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ANALYSIS OF RECYCLING PERCEPTIONS OF 5-6-YEAR-OLD CHILDREN THROUGH PICTURES

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Abstract:
The aim of this study is to examine the drawings of 5-6-year-old children attending preschool educational institutions regarding their perceptions of recycling. For this purpose, the pictures drawn by children who were administered recycling-themed drama activity and those who were not were examined. The study was designed in an experimental design with a control group. The content analysis method, one of the qualitative data collection methods, was used in the study. The data were collected by using the draw-narrate technique through the pictures drawn by the children. A total of 24 children aged 5-6 years, who were attending kindergartens in the 2022-2023 academic year, determined by convenience sampling method, participated in the study. After the drama activity on recycling was administered to 10 children in the first group, they were asked to draw pictures about recycling in the evaluation phase. The 13 children in the second group were asked what they thought of when they thought of recycling and were asked to draw pictures. The expressions of children describing the pictures they drew were noted. By using the content analysis method in the analysis of the data, children's perceptions of recycling were tried to be revealed. As a result of the research, the rate of recycling figures in the pictures of children who drew pictures related to recycling after the drama activity on recycling was found to be significantly high (90%) compared to the pictures containing figures related to recycling in the pictures drawn by children who did not have a drama activity on recycling (46,1%).

Keywords: creative drama, recycling, preschool, drawing

1. Introduction

Rapid population growth on our planet causes excessive use of natural resources. Excessive use of natural resources in turn causes a decrease in resources and a need for shelter and therefore brings along the need for land. All these lead humanity to reuse waste (Erdaş-Kartal & Ada, 2020). With the rapid increase in population due to the

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industrial revolution, changing consumption habits, rapid consumption of our planet's natural resources, and the pollution of natural resources, it has become a necessity to provide training and take precautions regarding environmental awareness. Rapid increase and change in human activities have increased the formation of solid waste, which is expressed as garbage, and has made it an important problem today. In this process, the concept of recycling, defined as the conversion of wastes such as paper, cardboard, metal, plastic, glass into different raw materials through physical or chemical processes and bringing these back into production, has begun to be used. Since the acquisitions of the preschool period are permanent, it is important that the training to be given to individuals in solving problems start in this period in order to establish conscious environmental behaviours that will turn into attitudes in adulthood (Bilgili, 2006; Büyüksaatçi, Küçükdeniz & Esnaf, 2008; Çelik, 2011; Kaçtıoğlu & Şengül, 2010; Nazlıoğlu, 1991; Nikolaeva, 2008; Siraj-Blatchford, 2009; Smith, 2001; Taşkın Şahin, 2008; Yaşar, İnal, Ünsal Kaya & Uyanık, 2012; Yoleri, 2012; Yücel & Morgil, 1998). Besides natural disasters such as earthquakes, fires, and floods that we have encountered in recent years, environmental disasters such as mucilage, forest fires, and epidemics have revealed the need to implement rapid action to prevent environmental problems (Dağ, 2020). Engaging in activities related to recycling is an indicator of a high level of environmental awareness and providing children with the necessary information so that they can perceive recycling can be achieved through education (Connor, 1989; Simmon & Widmar, 1990; Vining & Ebreveo, 1992). The fact that research has proven that environmental education provided in the early period is effective throughout life makes it essential for education in the field of waste utilization in economic recovery and environmental protection to start in the preschool period (Onur, Çağlar & Salman, 2016). The fact that recycling awareness is effective in creating environmental awareness makes it necessary to transfer this awareness to children in schools (Öztap & Bartan, 2019). For this reason, preschool teachers' preparing activities related to recycling awareness in different activity types and using different concepts will contribute to the process.

