skills for making friends in school, communicating effectively with family members, fitting in and being successful in school, and participating in the world of work and business (Harris, 1990).

In general, language is a fundamental skill for human existence at all stages of life. Not all children enter school with the same lexical capabilities. These may be a disadvantage academically for some in comparison to the skills of their peers (Beck, McKeown, & Kucan, 2008; Carmio, Rios, & Sparks, 2013; Mancilla-Martinez & Lesaux, 2011). However, it is during the school years where important growth occurs in the number of new vocabulary words individuals acquire. Furthermore, it is during this time that individuals learn to select words appropriate for responding to particular determined situational contexts and even specific speech (Zimmermann, 2013).

On the other hand, the increase in a sedentary lifestyle and the dependence on technology (Nippold, 1998) has generated a growing concern about how complex and sophisticated communicative interactions have become (Brinton et al., 2004). Furthermore, in many cases, these factors may lead to a decrease in social interactions between children, adolescents, and young adults. This may limit the ability to communicate (Brinton et al., 2004), organize sentences (Wetherell et al., 2007), and use body language during the growth and development stage.

Thus, the focus on speaking, language, and communication are fundamental keys to fitting into society (Larson & McKinley, 2003). Furthermore, they are important for professional development, especially for the process of finding a job (Iksan et al., 2012), achieving professional development, improving social mobility, and confronting future life changes (DfE, 2011).

In this context, during adolescence, cognitive, emotional, and social development are crucial skills for learning and for life. In addition, during this stage, some tasks related to language are developed at school such as control of selective attention, memorization, and problem solving (Hartshorne, 2011). These may contribute to the development of linguistic, verbal, and non-verbal skills respectively.

In general, through linguistic skills for receiving information, individuals process and express personal thoughts. Therefore, linguistic skills influence in a determined way the quality and accuracy of the information individuals receive (García-Álvarez & Bermello-Ávila, 2017). Thus, adequate acquisition of language emerges as the tool that allows communication, thought development, culture, and personality consolidation. As a consequence, individuals acquire capabilities to observe, converse, and understand. These directly influence other areas of learning, such as, language, science, and including mathematics.

In this sense, the linguistic skills of adolescents are important because lexical knowledge predicts academic achievement, and it plays an essential role in cognitive development (Dockrell & Messer, 2004). As a result, children with a larger vocabulary have a greater understanding of what they read.

[a] Juan Lagos-Luciano, Department of Diversity and Educational Inclusivity. Catholic University of Maule. Chile. E-mail: jlagos@ucm.cl
[b] Cynthia Lee Andruske, Centro de Investigación CINEMAROS, Arequipa, Perú. E-mail: candruske@gmail.com
[c] Marco Cossio-Bolaños, Department of Physical Activity Sciences of the Catholic University of Maule, Talca, Chile.E-mail: mcossio1972@hotmail.com
[d] Jose Sulla-Torres, Universidad Católica Santa María de Arequipa, Arequipa, Perú. E-mail: josullato@hotmail.com
[e] Leonel Coyla Idme, Departamento de Estadística e Informática, Universidad Nacional del Altiplano, Puno, Perú. E-mail: leonelcoyla@hotmail.com
[f] Cristian Luarte-Rocha, Universidad San Sebastian, Concepción, Chile. E-mail: cristian.luarte@uss.cl
[g,*] Corresponding Author: Rossana Gómez-Campos, Department of Diversity and Educational Inclusivity, Catholic University of Maule, Chile. E-mail: rossaunicamp@gmail.com

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

Therefore, good readers acquire a larger vocabulary than less competent readers (Baumann, 2008; Beck, McKeown & Kucan, 2008; Nippold, 2007). This explains the close relationship that emerges between the quantity of vocabulary words that an individual possess and reading comprehension (Zimmermann, 2013).

Based on this perspective, an instrument is needed that validates the linguistic skills of adolescent students from the Maule Region (Chile). Furthermore, in view of the absence of standards to evaluate linguistic skills, the objective of this study was to validate an instrument based on content and construct validity and propose standards for measuring linguistic skills of adolescent students. This information could help identify and classify adolescents' skills based on age and sex. Furthermore, this information might contribute to controlling the changes produced during intervention programs and/or training inside or outside of school.

Methodology

Design and sample

A descriptive cross-sectional study was carried out. The population consisted of 16220 students (8590 males and 7630 females). The 2270 student sample (1134 males and 1136 females) was selected through stratified probabilistic sampling that represented a total of 14 % (CI= 95%) from the Maule Region (Chile). Student ages ranged from 10 to 18 years old. Information was collected from 6 public schools (funded municipally). Figure 1 illustrates the characteristics of the sample studied.

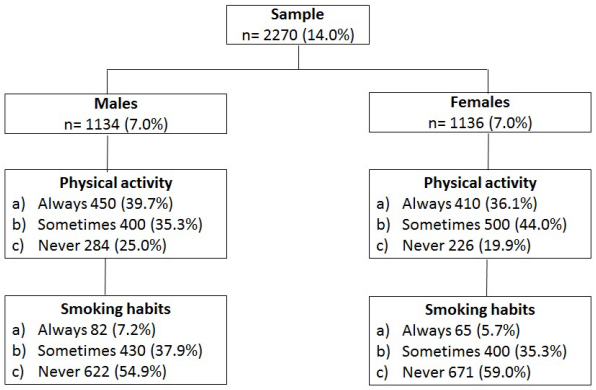


Figure 1. Characteristics of the sample studied

Adolescents included in the study were those in the established age range and those registered in public schools. Students not returning informed consent forms were excluded from the study as well as those not completing correctly the instrument under review. All students participating in the study provided informed consent. In addition, the local ethics committee approved the project in keeping with the Declaration of Helsinki.

Procedures

The instrument was designed based on the operationalization of the linguistic skills variable. This variable is composed of three categories: verbal, linguistic, and non-verbal skills (appendix 1). Each one of these is represented by a set of questions that are related to content validity (Cossio-Bolaños, 2015). The alternatives for each question were based on the Likert format: a) totally agree, b) neither agree or disagree, and c) totally disagree

Once the instrument was created, the contents were examined by content experts. Then, construct validity was carried out by means of exploratory factorial analysis, EFA.

Validity and reliability of the instrument

The instrument was validated by two methods: content and construct validity. Content validity was carried out by following Wierseman's (2001) suggestions for the experts' judgement method. Six expert judges were contacted (professional researchers from communications and linguistics) to perform by content, using a scale.

A file was created for the experts so that they could assess the degree of representativeness, relevance, clarity, simplicity, and comprehensibility of the items from the instrument. The experts evaluated the items based on a scale of 1 to 5 points for each item (equivalent to values for not important to very important). During the analysis, adequacy of the item from the instrument developed was accepted with values greater than the V of Aiken ≥ .75 (Bulger & Housner, 2007). The means of contacting the experts was by email, and the file for assessing the instrument was also sent to them by email. Initially, the instrument consisted of 36 linguistic skills questions with three categories. At the end of the analysis, the questions were reduced to 26 while maintaining the three categories.

Construct validity for the instrument was carried out by means of the exploratory factorial analysis EFA (Días de Rada, 2002). EFA was used to determine the dimensions of the scale (Fahretdin-Hasan, Seda, & Engin Ader, 2015) using the principal component analysis (PCA) with Varimax rotation. In addition, the Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin (KMO) were applied to determine sampling adequacy for factor analysis.

To verify the reliability of the instrument, internal consistency was analyzed using the Cronbanch coefficient (Cronbach's α). The cut-off points of the instrument were determined by using percentiles. Low skill was identified as <p10, moderate skill as p10 to p90, and high skill as >p90.

