



Primary School Students' Perceptions of Self-Regulation Skills and the Supporting and Hindering Factors for Self-Regulation *

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Abstract

Primary school is a significant period for the children to learn self-regulatory behaviours. This study aims to help enhance primary school fourth grade curricula to support students' self-regulation skills. The study employed an explanatory sequential mixed-methods design to collect quantitative data from 1753 students and 86 teachers in 46 primary schools via descriptive and relational surveys, and causal-comparative methods, and qualitative data from 60 stakeholders of primary school curricula (students, family members and teachers) via semi-structured interviews. In conclusion there is no statistically significant relationship between students' perceptions of their self-regulation skills and teachers' perceptions of their level of encouraging self-regulation. Self-reflection and seeking help by the student, sustaining self-regulation strategies, serving as a model for children and adoption of a democratic attitude by families, self-regulatory behaviours of peers, cooperation between school and family, and inclusion of self-regulation as an aim in the curriculum are all supporting factors for self-regulation. A student's expectation of direct instruction, family's low socioeconomic and cultural levels, teacher's lack of self-regulation education, spoon-feeding or over interfering the students by teachers, exam-oriented approach for education, and intensive curriculum material are all hindering factors.

Keywords

Self-regulation skills
Primary education
Primary school curriculum
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Introduction

Self-regulation skills have grown in importance with the advent of lifelong learning in the twenty-first century. Vassallo (2008) pointed out that self-regulated learning helps in several aspects, including an individual's democratic participation, lifelong learning, academic achievement, and vertical movement in the economic field. This skill should be improved, especially along with formal education. Bandura (2002) emphasized that predisposing students to self-regulation skills is education's primary objective. Self-regulated learning is treated as an effective variable that will increase students' learning skills, academic success, and education levels within the current teaching models in the end (Wolters, 2010). Accordingly, objectives and activities for self-regulation are incorporated into curricula.

Primary school is an important stage for students to develop an emotional relationship with their school, understand their own feelings and thoughts, and adopt cognitive strategies. Children begin to act according to social and ethical values, steering their thoughts and behaviours toward achieving their goals and meeting the expectations of others during this period. Primary school is, therefore, considered the best schooling stage for developing and teaching self-regulation skills. It is important to develop self-regulation skills throughout the first years of education according to research (e.g., Arsal, 2009; Ferreira & Simão, 2012). Bayındır and Ural (2016) stated that self-regulation is a skill that should be developed and included in primary school curricula to ensure high levels of development and academic achievement in primary school students. However limited research has been conducted on curriculum implementations within the scope of self-regulation skills of primary school students in Turkey. For instance, Aktan and Topuzkanamış (2010) found that the gains of self-regulation skills in the primary school Turkish teaching curriculum are at a moderate level and there is no explanation about self-regulation in the Teacher's Guide Book. Research emphasized on curriculum implementations and teacher education (Aktan & Topuzkanamış, 2010), and how self-regulation strategies are taught in the real classroom environment (Chatzistamatiou, Dermitzaki, & Bagiatis, 2014; Schunk & Zimmerman, 1997).

The major goals of primary school curricula in Turkey are to ensure that students accept responsibility for formal and informal activities and are motivated to discharge such responsibilities (Ministry of National Education [MoNE], 2017). There has been little study on primary school curricula aimed at strengthening such skills despite the increasing number of studies on self-regulation in Turkey in recent years (e.g., Çatalbaş & Semerci, 2016; Sıcak & Eker, 2016). Therefore, a need to investigate the factors that support and hinder self-regulation skills in primary school curricula is felt.

Theoretical Framework

Definition of self-regulation

In some cases, self-regulation is defined in terms of developmental processes, whereas in others, it is characterized in terms of social and cognitive processes (Bronson, 2000). Bandura (1989, 2002) defined self-regulation as setting personal goals, making an effort, and employing various resources to attain such goals. Zimmerman (2000) described self-regulation as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (p. 14). Zumbunn, Tadlock, and Roberts, (2011) stated that self-regulation refers to an individual's awareness of their ways of thinking, behaviours, and feelings; management thereof; and realization of learning. Kauffman (2004) described self-regulation as the learner's effort to control and manage learning activities. Boekaerts (1997) stated that of self-regulation, in addition to these definitions focused on its cognitive process, has another dimension, motivational. The self-regulation concept was explored in this study in a broad context including cognitive, emotional, and social processes.

Self-regulation models

Models explaining self-regulation are based on two assumptions. The first assumption is that learning is not simply an outcome but a process composed of diverse combinations of the learner's particular stable traits and skills, whereas the second assumption is that learning regulation is a cyclic process (Järvenoja, Järvelä, & Malmberg, 2015). Different models are proposed to explain self-regulation. Kanfer (1970)'s three-stage self-regulation model, for example, includes self-observation, intrinsic and extrinsic motivation, and self-evaluation stages. Borkowski (1992) suggested that in the process-oriented cognitive model, self-regulation derives from lower-level cognitive skills and relates to positive motivational processes in later stages (as cited in Borkowski, Chan, & Muthukrishna, 2000). In Boekaerts (1996)'s adaptive learning method, evaluations are given great importance to ensure that attitudes and behaviours of the learner are guided by their perceptions. Winne (1996) defines the four-stage self-regulation model as identifying and interpreting the learning challenge, determining a purpose and organizing the learning process, adopting the determined learning methods and strategies, and developing metacognitive strategies. In Zimmerman (1998)'s self-regulated learning model, the anticipation, performance/control of the will, and self-reflection stages alternate cyclically. Pintrich (1999) discussed three strategies in self-regulation, namely, cognition, metacognition, and resource management: (1) Cognitive strategies are one's repetition, interpretation, and organization of information. (2) Metacognitive strategies are related to planning, monitoring, and regulation. (3) Resource management is composed of time management, work environment, and help-seeking strategies. The main skills expected of a student in such models are determining the learning goal, selecting appropriate strategies toward achieving that goal, ensuring a high level of motivation to adopt such strategies, seeking social support when needed, evaluating his/her performance, and changing the strategy when necessary.

Self-regulation skills and teaching

A self-regulated individual has the following characteristics: having a purpose and forethought, keeping a specific source of motivation for learning, drawing certain judgments about the process, putting the learning plan into action, being an active participant in the process, self-evaluating, self-monitoring, and self-reflecting (Bandura, 2006). Zimmerman (1990) stated that self-regulated students actively search for information when they need it and put in individual effort to internalize such information. These students have a strong sense of responsibility.