The key point of environmental education is that it has an "*emotional field*" (Iozzi, 1898). Effective environmental education prepared within the framework of programs in which children will use their senses and empathize is effective in the preschool period (Şimşekli, 2001). For this reason, "*creative drama method*" is the most suitable teaching method that is not rote memorization and that allows for learning by doing and living and that can be given by "*pretend*" experiences (Kandır, Aral & Can Yaşar, 2011). Using drama as a learning method in the preschool period helps effective and permanent learning to take place. Using the drama method in preschool education develops critical and emphatic thinking skills and supports children to grow up as responsible individuals in the future. In addition, using drama methods in education supports children's development since it contributes to the control of emotions, which have an important place in attitudes, and to the harmony of individuals with their environment, which supports emotional development (Aytekin, 2016; Berk, 2013; Çaykuş, 2015; Durualp, 2014; Erdoğan, 2019; Fox & Schirrmacher, 2014; Hamamcı & Hamamcı, 2015; İbiş, 2017; Önder, 2012). Drama activities help children who can interact with their environment and

who are supported in terms of affective learning, to develop respect which starts within their close environment, and is transferred to other environments (respect for each other, respect for other individuals in the society and respect for other living beings) (Aydın & Aykaç, 2016; Pinciotti, 1993). The fact that one of the most important perspectives underlying environmental problems is that humanity has lost respect for the right to life of other living beings on our planet (Gigliotti, 1992) shows that the drama method is one of the most important methods in this education.

A large number of different techniques are used in the evaluation phase of drama methods. One of these is drawing. It is a known fact that small children learn by playing, according to Piaget (1953), drawing is a game for children and children get great pleasure from drawing. The stages of drawing differ, just as the developmental stages of children. Children who start drawing pictures that can be interpreted at the age of five start drawing pictures that include composition and details (Collado, 1999; Halmatov, 2017; Yavuzer, 2009). Based on the definition of art as categorizing the external world in the brain with sensory organs (Artut, 2010), it is an undeniable fact that art has a very important place in the development of children's cognitive, kinaesthetic, visual, and affective perceptions. Art plays a descriptive role in individuals' perceiving first themselves and then their environment (Artut, 2010; Cherney et al, 2006). Based on this point of view, it is very important for children to reflect on their perceptions of the environment through drawing (Yaşar ve Aral, 2009; Yavuzer, 2009). Drawing, which is one of the methods of self-expression, allows children to reflect on their inner world. It is easier for children to express themselves through drawing than speaking. Children who express their perceptions and emotions with their feelings in their drawings use unique symbols in their pictures. For this reason, pictures children draw help us understand their inner worlds to know the children and to understand their feelings and thoughts (Dai, 2017; De Brito, Jófili & dos Anjos, 2017; Dentzau & Gallard, 2015; Emmons and Kelemen, 2015; Flowers, Carroll, Green & Larson, 2015; Yavuzer, 2000). There are a large number of environmental studies conducted with children in which drawing is used as a method of evaluation (Ahi, 2016; Anderson, Ellis &Jones, 2017; Bengisu & Akkaynak, 2021; Cainey, Humphrey and Bowker, 2017; Cainey, Bowker, Humphrey & Murray, 2018; Civekel & Çamlıbel Çakmak, 2019; Madden & Liang, 2017; Malleus, Kikas & Marken, 2017; Mol, 2019; Özsoy, 2012; Saz, Osmanpehlivan, Demir & Bay, 2019; Stokas, Strezou, Malandrakis & Papadopoulou, 2017; Tardif-Williams & Bosacki, 2017; Vilarroel & Villanueva, 2017; Villarroel, Zuazagaitia & Nuño, 2018).

Finding out children's cognitive structures and perceptions is important for an effective environmental education (Ayvacı et al., 2021). Measurement tools used in the evaluation of research conducted with children can create difficulties for researchers during the implementation process. Some of the problems experienced are that children do not know the researchers; they are reluctant to answer the scale items and therefore they have low performance (Cronin-Jones 2005). The fact that visual assessment tools do not include cultural elements and they eliminate problems that can be caused by language problems provides international comprehensibility (Zoldosova & Prokop 2006). At the same time, the fact that there are few cultural elements in children's pictures

until the age of 6 makes pictures universal and these pictures can be generalized (Toku, 2001; Georgantopoulou, Fragkiadaki & Ravanis, 2016). For this reason, artistic evaluations can be used as evaluation tools that help researchers and allow for objective evaluation (Carr, 2004; Inwood & Taylor, 2012). Children's drawings, which allow us to examine children's knowledge, attitudes, and perceptions about wildlife and nature, have also been used in studies that show children's perspectives on the needs of children (Harwood, Bosacki, & Borcsok, 2010; Miller, 2010; Myers, Saunders & Garett, 2004; Tipper, 2011).