Statistical analysis

All data was analyzed using the Kolmogorov-Smirnov test. The normality of the data was verified. Subsequently, arithmetic mean descriptive statistics, standard deviation, range, and percentage were carried out. Differences between both sexes were verified by means of the *t*-test for independent samples. Content validity was determined by the V of Aiken test (Penfield & Giacobbi, 2004). Construct validity of the instrument was determined by exploratory factorial analysis (EFA). The technique of principal component extraction, Varimax rotation, Kaiser-Meier-Olkin (KMO), Bartlett's Test of Sphericity and percentage variance were carried out. For reliability, Cronbach's alpha was used. Smoothed distribution of percentiles was created by using the LMS method (Cole et al., 2000). Percentiles p10, p50, and p90 were calculated. This procedure allowed standardization of the data for each sex. Furthermore, transformation of the power of Box-Cox was calculated. The maximum penalty probability procedure was run in order to create three new smoothed curves: L(t) Box-Cox Power, M(t) median, and S(t) coefficient of variation. The calculations were carried out using LMS Chartmaker Pro Version 2.3 software. All calculations were calculated on Excel sheets and with SPSS 18.0.

Results

With regard to content validity, the values from the V of Aiken test are illustrated in Table 1. The values of the V Aiken test for each question oscillate from .75 to 1.0 while for categories these values range from .77 to .94. In all cases, the values from the expert judges reflected an acceptable agreement. The questions that were eliminated showed values inferior to .74 (10 questions) resulting in a final total of 26 questions.

Table 1. *Content validity of the instrument created to measure linguistic skills with the Aiken by question and categories*

Nº	Items/ categories	Representativeness	Relevance	Clarity	Simplicity	Comprehensibility	Total
1	Item 1	1.00	.75	1.00	.86	1.00	.92
2	Item 2	.93	93	.93	.93	.93	.93
3	Item 3	1.00	.96	.86	.82	.86	.90
4	Item 4	1.00	.82	.93	1.00	.75	.90
5	Item 5	.93	1.00	.93	.93	.96	.95
6	Item 6	.75	.93	.86	.75	.86	.83
7	Item 7	.96	.86	.75	.88	.89	.87
8	Item 8	.86	.75	.96	.75	.82	.83
9	Item 9	.93	.96	.86	.96	1.00	.94
10	Item 10	.82	.86	.89	.86	.93	.87
11	Item 11	.89	.85	.88	.88	.90	.88
12	Item 12	1.00	.75	.86	.75	.75	.82
13	Item 13	.93	.96	.75	.82	.96	.88
Verbal category		**.92**	**.88**	**.88**	**.86**	**.89**	**.89**
14	Item 14	.86	.75	.75	1.00	.86	.84
15	Item 15	1.00	.88	.75	.75	.93	.86
16	Item 16	.93	.75	.93	.88	.86	.87
17	Item 17	.75	.96	.93	.75	.75	.83
18	Item 18	.96	.86	.86	.96	.96	.92
19	Item 19	.86	.96	.86	.86	.75	.86
20	Item 20	.75	.86	.86	.93	.75	.83
21	Item 21	.75	.75	.86	.93	.93	.84
22	Item 22	.93	.96	.86	1.00	1.00	.95
Linguistic category		**.87**	**.86**	**.85**	**.90**	**.87**	**.87**
23	Item 23	.86	.75	.86	.93	.75	.83
24	Item 24	.75	.96	.86	.75	.96	.86
25	Item 25	.96	.93	.75	.96	.75	.87
26	Item 26	.86	.82	.96	.96	.96	.91
Non-verbal category		**.86**	**.87**	**.86**	**.90**	**.86**	**.87**

The results of the construct validity and reliability are shown in Figure 2. The saturation of the three categories vary between .350 to .822. The percentage of explanation of the variance of the instrument is 53% (36.0% verbal skill, 9.0% paralinguistic skill, and 8/0% non-verbal skill). The Cronbach values showed reliability in each of the questions (α= .86 to .88) and in the entire instrument (α= .87).

The values for the linguistic skills are represented in percentiles in Table 2. The assessment was carried out for each category (verbal, linguistic, and non-verbal) and for the entire instrument. The percentiles for both are as follows: p10, p50, and p90. The calculations may be interpreted as a function of age and sex. Figure 3 illustrates the graph for percentiles.

Discussion

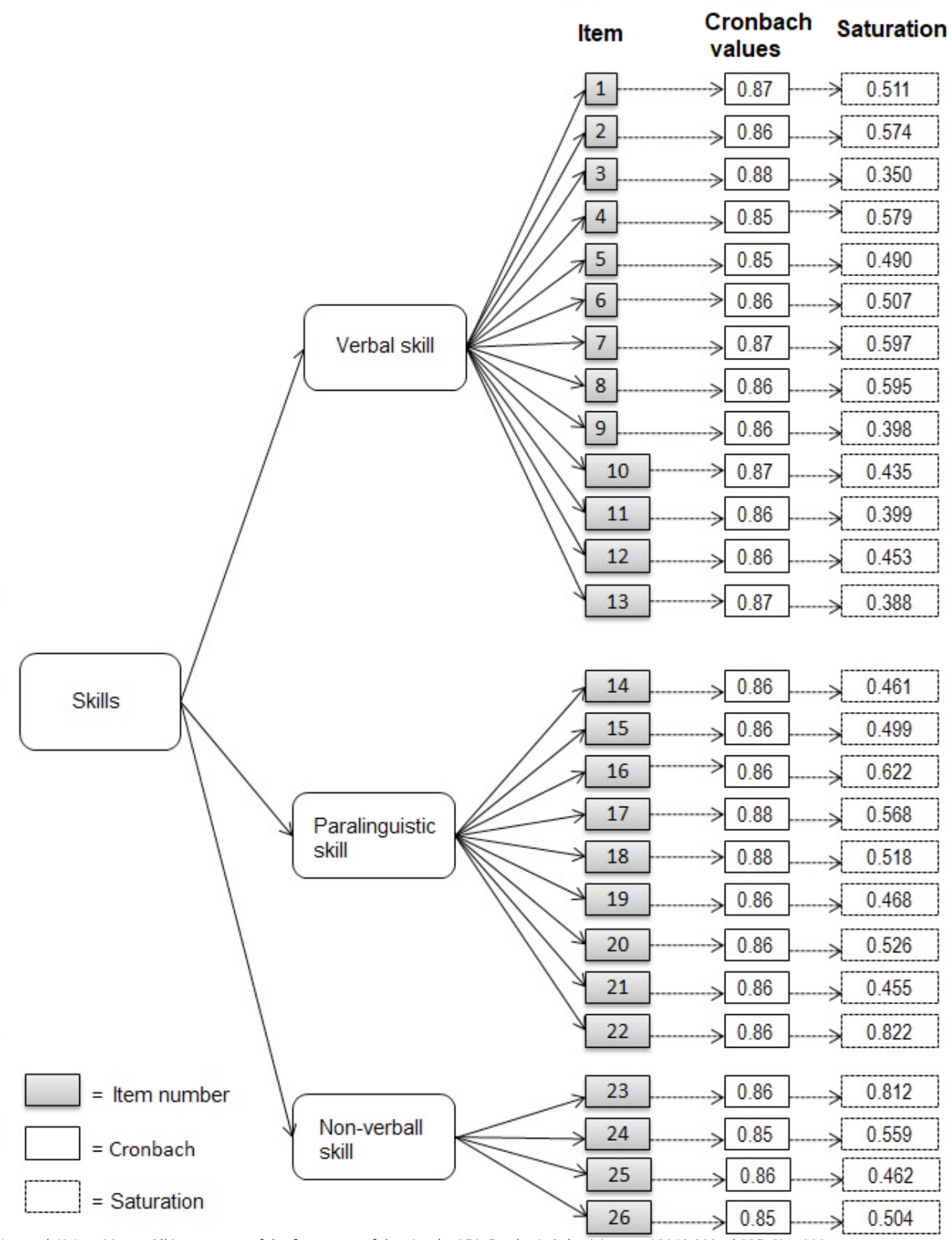
The instrument created for this study consisted of three categories to measure the verbal, paralinguistic, and non-verbal skills. These skills, in general, are interpreted by the receiver and/or receivers through clarity, coherence, and voice intonation in addition to body, facial, and posture expressions. These expressions may vary greatly. Furthermore, they may change the significance of the statement according to the receptor (Stiff et al., 1990) and the circumstances.

The results of this study have demonstrated that the instrument proposed to measure linguistic skills of adolescent students is valid for content and construct (EFA). Based on the analysis of the content by expert judges, the V Aiken test values obtained in this study were valid for 26 questions. These findings reflect homogeneity between six judges. They found representativeness, relevance, clarity, simplicity, and comprehensibility as suggested by Wierseman (2001).

