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The role of caregivers in the use and re-use of toys for a sustainable future

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Abstract.

The toys sector worldwide is worth 80 billion USD, and 700 million USD in Turkey. This equates to 175 USD per child globally, compared with just 30 USD in Turkey (Şentürk&Bayat, 2016). A household's budget for toys and other means of entertainment has to be spent with care and attention both to the need for children to develop, have fun, and experience everyday life through them and to satisfy the caregivers' concerns with safety and educational priorities. Toys have an asymmetric power relation between buyers and users where the buyer and the user have different roles and the user's reaction is unpredictable. If this is not managed properly, toys run the risk of remaining in the hands of the buyer without being used at all, causing clutter and waste. Toy sustainability can be measured by nine criteria derived from the literature and expert interviews. The literature on the environmental aspects of toys, from a value-belief-norm perspective, covers physical touch points, such as materials, design, assembly, and transportation, and suggests methods to enhance toys' sustainability up to the "during use" phase. This study, carried out by snowball sampling among Turkish caregivers, is one of the few to examine caregiver toy selection and lifecycle management patterns, thus providing useful information about the whole lifecycle of toys. Among those who participated in the survey,

mothers, who constituted the greatest number, indicated that they were open to the use of secondhand toys. This research identifies a “less is more” culture for toys, considering both sustainable values and income inequality and manifested in the practice among environmentally conscious caregivers of returning unused toys into circulation for further use, thereby decreasing the carbon footprint of toy usage.

Keywords: consumer behavior, child development, carbon footprint, secondhand market, climate citizen, toys, sustainability

1. Introduction

Sustainability and toys ... Although these two words may seem unconnected, as children rapidly grow out of using toys, and it is mostly adults who are concerned with sustainability, they are closely related. Sustainability, in a sense, refers to what may be done for a happier, cleaner, and healthier world and a better future, and children are the real owners of the future world. Sustainability is a concept that has technical, environmental, and social dimensions. While the technical dimension of this concept includes the more controllable aspects of products, such as design, materials, and production, the social and environmental dimension includes systems based on relations that support social bonds and leave a clean environment for future generations. Even before a baby is born, a family tends to start investing in toys, and a high level of consumption of toys continues well into childhood. Little research has been done on the sustainability of this universally consumed type of product. The present study aims to fill this gap for the good of all now and into the future.

Toys, which can be defined as any object designed to be played with, are a prominent part of children’s daily lives, and children experience everyday life through them (Healey & Mendelsohn, 2019). Toys are essential tools through which adults connect and communicate with children and which advance children’s cognitive, physical, social, imaginative, and emotional skills (Abdulaeva & Smirnova, 2011; Bolişik et al., 2014). In the past, children spent much of their time outdoors and did not need any manufactured toys to play with. “Toys” could be anything that they imagined as complementing their games. Most schools in which the holistic development of the child is prioritized, such as the Waldorf or Montessori schools, stress the importance of the quality of toys, rather than their quantity. Patterson and Bradley (2010/2020) indicated that, if the child is exposed to too many toys, s/he may be overwhelmed and not play with any of them. To call a toy successful, it is important that the child play with it repeatedly and have fun in doing so (Bolişik et al., 2014).

As children grow up, their needs and inclinations develop. Thus, toys should fulfill the rapidly changing needs of children at various developmental stages, while causing minimal damage to the environment. With the success of online shopping platforms in recent years and the convenience of comparison of alternatives, recommendations, or comments on products, caregivers prefer these to the traditional methods of shopping for toys (Richards et al., 2020). However, while digital channels make purchasing easy, they can also stifle environmental awareness among shoppers who tend to act on impulse. These channels have limited capacity for conveying to potential buyers all the properties of the products that

they would experience in physical contact, thus inhibiting clear judgement. However, the ease of comparison on digital platforms gives online shopping the edge, especially in the eyes of families with a low income. The global toy market is worth 80 billion USD, compared with 700 million USD in Turkey. This equates to 175 USD per child globally, compared with 30 USD in Turkey, but the latter figure is not shared equally among the country's children (Şentürk & Bayat, 2016). Even when the budget for toys is limited, it must take into consideration all the developmental and health needs of children, as well as environmental concerns. In Turkey, a developing Mediterranean country, cultural and social values have an impact, such as the importance given to the child in the family or collective views on environmentalism (Dagher & Itani, 2014; Nguyen & Johnson, 2020; Johnstone & Lindh, 2018), which will be reflected in the distribution of the budget for toys. The best toys are not always the most expensive ones, and variety is critical for healthy child development (Bolişik et al., 2014).

Compared to some other products, the success of toys must be measured in terms of environmental friendliness and fulfillment of needs. For example, toys must be germ-proof and easy to clean, because small children especially tend to put things in their mouths. There are factors to be considered regarding child development needs. Fun is also a must when the subject is a child. Potential caregivers start buying toys long before child's birth, but the users abstain dispose of them easily even after the termination of use. The "use" lifetime of the toys is determined by the age of the child, and the toy should be disposed of somehow after the completion of its lifespan with the current user, which is not mostly equal to the real-

life expectancy of a toy. Therefore, if toys have not been bought mindfully with respect to environmental issues and disposal, homes tend to be filled with toys that are not played with at all, often having missing or non-functioning parts. A conscious caregiver considers the actively played and passive (not played) periods of toys and tries to manage them to cause minimum damage to the environment (Robertson & Klimas, 2019). During use, maximum efficiency must be obtained from the toy in the unit time. Toys, like many products made for children, have an asymmetrical relation of power with buyers and sellers (Neydim 2005; Karadağ 2018), meaning that it is adults who design, manufacture, sell, and buy toys, whereas it is only the children who play with them. Since the buyer and the user are different people, the reaction of the user cannot be known at the time of purchase. Hence, there is a substantial risk that a toy may remain in the hands of the buyer without being used at all. This situation suggests the need to develop a critical culture in the buying of toys.

Toy selection is a multidimensional process that includes both objective and subjective criteria regarding the toy's features and the needs of the child. These criteria need to be assigned the correct relative weights. The needs of consumers are understood by companies on online shopping platforms, where artificial intelligence systems with an integrated toy purchase guidance make decision-making easier by some 66% (Sales Force, 2020; Pascual Nebreda et al., 2021). Parental toy selection criteria have rarely been studied in the literature (Richards et al., 2020). Therefore, our research with parents and caregivers, with a focus on purchase behaviors on digital shopping platforms to identify buyers' approach, represents a

new perspective and study area. This study explains the relationship between two factors in toy purchase preferences: (1) sustainability and eco-awareness attitudes for specific caregiver types, and (2) their toy lifecycle management tendencies.