Koçak Tümer (2022) found that in activities preschool teachers prepared about recycling, they mostly used art and Turkish language activities and they integrated these two activities the most. In their study, Dinler, Simsar, and Doğan (2020) stated that pre-service preschool teachers expressed that the main purpose of recycling as keeping the environment clean, and the biggest obstacle to recycling is a lack of awareness. Akbayrak and Kuru Turaşlı (2017) found in their study that children had very low pre-test performance regarding recycling.

The aim of this study was to reveal the recycling perceptions of children attending preschool education institutions by examining the effect of the drama education they received on their drawings. The study is important since it will fill in the gap in the field and shed light on preschool children's perceptions of recycling.

2. Material and Methods

2.1 Research Model

The research, in which a qualitative method was used, was designed in an experimental design with a control group. Qualitative research aims to emphasize the interaction, flexibility, and relationship between the stages of the research process (Maxwell,1996). The aim of this study is to examine the effect of recycling activity, which was applied to 5-6 year old children attending preschool education institutions with drama method, on children's perceptions of recycling. For this purpose, drawings of children who were exposed to recycling-themed drama activities and those who were not exposed to activities were examined.

2.2 Study Group

The convenience sampling method, one of the purposeful sampling methods used in qualitative research methods, was used in the study to determine the participants. The convenience sampling method helps the research to gain speed and practicality (Yıldırım & Şimşek, 2018). Children in the 5-6 age group of an official kindergarten affiliated with the Ministry of National Education in the Mamak district of Ankara during the 2022-2023 academic year constituted the study group of the research.

2.3 Data Collection Tools

Research data were collected through the pictures drawn by the participants about recycling and their narratives about their drawings.

2.4 Data Collection

Data were collected through the narratives of children's drawings about recycling. Therefore, the draw-write-tell technique, which is frequently used when trying to reveal the perception of any concept (Dinç & Üztemur, 2017) and which is an effective method to reveal the epistemological beliefs of young children (Brownlee et al., 2017), was used. According to Yavuzer (2005), drawing has a large place in children's lives and is one of the most important ways in which they can express themselves comfortably. In addition, it is important to consider children's narratives about their drawings in order to understand the purpose of children's drawings (Haney et al, 2004). In data collection, the children in the control group who participated in the study were given the types of paint they preferred, and they were given instructions such as, "*I want you to draw a picture about recycling. In this picture, you can draw anything you want about recycling."* The recycling-themed drama activity prepared by the researcher was administered to the children in the experimental group. After the activity, the children were given the types of paint they preferred in the evaluation phase, and the same instruction was given to them as "*I want you to draw a picture about recycling. In this picture, you can draw anything you want about recycling."* No time limit was imposed during the children's drawings. After each child finished drawing, they were asked to explain what their drawings were about and the phrases and expressions they used were noted.

2.4 Data Analysis

The content analysis method was used in the analysis of the drawings children made in line with their instructions since the study aimed to determine associations and concepts (Yıldırım & Şimşek, 2018). In content analysis, which is a scientific approach frequently used in social sciences, verbal, written, and other materials are examined objectively and systematically. Content analysis, which is a systematic technique in which data coded in accordance with specific rules are summarized in smaller content categories, is conducted to determine the presence of certain words or concepts within a cluster. Qualitative data processing of the documents consists of four stages: coding the data and finding themes (1), organizing the codes and themes (2), describing the findings (3), and interpreting the findings (4) (Demiral & Kartal, 2016; Tavşancıl & Aslan, 2001; Yıldırım & Şimşek, 2018).

3. Findings

Some of the pictures of the children in the control and experimental groups and their explanations about the pictures are given in this part of the study.

3.1 Control Group's Pictures


- C2: the child throws every piece of garbage he finds into the recycling bin.
- C4: Two sisters who love recycling are recycling the paper in their hands. There are hearts because they love recycling.