The findings obtained from this research are similar to reports with the same type of characteristics (García & Garcia, 2014; Bolivar-Paredes et al., 2017; Martin-Romera & Molina, 2017). These ensure an adequate measurement of psychometric properties from expert judges. However, it is necessary to compare the results with other validation theories to ensure quality control for other psychometric properties (Kane, 2009). Consequently, a second technique to validate the instrument was the EFA, used to assess the 26 questions validated previously by content.

The results showed greater saturation than 3.50 for all of the questions. These results guaranteed the validity of the instrument since studies with similar statistical analyses, but with different techniques, have reported slightly higher values (Iglesias, 2009; Jaramillo & Ossesa, 2012; Cossio-Bolaños et al., 2013). Therefore, the instrument created for this study is valid and allows the accurate assessment of the linguistic skills of adolescents of both sexes.

With regard to the reliability of the instrument, which guarantees quality control, Cronbach's α values were highly



Legend: Kaiser-Meyer-Olkin measure of the frequency of the simple .959, Bartlett's Sphericity test 18048.809, gl 325, Sig. .000.

Figure 2. Reliability and Cronbach's α values for validity and reliability of the instrument created

Table 2. *Percentile distribution of linguistic skills for adolescents by age and sex*

Age (years)	Males (n=1134)						Females (n=1136)						
	N	L	M	S	P10	P50	P90	*N*	L	M	S	P10	P50	P90
Verbal skill														
10	68	2.91	28.46	.10	24.2	28.5	31.8	76	2.55	27.87	.12	22.7	27.9	31.9
11	124	1.66	28.17	.11	24.1	28.2	31.9	121	1.76	28.01	.12	23.3	28.0	32,.2
12	165	.40	28.07	.12	24.1	28.1	32.4	196	.93	27.79	.12	23.5	27.8	32,.1
13	161	-.77	27.76	.12	23.9	27.8	32.9	185	.08	27.67	.12	23.6	27.7	32.4
14	173	-1.73	27.40	.13	23.6	27.4	33.6	156	-.52	27.83	.13	23.8	27.8	32.9
15	184	-2.12	27.06	.14	23.2	27.1	33.9	135	-.73	27.82	.13	23.8	27.8	33.2
16	134	-1.62	26.72	.14	22.7	26.7	33.2	115	-.61	27.37	,13	23.3	27.4	32.8
17	66	-.68	26.73	.15	22.4	26.7	32.6	85	-.41	27.10	,13	23.0	27.1	32.4
18	59	.37	26.72	.15	22.0	26.7	32.0	67	-.21	26.75	,13	22.6	26.7	31.9
Paralinguistic skill														
10	68	1.81	19.72	.14	15.9	19.7	23.0	76	1.22	20.05	.16	16.0	20.1	24.0
11	124	1.49	19.32	.14	15.7	19.3	22.6	121	1.37	19.55	.16	15.5	19.6	23.3
12	165	1.19	19.11	.14	15.7	19.1	22.4	196	1.47	19.00	.16	15.0	19.0	22.7
13	161	1.01	18.91	.14	15.6	18.9	22.2	185	1.45	18.81	.16	14.8	18.8	22.5
14	173	.87	18.66	.14	15.4	18.7	22.0	156	1.39	18.89	.16	14.9	18.9	22.6
15	184	.59	18.43	.14	15.2	18.4	21.9	135	1.31	18.89	.16	14.9	18.9	22.6
16	134	.01	18.32	15	15.1	18.3	22.2	115	1.23	18.70	.16	14.9	18.7	22.4
17	66	-.92	18.17	.16	15.1	18.2	22.7	85	1.12	18.70	.15	15.0	18.7	22.3
18	59	-2.11	17.84	.17	15.0	17.8	23.7	67	1.02	18.65	.15	15.1	18.7	22.2
Non-verbal skill														
10	68	.63	8.73	.14	7.2	8.7	10.4	76	.02	8.42	.15	7.0	8.4	10.2
11	124	.72	8.62	.15	7.1	8.6	10.3	121	.03	8.58	.15	7.0	8.6	10.4
12	165	.82	8.55	.15	6.9	8.6	10.2	196	.60	8.55	.16	6.9	8.5	10.4
13	161	.94	8.58	.16	6.8	8.6	10.3	185	.84	8.49	.17	6.7	8.5	10.3
14	173	1.06	8.54	.17	6.7	8.5	10.3	156	.98	8.54	.17	6.7	8.5	10.4
15	184	1.13	8.47	.17	6.6	8.5	10.3	135	1.05	8.64	.18	6.7	8.6	10.6
16	134	1.07	8.49	.17	6.6	8.5	10.3	115	1.15	8.53	.18	6.6	8.5	10.4
17	66	.83	8.53	.17	6.7	8.5	10.4	85	1.23	8.34	.18	6.4	8.3	10.2
18	59	.53	8.48	.17	6.7	8.5	10.4	67	1.29	8.10	.18	6.2	8.1	9.9
Linguistic skills (Total)														
10	68	1.31	56.84	.10	49.8	56.8	63.6	76	-.93	57.39	-1.00	46.0	57.4	65.2
11	124	.89	55.94	.10	49.0	55.9	62/9	121	-.95	56.60	-1.00	46.6	56.6	64.4
12	165	.50	55.66	.10	48.8	55.7	63.0	196	-.97	55.56	-1.00	46.6	55.6	63.5
13	161	.23	55.40	.10	48.5	55.4	63.1	185	-.99	55.13	-1.00	46.9	55.1	63.4
14	173	.07	54.91	.11	47.8	54.9	63.0	156	-1.01	55.35	-1.00	47.4	55.3	64.1
15	184	-.07	54.30	.11	47.0	54.3	62.8	135	-1.02	55.31	-1.00	47.4	55.3	64.6
16	134	-.28	53.92	.12	46.5	53.9	63.0	115	-1.03	54.40	-1.00	46.6	54.4	64.0
17	66	-.73	5399	.13	46.3	54.0	64.1	85	-1.03	53.95	-1.00	46.3	54.0	63.6
18	59	-1.40	53.88	.14	46.1	53.9	65.7	67	-1.04	53.61	-1.00	46.1	53.6	63.3

Legend: L= assymetry; M= median; S= coefficient of variation.

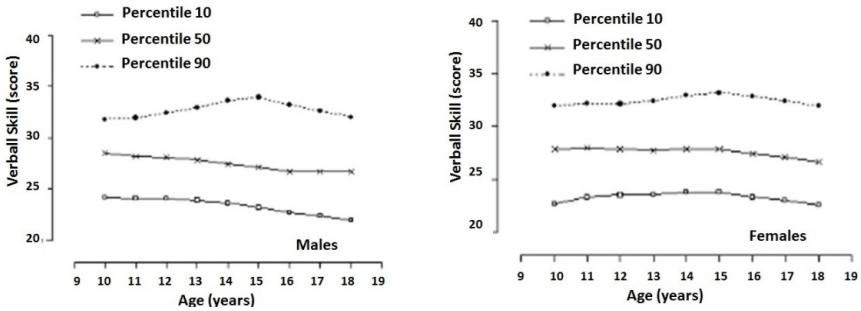


Figure 3. Graph of the percentiles based on the LMS method, distributed in p10, p50, and p90 by age and sex

