behavioral sciences

MDPI

Article

Adolescents' Online Product Information Search and Shopping: Parental Online Behaviors and Social Media Platforms from a Consumer Socialization Perspective

Oğuz Han Aykut [1] and Murat Kurnuç [2,*]

[1] Vocational School, Erzincan Binali Yıldırım University, Erzincan 24000, Türkiye; oaykut@erzincan.edu.tr
[2] Pasinler Vocational School, Atatürk University, Erzurum 25240, Türkiye
* Correspondence: murat.kurnuc@atauni.edu.tr

Abstract

Adolescents increasingly search for product information and shop online, yet associations with parental online behavior and specific social media platforms remain unclear. Drawing on consumer socialization theory, we analyzed two nationally representative Turkish surveys of regular internet users aged 11–15. Parental data were available only in the 2021 survey, which matched adolescents and parents within households (n = 2914); the 2024 survey assessed seven social media platforms (n = 3242). In the 2021 survey, weighted logistic regressions showed associations between parental and adolescent online shopping (odds ratio [OR] = 1.70, 95% CI [1.27, 2.29]) and between their product information searches (OR = 2.15 [1.62, 2.86]). Social media use was associated with both behaviors after adjustment for general internet use. Instagram, Snapchat, and Pinterest were positively associated with both outcomes, although two of the six associations were only marginally significant after correction for multiple comparisons. The parental education coefficient attenuated after accounting for adolescent internet use, device ownership, and parental online behavior, the last contributing the largest component. Within-household comparisons retained the social media–information search association; evidence for shopping was inconclusive. These cross-sectional associations do not establish causality. The findings highlight parental online behavior and platform differences for adolescent consumer education.

Keywords: consumer socialization; adolescents; online shopping; product information search; parental online behavior; social media platforms; socioeconomic status; Türkiye

Check for updates

Academic Editors: Liying Zhou, Taiyang Zhao and Sheng Wei

Received: 14 October 2026
Revised: 10 November 2026
Accepted: 16 November 2026
Published: 19 November 2026

Copyright: © 2026 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

1. Introduction

Online environments have become an important part of adolescents' daily lives (Arıcı Doğan & Pamuk, 2022). In Türkiye, the internet usage rate among children aged 6–15 was reported to be 82.7% in 2021 and 91.3% in 2024 (Türkiye İstatistik Kurumu, 2024a). In 2024, 79.0% of children aged 11–15 reported using social media (Türkiye İstatistik Kurumu, 2024a). As usage has become this widespread, research focus has shifted from access to the purposes for which the internet is used (Livingstone & Helsper, 2007; van Deursen & van Dijk, 2014). One such use is commercial. Searching for information about products and services and online shopping are two forms of commercial internet use. Indeed, in a classification based on adults, obtaining product information and shopping were addressed within the same category of internet use (van Deursen & van Dijk, 2014). In this study, adolescents' online product information searches and online shopping are examined as two separate outcomes. When these two behaviors are considered together, the term "participation in the online

marketplace" is used. However, it is not entirely clear how adolescents' participation in the online marketplace relates to their parents' own online consumer behaviors and various social media platforms. How young people acquire consumer behaviors has long been an important research topic from the perspectives of marketing, consumer education, and public policy (Moschis & Churchill, 1978; Ward, 1974).

How adolescents acquire consumer behavior is examined within the framework of consumer socialization in the field of marketing (Dal & Dal, 2016). Consumer socialization refers to the processes through which young people acquire the skills, knowledge, and attitudes necessary to function as consumers in the market (Balıkçıoğlu & Volkan, 2016; Dhondt et al., 2026). According to this approach, learning occurs through the young person's interaction with socialization agents such as parents, school, peers, and mass media (Dotson & Hyatt, 2005). Variables such as age and social structure can influence learning both directly and through socialization processes (Ateşoğlu & Türkkahraman, 2009; Moschis & Churchill, 1978). This framework has also been used to examine online consumer socialization in the context of the digitalization of consumer behavior. Previous studies have examined adolescents' use of shopping channels (Lueg et al., 2006), peer communication on social media (Wang et al., 2012), children's online shopping (Thaichon, 2017), and mutual learning between parents and adolescents (Dhondt et al., 2025). A meta-analysis synthesizing 36 studies also demonstrated that adolescents' consumer knowledge, attitudes, and purchasing behaviors are related to peers, the media, and parents (Mishra & Maity, 2021). However, it has been noted that the literature on marketing to children has not sufficiently addressed the issue of digitalization (Sigirci et al., 2022). This body of research leaves open some questions regarding how family and social media contexts are related to adolescents' participation in the online marketplace.