The study was carried out by means of a survey conducted among Turkish caregivers who were selected by snowball sampling. Studies on sustainable consumer behavior in Turkey indicate that such behavior varies according to occupation, age, gender, income, and education. In the survey, questions were posed based on nine sustainability criteria set explicitly for toys (Erol& Tayfun, 2022). During the evaluation, correlations were measured between the caregiver, the toy material, the ages of the children, and preferences regarding disposal. Current toy sustainability studies mostly focus on tangible sustainability measures such as materials, design, or production based on the “before use” part of the product’s life. The present study examined the perspectives of Turkish caregivers on online toy shopping in terms of sustainability, with criteria specifically developed for toys determined from previous research and expert interviews and covering the entire toy lifecycle. Hence, it should provide useful information for caregivers when selecting toys for their children. Our findings yield new theoretical and operational insights to those interested in understanding the drivers of green purchasing behavior (GPB) on digital platforms, how online toy retailers can improve product descriptions and workflow within the site, and how to direct buyers to sustainable products.

The remainder of this paper is organized as follows. Section 2 presents a literature review with information on child development

and children's relationships with toys, the concept of toy sustainability, toy materials, GBP and recycling, and secondhand options. Section 3 discusses how the participants of the survey were identified and how the survey was conducted. Section 4 introduces data analysis and the results interpreted with descriptive statistics and correlation tests. The last section discusses the outcomes of the survey and presents a conclusion.

2. Literature review

A shopping decision is shaped by multidimensional considerations, some internal, some external, including the consumer's character, mental outlook, lifestyle, and social status; the product's properties, such as form or financial value; and supplier-related measures, such as brand and purchasing assistance offered (Wan et al., 2014). The purchaser decides what to buy after evaluation of all the relevant factors that can be sensed internally and materialized in preferences later. The products themselves offer a clear picture of it because the dominant materials and values are reflected on the industry and the way the materials are produced or disposed. The use of environmentally friendly materials such as wood is more dominant in cultures intertwined with nature or the adoption of the recycling culture by most of the society is an example of this.

The value-basis theory suggests that a positive or less negative attitude toward a subject actualizes a person's actions in a specific way, which can be reflected in environmental issues in terms of beliefs, values, attitudes, and behaviors about the natural world (Esmailpour & Rajabi, 2016). Therefore, a nature-positive approach can be observed in actions that promote sustainability. Wesley Schultz (2001) divided eco-friendly values and attitudes into three

groups: self (“my health, my future, my lifestyle, me”), other people (“all people, children, my children”), and the biosphere (“plants, animals, marine life”). The authors indicated that education level and gender shape the act of sustainable and conscious consumption and the eco-friendly value given to environmental issues to minimize negative effects on nature (Wesley Schultz, 2001; Erol & Tayfun, 2022). Environmentalists maintain behavioral patterns, such as limiting the use of products that are not produced with ethically sustainable resources and have excessive packaging and instead using energy-saving products and packaging (Nguyen & Johnson, 2020; Esmailpour & Rajabi, 2016). These people, who can also be defined as showing GPB, are environmentally conscious, willing to recycle, use green products (Kautish et al., 2019), and act more consciously to reduce the potential harm they may cause to the environment. According to the value-basis theory, the environmentalist perspective expects behavior that is consistent in at least one of these three value groups. When toy-purchasing behavior is viewed from an eco-friendly viewpoint, the “other people” and “biosphere” value groups are prioritized. Children, who are the main users of toys, are represented as “other people,” while the management of the lifecycle and materials of toys falls within the “biosphere” group, and the buyers who have sustainable purchasing and disposal behavior are represented by the “self” value group.

2.1 Child development, skills, and relationship to toys

Although toys change and are updated for every age group, they are tools that accompany children throughout their lives and support their development and needs, from cognitive and imaginative to communication needs and from problem solving to physical abilities

(Coelho & Fernandes, 2013; Patterson & Bradley, 2010/2020). It is important that toys that meet the needs of the relevant age group are accessible. In a study in Turkey carried out with mothers and teachers by Özdemir and Ramazan (2012), toys were defined as beautiful and fun play tools that support the development of children in various fields, while entertaining and educating them at the same time. The researchers concluded that toys are expected to meet children's interests, wishes, needs, and skills development, while being healthy, safe, durable, high quality, and suitable for the age and development level of the child (Özdemir & Ramazan, 2012). This indicates how important it is to choose toys that are right for the child in every respect. Studies on online toy shopping in different cultures show that mothers give priority to the educational and developmental features of toys (Richards et al., 2020). With regard to sustainability, contextual and case-specific factors are also decisive (Dagher & Itani, 2014): features such as having long-term use and being educational, up-to-date, and challenging can be considered as indirect sustainability criteria specific to the product and conditions.

The benefits for the child of different types of toys, whether traditional or not, are varied. Most toys provide an opportunity for a dialogue between the child and the caregiver during play, while also supporting language development through the child's exposure to adult language (Robertson & Klimas, 2019). Role-playing toys such as dolls develop symbolic thinking, blocks and puzzles develop problem-solving and fine motor skills, and playing with a ball develops gross motor skills. For the healthy development of the

child, various types of toys are needed that support all these skill groups to some degree.

The things that the child plays with do not necessarily have to be expensive toys. Cutlery or kitchen utensils that allow the child to familiarize him/herself with the environment and imitate experiences of everyday life are also capable of meeting the developmental needs of the child, whereas expensive electronic toys may even harm the child's health as well as failing to make a contribution to the child's development.