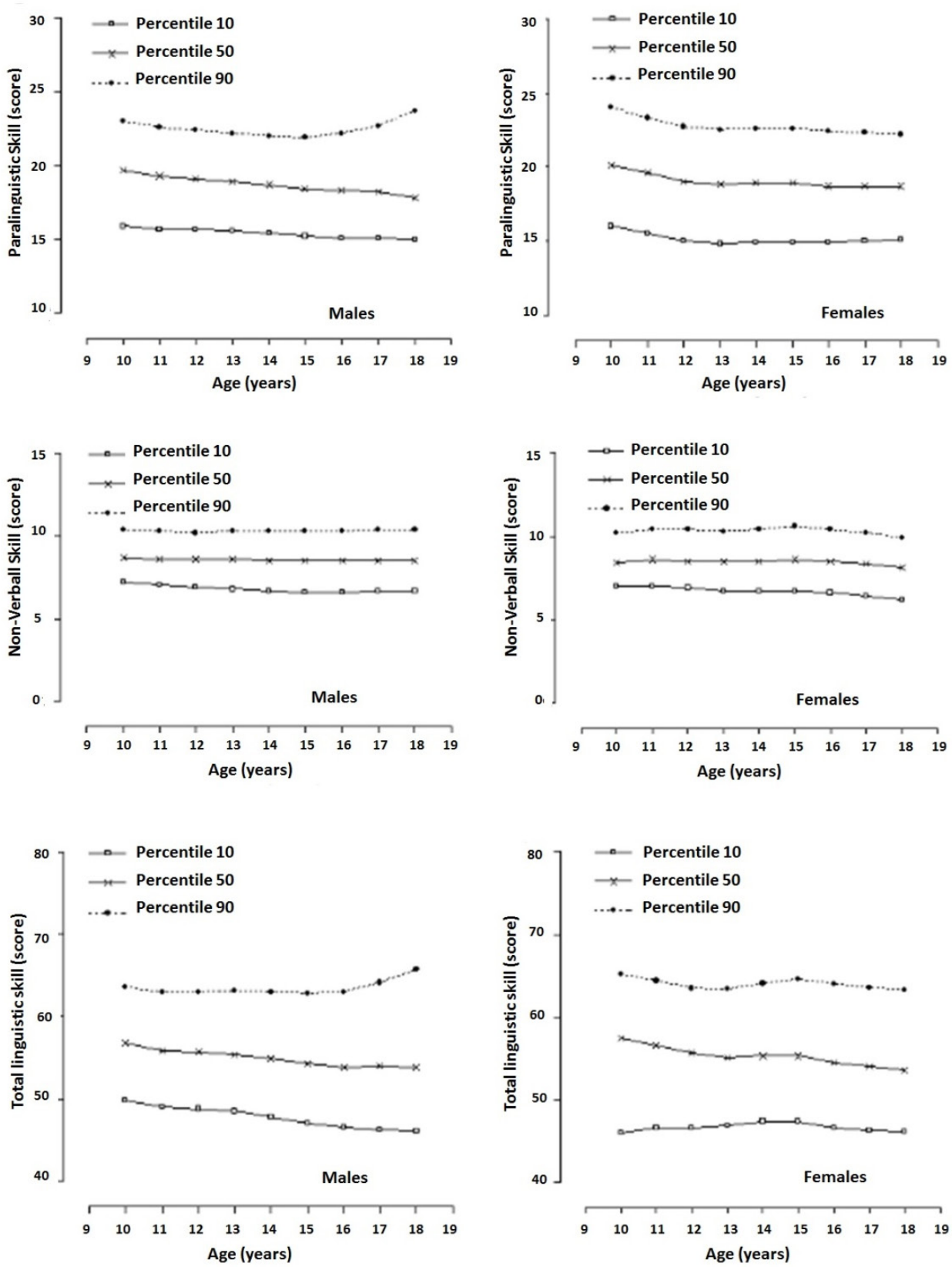


Figure 3 (Cont.). Graph of the percentiles based on the LMS method, distributed in p10, p50, and p90 by age and sex.

reliable. These findings are consistent with other studies with similar objectives (Cossio-Bolaños, Andruske, Vargas-Vitoria, Lagos-Luciano, Luarte-Rocha, Sulla-Torres, & Gómez-Campos, 2019; Cossio-Bolaños, Monné, Cornejo, Lepe, Vidal, & Araújo, 2013; Dini, Alves, Oliveira, & Guirardello, 2014).

In general, the conscious development of verbal, paralinguistic, and non-verbal skills may be crucial for improving the communicative capacity with others. Thus, the non-verbal skills are defined as the facial expressions and looking into the eyes of others. These expressions provide a rich source of non-verbal information, especially in transmitting emotions from the sender (Dixon & O'Hara, 2008). However, the term paralinguistic refers to characteristics such as speaking speed, tone, pronunciation, pausing, and emphasizing voice modulation that reflect happiness and/or sadness. However, these paralinguistic signs are difficult to decipher and are generally ambiguous.

Verbal skills include knowing how to listen, speak, read, and write. These skills are represented by the use of concrete and abstract vocabulary and meanings embedded in sentences by going through formal phonological and morphosyncratic structures. Additionally, practical aspects are also established that are necessary for verbal and social interaction, respectively (Dixon & O'Hara, 2008).

In essence, the instrument created actually measures the three categories described previously. Therefore, the exploratory analysis allowed us to corroborate that the questions formulated for each category were relevant. This instrument may be useful for educators as well as researchers since the three categories for the skills may be operationalized and may serve to measure the performance of linguistic skills. Consequently, they may perform a relevant role in academic success (Uccelli et al., 2014), not only during the school years but also at the university level.

With regard to the proposed norms to evaluate the linguistic skills, this researchers used the LMS method (Cole et al., 2000) to develop the percentiles. The three parameters, (L(t) Box-Cox power, M(t) median, and S(t) Coefficient of variation) allowed the creation of the curves in relation to any percentile using LMS (Pan & Cole, 2006). This guarantees that the extremes of the percentiles may be estimated more efficiently, and each observation may be converted into its standard deviation (Kulaga et al., 2011).

In this context, the cut-off points adopted (<p10, between p10 to p90 and >p90) allowed identifying, classifying, and diagnosing the linguistic skills of the adolescents. This academic tool is relevant for monitoring and following adolescents during the teaching-learning process throughout the school years. Therefore, linguistic skills are still developing during adolescence and potentially throughout the lifetime. In addition, users of daily language develop new sills in order to navigate a growing number of social contexts (Berman & Ravid, 2009).

Generally, the studies that focus on linguistic skills have suggested that students need to be evaluated during oral presentations continually in order to become confident, use actual technologies, capable of initiating and sustaining a discussion, accepting of criticism, and capable of making concise conclusions during discussions (Adler, Werner, & Korsch, 1980; Fann, Hunt, & Schaad, 2003). In this sense, the proposed instrument is an alternative that allows students to maintain personal motivation to practice, stimulate, and compare the student with himself or herself as well as with others.

It is necessary to point out that this study has some limitation. For example, the data collection was transversal, and it was carried out only in public (municipal) schools. Therefore, future studies need to include private schools in the evaluation process. This would have provided relevant information to analyze and interpret more accurately the results obtained. However, at the time of the research, more funding would have been required and difficulty in collecting information would have occurred. This research only examined state public schools (municipal). Moreover, it is necessary to highlight advantages of this study such as the large sample size and the ease of carrying out the calculations in real time. Thus, the assessment of the linguistic skills may be carried out with the following link: http://www.reidebihu.net/ling_skill.php

Conclusion

The researchers conclude that the instrument created measures the linguistic skills validly and reliably for content as well as for EFA. Furthermore, the cut-off-points adopted allow diagnosis and classification of adolescents according to age and sex. Finally, the results from this study suggest the use and implementation of this instrument could be used as a daily tool in social, cultural and educational contexts.

Acknowledgements

The authors wish to thank the teachers and students from the participating schools.

Disclosure statement

The authors reported no potential conflict of interest.

References

Adler, R., Werner, ER. & Korsch, B. (1980). Systematic study of four years of internship. *Pediatrics, 66*(6):1000–8.

Baumann, J.F. (2008). Vocabulary and reading comprehension: the nexus of meaning. En S. E. Israel & G. G. Duffy (Eds.), *Handbook of Research on Reading Comprehension*, 323-34. Nueva York: Routledge.

Beck, I.L., McKeown, M.G. & Kucan, L. (2008). *Creating Robust Vocabulary.* Nueva York: The Guilford Press.

Berman, R.A. & Ravid, D. (2009). Becoming a literate language user: Oral and written text construction across adolescence. In D. R. Olson, & N. Torrance (Eds.), *Cambridge handbook of literacy* (pp. 92-111). Cambridge, UK: Cambridge University Press.