Although students can gain self-regulation skills through individual experiences, a substantial portion of them must be taught in independent learning strategies and practices (Harvey & Wolfe, 2007). Zimmerman (1990) suggested that educators should teach students such skills rather than anticipating independent development of self-regulation. Self-regulation teaching is considered significant and necessary to ensure that individuals steer their learning, engage in lifelong self-education, and keep their knowledge up to date (Boekaerts, 1997). There are several studies (e.g., Arsal, 2009; Stoeger & Ziegler, 2008) indicating that students taught with self-regulation have high academic achievement and motivation. The acquisition of self-regulation skills by students is also an important goal in terms of lifelong learning.

Primary school curricula with children, families, and teachers as the main stakeholders can enhance self-regulation skills. There is a need for curriculum applications to research and develop such skills in primary school children. This need arises from the fact that primary school is a period in which children's physical, cognitive, affective and psycho-motor skills develop very rapidly. The knowledge and skills they will gain during this period form the basis of their education and even their career choices later in life.

Students may acquire self-regulation skills more efficiently through the support of teachers as suggested by Azevedo, Cromley, Winters, Moos, and Greene (2005). Research indicates that the family's participation in a child's homework process improves their self-regulation skills (Hoover-Dempsey et al., 2001). Therefore, determining the roles and performances on the self-regulation of stakeholders can contribute to curriculum development.

It is noteworthy that the studies on self-regulation generally focus on teachers and teacher candidates. Studies involving students were mostly carried out at secondary and high school levels. Considering in this context, there is a need for research at primary school level to examine the basic knowledge and skills of self-regulation.

Research Questions

This study aims to analyse fourth-grade students' self-regulation skill perceptions and to determine the supporting and hindering factors in the curricula that affect such perceptions. The study's main question is "What is the level of primary school fourth-grade students' perceptions on self-regulation skills; what are the supporting and hindering factors for self-regulation?" The following are the study's sub questions:

1. What are the levels of primary school fourth-grade students' perceptions on their self-regulation skills and teachers' perceptions on encouraging self-regulation?
2. Is there a significant correlation between perceptions of primary school fourth-grade students' perceptions on self-regulation skills and their teachers' perceptions on self-regulated encouragement capabilities?
3. Do perceptions of primary school fourth-grade students on their self-regulation skills differ significantly according to their teachers' professional experience and graduated school/faculty and the number of students in class?
4. Do primary teachers' perceptions on encouraging their students for self-regulation differ significantly according to professional experience and graduated school/faculty and the number of students in class?
5. What are the opinions of fourth-grade primary school students, their teachers, and their family members on the supporting and hindering factors for self-regulation in primary school curricula?

Method

Research Design

A mixed-methods explanatory sequential design was implemented in this study (Creswell, 2003; Creswell & Plano Clark, 2018). It was primarily aimed at quantitatively describing students' perceptions of their self-regulation skills and at determining the difference between some demographic variables and the relationship between students' perceptions and teachers' perceptions of encouraging their students for self-regulation. A sequential mixed-methods design was preferred because the study examines the supporting and hindering factors for self-regulation in the curricula from a qualitative perspective. Descriptive and relational surveys and causal-comparative methods (Johnson & Cristensen, 2019) were used to collect quantitative data as a result. Qualitative data were collected through semi-structured interviews with teachers, family members, and students.

Population and Sample

The study sample determined by two-stage cluster sampling method. In the first stage, 46 (18%) of the population of 252 primary schools in a metropolitan city located in Western Turkey were assigned into sample randomly. In the second stage, one ($n = 2$) or two classes ($n = 44$) in each school were selected by simple random sampling method. Data were collected from 1,753 students in 90 classes in such schools. Eighty-six teachers of such classes, voluntarily participating in the study, were included in the sample. The demographic characteristics of the primary teachers are presented in Table 1.

Table 1. Demographic Characteristics of the Primary Teachers

Demographic Characteristics	Categories	<i>n</i>
Gender	Female	65
	Male	21
	Total	86
Professional Experience (years)	10 years and less	6
	11-20	23
	21 years and more	56
	Total	85
Graduated School/Faculty	Faculty of Education	52
	Institute of Education/ Teacher Training College	11
	Other	23
	Total	86
Number of Students in Class	1-20	28
	21 and more	58
	Total	86

As seen as Table 1, most of the teachers had a professional experience of 21 years or more, whereas the professional experience of the remaining teachers ranged between 5 years and less and between 11 and 20 years. The majority of the teachers were graduated from Faculty of Education. The number of students in their classes was mostly between 21-40.

An extreme case sampling method (Kemper, Stringfield, & Teddlie, 2003) was employed in the study's qualitative phase. A total of 60 individuals were included in the sample, including students scoring high ($n = 10$) and low ($n = 10$) on the Perceived Self-Regulation Skills Scale, their teachers ($n = 20$), and an adult member of their families ($n = 20$).

Materials and Procedure

The Perceived Self-Regulation Skills Scale developed by Cavas, Arslan-Cansever, and Ünver (2020) was adopted in the study to determine the students' perceptions of their self-regulation skills. The scale consists of 26 four-point Likert-type items and three dimensions. The first dimension is called as Planning the Learning Process and it includes 12 items like "I make a daily to-do list." and "I would like to learn new things." The second dimension is the Implementation of the Learning Plan, it has four items like "I hurry to finish my study as soon as possible." and "I forget to do my homework." The last one is the Focusing on the Target and Learning Task and it includes 10 items like "I realize when I can't learn about a lesson/subject." and "I use different study methods for different subjects." The Cronbach's alpha internal consistency coefficients for the dimensions of the scale were calculated as .85, .60, and .73, respectively, and for the whole scale as .88.

The Self-Regulated Learning Encouragement Scale, created for primary teachers by Ercoşkun and Gündoğdu (2017), is another quantitative measurement tool used in the study. It is composed of 17 five-point Likert-type items and three dimensions. The first dimension of the scale named Encouraging Strategy use and Evaluation includes seven items like "I encourage my students to use their own

learning ways." The second dimension, Encouraging Planning and Goal Setting, has five items like "I encourage my students to set goals that they will reach at the end of their learning." The last dimension is Encouraging Motivation and Motivation for Learning and it contains five items like "I encourage my students to look for opportunities to learn new things." The Cronbach's alpha internal consistency coefficients calculated for the whole scale and its dimensions are .92, .87, .86, and .83, respectively.