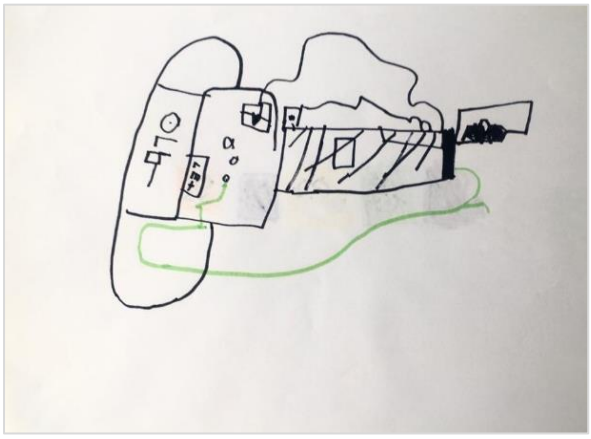

- C5: the boy was feeding the dog, he took the bone he saw on the ground and put it in the recycling.
- C6: The boy put the lights off and went to bed. He made the environment more beautiful with the rainbow.


- C8: Children who forgot the lights on are turning the lights off. There are recycling bins around the house.

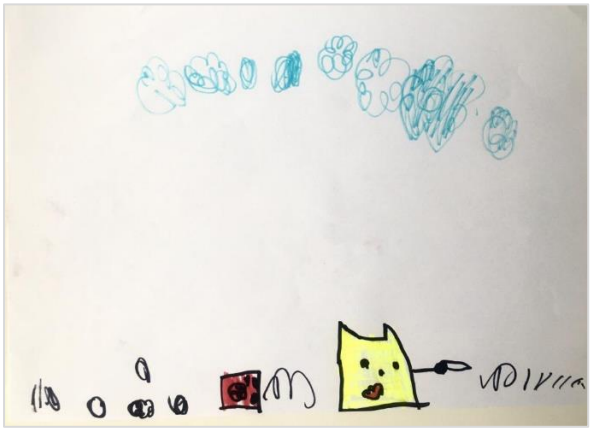
- C9: Animals got sick since garbage was thrown around. The girl was sad that the nature was polluted and she cried.

- C10 This girl loves recycling very much. Recycling protects our World.
- C12: A child turning off the washing machine.

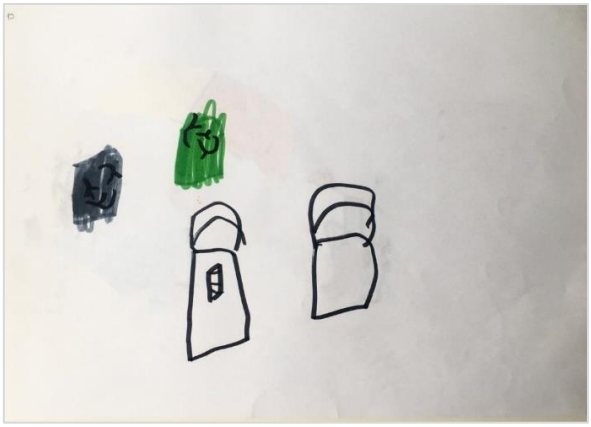
3.2 Experimental Group's Pictures

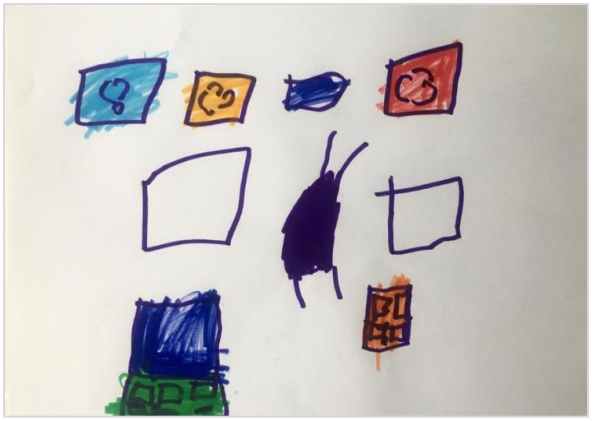


- E5: Child throwing garbage in the recycling bin
- E6: Recycling facility, pieces of glass



- E8: Recycling bins
- E3: The cat gets sick because of the garbage around





- E7: There are garbage and recycle bin
- E2: Recycle bin, telephone and computer

Table 1: Codes of the pictures drawn by the children in the Experimental and Control groups about recycling