Brinton, B., Robinson, LA. & Fujiki, M. (2004). Description of a program for social language intervention: If you can have a conversation, you can have a relationship. *Language, Speech and Hearing Services in School, 35*(3):283-290.

Bolivar-Paredes, E. & Villanueva-Ruska, A. (2017). Validación y confiabilidad del Cuestionario AQ-27 de actitudes estigmatizadoras hacia pacientes con esquizofrenia en un Hospital General-2015. *Revista de Neuro-Psiquiatría, 80*(3), 165-171.

Bulger, S.M., & Hourner, L.D. (2007). Modified delphi investigation of exercise science in physical education teacher education. *Journal of Teaching in Physical Education, 26*, 57-80.

Carmiol, A., Ríos, M. & Sparks, A. (2013). La relación entre habilidades prelectoras y habilidades narrativas en niños y niñas preescolares costarricenses: aportes para un enfoque comprensivo de la alfabetización emergente. En A. Auza & K. Hess (Eds.), *¿Qué me cuentas? Narraciones y desarrollo lingüístico en niños hispanohablantes.* México: Universidad Autónoma de Querétaro-Hospital Dr. Manuel Gea González.

Cole, TJ., Bellizzi, MC., Flegal, KM. & Dietz, WH. (2000). Establishing a standard definition for child overweight and obesity worldwide: international survey. *BMJ, 320*(7244):1240-3.

Cossio-Bolaños M., Andruske, CL., Vargas-Vitoria, R., Lagos-Luciano, J., Luarte-Rocha, C., Sulla-Torres, J. & Gómez-Campos, R. (2019). Validation of an Instrument to Assess the Skill Levels of Adolescent Students to Learn Knowledge. *International Electronic Journal of Elementary Education, 12*(1), 47-52.

Cossio-Bolaños, MA. (2015). *Métodos de investigación cuantitativa en ciencias de la educación.* Editorial UCM, Talca, Chile.

Cossio-Bolaños, MA., Monné, R., Cornejo, C., Lepe, N., Vidal, R. & Araújo, P. (2013). Construcción de un instrumento para medir el uso del conocimiento científico en alumnos de educación especial y psicopedagogía. *Multiciencias, 13*(1), 68-74.

DfE (2011) Opening Door, breaking down barriers: a strategy for social mobility. HM Government, London SW1A 2WH.https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/61964/opening-doors-breaking-barriers.pdf

Díaz de Rada Igurquiza, V. (2002). Análisis Factorial. En: Díaz de Rada Igurquiza V. Técnicas de análisis multivariante para investigación social y comercial. Madrid: RA-MA. 91-156.

Dini, A., Alves, DF., Oliveira, H. & Guirardello, E. (2014). Validez y confiabilidad de un instrumento de clasificación de pacientes pediátricos. *Rev. Latino-Am. Enfermagem, 22*(4), 598-603. DOI: 10.1590/0104-1169.3575.2457

Dixon, T. & O'Hara, M. (2008). Making Practice-Based Learning work - Communication Skills. (Accessed: 11/06/2013): http://cw.routledge.com/textbooks/9780415537902/data/learning/11_Communication%20Skills.pdf

Dockrell, J. & Messer, D. (2004). Lexical acquisition in the early school years. En R. A. Berman (Ed.), *Language Development Across Childhood and Adolescence*, 35-52. Amsterdam-Philadelphia: John Benjamins.

Fahretdin-Hasan, A., Seda S. & Engin A. (2015). Assessing Preschool Teachers' Practices to Promote Self-Regulated Learning. *International Electronic Journal of Elementary Education, 7*(3), 423-440

Fann, JR., Hunt, DD. & Schaad, D. (2003). A sociological calendar of transitional stages during psychiatry residency training. *Acad Psychiatry, 27*(1):31–8.

García, M.A. & García, M. (2013). Estimación de la validez de contenido en una escala de valoración de grado de violencia de género soportado en adolescentes. *Acción Psicológica, 10*(2), 41-58.

García-Álvarez, C.M. & Bermello-Ávila, C.B. (2017). *Habilidades lingüísticas en la comprensión lectora en los estudiantes de quinto grado de subnivel medio de la Escuela de Educación Básica Eugenio Espejo, periodo lectivo 2016-2017*(Bachelor's thesis, Universidad de Guayaquil. Facultad de Filosofiía, Letras y Ciencias de la Educación.).

Guttman-Louis. (1976). Fundamentos del análisis del escalograma. En: Wainerman CH (comp). Escalas de medición en ciencias sociales. Buenos Aires. Ediciones Nueva Visión, 291-330.

Hartshorne M. I CAN Talk is a series of reports exploring contemporary issues in children's speech, language and communication. London, 2011. www.ican.org.uk

Iglesias, MJ. (2009). Elaboración y validación de un instrumento diagnóstico para la percepción de las competencias emocionales en estudiantes universitarios de educación. *REOP, 20*(3), 300-311.

Iksana ZH., Zakaria E., Meerah, TS., Osman, K., Choon-Liana, DK., Mahmud, SN. & Krish, P. (2012). Communication skills among university students. *Procedia - Social and Behavioral Sciences, 59*, 71 – 76.

Jaramillo, S. & Ossesa, S. (2012). Validación de un Instrumento sobre Metacognición para Estudiantes de Segundo Ciclo de Educación General Básica. *Estudios Pedagógicos, 38*(2), 117-131.

Kułaga, Z., Litwin, M., Tkaczyk, M., Palczewska, I., Zajączkowska, M., Zwolinska, D., Krynicki, T., Wasilewska, A., Moczulska, A., Morawiec-Knysak, A., Barwicka, K., Grajda, A., Gurzkowska, B., Napieralska, E., & Pan, H. (2011). Polish 2010 growth references for school-aged children and adolescents. *Eur J Pediatr, 170,* 599-609.

Kurtz, S., Silverman, J. & Draper, J. (2005). *Teaching and learning communication skills in medicine.* 2nd edition. Oxford: Radcliff Publishing Ltd.

Larson, VL. & McKinley, NL. (2003). Service Delivery Options for Secondary Students with Language Disorders. Seminars, *Speech and Language, 24*(3).

Mancilla-Martínez, J. & Lesaux, N. K. (2011). Early home language use and later vocabulary development. *Journal of Educational Psychology*, Advance online publication. doi: 10.1037/a0023655.

Martin-Romera, A. & Molina Ruiz, E. (2017). Valor del conocimiento pedagógico para la docencia en Educación Secundaria: diseño y validación de un cuestionario. *Estudios pedagógicos (Valdivia), 43*(2), 195-220.

Nippold, M. (2007). *Later Language Development: School-Age Children, Adolescents, and Young Adults*. Austin TX: Pro-Ed.

Nippold, MA. (1998). *Later Language Development: The school age and adolescent years.* (2nd ed.). Austin, TX: Pro-Ed.

Nippold, MA. (2007). *Later language development: school-age children, adolescents, and young adults* (3rd ed). Austin, Texas PRO-ED.

Pan, H. & Cole, TJ. LMS Chartmaker. 2006. http://www.healthforallchildren.co.uk, accessed 11 march 2012.

Perron, NJ., Sommer, J., Louis-Simonet, M. & Nendaz, M. (2015). Teaching communication skills: beyond wishful thinking. *Swiss Med Wkly, 145*, 1-10, w14064

Penfield, R.D. & Giacobbi, P.R. (2004). Applying a score confidence interval to Aiken's item contentrelevance index. *Measurement in Physical Education and Exercise Science, 8*(4), 213-225.

Silverman, J., Kurtz, S. & Draper, J. (2005). *Skills for communicating with patients.* 2nd edition. Oxon: Radcliff Publishing Ltd.

Stiff, J.B., Hale, J.L., Garlic, R. & Rogan, R. G. (1990). Effect of cue incongruence and social normative influences on individual judgments of honesty and deceit. *Southern Communication Journal, 55*, 206-229.

Uccelli, P., Barr, CD., Dobbs, CL., Galloway, EP., Meneses, A. & Sanchez, E. (2014). Core Academic Language Skills (CALS): An expanded operational construct and a novel instrument to chart school-relevant language proficiency in per-adolescent and adolescent learners. *Applied Psycholinguistics,* 1-33.