Both scales were implemented when collecting data from teachers and students within the sample at their schools. The researchers explained to the teachers and students the study objectives, the scale structures, and the points to be considered while filling out the scales and answered their questions about the scales. The implementation of the scales took approximately 15-25 min for the teachers and students in a class.

Semi-structured interview guides were prepared by the researchers for students, teachers, and family members to collect qualitative data. Some questions on the draft interview guides were rearranged following the suggestions of four academicians'. Such guides were tested through interviews with a primary school fourth-grade student, his/her teacher, and a member of his/her family. They were reviewed, modified, and finalized accordingly. The interview forms contain 16 questions for students like "What are the enjoyable or not enjoyable behaviors of your family while you are learning anything?", 13 questions for teachers like "Which activities, in or out of the classroom, do you think improve your students' self-regulation skills?", and 10 questions for family members like "Which activities at home do you think improve your child's self-regulation skills?"

Interviews were held at the schools of the students in the sample group. Except for two schools, each of the students, teachers, and family members was interviewed on the same day sequentially. Interviews took 13-44 (total = 455; mean = 23) min with students, 19-46 (total = 714; mean = 37) min with teachers, and 13-38 (total = 476; mean = 24) min with family members. Interviews were recorded with an audio recorder if permitted by the participants. Interviews with two students, a teacher, and a family member were handwritten as they did not allow recording.

Data Analysis

The students' perceived self-regulation skill levels were analysed through descriptive statistics. Independent samples *t* test and one-way analysis of variance (ANOVA) were conducted to examine the significance of the difference between groups. The relationship between students' perceived self-regulation skills and teachers' perceptions of the level of self-regulation encouragement was tested using Pearson's correlation coefficient.

Content analysis was used to analyse the qualitative data. Two of the researchers coded the samples from the student, teacher, and family member interview transcripts, considering the research questions. Inter coder reliability (92%) was considered to comply with the 90% criterion of Miles and Huberman (1994). Researchers reviewed such codes and compiled an initial code list to improve the study's internal reliability. All deciphered interviews were analysed by hand using the code list. New codes were added when deemed necessary according to the data. The coders discussed on conflicting and unsure codes. by. The codes were analysed to attain subthemes once the coding process was completed and attain themes from such subthemes. Table 2, presents an example of coding process of the supporting factors for self-regulation dimension.

Table 2. An Example of Coding Process of the Supporting Factors for Self-Regulation*

Codes	Codes of the Participants for Each Codes	Examples of the Statements
Seeking help	CH6, CH7, CH8, CH11, CH14, CH17, CH18, PH11, TH8, TH18; CL3, CL5, CL9, CL10, CL13, CL15, PL9, PL20, TL16	(CH11) ask (for help) if he or she does not understand (a subject) and it is critical (PH11, p. 2).
Doing chores	CH1, CH7, CH11, CH12, CH14, CH17, CH18, PH1, PH11, PH17, PH18; CL13, PL13, PL19, PL20, TL15	I can crack eggs. I have learned to cook potatoes and pasta. I cook them with my mother, and I help her (CH17, p. 2).
Being open to suggestion	CH14, CH17, CH18, PH14, PH17, TH14; PL13, TL19	They (students) use my suggestions (in other similar situations as well) (TH14, p. 2).

* Theme: Characteristics of the Students, Subtheme: Social Skills

Trustworthiness of the Study

As a precaution for trustworthiness (Creswell & Plano Clark, 2018; Johnson & Christensen, 2019), the data sources triangulation (students, teachers, and family members) was also used and some direct quotations were benefited for describing the results. The data were collected from different participating groups to enhance the study's internal validity and reliability (Miles & Huberman, 1994). Considering the recommendations of Creswell and Plano Clark (2018) and Yin (2017), methodology and results were elaborated so that other researchers would trust on and replicate the findings of this study on their research design and reports. The sample was composed with students scoring high and low on the Perceived Self-Regulation Skills Scale, and their teachers and a member of their family to enhance the variety of sample. Inter coder reliability was also determined and an initial code list was prepared by reviewing the trial codes (Miles & Huberman, 1994). Out of consideration of Shenton (2004)'s suggestion, the coders discussed codes they coded differently on the same part of the data. Besides, as Johnson and Christensen (2019) state, peer discussions and enabling coders to self-reflect before and during the coding process can increase the reliability of the study.

Ethical Considerations

All participants were informed of the beneficial and risky aspects of the study. Voluntary participation was the principle of the study. Ethical precautions of the study were approved by a state University Publication and Research Ethics Board in 2018.

Results

Primary School Fourth-Grade Students' Perceptions on Their Self-Regulation Skills

In order to analyze the levels of primary school fourth-grade students' perceptions on their self-regulation skills and teachers' perceptions on encouraging self-regulation, descriptive statistics are utilized. Table 3 shows the descriptive statistical results of primary school fourth-grade students' perceptions on self-regulation skills.

Table 3. Descriptive Statistics on Perceived Self-Regulation Skill Scale Scores of Students

Variables	Range	<i>n</i>	\bar{x}	<i>SD</i>
Planning the Learning Process	12-48	1753	39.74	6.14
Implementing the Learning Process	4-16	1753	14.07	2.16
Focusing on the Task and Learning Task	10-40	1753	32.66	4.63
Self-Regulation (Total)	26-104	1753	86.47	10.80

The findings indicate that primary school students' self-regulation skills scores are high level. They feel competent planning and implementing the learning process, setting learning goals and adopting necessary strategies toward attaining such goals. Also their total scores of the perceived self-regulation skills are sufficient. Table 4 presents the descriptive statistical results of teachers' perception on encouraging self-regulation.

Table 4. Descriptive Statistics on Encouraging Self-Regulation Scale Scores of Teachers

Variables	Range	<i>n</i>	\bar{x}	<i>SD</i>
Encouraging Strategy Use and Evaluation	7-35	86	31.67	4.42
Encouraging Planning and Goal Setting	5-25	86	22.50	3.35
Encouraging Motivation and Motivation for Learning	5-25	86	22.88	2.96
Encouraging Self-Regulation (Total)	17-85	86	77.05	10.21

Table 4 shows that the means of teachers' perception on encouraging self-regulation are at a relatively high level. Primary teachers' scores indicate that they have a high perception of encouraging self-regulation both for subscales and total scale.