Code	Participant						Total	
	Experimental			Control			f	%
		f	%		f	%		
Recycling bin	E2, E4, E5, E7, E8, E9, E10	7	70				7	30,43
Child throwing garbage in the recycling bin	E5	1	10	C2, C4, C7	3	23.07	4	17,39
Garbage	E3, E7, E8	3	30	C12	1	7.69	4	17,39
Clouds	E3, E10	2	20	C7	1	7.69	3	13,04
The animals got sick because of the garbage around	E3, E10	2	20	C9	1	7.69	3	13,04
A kid who loves recycling, recycling protects our world				C10	1	7.69	1	4.34
Recycling facility, Pieces of glass	E6	1	10				1	4.34
The child turned off the washing machine				C12	1	7.69	1	4.34
The house where the light is wasted				C11	1	7.69	1	4.34
The boy who sleeps by turning off the light				C8	1	7.69	1	4.34
Waste thrown in the sea	E1	1	10			7.69	1	4.34
The boy who threw the bone on the ground in the recycling bin				C5	1	7.69	1	4.34
The child who accidentally damaged a tree and felt sad				C3	1	7.69	1	4.34
Tree drinking water from its roots				C1	1	7.69	1	4.34
Computer, telephone	E2	1	10				1	4.34
Total		10	100		13	100	23	100

When the table is examined, it can be seen that recycling bins were found in the drawings of 7 of the 10 participants (E2, E4, E5, E7, E8, E9, E10) who participated in the drama session on "*Recycling*". There were no children from the control group who drew recycling bins in their drawings. Three of the children who drew garbage were in the experimental group (E3, E7, E8) and one (C12) was in the control group.

Of the four participants who drew children throwing garbage into the recycling bin, one participant (E5) was in the experimental group, while the other three participants (C2, C4, C7) were in the control group. Two of the four participants who drew animal figures getting sick from garbage were in the experimental group (E3, E10) and one was in the control group (C9). Two participants who drew cloud figures were in the experimental group (E3, E10) and one participant was in the control group (C7). One of the participants in the experimental group (E1) drew garbage thrown into the sea, one (E2) drew a computer and telephone, one (E5) drew a child throwing waste into recycling, and another (E6) drew a recycling facility and broken glass.

Among the children in the control group, the participants who drew the figures of a child who likes recycling (C10), a house with unnecessary lights (C11), a child who threw the bone he saw on the ground into the recycling bin while feeding a dog (C5), a child who turned off the washing machine (C12), a child who slept with the light off (C8), a child who harmed trees and felt sad (C3), and finally a tree that drank water from its roots (C1) were one person each.

4. Results and Discussion

The aim of this study was to examine the effect of recycling activity administered to 5-6-year-old children attending preschool education institutions with drama method, on children's perceptions of recycling. The data of this qualitative study were analysed with content analysis method.

When the data obtained from the study were analysed, it was found that the most frequently seen figures in the drawings by the experimental group were *recycling bins* (f=7) and *garbage* (f=3). The figure of garbage was also drawn by a participant in the control group. The most frequently drawn figure in the drawings of the children in the control group was the figure of *a child throwing garbage into the recycling bin* (f=4).

It was found that three participants from the control group (C8, C11, C12) drew figures related to energy saving, which were not related to recycling (13,04%). But C12 also drew garbage, so garbage is related to recycling. Similarly, the figures of a tree drinking water from its roots (C1) (4,34%), a cloud (C7) (4,34%) and a child accidentally damaging a tree and feeling sad (C3) (4,34%) were also used by the children in the control group and were not related to recycling. Again, also C7 drew recycling bin.

According to these results, 13 of the 5 children in the control group (38,45%) used figures which were not related to recycling in their drawings. Similarly, two of the children in the experimental group (E3, E10) drew cloud figures that were not related to recycling (20%) besides their garbage figure. Again, one child (E1) (10%) from the experimental group used computer and telephone figures besides garbage bin figure,

which are not related to recycling, in his drawing. Two of the 10 children (20%) in the experimental group, to whom drama activity related to recycling was administered, used figures related to recycling in their drawings. In this case, it was found that the rate of recycling figures in the drawings of children who drew recycling-related pictures after the drama activity related to recycling (90%) was significantly higher than the rate of recycling-related figures in the drawings of children who drew pictures without being exposed to recycling-related drama activity (46,1%).