Wetherall, D., Botting, N. & Conti-Ramsden, G. (2007). Narrative in adolescent specific language impairment (SLI): a comparison with peers across two different narrative genres. *International Journal of language and communication disorders, 42*(5), 583-605.

Wierseman, L.D. (2001). Conceptualization and development of the sources of enjoyment in youth sport questionnaire. *Measurement in Physical Education and Exercis eScience, 5*(3), 153-157.

Zimmermann, K. (2013). Desarrollo léxico en la adolescencia: Un análisis de sustantivos en narraciones orales y escritas. *Actualidades en psicología, 27*(115), 113-127.

Appendix
Validation of linguistic skills

Dear Student, the purpose of this questionnaire is to collect information about linguistic skills. Please mark with an X the answer that you consider fits you best. Please select only one answer. Thank you for your help in answering these questions.

Date of assessment: Day ( ), Month ( ), Year ( ); Sex: (M) / (F); Birth date: Day ( ), Month ( ), Year ( ), Participation in physical activities: Always ( ), Sometimes ( ), Never ( ). Smoking: Always ( ), Sometimes ( ), Never ( ).

Questions	TA	NDA-NED	TD
1. I have a large vocabulary.	( )	( )	( )
2. I establish a mutual dialogue and share common themes of interest for me and my speaking partner.	( )	( )	( )
3. Frequently, I worry about having to speak in public.	( )	( )	( )
4. In general, it is difficult for me to maintain control of conversations.	( )	( )	( )
5. I feel that others enjoy speaking with me.	( )	( )	( )
6. Often, I consider my conversations are successful.	( )	( )	( )
7. I have the skill to speak with clarity.	( )	( )	( )
8. Frequently, family members or friends ask me to speak for them because I am a good speaker.	( )	( )	( )
9. Generally, I speak very fats, and sometimes, I speak so fast that I am not understood.	( )	( )	( )
10. Actually, I speak clearly all of the time and with adequate pronunciation.	( )	( )	( )
11. I communicate my opinions and concepts coherently in a logical order.	( )	( )	( )
12. Frequently, I use interesting, witty, or funny words when I speak.	( )	( )	( )
13. When I express my ideas or thoughts, I do not use complete sentences.	( )	( )	( )
14. When I speak in public, the volume of my voice is adequate in order to be heard by all participants.	( )	( )	( )
15. Often, it pleases me to play with the sounds of words to make them rhyme.	( )	( )	( )
16. During my frequent conversations, I experience constant interruptions or embarrassing pauses.	( )	( )	( )
17. Frequently, in my conversations, the use of fillers predominates: esteee, mmmm, ahhh, and, etc.?.	( )	( )	( )
18. Often, I become blocked, and I lose the rhythm of the conversation with some people.	( )	( )	( )
19. When I hear music, I follow the rhythm with my fingers.	( )	( )	( )
20. I sing on key.	( )	( )	( )
21. I can sing in harmony with other people.	( )	( )	( )
22. I am happy when I use different animated and expressive intonations during my conversations.	( )	( )	( )
23. I feel afraid, get the chills, or forget, and sweat when I present in front of a group of people.	( )	( )	( )
24. In general, it is difficult for me to express my sentiments, wishes, or needs with gestures.	( )	( )	( )
25. In general, when I am in a group, and I do not share the same opinions, I easily change my body posture.	( )	( )	( )
26. I interpret the gestures and expressions of others easily.	( )	( )	( )

iejee | INTERNATIONAL ELECTRONIC JOURNAL OF ELEMENTARY EDUCATION

December 2019, Volume **12**, Issue **2**, **233-236**

Creating a Community of Caring within a School

Stacey Keowng[a], Rob Carroll[b], Jill M. Raisor[c,*]

Received: 13 October 2019
Revised: 21 November 2019
Accepted: 16 December 2019
ISSN: 1307-9298
Copyright © IEJEE
www.iejee.com

DOI: 10.26822/iejee.XXXXXXXXX

Abstract

Students often arrive at school not ready to learn due to stress and trauma. In order to thrive in school, students need to know that within the school is an intentional, multi-layered system of caring. This manuscript details strategies at the individual, classroom, and school level. Having targeted strategies to assist students is essential in creating a caring community within the school context.

Keywords: Caring, Stress, Trauma, Community, School

Introduction

Children who are exposed to trauma are at risk for developing emotional or behavioral problems, including dysregulation, posttraumatic stress disorder (PTSD), depression, low self-esteem, and aggression (Beltran, Brown-Elhillali, Ryce, Ofonedu, Hoover, & Belcher, 2016). There is research to support that behavior in the classroom can increase teacher workload, stress level, and may be correlated to teacher burnout rates (Friedman-Krauss & Raver, 2014). A potential strategy to alleviate these issues could be the use of student interventionists in a peer-mediated intervention to build community within the classroom. Student interventionists have served as effective change agents in school settings for both academic problems (Dufrene, Henington, & Townsend, 2006; Dufrene, Reisener, Olmi, Zoder-Martell, McNutt, & Horn, 2010) and behavior problems (Arceneaux & Murdock, 1997).

The following manuscript details strategies for creating a community of caring within the school context. Needs of children entering our classrooms each day are demanding on teachers which can increase the stress level of the classroom. Schools are faced with the unique challenge of meeting the needs of children and supporting teachers while creating an enriching educational atmosphere. Below six strategies total are presented with two strategies highlighted at the individual, classroom, and school levels. The following strategies are practical ideas for establishing a culture of a caring community within the school setting. However, each situation is unique and should be evaluated by appropriate professionals to ensure best practice.

Strategy #1: Individual Level - Mentoring Program

A mentorship is a dynamic and reciprocal relationship that can be beneficial for both the child and the mentor (Burrell, Wood, Pikes, & Holliday, (2001). Community and home-based adult mentors can protect and support a student's resiliency towards overcoming trauma. Children with a mentor, such as a teacher or coach, who support efforts through encouragement and belief, were identified as having higher resilience than those without mentors (Walsh, 2003). Also, when adult mentors demonstrate continued confidence and consistent support in children, the children were far better in adaptive skills than students without an adult mentor (Wong, 2003). According to Blum, McNeely, and Nonnemaker (2002), children were found to benefit from having a stable, trustworthy, non-familial adult on whom they could rely. External mentorship can contribute to growth in all areas of a person's life, in part because mentorship is a combination of multiple processes. These processes include investments of thought, time, and effort that create a capacity for people to expand their capabilities in all capacities of their life (Burrell et al., 2001).

Strategy #2: Individual Level - Give Hugs, High-fives, or Pats on the Shoulder

Oxytocin is a chemical in our bodies that scientists sometimes call the "cuddle hormone" because levels rise when we hug or sit close to someone else. Oxytocin is associated with happiness and less stress (Cirino, 2018). According to a study conducted by Olff, Langeland, Witteveen, and Denys (2010), oxytocin has been implicated in the pathophysiology of psychiatric disorders. The disorders include abnormal stress regulation as well as disrupted attachment and/or social deficits (e.g., social withdrawal) such as autism, obsessive-compulsive disorder, social phobia, borderline personality disorder, mood disorder, and PTSD. The release of oxytocin reduces amygdala activation and decreases the brain regions involved in automatic and behavioral responses to fear. Young and Wang (2004) link oxytocin with neuroendocrine and psychosocial stress reduction.

Cortisol is public health enemy number one (Bergland, 2013). Ironically, this chemical in our own body, which was designed to activate the fight-or-flight mechanism, could silently harm us. According to Bergland (2013), both eustress and distress release cortisol as part of the general adaptation syndrome. Once the alarm to release cortisol has sounded, your body becomes mobilized and ready for action — but there has to be a physical release of the "fight-or-flight" chemical. If the body fails to release it, cortisol levels build up in the blood, which wreaks havoc on your mind and body. Elevated cortisol levels can interfere with memory and learning, lower immune system functioning and bone density, increase weight gain, blood pressure, cholesterol, and heart disease. Chronic

[a] Stacey Keown, Department of Teacher Education, University of Southern Indiana, Evansville, IN, USA. E-mail: srkeown@usi.edu
[b] Rob Carroll, Department of Teacher Education, University of Southern Indiana, Evansville, IN, USA. E-mail: recarroll@usi.edu
[c,*] Corresponding Author:Jill M. Raisor, Department of Teacher Education, University of Southern Indiana, Evansville, IN, USA. E-mail: jmraisor@usi.edu

© 2019 Published by T& K Academic. This is an open access article under the CC BY- NC- ND license. (https://creativecommons.org/licenses/by/4.0/)

stress and higher cortisol levels also increase one's risk for depression, mental illness, and lower life expectancy.