Three important gaps remain in this literature. The first concerns the parent's own online consumer behavior. Parents' interventions regarding their children's media use have been examined within the framework of parental mediation (Clark, 2011), and the relationship between these interventions and adolescents' problematic internet use has been investigated (J. Liu et al., 2023). In contrast, this study focuses not on parental intervention but on parents' own behavior as online consumers. Some previous studies examining the parental role in the context of online shopping have relied on qualitative designs and small sample sizes (Dhondt et al., 2025; Thaichon, 2017), while others have been based solely on survey data collected from adolescents (Niu, 2017). The limitations of deriving information about parental behavior solely from adolescent reports have been emphasized both in the early stages of the field and in current research (Chen et al., 2023; J. Liu et al., 2023; Ward, 1974). However, quantitative evidence regarding the relationship between parents' self-reported online consumer behaviors and adolescents' corresponding behaviors is limited. Matched parent–adolescent data have also been used in other areas of consumption (Gong et al., 2022). In a nationally representative study, matching parent and adolescent responses within the same household allows for an examination of this relationship based on the responses recorded for both parties in the same survey.

Second, social media platforms differ in ways that may be relevant to adolescent consumer behavior. Social media is a digital context where adolescents can interact with peers and influencers (Şener, 2021). Previous studies have shown that peer communication on social media is associated with consumer behavior (Wang et al., 2012) and that adolescents' relationships with influencers are linked to purchase intent (Lou & Kim, 2019). Furthermore, it has been found that social media platforms offer different user experiences (Voorveld et al., 2018). Evidence based on nationally representative samples of adolescents regarding which platforms are associated with product information search and which with shopping is limited.

Third, it remains unclear which household conditions are associated with socioeconomic differences in adolescents' online consumption behaviors. The fact that certain consumer skills are more developed among children from families with higher socioeconomic status may be related to both structural opportunities and intra-family socialization processes. Moschis and Churchill (1978) were unable to distinguish between these two possible explanations using their data. A similar pattern has been reported regarding internet use: socioeconomic differences in children's frequency of use disappeared when only those with internet access at home were compared (Livingstone & Helsper, 2007). Based on these findings, a key question for this study is to what extent socioeconomic differences in adolescents' participation in the online marketplace change when measurable household conditions—such as the adolescent's internet use, device ownership, and parental online consumer behavior—are taken into account in an environment where internet use is becoming widespread.

These three topics are addressed using two nationally representative surveys conducted by the Turkish Statistical Institute (TÜİK). The module on children was administered as part of the household survey in 2021 and as a standalone survey in 2024 (Türkiye İstatistik Kurumu, 2024a). The 2021 survey design allows for the matching of children's and parents' responses. Study 1 examines the relationships between parents' self-reported online consumer behaviors and the behaviors of adolescents aged 11–15 who regularly use the internet by matching child, individual, and household records from the 2021 survey at the household level (n = 2914). Study 2 uses the 2024 survey to assess the relationship between social media use and adolescents' participation in the online marketplace in a different sample, examining seven platforms separately (n = 3242). While the 2021 data include measures of parents' online consumer behavior and both studies include measures of social media use, they do not include a direct measure of peer influence or peer communication. This study has four objectives. The first is to estimate the relationships between parents' online shopping and product information searches and adolescents' corresponding behaviors. The second is to examine how social media use, including the use of specific platforms, is associated with adolescents' participation in the online marketplace. The third is to examine differences based on age and socioeconomic status, and to determine the extent to which these socioeconomic differences change when adolescents' internet use, device ownership, and parental behavior are taken into account. The fourth is to assess whether the relationships observed at the adolescent level are also evident when adolescents within the same household are compared.