Pearson's correlation coefficients were calculated on scores of the Perceived Self-Regulation Skills Scale and the data from the Encouraging Self-Regulation Scale to test the correlation between the perception of primary school fourth-grade students on their self-regulation skills and teachers' degree of encouraging self-regulation. A low-level, negative, and non-significant correlation was determined between the perception of primary school first-grade students on their self-regulation skills and the teachers' degree of encouraging self-regulation ($r = -.125$; $p > .05$).

In order to analyze perceptions of primary school fourth-grade students on their self-regulation skills differ significantly according to their teachers' professional experience, graduated school/faculty and the number of students in class, One-Way ANOVA was used. The results are given in Table 5.

Table 5. Means, Standard Deviations, and One-Way ANOVA Statistics for Study Variables

Variables	Group	<i>n, \bar{x}, SD Values</i>			ANOVA Results					
		<i>n</i>	\bar{x}	<i>SD</i>	Source of Variance	Sum of Square	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
Professional Experience	1-10 years	6	85.97	2.81	Between G.	3.77	2	1.89	.17	.85
	11-20 years	23	86.69	4.44	Within G.	933.96	82	11.39		
	21 and more years	56	86.27	2.89	Total	937.73	84			
Graduated School/Faculty	Fac. of Edu.	52	86.09	3.38	Between G.	18.26	2	9.13	.82	.44
	Inst./Higher Sch. of Edu.	11	86.06	3.16	Within G.	919.49	83	11.07		
	Other	23	87.13	3.28	Total	939.75	85			
The Number of Students in Class	1-20	28	86.80	2.83	Between G.	7.90	1	7.90	.71	.40
	21 and more	58	86.16	2.54	Within G.	929.75	84	11.07		

$p > .05$

It can be seen in Table 5, students' perception on self-regulation shows no significant difference on the basis of the teachers' professional experience, $F(2, 82) = .17$, $p > .05$; graduated school/faculty, $F(2, 83) = .82$, $p > .05$; and number of students in class, $F(1, 84) = .71$, $p > .05$. Accordingly, the students' perceived self-regulation scores do not indicate a statistically significant difference in terms of those variables of the teachers.

Table 6 shows the results of the One-Way ANOVA conducted to determine whether perceptions of teachers on their degree of encouraging self-regulated learning differ on the basis of their professional experiences, their graduated school/faculty, or the size of class they teach.

Table 6. Means, Standard Deviations, and One-Way ANOVA Statistics for Study Variables

Variables	Group	<i>n, \bar{x}, SD Values</i>			ANOVA Results					
		<i>n</i>	\bar{x}	<i>SD</i>	Source of Variance	Sum of Square	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
Professional Experience	1-10 years	6	73.33	7.76	Between G.	107.62	2	53.81	.50	.61
	11-20 years	23	78.09	5.99	Within G.	8747.09	82	106.67		
	21 and more years	56	77.04	11.79	Total	8854.71	84			
Graduated School/Faculty	Fac. of Edu.	52	77.33	9.25	Between G.	295.92	4	147.66	1.43	.25
	Inst./ Higher Sch. of Edu.	11	72.45	18.82	Within G.	8559.38	81	103.13		
	Other	23	78.65	5.46	Total	8854.70	85			
The Number of Students in Class	1-20	28	76.89	11.45	Between G.	1.13	1	1.13	.01	.92
	21 and more	58	77.14	9.65	Within G.	8853.58	84	105.40		

$p > .05$

Table 6 presents that the teachers' perceptions on encouraging self-regulated learning do not indicate a significant difference on the basis of professional experience, $F(2, 82) = .50, p > .05$; graduated school/faculty $F(4, 81) = 1.43, p > .05$; or number of students in class, $F(1, 84) = .01, p > .05$.

Supporting and Hindering Factors for Self-Regulation

Qualitative findings on supporting and hindering variables in primary school programs for self-regulation skills are provided under three themes, including student, family, and school characteristics. Table 7 summarizes the numbers of individuals asserting certain opinions, mentioned most commonly by the participants or included in the codes and subthemes in each themes. Supporting factors include the facilitating and enhancing characteristics of the primary school curricula and hindering factors indicate the obstacles for self-regulation. In direct quotations, students with a high score of perceived self-regulation were coded as CH, their families as PH, and their teachers as TH; students with a low score of perceived self-regulation were coded as CL, their families as PL, and their teachers as TL.

Table 7. Supporting and Hindering Factors in the Primary School Curricula for Self-Regulation

Supporting Factors	n	Hindering Factors	n
Theme 1. Characteristics of the Students			
Affective Characteristics	73*	Affective Characteristics	43
Sense of responsibility	19	Extrinsic motivation	12
Intrinsic motivation	15	Failing to manage negative feelings	12
Social Skills	44	Social Skills	6
Seeking help	19	Not seeking help	3
Doing chores	16	Obeying the directives and suggestions of the elders	2
Being open to suggestion	8		
Cognitive Competences	39	Cognitive Competences	37
Self-reflection	10	Having concentration problems	15
Awareness of learning characteristic	3	Expectation of direct teaching	5
Developing learning strategy	3		
Theme 2. Characteristics of the Families			
Sustaining Self-Regulation Strategies	90*	Low Socioeconomic and Cultural Level	48
Offering various activity options	18	Limited allocation of support or time	23
Monitoring child's works	11	Serving as a negative model	4
Explaining the benefits of a certain strategy	6	Failing to provide a proper work environment	3
Democratic Attitude	39	Protective Attitude	22
Regarding the child as an individual	8	Reminding or doing child's studies	19
Being rule-oriented	7	Planning daily activities of the child	4
Serving as a Model	14	Authoritarian Attitude	11
Receiving professional assistance	7	Punishing the child	10
Planned living	7	Imposing rules and plans	1
Theme 3. Characteristics of the Schools			
Institutional Culture	43	Institutional Culture	55
School-family cooperation	20	Inadequacies of physical environment	19
Self-regulatory behaviors of peers	9	Official rulings contradicting with the educational psychology	14
Offering various activity options	6	Insufficient school-family cooperation	13
		Exam-oriented approach for education	2
Teacher Behaviors	117*	Teacher Behaviors	22
Giving feedback	22	Punishing	8
Offering various activity options	19	Spoon-feeding the students	4
Guidance toward planning	13	Being over-interfering	1
Serving as a model	6		
Structure of Curriculum	13	Structure of Curriculum	18
Goals and activities toward self-regulation	8	Intensive content	11
Being student-centered	5	Simple or difficult teaching activities and materials	7

* Indicates the same individuals assigned to multiple codes as the number of individuals exceeds the total number of participants ($n = 60$).