Oxytocin has been observed to reduce the levels of cortisol in the body and lower blood pressure (Dvorsky, 2012). The "tend-and-befriend" response increases oxytocin and reduces cortisol (Bergland, 2013). This response is the exact opposite to "fight-or-flight." The "tend-and-befriend" response is linked to increasing healthy social groups to reduce vulnerability, and contributing to the development of social networks (Taylor, Klein, Lewis, Gruenewald, Gurung, & Updegraff, 2000).

A hug, high-five, or pat on the shoulder can make a person feel safe, secure, and can help reduce their fears. Very rarely is the importance or impact of a hug, high-five, or pat on the shoulder given much thought. A hug, high-five, or pat on the shoulder releases oxytocin which leaves a person feeling tranquil and loved. Oxytocin, along with dopamine and norepinephrine, are believed to be highly critical in human pair-bonding (Dvorsky, 2012).

During a hug, high-five, or pat on the shoulder, oxytocin is distributed throughout the body causing stress reduction and an increase in mood regulations. Through the physical connection, oxytocin can alleviate social anxieties and produce feelings of trust (Dvorsky, 2012; Kosfeld, Heinrichs, Zak, Fischbacher, & Fehr, 2005). According to Cirino (2018), even touching an inanimate object, such as a teddy bear, can help reduce people's fears about their existence.

Hugs, high-fives, or pats on the shoulder are essential for people with traumatic stress. Oxytocin has been proven to be a natural form of an antidepressant (Dvorsky, 2012). Early stress and abuse experiences (particularly childhood emotional abuse and neglect and early parental separation) seem to disrupt the normal development of oxytocin in children. This development is a critical mechanism to regulate emotional behaviors (Olff et al., 2010). Children with adverse childhood experiences need more oxytocin, which means they could benefit from more hugs, high-fives, or pats on the shoulder. It is important to note school policies and children's personal preferences. One idea to consider is to create a chart where the children choose how they prefer to be greeted each day; for example, a high five might help today, but a simple wave might be preferred the next day.

Strategy #3: Classroom Level - Classroom Champions

The protégé effect, or using peer-to-peer techniques, can be useful not only in the classroom but in developing a healthier, more positive school culture (Price, 2019). When administrators and teachers give students ownership in their learning environments, it creates a sense of pride in students (Price, 2019). An example of how this might work in a classroom is when a student enrolls in school, they will be matched with an identified classroom champion "champ." Students chosen to be classroom champs show leadership skills in knowing school and classroom procedures and have the ability to collaborate well with others. Their role is to welcome new students into the classroom until they have been onboarded successfully into the classroom's culture. The classroom champ's job is to give the new student an initial tour, introduce them to their classmates, teach them their school procedures, and befriend them through this challenging transition. Have the champ greet them each morning upon arrival and walk with them into the classroom. Examples of collaborations might also include things such as playing at recess, eating lunch together, being teammates on a project, etc.

By creating this autonomy within the classroom, character traits, such as—friendship, perseverance, responsibility, respect, self-discipline, cultural sensitivity, and courage—are built (Sheasley, 2019). Belonging in the classroom means ensuring that all students feel welcomed, comfortable, and part of the school family (Dunlea, 2019). Teachers could regularly refer to the character traits in class and consistently link them to learning targets—emphasizing that the traits will help students develop into "their best self". Students and staff share the responsibility for creating a culture of respect and safety, as well as working hard to break down misconceptions that can stand in the way of progress (Sheasley, 2019).

An extension would be to match families together as adult versions of classroom champs, so the families also have a go-to person to ask questions and for reminders or clarity on processes. It is imperative that every child and family feel welcomed in classrooms. Families and schools belong together. They're all strengthened when parents come inside, get acquainted with teachers, and get involved in their kids' learning (Boss, 2010).

Strategy #4: Classroom Level - Continuity of Care

Looping, the practice of keeping a group of children with the same teacher for more than a year, has the potential to provide a consistent caregiver during the young child's critical period of attachment and emotional development (Nitecki, 2017). Looping occurs when a teacher is promoted with her students to the next grade level. "Continuous learning," "continuity of care," "continuous progress," or "persisting groups," is the practice of keeping the same caregiver or teacher with a group of children for two to three years (Lab at Brown University, 1997). This classroom practice builds on attachment and continuity of care. The practice of looping stresses long-term relationships, so students of the same age group remain with the same teacher for more than one school year, while multi-age classrooms may have a different teacher year after year (Nitecki, 2017).

Blum, McNeely, and Nonnemaker (2002), found that students benefit from having a stable, trustworthy, non-familial adult they could rely on. Looping provides children with additional time to build the trust and relationships on which much of their learning depends (Haslinger, Kelly, & O'Lare, 1996). In this setting, children develop stronger social bonds with their peers, are better able to resolve conflicts, and are more skillful in working as team members to solve problems. Looping is especially important for young children, whose social emotional foundation is being built through attachments with parents and caregivers (Nitecki, 2017). . According to Murgatroyd & Spengler (2011), there is evidence linking early experiences and stressors to physical and emotional problems. The researchers state a solid preventive measure is attachment that a consistent, trustworthy adult could provide. Recent findings based on the implications of epigenetics magnify the need to prioritize the child's need for attachment, especially in settings outside of the home (Nitecki, 2017). The main caregivers are responsible for the "blueprint for baby's own emotional regulations and future expectations of relationships" (KarrMorse & Wiley, 2012, p. 98). To prevent the negative effects of stress on the child's developing and fragile system, there should be a solid consistent base of attachment (Nitecki, 2017), like those found in looping.

During infancy, toddlerhood, and leading up to age five, there is an "emotional vulnerability of the immature system that is so overlooked in our culture" (Karr-Morse & Wiley, 2012, p. 97). The widely held opinion about young children is that trauma experienced at a young age is "erased over time, lost in the fog of early experience" (p. 92). This is simply not true. The brains of young children are particularly tuned to both positive and negative emotions in surroundings (Nitecki, 2017). Our schools are where students spend a majority of their day. Within the context of a safe, familiar environment (ex. school settings) with a steady caregiver, attachment can form, which leads to self-regulation, and ultimately maintaining physical, cognitive, and emotional health (Nitecki, 2017).

Strategy #5: School Level - Supportive Peers

Students who experience trauma need to know that they are not alone. Trauma-informed peer support emerged as an alternative to traditional psychiatric hospitalization and has been at the cutting edge of developing new practices for responding to crisis (Felton, 2003). Peer support is grounded in the knowledge that crisis can be transformative, that mutually supportive relationships provide necessary connection, and that new contexts offer new ways of thinking about one's experience. Supportive peers proactively create plans that serve as guidelines to the kinds of interactions and activities that will benefit the student. The situation is shared rather than "handled," and it offers an opportunity for the peer community to learn and grow (MacNeil & Mead, 2005). Peers can mature together in small groups and learn from each other's challenges based on similar experiences. Oxytocin levels are increased by close relationships and social support, and reduced by sad emotions or social isolation. There is a clear association between oxytocin and the experience of social support (Kosfeld et al., 2005). Peer supports in mental health settings for children who have experienced trauma often mean having peers who have experienced similar hardships working together to address needs (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). This can be implemented in the school setting as well. In a study conducted by Heinrichs, Baumgartner, Kirschbaum, and Ehlert (2003), students who received both protective factors of social support and oxytocin exhibited the lowest cortisol concentrations during stress exposure, whereas students who received no social support and placebo demonstrated the highest cortisol response. Also, students that have more secure attachments in relationships may be related to having a more positive alliance with therapists, peers, educators, and to their outcomes (Olff et al., 2010).