The findings indicate positive associations between parents' online shopping and product information searches and adolescents' corresponding behaviors. While social media use is associated with participation in the online marketplace in both studies, these associations vary by platform. Both forms of online consumer behavior are more prevalent at older ages. The difference observed based on parental education, however, weakens substantially when the adolescent's internet use, device ownership, and parental behavior are taken into account. In the statistical analysis, parental behavior constitutes the largest component of this variation. In a supplementary within-household comparison, the association between social media use and product information search persists, whereas the estimate for shopping is inconclusive. The contribution of the study is primarily empirical and measurement-related. First, it measures parental consumer behavior from the parents' own survey responses in a nationally representative sample and matches them with the adolescents' responses in the same household; it also quantifies the extent to which socioeconomic differences covary with this behavior using a decomposition method, and it indicates where a modeling reading and a resource-based reading of the parent–adolescent association lead to different expectations (Section 5.4). Second, it treats online product information search and online

shopping as distinct outcomes. Third, it goes beyond general social media use and examines platform-level associations in an exploratory manner. Due to the cross-sectional nature of the data, these relationships are not interpreted as causal effects, and the direction of the relationship between parental and adolescent behaviors cannot be determined. In addition to the hypotheses developed in Section 2, three research questions are examined, the second and third in an exploratory manner:

RQ1. *To what extent do socioeconomic differences change after accounting for adolescents' internet use, device ownership, and parental behavior?*

RQ2. *Which social media platforms are associated with online product information search, and which are associated with online shopping?*

RQ3. *Are the associations observed at the adolescent level also evident when comparing adolescents within the same household?*

The theoretical framework and the hypotheses are presented in the following subsections; the rationale for each research question is given in Sections 2.4 and 2.5.

2. Theoretical Framework, Hypotheses, and Research Questions

2.1. Consumer Socialization Framework

Socialization encompasses the processes through which individuals learn social norms, values, and cultural beliefs, as well as the actors involved in these processes (Mishra et al., 2026). In the marketing literature, consumer socialization—based on cognitive development and social learning approaches—is examined to explain how young people acquire market-related knowledge and skills and how they develop as consumers (Mishra et al., 2018). The concept of consumer socialization was introduced by Ward (1974), who defined it as the processes through which young people acquire the skills, knowledge, and attitudes necessary to function as consumers in the market (Ward, 1974, p. 2). This process involves various socialization agents—including parents, peers, and mass media—that shape the environment in which young individuals learn consumer-related behaviors (Hota & Bartsch, 2019). The theoretical framework of this study is based on Moschis and Churchill's (1978) model of consumer socialization. Moschis and Churchill's (1978) model consists of three main components: antecedents, socialization processes, and outcomes. Antecedents include variables related to consumer socialization, such as age and social structure. Socialization processes encompass interactions with socialization agents—such as parents, peers, and the media—and the ways in which learning occurs (Bao et al., 2007; Wang et al., 2012). Outcomes, on the other hand, are the cognitive and behavioral outputs that develop during the consumer socialization process (Shim, 1996).

In this study, the outcome variables are two behaviors: searching for product information online and online shopping. The socialization agents examined are parents and social media. The antecedents are age, household income, and parental education (Figure 1). Gender was treated as a control variable, as in Moschis and Churchill (1978). The entire sample is in the 11–15 age range and falls within the reflective stage (ages 11–16), which John (1999) characterized as oriented toward the social meanings of consumption. Cross-sectional designs are not suitable for examining learning processes. However, they are suitable for examining the scope of interaction between the agent and the learner (Moschis & Churchill, 1978, p. 601). Accordingly, this study does not observe the processes themselves; it examines the relationships between indicators related to the agents and the outcomes. The hypotheses are therefore formulated in terms of associations.