Supporting factors in the primary school curricula for self-regulation

Theme 1: Characteristics of the students

The theme of student characteristics supporting self-regulation is composed of affective characteristics ($n = 73$), social skills ($n = 44$), and cognitive competencies ($n = 39$) subthemes. The first affective characteristic is the innate or learned sense of responsibility. Students with a strong sense of responsibility can largely comply with their process–time schedules. The “I do my homework even if my teacher does not check them, because it’s my responsibility.” statement by CH1 indicates that students with a sense of responsibility do not require a reminder or supervision for their learning tasks. Some participants regarded intrinsic motivation as an important force for self-regulation.

One of the social skills that inspires students to self-regulation is seeking help from their family members, teachers, and peers. Students usually seek help with homework or a new learning unit only after they study it themselves and fail to learn. Students’ openness to suggestions by others was deemed beneficial for self-regulation. CH18’s statement that “... We take Social Studies course. Our teacher said, ‘If you make a schedule... And if you implement the schedule, you can do your work on time more easily.’ That’s what I do, and I can do it on time.” can be an example thereto. Students who participate in household chores as part of their social living environment improve their self-regulation.

Self-reflection behaviors, which were frequently stated in cognitive competencies promoting self-regulation, are displayed by students usually when they check their homework or exam answers. Students’ awareness of their learning characteristics, as seen in the statement by CL13, “... I have always found mathematics fun ... (I think) I can express myself better when writing.” was considered significant for self-regulation. A small number of participants determined students developing a learning strategy as a significant cognitive competence for self-regulation: “I try to find a fun way. For example, I have dolls. I think of them as students, and myself as the teacher. I play teacher.” (CH8).

Theme 2: Characteristics of the families

Subthemes under the subject of family traits encouraging self-regulation include exposing them to self-regulation ($n = 90$), displaying a democratic attitude ($n = 39$), and functioning as a model ($n = 14$). Families use self-regulation strategies for their children by providing limited support in class reviews, exam preparations, and homework studies. Some participants stated that offering various activity options for the child, such as sports, arts, and educational courses, contributes to self-regulation. For example, TH17 emphasized the importance of sports in self-regulation, stating that CH17 “Stopped skipping (class) studies after (engaging in) sports.” Some participants believe that parents help self-regulation as monitoring and evaluating their children’s studies (e.g., examining their homework). Finally, a few participants indicated that families guide their children through explanatory conversations to experience certain self-regulation strategies.

Democratic attitudes of families were defined as a facilitator for self-regulation. Families adopting a democratic attitude encourage self-regulation as they regard their children as individuals and therefore can discuss their children’s future plans, decisions, and problems with them. A small number of participants stated that families with a democratic attitude were also rule-oriented and determined such rules along with their children.

Participants specified that some families served as a model for their children by seeking help through professional support when necessary, being open to criticisms and suggestions, implementing such suggestions, and adopting self-regulation strategies such as planned living. In this case, as seen in a statement by PL13 that “It is crucial that you (families) are organized first ... If a child does the same things at same times, then it becomes a real habit.”; when family members serve as good models, their children also consider and practice self-regulation as a natural element of life.

Theme 3: Characteristics of the schools

The theme of school characteristics consists of the teacher behaviors ($n = 117$), school culture ($n = 43$), and curriculum structure ($n = 13$) subthemes. The most commonly mentioned teacher behavior was giving explanatory feedback. Teachers contribute to self-regulation by offering different teaching strategies, methods, techniques, and materials. Some participants stated that extramural activities, such as project work, nature studies, and trips to real environments within the official and implemented curriculum, participating in cinema, theater, concerts, and artistic activities as observers, or engaging in art courses under the extra curriculum, further promote self-regulation. Teacher characteristics that support self-regulation include also guiding students toward planning by asking them to create timetables for self-care skills through homework studies. Finally, a small number of teachers believe that modeling specific behaviors for students, such as choosing a goal, studying systematically, and organizing the learning environment, has a positive impact on students' self-regulation.

The principal encouraging factor for self-regulation within the scope of school culture is establishing and maintaining cooperation between school and family. This cooperation between teachers and families is mostly established through guiding children toward different activities in line with their abilities; developing their sense of responsibility, discipline, planned study, and repetition behaviors; and exercising additional teaching activities. It was specified that the self-regulatory behaviors of other children at school, and particularly in class, had been influential. For example, TL3 commented that students in class had acquired a collective planning skill in group studies through asking questions such as "What do we do, how do we do it, and what do we get?" Another encouraging characteristic of self-regulation within the scope of school culture is offering various activity options, such as theater (TH7) and dance (CH1).

The participants remarked that the objectives of certain lessons within the curriculum, a significant element in school operation, include expressions toward self-regulation. The curricula of Social Sciences and Mathematics courses include goals and gains toward time management. Some participants stated that the curriculum encouraged students to practice self-regulation through being student-centered. Within this respect, TH11 and TH17 exemplified the inclusion of group studies in the Science course, whereas TL15 specified the correlation between traffic, human rights, and Turkish language classes and daily life.

Hindering factors in the primary school curricula for self-regulation*Theme 1: Characteristics of the students*

The student characteristics that hinder self-regulation were grouped under the affective characteristics ($n = 43$), cognitive competencies ($n = 37$), and social skills ($n = 6$) subthemes. Opinions on extrinsic motivation, a prominent factor under affective characteristics, suggest that students practice learning activities for the sake of either their teachers or their families. For example, CL15 demonstrated that they do not autonomously engage in learning activities, stating that "(If my teacher does not assign a homework) I take a rest (I do not study)." A limited number of participants believed that evaluation techniques and results such as tests, scores, and certificates of excellence had a significant role in children's extrinsic motivation. A small number of teachers and families complained that the children had not implemented self-regulation strategies continuously and that they would need to be constantly "nudged". Some participants stated that students failing to manage their feelings also embarrass self-regulation. Such characteristics are observed in the manner of anger or sobbing when they cannot do their homework, when they have learning problems, or when their plans fail.