In a study conducted by Erdaş Kartal and Ada (2020) to determine recycling from the perspective of preschool children, it was found that children in the 5-year-old age group included symbols related to recycling bins, separation of garbage and recyclable materials in their drawings more than children in younger age group. Similar to the findings of this study, which was conducted to examine the recycling perceptions of 5–6-year-old children attending preschool education institutions, it was found that children included recycling bin figures in their drawings. The results of this study are similar to the results of Erdaş Kartal and Ada's study in terms of drawing recycling bins. However, in the data obtained in the study, no figures were found regarding children's separation of garbage and recyclable materials.

Children in the preschool period can understand the concept of recycling (Palmer, 1995). Since learning by doing and experiencing provides permanent learning outcomes, children should have favourable environmental opportunities to experience recycling (Aydın & Aykaç, 2016). At this stage, it is important that local governments and schools provide environmental arrangements that support recycling.

Families have important responsibilities to increase the awareness of preschool children, who also learn through modelling, about recycling; providing exemplary experiences in the separation and reuse of waste will increase children's awareness of the concept of recycling (Yaşar et al., 2012). Therefore, public service announcements and projects can be developed to inform families about how recycling can be done.

In the study conducted by Koçak Tümer (2022) to examine the views of preschool teachers on recycling, it was determined that teachers did not use drama and play methods frequently in the activities they prepared for recycling. Especially in schools, play-based and drama activities can be used more frequently in the activities prepared by teachers and children's awareness of recycling can be improved (Albayrak & Kuru-Turaşlı, 2017; Aydın & Aykaç, 2016). In the studies conducted, it has been reported that pre-service preschool teachers' attitudes towards recycling are not low. The reason for this situation is thought to be the compulsory course in the field of environmental education taught in undergraduate programs (Özel & Erdaş Kartal, 2022).

Including more recycling-oriented acquisitions in the preschool education program, expanding recycling projects to target preschool children, planning the trainings to be held in a practical way, and improving the knowledge and application skills of teachers who will carry out the applications on recycling will improve the awareness of children in this period about recycling (Erdaş Kartal & Ada, 2020).

When studies conducted in Turkey in recent years are examined, it can be seen that many studies have been conducted with pre-service teachers, preschool teachers and

preschool children regarding environmental awareness and environmental problems (Arık & Yılmaz, 2017; Akçay et al., 2017; Aksan & Çelikler, 2019; Bozdemir & Fiz, 2018; Erbasan & Erkol, 2020; Erdaş Kartal & Ada, 2019; Güngör & Cevher Kalburan, 2022; Güşta Şahin & Doğu, 2018; Kara & Çelikler, 2017; Karakaş et al., 2018; Koçak Tümer and Temel, 2021; Koçulu, 2018; Mol, 2019; Okumuş & Okur Akçay, 2020; Şahin & Doğu, 2018; Ultay et al., 2019; Yanarateş & Yılmaz, 2020; Yılmaz & Aydoğdu, 2020). However, there are quite a few studies conducted with the participants above, especially on recycling (Dinler et al., 2020; Koçak Tümer, 2022; Özel & Erdaş Kartal, 2022; Pamuk and Kahriman, 2019; Türkoğlu, 2019). In this study, the perceptions of preschool children about recycling were tried to be determined. The study is limited to the sample group. In more comprehensive studies, teachers' activities and families' experiences related to recycling can be examined and compared.

Conflict of Interest Statement

The authors declare no conflicts of interest.

About the Author

Dr. N. Bilge Koçak Tümer was a teacher at kindergarden school for 3 years after graduating with a license in education and then worked as a head teacher at Gazi University kindergarden for 4 years. Since 2012 working at Child Development and Care Department of Ankara Haci Bayram Veli University in Turkiye. She achieved his PhD in early childhood education from Gazi University in Turkiye. Her primary interests are drama in education, environmental education in early childhood education, and sustainability at kindergarden. Some articles from authors: Development of Environmental Scale for Children, Analysis of Postgraduate Theses Prepared for The Preschool Period on "Environmental Education" Conducted between 2011 and 2020 in Turkey: A Content Analysis, Child Development Department of Vocational School Students' Opinions on Recycling, Preschool Teachers' Views on Recycling, Analysis of Postgraduate Theses Conducted on Creative Drama Between 2016-2020 in Turkey.
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