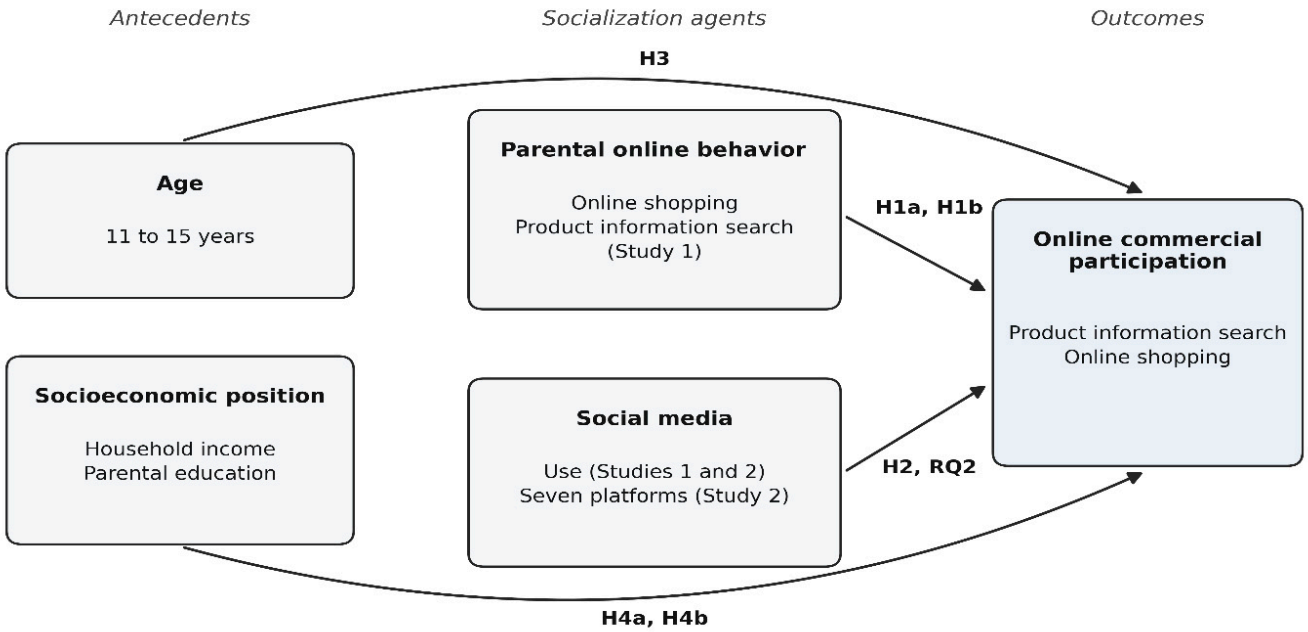


Figure 1. Conceptual model. Arrows show the hypothesized associations. Platform-level associations (RQ2) are exploratory. RQ1 (the change in socioeconomic differences once adolescent internet use, device ownership and parental online behavior are taken into account) and RQ3 (the within-household comparison) are not depicted.

2.2. Parents as Socialization Agents

The family serves as an important socialization context in the development of children's and adolescents' knowledge, attitudes, and behaviors regarding consumption (Rahmatullah et al., 2020; Wulandari, 2026). It is noted that parents can play a role in this process through various means, such as direct instruction, behavioral modeling, and involving children in family decision-making processes (Asadi et al., 2024). However, there are differing views on how parental influence operates in consumer socialization. Based on findings from children between kindergarten and sixth grade, Ward (1974) noted that deliberate consumer education is rare and that children can learn through observation and imitation. John (1999) also concluded that family influence operates primarily through implicit social interaction rather than deliberate instruction. Moschis and Churchill (1978), on the other hand, reported that parents attempt to teach consumer skills to adolescents and that different skills can be learned through different processes. In this vein, research has also focused on patterns of intra-family communication to understand family influence (John, 1999). Moschis and Churchill (1978) also examined family influence through communication between parents and adolescents regarding consumption.