The primary hindering cognitive competence of students for self-regulation is failing to concentrate on certain learning activities or studies. The concentration problem mostly occurred in self-care, reading, writing, and listening skills. Some participants considered certain tools, such as electronic games, telephones, and television, as the greatest obstacles against students concentrating on learning activities. Few participants pointed out that the students' expectation of direct teaching also holds up self-regulation. Such students demand an explanation of the learning unit from their families or teachers. CL15 described this situation tersely, saying, "They want things readily prepared for them." CH14 indicated that they feel bad when they ask their mothers questions and are redirected by the question of "What do you think?"

One of the deleterious factors against self-regulation is that students with a low level of perceived self-regulation abstain from seeking help. CL13 attributed the reason for not seeking help to previous negative experiences as “Honestly, I do not like asking questions. Because when I do, I feel a bit humiliated. So, I do not ask questions. ... (In my previous experience, my classmates) made fun of me.” Self-regulation of some students is hindered by the characteristic of obeying all directives and suggestions of elders.

Theme 2: Characteristics of the families

The hindering family characteristics for self-regulation are low socioeconomic and cultural levels ($n = 43$), a protective attitude ($n = 22$), and an authoritarian attitude ($n = 11$). Low socioeconomic and cultural levels of the family result primarily in providing limited support to the children – when they need it – in their studies. CL4 stated that they quit studying when they did not receive support from their mother when studying. TH17 expressed that “children are left alone” in families with such a structure. The fact that some families cannot provide their children with support is, as pointed out by CL16 as “He (my father) is always busy with work”, caused by parents having to work most of the time to increase the economic incomes of their families. Within this regard, PH17 stated that “Because I do not have much free time. I work at home, that’s how I make a living. If I make time for studies (of CH17), I miss ten or so tasks and cannot make money.”

Some families serve as a negative model in terms of learning behaviours and self-regulation. As expressed by PL13, “I keep telling the child to ‘Read books,’ but I cannot make any time for reading. Who are they going to look up to?”, directives instructed to the child may have limited influence when they are not practiced by other members of the family. On the other hand, according to CL16 and CL19, failing to maintain a planned and organized life in the family sets a negative example for the children.

Participants frequently expressed that a protective family attitude (excessive help and interference with the child) inhibits self-regulation. Families assuming a protective attitude remind or personally carry out self-care work and preparation of school materials and homework processes of the children. Some families plan the daily activities of their children and give step-by-step directives. The statement of CH14 that “(After coming home from school) Sometimes I paint... I watch TV, my mother makes my food, I eat, then I do a little bit of homework, my mother makes me have a break. Then I do some more and she makes me do some tests in the evening, and read a book before sleeping.” demonstrates that the child considers it natural to follow their mother’s plan. Another unfavourable family attitude for self-regulation is being authoritarian. The most concrete behaviour arising from this attitude is punishing the child when they do not carry out their learning tasks or exhibit undesirable behaviours.

Theme 3: Characteristics of the schools

The hindering characteristics of the schools for self-regulation relate to institutional culture ($n = 55$), teacher behavior ($n = 22$), and curriculum structure ($n = 18$). The most commonly expressed opinion with regard to institutional culture is the inadequacy of physical opportunities, such as laboratory, library, reading hall, drama hall/room, garden, music hall, gym, and playground. For example, TH11 stated that the laboratory at their school had been converted into a classroom, and TL13 expressed their regret that the school they worked at, the most successful school in the district, did not have a laboratory. Notably, CL15 requested a library at the school to increase the number of books they read.

Some official decisions and practices that are deemed to contradict educational psychology hinder self-regulation. One such example is the early schooling age. According to the participants, in this case, it is hard for the child to acquire learning habits. They also stated that frequent changes of teachers’ places of post negatively affected the continuity of education and students’ perceptions on planning, rules, and order. Experiencing teacher changes at an extreme point, PL5 stated “... TL5 is our eighth teacher. CL5 has been highly affected by it for four years... Too many teachers kept coming and going. (Finally) We met TL5. I really wish they were our teacher since the beginning.”

The lack of sufficient cooperation between school and family further hinders the self-regulation of students. Teachers have stated that they cannot get the support they expect from families with regard to doing homework and procuring materials to ensure that students maintain their school learning processes at their homes. An exam-oriented approach at educational institutions also hinders self-regulation. Within this context, as a reflection of the exam-oriented approach, PH1 commented that "Schools keep saying 'Study, study...' (to students). I mean, there aren't any social or entertaining activities."

Punishment was the most commonly mentioned teacher behaviour hindering self-regulation. It is understood from the statements by participants that teachers, usually at moments of class management problems, refer to punishment following a warning to students. Participants specified that teachers attune students to spoon-feeding, and thus hinder self-regulation, by lecturing all the information themselves or giving direct answers to student questions. For example, CH12 expressed that when they answer a question incorrectly, the teacher writes the correct answer in their notebooks. Although specified only by one teacher, excessive interference, which is critical in terms of self-regulation, is also included among hindering characteristics. In this regard, TL16 stated that students had homework notebooks wherein they instructed students to write their assignments and monitored the process.

Intensive curricula are another factor hindering self-regulation. Some teachers pointed out that they could not make enough time for teaching and social activities because of intense curriculum content. TH18 thought that a curriculum with heavy content could lead to student stress, thus hindering their self-regulation. Activities and materials in the curriculum may also inhibit self-regulation. TH6 stated that curricula did not contain any activities toward developing the self-regulation skills of the students. Experimentation (TH11) and trip (TH7) activities in the curriculum were deemed insufficient. Within the scope of teaching materials, teachers specifically criticized course books and study books. For example, TH1 stated that homework studies in the Turkish language course book were not fit for the developmental levels of the students, explaining that "Believe me, we say, 'What? How to do?' in the teachers' room ... a fourth-grade child cannot do that."