2.2 Conceptualizing sustainable toys including their after life

Previous studies on toy sustainability cover improvements and suggestions for the period "before" use, which spans the time from the moment of design to the moment of use and includes production processes, selection of materials, the management of production waste, and logistics management, but not the entire lifecycle of toys (Muñoz et al., 2009; Choi et al., 1997). In the toy lifecycle, there is almost no information on the usage period and the expected long life in which the toy encounters more than one user (Lukman et al., 2021). This important period should be examined specifically because the success of a toy's performance, until it is thrown away, is measured by this duration. Manufacturers and designers do not have control over the use phase of the toy owing to different user scenarios and different combinations of user types to which the same product is exposed (Cor & Zwolinski, 2015). In addition, the impact on nature is evident when considering the waste of batteries in electronic toys; the number of batteries a toy will use during its

lifetime and how those batteries are disposed of afterward are not in the domain of the manufacturers or designers. Only a conscious consumer with an environmentalist approach can make the right decision about the disposal of these wastes.

While previous studies excluded what happens to the toy after the act of purchase, such as everyday use or alternative scenarios after the first user, including disposal or a new user, this study evaluates the sustainability of toys in terms of their entire lifecycle. To construct a sustainable toy lifecycle perspective, it is important to examine the various phases through which toys go, in order to make sense of the inconsistent relationship between the “intention–behavior gap between values and everyday user actions” and the inferences to be drawn from that (Bhamra et al., 2011). Understanding the real reasons for this contradiction between “intention” and “behavior” will suggest areas that can be improved in the toy lifecycle. For example, while earlier studies indicate that price is the most effective criterion for deciding on a purchase, accounting for 30% of the considerations, the customer may consciously prefer more expensive green products with the expectation of better quality and environmental friendliness (Schuitema & de Groot, 2015; Scherer et al., 2017). One of the aims of the present study is to discover the kind of “intention and behavior” tendency in balancing price and preference. Assuming that children will be perceived as the most valuable people in the eyes of caregivers, it can be thought that more expensive and environmentally friendly choices can be made with the expectation of the highest quality.

Key sustainability criteria are measured by material type, battery usage, durability, recycling, and secondhand opportunities. According to the literature, traditional toys that do not require batteries (Robertson & Klimas, 2019), made with durable, natural, and recyclable materials and not of plastic, but which can be used for years by more than one owner, can be defined as the most sustainable. As suggested, the impact on climate change can be limited by repairing minor problems in items, instead of replacing such items; by donating after use rather than throwing the items away; and by choosing higher-quality products considering that they will last longer. Environmentally concerned people are also expected to prefer toys with features with the key sustainability criteria and meeting other sustainability criteria set specifically for toys that this research covers.

2.3 Multifaceted features of toy materials

In terms of sustainability, the material of which a product is made is an important component because, in principle, it is expected that the material shall cause minimal damage to the environment and be recyclable. When it comes to toys, the importance of the material includes a health dimension, given that children are in direct contact with them potentially all day long and can put them in their mouths. Therefore, conscious caregivers prefer toys made from organic, additive-free, traditional, and environmentally friendly materials (Dalğar & Kaya, 2017; Scherer et al., 2017). The sustainable preferences of consumers are parallel to their ecological sensitivities, and they prefer products that consistently match their own values and sensitivities (Scherer et al., 2017). For this reason, sellers of toys should provide clear information on the sustainability of the materials used. In the absence of such information,

consumers may not be able to make informed decisions, even if they are environmentally conscious.

Wood, plastic, paper, fabric, and metal are common toy materials, and there are battery-operated electronic toys produced by combining these materials. Various materials allow children to experience, in a fun way, sizes, colors, shapes, and textures through toys, thus supporting their development and teaching them at the same time (Elibol et al., 2006). Wood is a sustainable, durable, natural, organic, and easily workable material that is also harmless when unpainted (Elibol et al., 2006; Usta, 2019). This traditional material can gain more aesthetic value with the addition of colors and patterns, but wooden toys are more expensive than those made with other materials, as they are handcrafted. Although paper is a healthy, sustainable, recyclable material, it is unstable unless reinforced with other materials (such as plastic, wood, or lacquer) and therefore easily deformed when used in toys (Elibol et al., 2006). For this reason, it is not a preferred material for toy production, except for certain categories such as jigsaw puzzles or traditional paper dolls. The fabric types used in the production of stuffed animals or dolls, which toddlers use as sleeping companions and are the primary toys that allow them to experience love and affection, are also among sustainable materials (Patterson & Bradley, 2020).

Metal is high density and therefore heavy, even in small quantities, and its chemical composition can cause health problems; for these reasons, although it is recyclable, it is an unsuitable toy material for young children (Elibol et al., 2006). Some electronic toys, which

leave non-biodegradable waste, contain toxic cadmium if they are battery-powered, and can cause suffocation or poisoning if their battery is swallowed, are highly dangerous for children (Elibol et al., 2006; Pérez-Belis et al., 2017). Battery-powered or complex electronic toys also fail to improve dexterity and promote imagination (Patterson & Bradley, 2010/2020). Although electronic components and batteries that allow recycling are used in these toys, the sustainability performance of such toys is limited by the sense of responsibility of the purchasers, owing to limited legal enforcement for recycling in countries like Turkey.

Plastic, which is ubiquitous in the modern world, is the most preferred material for toys, being low-cost, easy to mold, capable of mass production, and having clean lines and vivid colors (Shove et al., 2017). This material, some types of which are recyclable, can withstand all kinds of atmospheric conditions for long periods without losing its properties, and it provides a nice combination of durability with lightness, warmth to the skin, and pleasure to the eyes, with vibrant colors and aesthetics (Dalğar& Kaya, 2017; Shove et al., 2017). Moreover, plastic is often lightweight and can be carried easily by children of any age. Plastic is used a lot, especially in packaging, but is not recyclable and takes hundreds of years to decompose, accumulating in the natural world over the years and posing a serious threat to the environment. It is vital to act with environmental awareness for the protection of nature, especially with the right material selection and waste management, and embracing sustainable values (Evode et al., 2021; Levesque et al., 2022).

2.4 GBP and recycling

Considering that domestic waste accounts for 40% of material that is damaging to nature, this number can only be reduced by the conscious purchasing of “green products” that cause less damage without sacrificing quality and expectations (Joshi & Rahman, 2015; ElHaffar et al., 2020). Although the earlier literature explained “green products” in terms of their production methods, later sources adopted a more inclusive approach that encompassed systems based on the prioritization of a wide variety of product characteristics and their perceptions by buyers (Joshi & Rahman, 2015; Johnstone & Lindh, 2018; Papista et al., 2018). In these systems, criteria based on personal evaluation outweighed classical green product criteria, which indicates the importance of meeting green product characteristics and personal preferences on common ground (Dagher & Itani, 2014; Joshi & Rahman, 2015; Schuitema & de Groot, 2015; ElHaffar et al., 2020).