Rather than directly measuring family communication, this study focuses on parents' own online consumer behavior. Within the framework of consumer socialization, modeling is defined as the imitation of an agent's behavior (Moschis & Churchill, 1978, p. 600). This approach provides a theoretical basis for expecting behavior-specific similarities between parental and adolescent behaviors. Accordingly, it is expected that parents' online shopping will be positively correlated with adolescents' online shopping, and that parents' search for product information will be positively correlated with adolescents' search for product information. There is also additional support for the expectation regarding the search for product information. Moschis and Churchill (1978) concluded that the family appears to play an important role in learning the rational aspects of consumption and examined this aspect through the importance placed on functional product information prior to purchase. Intra-family transmission has also been addressed in the marketing literature within the

framework of intergenerational influence. This influence has been demonstrated in the context of brand equity (Moore et al., 2002) and examined conceptually (Guillemot, 2018). Studies that match parent and adolescent data have also reported similar relationships across different areas of consumption. Gong et al. (2022), who examined 722 families in China, found a relationship between parents' green consumption values and those of early adolescents and demonstrated that parents' environmentally conscious consumption behavior mediates this relationship. Correlations have also been reported between parental behavior and adolescent behavior in digital behaviors outside of consumption. In this context, Chen et al. (2023) identified parents' engagement with their phones while spending time with their children (parental phubbing) as one of the predictors of smartphone addiction among adolescents.

Two points should be noted here. First, previous findings indicate that parental influence decreases and peer influence increases during adolescence (John, 1999; Ward, 1974). Nevertheless, family communication has been found to be associated with certain consumer behaviors in a sample of adolescents (Moschis & Churchill, 1978). Second, the relationship does not have to be one-way. Children can also influence their parents' knowledge and skills regarding consumption (Dhondt et al., 2025; Ward, 1974). Therefore, similarities between parental and adolescent behaviors cannot be interpreted as direct evidence of a modeling process. In this context, the following hypotheses have been formulated:

H1a. *Parental online shopping is positively associated with adolescent online shopping.*

H1b. *Parental online product information search is positively associated with adolescent online product information search.*

2.3. Social Media as a Socialization Agent

It has been noted that social media use is associated with adolescents' perceptions of products and lifestyles (Wulandari, 2026). Content shared by influencers, celebrities, and peers is also among the references adolescents may consult when making consumption decisions (Wulandari, 2026). The theory of consumer socialization treats mass media and peers as distinct socialization agents (Moschis & Churchill, 1978). Social media, however, combines the characteristics of these two areas by not only carrying commercial and other media content but also facilitating interaction with peers and influencers. The widespread use of social media among adolescents (Türkiye İstatistik Kurumu, 2024a) is consistent with the criterion of regular contact emphasized by Moschis and Churchill (1978, p. 600) for socialization agents. Previous studies have shown that peer communication on social media (Wang et al., 2012) and adolescents' relationships with influencers (Lou & Kim, 2019) are associated with purchase intent. The relationship between young people's consumption patterns and social media has also been reported in qualitative studies (Wilska et al., 2023). In the context of non-alcoholic beer and alcoholic beverages, exposure to influencer marketing was found to be associated with adolescents' purchase of the promoted product (Hou et al., 2023). Among college students, the intensity of social media use was found to be associated with conspicuous consumption, with upward social comparison mediating this relationship (Xu et al., 2023).

Moschis and Churchill (1978) showed that, in the context of television, mere exposure to a communication medium may not be sufficient for learning, and that learning is related to how young people use that medium. A similar distinction can be made with regard to internet use. Social media use is not merely an indicator of general internet use but a more specific form of use through which adolescents can engage with consumption-related content and other social actors. Therefore, the relationship between social media use and online product information searches and online shopping is examined by taking into account

time spent online and the breadth of online activities. However, this study does not directly measure specific interactions with peers, influencers, or commercial content that occur through social media use. Consequently, H2 tests the relationship between social media use and two online consumer behaviors rather than the effect of a specific socialization mechanism. Within this framework, the following hypothesis has been formulated:

H2. *Social media use is positively associated with adolescents' online product information search and online shopping, after accounting for general internet use.*

2.4. Antecedents: Age and Socioeconomic Status

In the consumer socialization model proposed by Moschis and Churchill (1978), age is considered an indicator of maturation throughout adolescence. Older adolescents possess greater consumer knowledge (Moschis & Churchill, 1978). These adolescents consult more sources of information before making a purchase (John, 1999). Age predicts these differences but does not explain them. Age may reflect not only cognitive development but also opportunities for consumption and market experience (Thaichon, 2017). Since the entire sample is at the same developmental stage, the expected pattern is a difference within the stage rather than a transition between stages.