Discussion

The quantitative findings of the study revealed that primary school fourth-grade students have a considerably high perception of their self-regulation skills and that there is no significant correlation between the perception of primary school fourth-grade students on their self-regulation skills and the perception of teachers on encouraging self-regulation. The data show that the teacher's professional experience, their graduated school/faculty, and the number of students in class have no significant influence and that the students' perceived self-regulation skills and teachers' perceptions of supporting self-regulation are not substantially connected. However, Vandeveld, Vandebussche, and Van Keer (2012) determined that teachers with a full understanding of the importance of self-regulation employ a greater number of activities that develop the self-regulation skills of the students. On the other hand, self-regulation is also affected by factors other than the teachers, including family, school culture, and learning characteristics of the students. Therefore, the fact that the quantitative variables of the study do not significantly affect the self-regulation skills of the student may be explained through the qualitative findings hereof.

It was noted in the qualitative findings of the study that students have a high sense of responsibility and intrinsic motivation within the scope of affective student characteristics that encourage self-regulation skills. On the contrary, students' having a high level of extrinsic motivation and failing to manage their negative feelings hinder self-regulation. The concept of motivation is included in the definitions (Bandura, 1991; Pintrich, 2000, 2004; Zimmerman, 1989) and scales (e.g., Leutwyler & Maag Merki, 2009) of self-regulation. Taking the responsibility of learning is one of the dimensions in Magno (2010)'s self-regulation scale. Accordingly, it can be suggested that encouraging student characteristics for self-regulation is an indicator of regulation.

One result shows that seeking help improves self-regulation, but not seeking help or accepting all orders and advice of elders hinders it. Help seeking is regarded as a self-regulation strategy (Pintrich, 1999) and is included in self-regulation scales (e.g., Magno, 2010). Help seeking may provide a greater contribution, especially at earlier ages. Students may quickly and easily overcome problems in the learning process by receiving help when the learning unit is too complex or difficult for them or when they really need it. On the other hand, students should seek help only after they put enough effort into the learning unit and strive toward self-regulation. Otherwise, students may acquire characteristics that may hinder self-regulation, such as expectations for direct teaching and being attuned to spoon-feeding, which are determined as hindering factors in this study.

An interesting finding of the study is that doing chores promotes self-regulation. Leutwyler and Maag Merki (2009) revealed that doing chores is a meaningful predictive variable for self-regulation. Doing chores may help students in allocating their time and making plans to be able to carry out other work.

Cognitive self-reflection was deemed significant in the study. Likewise, according to Bandura (2006), self-reflection is one of the four main characteristics of the self-regulated individuals. One of the stages in the self-regulation model of Pintrich (2000) and Zimmerman (2013) is self-reflection. Self-reflection may ensure that students reflect on their learning characteristics and actions and make changes in their learning strategies if necessary.

The study demonstrated that the most significant obstacle to self-regulation in terms of the cognitive skills of students is the concentration problem. Students experiencing this problem, which may pose a problem even for basic learning behaviours, may have greater problems implementing self-regulatory actions that require complex and versatile thinking. Therefore, the support of school psychological counsellors or relevant professionals may be needed to overcome this problem. Accordingly, professional support was received for some students with a concentration problem within the sample.

Another result is that a democratic family attitude encourages self-regulation, whereas a protective and authoritarian approach inhibits it. Uykan (2019) also established a significant correlation between family attitude and self-regulation. A democratic family attitude may provide the child with the opportunity to have a choice and make independent or joint decisions. An authoritarian attitude, on the other hand, may have the opposite effect. A protective family attitude may prevent the child from even needing self-regulation.

Another notable finding of the study is that self-regulation can be enhanced through offering various activities such as arts and sports at schools and homes. Such activities may improve the planning skills of the students (Leutwyler & Maag Merki, 2009), have a relaxing and soothing effect on the students, and ensure that the students concentrate further on their learning activities in free periods. However, in this study, families and schools remained incapable of offering such activities. Although families comprehend the importance of such activities, they could not provide opportunities for their children in this regard because of economic difficulties.

The study offers interesting findings on the socioeconomic and cultural levels of the families. In general, although high socioeconomic and cultural levels of the family enhance self-regulation opportunities of the child, a low level thereof limits self-regulation and even basic learning faculties. Other studies have determined that the socioeconomic level of the family affects the self-regulation of the child (Pratt, McClelland, Swanson, & Lipscomb, 2016) and that the educational level of the family (Çölok, 2010) and father's positive communication with the child (Özsoy Yanbak, 2019) encourage self-regulation. The findings of Öner (2019) suggested that chaos in the home environment and the lack of a routine have a negative influence on the self-regulation of the children, explaining the cultural influence of the family.

However, children of some families in the study, who stated experiencing socioeconomic problems, were determined to have a high level of perceived self-regulation. Notably, the families of such children may adopt a protective or authoritarian attitude. The same contradictions can be seen in the families of children with a low level of perceived self-regulation. In this regard, it is understood that culture is the distinctive family characteristic in incentivizing self-regulation. For example, some families, despite socioeconomic problems, made an effort toward ensuring the participation of their children in various activities. However, it is apparent that such efforts gradually wear out both the family and the child.

Another finding of the study suggests that students are positively influenced by cohabiting with good, self-regulated models at home and school. Children maintaining an ordinary life with good models may innately acquire self-regulation skills. On the other hand, adults at home and school may cause inconsistencies if they suggest self-regulatory behaviours and warn or even punish inappropriate behaviours of the child while they act to the contrary.

Participants in the study have mostly identified the encouraging role of the teacher within the context of school. Aktan (2012) determined that teachers adopting a learner-oriented approach provide greater incentive for the self-regulation of their students. The qualitative findings of this study demonstrate that teachers, to a certain extent, implement encouraging activities for self-regulation. However, some teachers made an impression during the interviews that they implemented such activities without complete acknowledgment and awareness of self-regulatory education. This indicates the teachers' need for professional development in self-regulation.

The other finding of the study is that explanatory feedback given to students' homework by teachers encourages self-regulation. Taş (2013) also determined that teachers regularly checking homework assignments, quickly evaluating them, and discussing them with the students encourage self-regulation. On the other hand, some students are pleased when the teacher immediately gives the correct answer for their incorrect or missing homework assignments. However, such teacher behaviour is not favourable for self-regulation as it may prevent the students from engaging in reflective thinking on the homework.

Punishment by teachers was identified as a hindering factor for self-regulation in the study. The use of punishment for self-regulation is a contradicting issue. A learning behaviour implemented to avoid punishment may result in students adopting external supervision instead of self-regulation.