Any kind of production process, if not well managed, may produce biodegradable or non-degradable wastes that can be harmful to all living things and nature. Recycling is a means of converting these wastes into raw materials to produce new products that will reduce the damage to the environment (Evode et al., 2021). Unfortunately, considering that only 9% of the waste is recycled and the remaining amount is collected in disposal areas or discarded into the natural environment, such environmentally friendly practices are evidently not adequately embraced by all in society (Gourmelon, 2015). Plastics and batteries are materials that are suitable for recycling and need to be disposed of separately, as they otherwise cause harm to the environment (Sun et al., 2015).

2.5 Second hand options

Products that are offered to the market after completing their life with the first user and that therefore have more than one owner are called secondhand products, and the use of such products supports the economy as well as being positive in terms of sustainability. Sharing, giving, donating, selling, or using the products through common access services give products a second chance, allowing them to reduce ecological damage (Mugge, 2018). It is essential to encourage the maintenance and repair of toys and their secondhand use. Unfortunately, the literature shows that many people have a negative attitude toward extending a product's life because of ignorance. However, ignorance is not the only reason for avoiding the secondhand use of products (except cars, etc.), there being other reasons for people's negative attitudes, which are defined as perceived risks. Perceived risk, which varies in severity depending on the circumstances, is defined as the expectation that the person will endure negative consequences as a result of choosing the wrong option in the decision process (Çakır & Dedeoğlu, 2020). Çakır and Dedeoğlu (2020) described aspects of perceived risk as financial (feeling apprehension of financial loss as a result of purchasing a useless product), physical (potential illnesses due to dirt or contagious viruses or bacteria from the product), psychological (use of someone else's old product makes the person feel worthless), social (insult and exclusion from society), and performance-related (product not performing as expected).

Excluding consciously preferred secondhand shopping applications that have developed in recent years, using hand-me-down products outside the family circle is perceived as the most obvious sign of low

socioeconomic status in Turkey. People try to stretch their means as much as possible to heighten their social status by buying brand-new products (UckanYuksel & Kaya, 2021). The idea of loss of prestige causes many people to approach secondhand products with hesitation. Toys, on the other hand, are products that often lie idle and unwanted because they cannot keep up with the development of children, become out of date, or have a short lifespan, making them quite suitable for secondhand use.

3. Materials and methods

The aim of this study was to examine the preferences of different caregiver types in the management of the purchasing of toys and other means of entertainment and their handling of the toy lifecycle. Given that people buy toys in different relationships and contexts, the environmental effects of their decisions and priorities, conscious or unconscious, gain a dimension worth investigating. After choosing the product and purchasing it, different processes start, for each user, with “using” and “not using.” There is no problem when toys are played with, since they have been already purchased with certain expectations, which it can be assumed they meet. However, if the toy is not played with by the “user” child, it may remain idle. At this point, some caregivers, owing to environmental awareness or their individual personality traits, prefer to dispose of the toys in such a way that they can still serve a purpose.

According to Turkish Statistical Institute (TURKSTAT) data from 2021, the number of live births in the country was about one million, 35.8% of these being the first, 32.2% being the second, and 18.3% being the third births of mothers. The average age of mothers who gave birth in 2021 was 29.1 years, compared with 26.7 years in

2001. The average age for the first birth was 26.7years in 2021 (TUIK, 2022). Millions of young people are considered as children until they reach the age of 18, and each year more are added to this number. These people, who are the potential users of toys, are the subject of our research, along with the large market of their caregivers. The aim of this study was to observe the relationship between sustainable consumer preferences in toy purchase and caregiver types. As a first step, a sustainability expert with knowledge of toys and child development was interviewed. Then, the factors to search for were drawn from the literature review, including various aspects of sustainability and possible sustainability criteria specifically for toys. Finally, nine criteria that are effective in preferences were highlighted for toy sustainability. The study was organized within the framework of these criteria.

The sample for the study consisted of Turkish caregivers living in the country or abroad, found by the snowball sampling method. A questionnaire was sent to the participants via various electronic communication methods (e-mail, WhatsApp, social media, etc.) during a 21-day period (29.11.2021 – 20.12.2021). Of those approached, 225 people with different caregiver roles completed the questionnaire successfully. The survey consisted of 83 questions about demographics, product purchase preferences, end-of-life scenarios, and environmental awareness in general. Some of the questions asked and statements addressed to measure their strengths in the survey regarding the perspectives of caregivers about toy sustainability and their representations used in the data analysis in parenthesis were:

- *I look for the recyclability of toy materials (material recyclability importance)*
- *When buying toys, I think about the possible harm to the environment*
- *When buying a toy, I look for it to be recyclable (recycle potential concern)*
- *What is your approach to the secondhand use of toys that you do not use?*
- *Have you ever acquired a toy secondhand?*
- *Why did you acquire that toy secondhand?*
- *When buying a toy, I think about the possible harm that its packaging may do to the environment*
- *I recycle toys that my child did not use /had previously been damaged before (recycled before)*
- *I dispose of waste batteries from toys in waste battery collection boxes, and I usually pay look for rechargeable batteries instead of disposable batteries.*

Participation in the survey was voluntary. Demographic information, such as education level, income level, and participant age, was sought from the participants, with direct and indirect questions and several alternatives. On the other hand, to allow for alternative correlations, questions about caregiver roles, which allowed multiple selection, and the ages of the children were included in the questionnaire. The data obtained from the survey were analyzed through the statistical program.

4. Data analysis and results

Our study sought to discover the effect on caregivers' sustainability behaviors of factors such as their titles, age, education level, or

income level (Tables 1, 2, 3). Studies on sustainable consumer behavior in Turkey and abroad indicate that it varies according to occupation, age, gender, income, and education (Dagher & Itani, 2014; Erol & Tayfun, 2022).