H3. *Within the 11–15 age range, older adolescents are more likely than younger adolescents to search for product information online and to shop online.*

In Moschis and Churchill's (1978) model of consumer socialization, social structure variables are also included among the antecedents. Moschis and Churchill (1978) found that adolescents from higher social classes were more advanced in certain consumer skills and attributed this to greater consumption opportunities. There is also a counterintuitive expectation: children from low-income households may become more skilled consumers by learning to use scarce resources carefully (Ward, 1974). Findings regarding internet use largely support the first perspective. Middle-class children have greater and higher-quality access (Livingstone & Helsper, 2007). The usage difference approach considers education to be a key determinant of the types of online activities (van Deursen & van Dijk, 2014). Among adults, however, commercial use was found to be related to income but not to education (van Deursen & van Dijk, 2014). For this reason, household income and parental education were considered separately as two indicators of socioeconomic status.

H4a. *Household income is positively associated with adolescents' online product information search and online shopping.*

H4b. *Parental education is positively associated with adolescents' online product information search and online shopping.*

As noted above, antecedents may also be indirectly related to outcomes through socialization processes. Socioeconomic differences in children's internet use are linked to home conditions. However, home access mitigates the disparity in the extent of use but does not eliminate it entirely (Livingstone & Helsper, 2007). Therefore, this study examines the extent to which socioeconomic differences in adolescents' participation in the online marketplace change when measurable household conditions—such as adolescents' internet use, device ownership, and parental behavior—are taken into account (RQ1).

2.5. Exploratory Research Questions: Platforms and Within-Household Comparisons

Two additional questions, stated in Section 1, are explored: differences across social media platforms and whether adolescent-level associations persist in within-household comparisons.

Social media is not a single environment. Voorveld et al. (2018) compared eight platforms and concluded that each platform is experienced differently by users. For example, Pinterest received the highest score in the practical use dimension, which includes gaining useful ideas and seeking out more information. However, the existing evidence is not sufficient to formulate directional hypotheses regarding the platforms: the sample of Voorveld et al. (2018) consists of the general population aged 13 and older and does not include TikTok. Therefore, platform-level relationships are examined in an exploratory manner (RQ2).

Associations estimated across adolescents may reflect unmeasured household characteristics. Moschis and Churchill (1978) noted that the relationship between newspaper readership and consumer skills may stem from the family environment, which shapes both. Adolescents living in the same household share many household characteristics, such as income, parental education, and parental behavior. Comparing adolescents within the same household allows these shared household characteristics to be accounted for. Thus, the relationships between online consumer behaviors and characteristics that differ among adolescents within the same household—such as social media use—can be examined while accounting for shared household characteristics. However, unmeasured characteristics that differ among adolescents within the same household cannot be controlled for. It has also been noted that siblings may influence each other's socialization (John, 1999). For these reasons, within-household comparisons are regarded not as causal tests but as exploratory and complementary analyses (RQ3).

3. Methods

3.1. Data and Sample

This study draws on microdata from two nationally representative cross-sectional surveys conducted by the Turkish Statistical Institute (TÜİK).

Study 1 used the 2021 Household Information and Communication Technology Usage Survey (Türkiye İstatistik Kurumu, 2021b). In this survey, a module targeting children aged 6–15 was added to the questionnaire administered to household members aged 16–74. Data were collected via computer-assisted telephone interviews between 29 March and 21 May 2021 (Türkiye İstatistik Kurumu, 2021a, 2021c). The survey uses a two-stage stratified cluster design: clusters of about 100 addresses are selected with probability proportional to size and ten addresses are then drawn systematically from each cluster, with stratification by NUTS-1 region and urban–rural status (16,270 sampled addresses; unit non-response 6.8% after exclusion of out-of-scope addresses; 14,264 responding households in the microdata). Weights are the inverse of the selection probabilities, adjusted for non-response and calibrated to population totals (Türkiye İstatistik Kurumu, 2021c). The reference period is the first quarter of 2021 for most items; the e-commerce items cover the preceding twelve months, with the last three months distinguished. According to information provided by TÜİK on request (Türkiye İstatistik Kurumu, personal communication, 8 November 2026), the child items refer to the twelve months preceding the interview, all children aged 11–15 answered for themselves, and a non-response form was completed for children who could not be reached; proxy responses by parents were therefore not used for this age group. The microdata include records from 14,264 households, 30,530 individuals aged 16–74, and 7034 children aged 6–15 living in 4414 households. The child, individual, and household records were linked via the household identifier. Thus, three types of information were