The inclusion of self-regulation goals in the curriculum is considered necessary for self-regulation. For example, approximately half of the gains in the life science course curriculum were found to be related to self-regulation (Sıcak & Eker, 2016). Research suggests that the contents of the primary school curriculum are intensive (Taş & Kiroğlu, 2018) and above the developmental levels of students (Seçkin, 2011). Intensive content, teaching activities, and homework assignments may cause students to feel suffocated and distracted amid all the learning tasks, thus hindering self-regulation.

The study ascertained that some official decisions (e.g. early schooling age) also hinder self-regulation. With the implementation of curricula on top of the developmental characteristics of the child, the number of stimulants to be regulated is increased and learning becomes more complex. In such cases, it may become more challenging for the child to adopt cognitive, emotional, and/or behavioural regulation.

Another factor elaborated most commonly by the participants is school–family cooperation. The continuity of the student's self-regulation process may be ensured through this cooperation. Similarly, Gündoğdu (2006) included this cooperation among the indicators of a facilitative teaching environment for self-regulation. It is noteworthy that family members and school employees in this study have indicated each other as the reason behind the lack of such cooperation. However, the stakeholders' belief that they are fulfilling their obligations while others are not may hinder cooperation.

Upon a holistic consideration of the findings of the study, some factors in the curricula may also encourage or hinder self-regulation through interactions between such elements. For example, the family's attitude and socioeconomic and cultural levels may have an interconnected influence on self-regulation. It is noted throughout the findings that the children, their families, and their teachers with high levels of perceived self-regulation have expressed their opinions more extensively on supporting factors in the curriculum. On the other hand, the children, families, and teachers with low levels of perceived self-regulation focused on hindering aspects of the curriculum. This indicates consistency between the quantitative and qualitative findings of the study.

Conclusion

The quantitative findings of the study revealed that perceptions of primary school fourth-grade students on their self-regulation skills and perceptions of primary school teachers on their degree of encouraging self-regulation are considerably high. The students' perception of their self-regulation skills does not indicate a significant variance on the basis of their teachers' professional experience, graduated school/faculty, or number of students in class. Similarly, the teachers' perceptions of encouraging their students toward self-regulation do not demonstrate a significant difference on the basis of their professional experience, graduated school/faculty, or number of students in class. Finally, no significant correlation was found between perceptions of students on their self-regulation skills and perceptions of teachers on their degree of encouraging self-regulation.

Students' affective characteristics that support self-regulation have a sense of responsibility and intrinsic motivation for a task; their social skills are seeking help, doing chores, and being open to suggestions. Their cognitive competencies are self-reflection, awareness of learning characteristics, and generating learning strategies. Families recommending self-regulation strategies to their children, adopting a democratic family attitude, and serving as good models encourage self-regulation improvement. A school culture that cooperates with the family, provides students with various activity options, and allows students to exhibit self-regulation behaviours (most of whom do) facilitates self-regulation. Teacher actions encouraging self-regulation processes of the students include giving explanatory and positive feedback, providing various activity options, and guiding students toward planning. Last, a curriculum that boosts self-regulation should be student-oriented and include goals and teaching activities related to self-regulation.

Students' affective characteristics that hinder self-regulation are extrinsic motivation and failing to manage negative feelings. Their social inhibitions include not seeking help when necessary; their cognitive incompetency include failing to concentrate on the learning material and expecting direct teaching. The family characteristics arising from their socioeconomic and cultural levels that impede self-regulation include providing limited support to their children in their studies, and serving as negative models. Additionally, protective and authoritarian family attitudes further inhibit self-regulation. The characteristics of the schools hindering self-regulation include inadequacy of physical opportunities, schools making and implementing official decisions contradicting educational psychology, schools lacking sufficient school-family cooperation, and the prominence of an exam-oriented education approach. Unhelpful teacher behaviours for self-regulation of the students are punishment, spoon-feeding the students, and excessive interference with their learning processes. Furthermore, curricula that have intensive content and excessively challenging teaching activities and materials for the children obstruct self-regulation.

Suggestions

Following the results of the study, these suggestions are offered for the stakeholders of the primary school curriculum:

Students should pay attention to suggestions of their family members, peers, and school employees concerning the learning process, think on these suggestions, and implement the suggestions if they consider them suitable. They should be encouraged to be open to trying different learning

strategies. Instead of waiting for the teacher or someone else to teach everything, they should make an effort and seek help when they have a hard time learning.

As for families, it can be suggested that instead of protective or authoritarian attitudes, they adopt a democratic attitude and try to show the behaviours of this attitude. They should not interfere overly with their children; however, they should be able to be helpful and/or directing at a limited level when they observe that their children need help. To the extent of their economic possibilities, they may offer different activity options in art, sports, and so on and give responsibilities to children in housework, including common living areas such as the living room, kitchen, and bathroom. They should strive to implement the professionals' recommendations decisively and consistently. They should serve as good models by exhibiting self-regulatory behaviours themselves to ensure that the children consider self-regulation a natural way of living.

Teachers can perform guiding practices such as asking students to create weekly activity lists or timetables and having conversations with the students regarding their compliance with their plans to ensure that students acquire planning skills in their studies. They may offer reinforcements to students for their willingness to their effort and their use of learning strategies. It is beneficial for students to provide descriptive and positive feedback for their work, assignments, and learning products. Teachers should avoid punishment. They should provide different activity options, such as arts, sports, and so on. Last, performing action research studies is useful in finding ways of teaching self-regulation skills.

In the physical conditions of educational institutions should be structured that students can participate in different activities. By identifying the learning strategies and styles of the students at the beginning of the curricula, students who can support each other can be placed in the same class. Contents, educational conditions, and evaluation activities that allow for students' self-regulation should be included in the curriculum. School-family cooperation should be maintained effectively.

This study was conducted with a large scale sample yet it was limited with the sample in a city in Turkey. Therefore, for the researchers, it can be suggested that they collect data from other contexts in the world. This study has methodological limitations with descriptive and relational surveys, causal-comparative, and interview methods. In consideration of that, experimental designs on integrating teaching self-regulation into primary school curricula can be carried out. In addition, by providing education on self-regulation for families, experimental studies can be conducted to examine the reflections of this education on children's self-regulation behaviours. Survey studies may be adopted so that self-regulatory practices in preservice teaching education and professional development processes are determined; experimental designs can be implemented for the development of teacher education curricula.

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