Caregiver role	Frequency	Percent
Mother	100	44.4
Father	18	8.0
Sibling	12	5.3
Grandparent	14	6.2
Aunt / uncle	75	33.3
Educator	2	0.9
Other (friend, acquaintance, etc.)	4	1.8
Total	225	100.0

Table 1 - Caregiver Roles

Education level	Frequency	Percent
Masters, PhD	117	52.0
University	95	42.2
High school	13	5.8
Total	225	100.0

Table 2 - Education Levels

Child's age	Frequency	Percent
0 – 1 years	17	7.6
1 – 3 years	70	31.1
3 – 6 years	72	32.0
6 – 11 years	46	20.4
11 – 16 years	20	8.9
Total	225	100.0

Table 3 - Child's Age

The participants were selected from those who were in contact with children of various ages. It was assumed that preferences for toys would change because of the evolving behaviors and needs of children in different age groups.

In the research, the descriptive statistics method, a quantitative research method, was used. Analyses were conducted of the data collected from the surveys, and descriptive statistical findings such as frequency, percentage, mean, standard deviation, skewness, and kurtosis of the data were presented. Then, statistical analysis methods suitable for the hypotheses were selected, and the relationships and differences between dependent variables and independent variables were revealed.

In a normal distribution, the test reveals how much the universe overlaps with the sample and shows homogeneity. According to the normal distribution test results, parametric test methods or non-parametric test methods are used. The fact that the skewness and kurtosis values in this study were between ± 1.5 and ± 2.0 indicate that the data were normally distributed (Erol & Tayfun, 2022). The results of the normal distribution test are shown in Table 4.

Descriptive statistics (N = 225)								
	Minimum score	Maximum score	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Importance of materials	1	5	3.79	1.020	-0.462	0.162	-0.474	0.323
Wood	1	5	3.75	1.367	-0.665	0.16	-0.902	0.32

preference						2		3
Plastics preference	1	5	3.08	1.329	-0.317	0.16 2	-1.057	0.32 3
Cloth / plush preference	1	5	2.90	1.374	0.050	0.16 2	-1.198	0.32 3
Electronics preference	1	5	3.08	1.205	-0.164	0.16 2	-0.749	0.32 3
Cardboard / paper preference	1	5	3.29	1.446	-0.417	0.16 2	-1.183	0.32 3
Metal preference	1	5	2.29	1.210	0.495	0.16 2	-0.778	0.32 3
Concern about potential recycling	1	7	4.16	2.119	-0.195	0.16 2	-1.278	0.32 3
Importance of material recyclability	1	5	3.72	1.148	-0.613	0.16 2	-0.345	0.32 3
Recycled before	1	7	4.15	1.878	-0.157	0.16 2	-1.073	0.32 3
Secondhand purchase / acquisition	1	7	4.57	1.882	-0.195	0.16 2	-1.129	0.32 3
Secondhand giving	1	7	5.72	1.377	-0.921	0.16 2	0.102	0.32 3
Packaging concerns	1	7	4.49	1.897	-0.395	0.16 2	-1.010	0.32 3
Battery concerns	1	7	5.35	1.907	-1.039	0.16 2	-0.102	0.32 3
Environmental awareness	1	7	4.85	1.688	-0.414	0.16 2	-0.789	0.32 3

Table 4 - Descriptive Statistics Summary

For the selection of parametric–non-parametric statistic methods, the mode–median–arithmetic mean and skewness–kurtosis values were examined in relation to the evaluation of the normality of the responses of the participants, and it was observed that the distribution was normal. The descriptive statistical results of the answers given by the participants are presented in Table 4. The scores were normally distributed, and therefore parametric analysis techniques could be used.

However, a more advanced technique to evaluate and double-check the same data, as shown in Table 5, did not support the conclusion of normality. This further technique explains that, if the “sig” value, which indicates the p value, is less than 0.05 in tests performed at a confidence level of 95%, it is considered that the variable is not normally and homogeneously distributed. If the number of data is less than 30, Shapiro–Wilk test results are preferred, and, if it is higher than 30, Kolmogorov–Smirnov test results are preferred (Özdemir & Ramazan, 2012). The sample size of 225 assessed with Kolmogorov–Smirnov showed that the data with sig 0 were not normally distributed.

	Kolmogorov–Smirnov ^a			Shapiro–Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Importance of materials	0.194	225	0.000	0.873	225	0.000
Wood preference	0.265	225	0.000	0.815	225	0.000
Plastics preference	0.204	225	0.000	0.881	225	0.000
Cloth / plush preference	0.144	225	0.000	0.895	225	0.000
Electronics preference	0.188	225	0.000	0.909	225	0.000
Cardboard / paper	0.225	225	0.000	0.858	225	0.000

preference						
Metal preference	0.221	225	0.000	0.858	225	0.000
Concern about potential recycling	0.151	225	0.000	0.928	225	0.000
Importance of material recyclability	0.187	225	0.000	0.868	225	0.000
Recycled before	0.157	225	0.000	0.894	225	0.000
Secondhand purchase / acquisition	0.150	225	0.000	0.913	225	0.000
Secondhand giving	0.223	225	0.000	0.835	225	0.000
Packaging concerns	0.196	225	0.000	0.908	225	0.000
Battery concerns	0.225	225	0.000	0.806	225	0.000
Environmental awareness	0.170	225	0.000	0.915	225	0.000
a. Lilliefors Significance Correction						

Table 5 - Tests of Normality

When the data do not show a normal distribution, the non-parametric Mann–Whitney U test is used for the evaluation steps of non-parametric independent samples. This test is used to see the difference of means between two independent groups from a similar population and to determine the difference or equality between the groups. The Mann–Whitney U test is used when the dependent variable is ordinal or when the necessary assumptions for the t-test are not met (Arslan, 2018). On the other hand, the Kruskal–Wallis test allows comparison of three or more groups in terms of a quantitative variable. It can be seen as the extension to the Mann–Whitney test, which allows comparison between two groups under the non-normality assumption.

The Kruskal–Wallis test was first performed in relation to sustainable behaviors listed in Table 4 and the different age groups of the children in Table 3. However, there was no meaningful difference among the groups of children. Although there was an inference that there might be a significant difference between the groups according to the education levels of the participants (Table 2), there were only two groups that could be calculated out of three levels of education (university and masters/PhD), both of which represent higher education. This difference was therefore not taken into further consideration in the study owing to the small number of participants with lower levels of education.

The same test indicated that (Table 6) the role of the caregiver had a meaningful effect on the choice of plastics, plush, secondhand shopping, recycling, environmental concerns, and concerns about packaging and batteries.