Strategy #6: School Wide - Therapeutic Toolbox

Students who have been traumatized may exhibit a number of challenging behaviors. The multifaceted nature of these challenges often makes such students candidates for individualized behavior support (Cavanaugh, 2016). Certain people or situations may remind the student of their traumatic experience, which could trigger a student's aggressive behavior in the classroom. Once these triggers are identified, support plans can be developed that remove or adjust these antecedents (Crone, Hawken, & Horner, 2015). It is critical to find time throughout the day for students to demonstrate their strengths and be provided opportunities to engage in activities that interest them (Cavanaugh, 2016). As educators, it is important to celebrate the "small wins". Supporting students with multitiered school-wide supports (MTSS) gives them a safe place to talk about an experience, describe a fear, relieve frustrations, or in some cases, simply provides a friendly face to say hello to everyday. Within some systems of MTSS, the supports include screening, check-in/check-out (CICO), yoga, breathing techniques, and social skills instruction (Bruhn, Lane, & Hirsch, 2014; Telles, Singh, & Balkrishna, 2012). By giving students these supports in their therapeutic toolbox, it helps establish a safe environment for them to thrive. In order to be successful, it has been determined that schools must develop, teach, and reinforce at least three to five of these school-wide expectations. (Horner, Sugai, & Anderson, 2010).

Conclusion

There are numerous strategies at the various levels (i.e. individual, classroom, and school) that can be implemented to help students cope with a variety of stressors. Educators of students with stress and/or trauma need to be aware of its impact on children, and the most effective ways to address their educational and social needs. Having practical strategies to assist students is essential in creating a community of caring within the school. A simple smile or wave "hello" can provide a strong start to the day. In this manuscript, strategies for building a community of caring within the school are detailed. Each school should consider their unique culture and work collaboratively with students, teachers, staff, administrators, families, and the community to establish a positive, caring atmosphere where optimal learning can occur.

References

American Psychological Association. (2015). *Trauma.* Internet site: www. apa.org/topics/trauma.

Arceneaux, M.C., & Murdock, J.Y. (1997). Peer prompting reduces disruptive vocalizations of a student with developmental disabilities in a general eighth grade classroom. *Focus on Autism and Other Developmental Disabilities, 12*, 182-186.

Beltran, M., Brown-Elhillali, A., Ryce, P., Ofonedu, M.E., Hoover, D., Belcher, H.E. (2016). Yoga-based psychotherapy groups for boys exposed to trauma in urban settings. *Alternative Therapies in Health & Medicine, 22*(1), 39-46.

Bergland, C. (2013). Cortisol: Why the "Stress Hormone" Is Public Enemy No. 1. *Psychology Today.*

Blum, R. W., McNeely, C. & Nonnemaker, J. (2002). Vulnerability, risk, and protection. *Journal of Adolescent Health, 31*, 28-39.

Boss, S., (2010). For Kids' Sake, Let's Connect Parents and Schools. *Edutopia.*

Burrell, B., Wood, S., Pikes, T., & Holliday, C. (2001). Student Mentors and Protégés Learning Together. *TEACHING Exceptional Children, 33(3), 24–29.*

Cavanaugh, B., (2016). Trauma-Informed Classrooms and Schools. *Beyond Behavior, 25*(2).

Cirino, E. (2018). What Are the Benefits of Hugging? *Heathline.*

Crone, D.A., Hawken, L.S., & Horner, R.H. (2015). *Building positive behavior support systems in schools: Functional Behavioral Assessment* (2nd Edition). New York: Guilford Press.

Dufrene, B. A., Henington, C., & Townsend, A.E. (2006). Peer tutoring for reading fluency: Student implementation and effects on reading fluency. *Journal of Evidence Based Practice for Schools, 7*, 118–137.

Dufrene, B.A., Reisener, C.D., Olmi, D.J., Zoder-Martell, K., McNutt, M.R., & Horn, D.R. (2010). Peer tutoring for reading fluency as a feasible and effective alternative in response to intervention systems. *Journal of Behavioral Education, 19*, 239-256.

Dunlea, M., (2019). Every Student Matters: Cultivating Belonging in the Classroom. *Edutopia.*

Dvorsky, G. (2012). 10 Reasons Why Oxytocin is the Most Amazing Molecule in the World. *GIZMODO.*

Felton, B.J. (2003). Innovations and implementation in mental health services for homeless adults: A case study. *Community Mental Health Journal, 39*, 309-322.

Friedman-Krauss, A.H., & Raver, C.C. (2014). Child behavior problems, teacher executive functions, and stress in head start classrooms. *Early Education and Development, 25*, 681-702.

Haslinger, J., Kelly, P., & O'Lare, L. (1996). Countering absenteeism, anonymity, and apathy. *Educational Leadership, 54*(1), 47-50.

Horner, R.H., Sugai, G., & Anderson, C.M. (2010). Examining the evidence based for school- wide positive behavior support. *Focus on Exceptional Children, 42,* 1–14.

Karr-Morse, R. & Wiley, M.S. (2012). *Scared sick: The role of childhood trauma in adult disease.* New York: Basic Books.

Kosfeld, M., Heinrichs, M., Zak, P., Fischbacher, U., & Fehr, E. (2005). Oxytocin increases trust in humans. *Nature, 435*(7042), 673-676.

Laboratory at Brown University. (1997). *Looping: Supporting Student Learning Through Long-Term Relationships.* Brown University Press. Office of Educational Research and Improvement (OERI), Department of Education, under contract no. RJ96006401. Retrieved from http://www.brown.edu/academics/education-alliance/sites/brown.edu.academics.educationalliance/files/publications/looping.pdf

MacNeil, C., & Mead, S. (2005). A Narrative Approach to Developing Standards for Trauma-Informed Peer Support. *American Journal of Evaluation, 26*(2), 231-244.

Murgatroyd, C., & Spengler, D. (2011). Epigenetics of Early Child Development. *Frontiers in Psychiatry, 2*, 16. http://doi.org/10.3389/fpsyt.2011.00016

Nitecki, E. (2017). Looping and Attachment in Early Childhood Education: How the Applications of Epigenetics Demand a Change. *Journal of the Scholarship of Teaching and Learning, 17*(2), 85–100.

Olff, M., Langeland, W., Witteveen, A., & Denys, D. (2010). A Psychobiological Rationale for Oxytocin in the Treatment of Posttraumatic Stress Disorder. *CNS Spectr, 15*(8), 522–530.

Price, S., (2019). Student-Led Culture Change. *Edutopia.*

Sheasley, C., (2019). Building a School Like a Tight-Knit Family. *Edutopia.*

Taylor, S., Klein, L., Lewis, B., Gruenewald, T., Gurung, R., & Updegraf, J. (2000). Biobehavioral Responses to Stress in Females: Tend-and-Befriend, Not Fight-or-Flight. *American Psychological Association, Inc, 107*(3), 411-429.

Telles, S., Singh, N., & Balkrishna, A. (2012). Managing Mental Health Disorders Resulting from Trauma through Yoga. *Depression Research and Treatment, 2012.* doi:10.1155/2012/401513

Substance Abuse and Mental Health Services Administration (SAMHSA). (2014). *Trauma- informed care in behavioral health services.* Treatment Improvement Protocol Series 57. Rockville, MD: Substance Abuse and Mental Health Services Administration. http://www.samhsa.gov/nctic/ trauma-interventions

Walsh, F. (2003). Family resilience: a framework for clinical practice. *Family Process, 42*, 1-18.

Wong, B. Y. L., (2003). General and specific issues for researchers' consideration in applying the risk and resilience framework to the social domain of learning disabilities. *Learning Disabilities Research & Practice, 1*8, 68-76.

Young, L. J., & Wang, Z. (2004). The neurobiology of pair bonding. *Nat Neurosci, 7*(10), 1048–1054.

Zimmermann, K. (2013). Desarrollo léxico en la adolescencia: Un análisis de sustantivos en narraciones orales yescritas. *Actualidades en psicología, 27*(115), 113-127.

December 2019, Volume **12**, Issue **2**, **233-236**

December 2019, Volume **12**, Issue **2**, **233-236**