	Null Hypothesis	Sig. a, b	Decision
1	The distribution of material importance is the same across categories of caregiver	0.057	Retain the null hypothesis.
2	The distribution of wood preference is the same across categories of caregiver	0.141	Retain the null hypothesis.
3	The distribution of plastics preference is the same across categories of caregiver	0.002	Reject the null hypothesis.
4	The distribution of cloth / plush preference is the same across categories of caregiver	0.019	Reject the null hypothesis.
5	The distribution of electronics preference is the same across categories of caregiver	0.098	Retain the null hypothesis.
6	The distribution of cardboard / paper preference is the same across categories of caregiver	0.272	Retain the null hypothesis.

7	The distribution of metal preference is the same across categories of caregiver	0.337	Retain the null hypothesis.
8	The distribution of concerns about potential recycling is the same across categories of caregiver	0.056	Retain the null hypothesis.
9	The distribution of material recyclability importance is the same across categories of caregiver	0.014	Reject the null hypothesis.
10	The distribution of previous recycling is the same across categories of caregiver	0.055	Retain the null hypothesis.
11	The distribution of secondhand purchase / acquisition is the same across categories of caregiver	0.038	Reject the null hypothesis.
12	The distribution of secondhand giving is the same across categories of caregiver	0.071	Retain the null hypothesis.
13	The distribution of packaging concerns is the same across categories of caregiver	0.001	Reject the null hypothesis.
14	The distribution of concerns about batteries is the same across categories of caregiver	0.021	Reject the null hypothesis.
15	The distribution of environmental awareness is the same across categories of caregiver	0.001	Reject the null hypothesis.
a The significance level is .050.			
b Asymptotic significance is displayed.			

Table 6 - Independent-Samples Kruskal-Wallis Test Results

Reliability analysis was conducted to measure the internal consistency of the items in the scales used in the study. Within the scope of this analysis, Cronbach's alpha coefficient was evaluated with a number between 0 and 1 (Cronbach, 1951). The scale is considered dependable when Cronbach's alpha value is 0.60 or above. It was observed that the Cronbach's alpha coefficient for the

21-item preference, end-of-life scenario, and environmental awareness responses was 0.681. Hence, it was concluded that the measurements used in the study were dependable. Accordingly, we moved on to the next phase of checking the Kaiser–Meyer–Olkin (KMO) values.

As a result of the first explanatory factor analysis for preference, end-of-life scenario, and environmental awareness answers, it was concluded that the KMO value calculated as 0.690 was sufficient, and the Bartlett sphericity test was found significant (chi-square test statistic = 1179.17; degree of freedom = 105; p-value < 0.001). Therefore, it was decided that the interpretation of the explanatory factor analyses was appropriate, and further evaluations were started. In addition, it was observed that there was significant consistency at the attitude level found by the correlation tests regarding sustainability attitude and behaviors.

In the relations established with bivariate Pearson correlation, which measures the strength and direction of linear relationships between pairs of continuous variables (Rodgers & Nicewander, 1988), it was observed that those who were open to buying plastic toys did not attach much importance to the product material (-0.279), did not care about reuse or recycling of the toy materials (-0.188), did not care much about damage to the environment (-0.241), and did not care about recycling (-0.219). However, it was observed that those people were willing to buy electronic toys (0.180). Those who cared about toy materials avoided the use of plastic (-0.279) and electronic toys (-0.146), attached importance to the reuse of toy materials when the life of the toy ended (0.211), especially preferred wooden toys (0.187), and cared about environmental damage (0.531), recycling (0.439), and possible

damage from the battery (0.220). A high percentage of caregivers who preferred cardboard toys were willing to use wood (0.414) and plush (0.256), were sensitive to recycling (0.149), and were environmentally aware (0.138).

Descriptive statistics and the Kruskal–Wallis–H test methods were used when comparing the nominal and ordinal values, such as the type of caregiver, education, age, and age of the children with the continuous values we measured with the Likert scale in our survey.

Caregiver Roles		N	Mean	Std. Deviation	Std. Error Mean
Concern about potential recycling	Mother	100	4.28	2.239	0.224
	Father	18	4.17	2.036	0.48
	Siblings	12	3.83	1.899	0.548
	Aunt / uncle	75	3.96	2.05	0.237
	Teacher	2	6.5	0.707	0.5
	Grandparents	14	5	1.519	0.406
Importance of material recyclability	Mother	100	3.73	1.118	0.112
	Father	18	3.94	0.725	0.171
	Siblings	12	4.17	1.03	0.297
	Aunt / uncle	75	3.6	1.273	0.147
	Teacher	2	5	0	0
	Grandparents	14	3.86	1.027	0.275
Recycled before	Mother	100	3.78	1.941	0.194
	Father	18	4.44	1.504	0.354
	Siblings	12	4.75	2.179	0.629
	Aunt / uncle	75	4.29	1.777	0.205
	Teacher	2	7	0	0
	Grandparents	14	5.07	1.492	0.399
Secondhand purchase / acquisition	Mother	100	4.89	1.901	0.19
	Father	18	4.67	1.97	0.464
	Siblings	12	4.58	1.881	0.543
	Aunt / uncle	75	4.35	1.744	0.201

	Teacher	2	5	2.828	2
	Grandparents	14	4	2	0.535
Secondhand giving	Mother	100	5.95	1.313	0.131
	Father	18	6.17	0.924	0.218
	Siblings	12	5.58	1.379	0.398
	Aunt / uncle	75	5.41	1.462	0.169
	Teacher	2	4	1.414	1
	Grandparents	14	5.71	1.326	0.354
Packaging concerns	Mother	100	4.2	1.969	0.197
	Father	18	4.94	1.765	0.416
	Siblings	12	4.75	1.712	0.494
	Aunt / uncle	75	4.51	1.758	0.203
	Teacher	2	7	0	0
	Grandparents	14	6	1.519	0.406
Battery concerns	Mother	100	5.36	1.977	0.198
	Father	18	5.94	1.552	0.366
	Siblings	12	4.75	1.815	0.524
	Aunt / uncle	75	5.16	1.939	0.224
	Teacher	2	7	0	0
	Grandparents	14	6.36	0.929	0.248
Environmental awareness	Mother	100	4.53	1.806	0.181
	Father	18	5.61	0.916	0.216
	Siblings	12	4.75	1.815	0.524
	Aunt / uncle	75	4.84	1.586	0.183
	Teacher	2	7	0	0
	Grandparents	14	6.29	0.825	0.221

Table 7 – Group Statistics

In line with the data in Table 7 show, mothers had the second-highest tendency ($X = 4.89$, $Std = 1.901$) to purchase secondhand products after teachers (negligible because of the small sample size). However, they did not have the same sensitivity in terms of

secondhand giving, recycling, battery concerns and environmental awareness compared with the rest of the study population as the data in Table 7 shows.

To dig deeper and test the previous hypothesis, the Kruskal–Wallis–test, which measures the non-parametric inputs’ relationships with unsatisfied normality, was conducted for the caregiver variable of the study, as the results did not show a normal distribution.

Test Statistics ^{a, b}															
	of materials	preference	preference	preference	preference	preference	preference	concern	importance	before	purchase / acquisition	giving	concerns	concerns	awareness
Krusk	7.314	8.552	11.99	13.57	3.340	5.601	3.471	9.186	2.492	3.617	5.714	8.715	13.85	8.477	17.55
d	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Asym	0.12	0.07	0.01	0.00	0.50	0.23	0.48	0.05	0.64	0.46	0.22	0.06	0.00	0.07	0.00
a. Kruskal–Wallis test															
b. Grouping variable: caregiver roles															

Table 8 – Kruskal - Wallis Test Results

According toThe results of the Kruskal–Wallis test (Table 8) demonstrate the effects of caregiver roles with a large enough sample size in environmental concerns ($H(4) = 17.559$, $p = 0.002$), packaging concerns ($H(4) = 13.855$, $p = 0.008$), plastics choice ($H(4) = 11.995$, $p = 0.017$), and plush choice ($H(4) = 13.573$, $p = 0.009$). These results indicate that, in the abovementioned terms, there were significant differences within the four caregiver groups.

Sample 1 - Sample 2	Test Statistic	Std. Error	Std. Statistic	Test Sig.	Adj. Sig. ^a
<i>Mother - Father</i>	-37.309	15.921	-2.343	0.019	0.191
Mother - Siblings	8.740	18.997	0.460	0.645	1.000
Mother - Aunt / uncle	-8.978	9.498	-0.945	0.345	1.000
<i>Mother - Grandparents</i>	-66.401	17.744	-3.742	0.000	0.002
Father - Siblings	-28.569	23.174	-1.233	0.218	1.000
Father - Grandparents	-29.091	22.158	-1.313	0.189	1.000
Father - Aunt / uncle	28.331	16.321	1.736	0.083	0.826
<i>Siblings - Grandparents</i>	-57.661	24.462	-2.357	0.018	0.184
Siblings - Aunt / uncle	-0.238	19.333	-0.012	0.990	1.000
<i>Aunt / uncle - Grandparents</i>	-57.422	18.104	3.172	0.002	0.015
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050.					

Table 9 - Pairwise Comparisons of Caregiver for Environmental Awareness

Pairwise comparisons for environmental concerns (Table 9) using Dunn's test indicated that grandparents' scores were significantly different from those for mothers ($p = 0.000$), siblings ($p = 0.018$), and aunts / uncles ($p = 0.002$), as were mothers' scores from fathers' ($p = 0.019$). No other differences were statistically significant.

Sample 1 - Sample 2	Test Statistic	Std. Error	Std. Statistic	Test Sig.	Adj. Sig. ^a
Mother - Father	-23.658	15.966	-1.482	0.138	1.000
Mother - Siblings	18.047	19.050	0.947	0.343	1.000
Mother - Aunt / uncle	-8.493	9.525	-0.892	0.373	1.000

Mother - Grandparents	-63.166	17.794	-3.550	0.000	0.004
Father - Siblings	-5.611	23.239	-0.241	0.809	1.000
Father - Grandparents	-39.508	22.221	-1.778	0.075	0.754
Father - Aunt / uncle	15.164	16.367	0.927	0.354	1.000
Siblings - Aunt / uncle	9.553	19.388	0.493	0.622	1.000
Siblings - Grandparents	-45.119	24.531	-1.839	0.066	0.659
Aunt / uncle - Grandparents	-54.672	18.155	3.012	0.003	0.026
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .050.					
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.					

Table 10 - Pairwise Comparisons of Caregiver for Packaging Concerns

Pairwise comparisons for packaging concerns (Table 10) using Dunn's test indicated that grandparents' scores were significantly different from those for mothers ($p = 0.000$) and aunts / uncles ($p = 0.003$). No other differences were statistically significant.

As Dunn's test also revealed, the desire to buy plastic was statistically much lower among the siblings ($X = 1.67$, $Std = 1.371$) group than among the rest of the roles (mothers ($p = 0.001$), fathers ($p = 0.010$), grandparents ($p = 0.012$), and aunts / uncles ($p = 0.001$)).

In our study, mean and standard deviation values were first examined step-by-step in the statistical evaluations, and then

Kruskal–Wallis–H and Dunn’s tests were used to reveal the differences in attitudes among different caregiver roles on subjects such as material type, environmental awareness, and recycling.

In terms of mean and standard deviation values, although Table 7 revealed that mothers stood out with positive attitudes, especially with regard to secondhand purchases ($X = 4.89$, $Std = 1.901$) compared to other roles, no statistically significant difference was observed in this regard in the detailed tests conducted. Moreover, according to the results in Table 8, environmental concerns attitude ($H(4) = 17.559$, $p = 0.002$) values are meaningful for grandparents, packaging concerns attitude ($H(4) = 13.855$, $p = 0.008$) values are also meaningful for grandparents, and low plastics preference ($H(4) = 11.995$, $p = 0.017$) values showed a statistically significant difference in favor of siblings from all other caregiver roles.

5. Discussion and Conclusion

The participants in our study behaved consistently in terms of environmental and material sensitivities and waste management, which can be described as sustainability conscious behaviors. In general, it was observed that those who preferred plastic toys had a similar positive approach to electronic toys, but they were not highly sensitive with regard to toy materials or recycling. Similarly, material-conscious people preferred wooden toys and were sensitive to environmental issues, but stayed away from electronic, plastic or battery-powered toys. The fact that those who preferred paper or cardboard toys also preferred natural materials such as fabric and wood and adopted environmentalist behaviors in general is in line with the sustainability literature. For this reason, if there is an inconsistency between the expectations based on the literature, it

would be appropriate to question the different motivations behind it by conducting new studies. When examined in detail, it seems that “recycling of toy material,” “prolonging the life of the toy by secondhand exchange,” and “recycling” behaviors do not act in parallel. This can be explained as not being able to distinguish different cases that each of those behaviors represent different values for people or as indicating that these differences may be the reflection of different motivations. For example, choosing recyclable toy materials may be an environmentalist preference, while the unestablished recycling culture and system in society may lead to an “I did my responsibility by choosing the right material, but let the system take care of the rest” perspective. On the other hand, from the sharing culture point of view, prolonging the life of toys may be perceived as an expected family activity, and the exchange of toys between relatives may not have been evaluated as an environmentalist approach to consumption. Therefore, the main motivations that cause these behavioral differences bear examination with further research and in-depth interviews.

In our research, questions such as “Did you ever get secondhand toy?,” “What kind of toys did you get secondhand?,” “What was the reason for your preference?,” and other questions about secondhand buying, secondhand giving, and their processes were included in the survey. Of the 225 participants, 98 answered negatively, participants responding, “I never buy / use secondhand toys.” The stigma attached to secondhand product use in Turkey had a serious impact (UckanYuksel & Kaya, 2021). The toys and other objects for entertainment that were got secondhand were large and inessential items, such as baby walkers or baby bouncers; toys that needed to

be bought in bulk but were expensive, such as Legos, Hot Wheels cars, or wooden blocks; moderately expensive vehicles, such as a battery-operated car or a balance bike; or expensive and frequently bought items such as foreign books. When it came to a preference for secondhand toys, few answers highlighted a motivation for sustainability; the other respondents stated that secondhand toys came from acquaintances, were given free of charge or at affordable prices, or that there was a wide variety of such toys that are not even at the market for sale that can be reached at cheap prices. Our research also found that the practice of hand-to-hand transfer of secondhand toys and baby goods was common in Turkey.

The literature indicates that family histories, personal backgrounds, and the environments in which people grow up have different effects on sustainable behaviors. Considering this, our research included questions about income and education. However, although there were differences in terms of education levels among the participants, the distribution of education levels, being confined to mostly university level and above and only a few of high school, was too small to represent Turkey's population and to explain the differences in sustainability behavior between education levels. In contrast, the preferences of the participants for certain expensive product groups like battery operated cars by secondhand buying or giving behaviors indicated the strong effect of income. It means that people do not perform this behavior with the intention of sustainability, but they have this tendency because these products are expensive. In future studies, the links between the trends in toy preferences and demographics can be examined in greater detail with measurable questions and a larger sample.

With regard to caregiver roles, mothers exhibited either more positive (giving a chance for secondhand products) or more negative (not being sensitive to use of plastics at all) attitudes in some areas than the general sample, but these attitudes were not always consistent within themselves, and there may be different motivations behind this inconsistency. Mothers who had a positive attitude and behavior toward buying secondhand products registered similar or even lower scores than those in other categories in terms of secondhand giving, material or battery recyclability, or environmental awareness. This result may indicate the economic aspect of secondhand purchasing behavior, meaning that the behavior is a necessity rather than a sustainable choice. However, there is still potential here for a marketing study because of the positive attitudes of mothers compared to other caregivers. Since they approach the subject more positively, perception management studies, especially on secondhand receiving and giving, can lead to positive behavior change for caregivers. Personalized information and guidance on sustainability in the lifecycles of toys can be offered to caregivers to aid their choices.

Differences in terms of sustainability behaviors were found among caregivers where there was a sufficient number of participants (mothers, fathers, grandparents, siblings, and uncle/aunt). These differences pertained to their use of plastic or fabric toys, their perspective on secondhand shopping, their tendency to recycle, and their environmental, packaging, and battery concerns. The most significant differences were indicating higher tendency for grandparents in relation to environmental and packaging concerns.

These differences may be attributable to their life experience, better economic conditions, enabling them to spend more money on toys, which they buy rarely, or their desire to leave a better world to the next generation. However, since all of these are matters of speculation, detailed research is required with a focus on the effect of participants' genders on their preferences.

In our research, we tried to differentiate between the toys bought for children in different age groups. However, unlike findings in the literature, there was no difference between age groups, nor any specific kind of toy bought for an age group. The reason may be that the same person had a connection with children in different age groups and therefore was unable to make a differentiated assessment. In Turkish culture, the transfer of toys and other means of entertainment from older to younger children is considered quite normal, unlike secondhand buying or acquiring, so the respondents may not have been able to control or to be particularly selective about the toys they received. Better assessment in this regard could be studied by conducting in-depth interviews with caregivers, especially with a single child or age group.

This study suggests raising awareness of a "less is more" culture in child entertainment products, considering both sustainable values and income inequality by returning unused toys into circulation on secondhand use platforms. Especially with the irrepressible rise of digital services pumping consumption, it is more important to decrease the carbon footprint of toys with the help of environmentally conscious caregivers. Among the missions of our study were raising the awareness of caregivers about the problems

caused by discarded toys and encouraging them to reintroduce toys that are not or no longer wanted into the cycle of usage.

The existence of the deficient issues mentioned in the text and creating new questions in our minds also points out the areas of our study that need to be developed in the future studies. The participants in the survey were reached by snowball sampling, which meant they did not have enough ethnic or demographic diversity to represent Turkish society as a whole. There were not enough participants in certain caregiver groups, most of the participants were highly educated, and most lived in big cities. In addition, although most of the questions were about online shopping experiences, it is possible that the participants answered the questions in consideration not only of their online experiences but also of their conventional shopping experiences. Still, the framework of our study, the research area, and the new questions that arise from our evaluations will form the basis for future research. Since our research related only to the Turkish market, which represents just 0.8% of the world toy market, it would be appropriate to conduct a similar study in different cultures to gain a broader picture and to make sense of motivations and attitudes that may vary between nations.

It is our duty to leave a better world for our children, to whom we entrust the future. We can do this with behavioral models and systems implemented today that will create a sustainable world in the future. The present research attempted to shed light on this little-studied area.

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