added to each adolescent's record: the online behaviors self-reported by the head of household (the household reference person) and his or her spouse (hereinafter referred to as "parents") in the adult questionnaire, household income, and region. The child record does not include the adolescent's relationship to the head of household. Therefore, the head of household and his or her spouse are considered the adolescent's parents. When only one of these two individuals is present in the household (17.8% of adolescents), the indicators are based on that person. The head of household and his or her spouse are considered the mother (if female) and the father (if male). This designation rests on an assumption about household roles rather than on recorded kinship information. The assumption was tested in a subsample defined by more restrictive criteria for parent–child matching (hereinafter referred to as the "restricted subsample"). In this subsample, there are no adults in the household other than the head of household, his or her spouse, and their children. The head of household also has no children of an age at which they could be the adolescent's parent (at least 15 years older than the adolescent), because in such households, the adolescent could be the head of household's grandchild. The age differences between the adolescent and the head of household and spouse are consistent with parenthood (15–49 years for women, 15–65 years for men). These criteria are met by 88.7% of the analysis sample (2585 adolescents).

Study 2 used the 2024 Survey on Children's Use of Information Technologies, which was conducted for the first time as an independent survey (Türkiye İstatistik Kurumu, 2024b). The microdata include 7072 children aged 6–15 living in 4555 households. At the time of the analyses, this was the most recent survey with accessible microdata on children. The data were collected in April–May 2024 through in-person and telephone interviews. The survey covered households with at least one child aged 6–15 in all settlements; addresses were selected systematically under a simple random sampling design without substitution; 5062 addresses were sampled, the unit non-response rate after exclusion of out-of-scope addresses was 3.4%, and the microdata contain the 4555 responding households in which a child aged 6–15 was enumerated. Weights are the inverse of the selection probabilities, adjusted for non-response and calibrated to the projected population aged 6–15 by region, urban–rural status, age group, gender and household size (Türkiye İstatistik Kurumu, 2024b, 2024c). According to TÜİK, the child items refer to the twelve months preceding the interview (Türkiye İstatistik Kurumu, personal communication, 8 November 2026). For children aged 6–10 the questionnaire could be completed with the help of a parent; for the 11–15 age group, information was obtained only from the children themselves (Türkiye İstatistik Kurumu, 2024b). Because the sampling design and the question formats changed in 2024, TÜİK states that the 2024 results are not comparable with those of the earlier rounds (Türkiye İstatistik Kurumu, 2024c); the two surveys are therefore treated here as independent tests of the same hypotheses rather than as a time series. This survey measures social media use at the platform level but does not include data on adults. The two datasets complement each other in this regard: parental behavior was examined in Study 1, while platforms were examined in Study 2.

The analysis sample in both studies consists of adolescents aged 11–15 who use the internet at least once a week. Of the 7034 children in the 2021 microdata, 3454 were aged 11–15, 2961 of these used the internet at least weekly, and 2914 could be matched with parental and household records; of the 7072 children in the 2024 microdata, 3470 were aged 11–15 and 3242 used the internet at least weekly (Table 1). The age range corresponds to the reflective stage of consumer socialization (John, 1999). The usage threshold is based on the data. Questions regarding internet activities were directed only at regular users. In Study 1, 47 adolescents (1.6%) whose parental or household information did not match were excluded from the analysis. There are no missing observations for the other variables

used in the models. Unless otherwise specified, the weights calculated by TÜİK for child records were used in the estimates. The estimates are generalized not to all adolescents, but to 11- to 15-year-old adolescents who use the internet regularly.

Table 1. Analytic samples by study.

	Study 1 (2021)	Study 2 (2024)
Adolescents aged 11–15	3454	3470
Regular internet users	2961	3242
With complete parental and household information	2914	-
Households in the analytic sample	2415	2691
Social media users (platform models)	-	2735

Note. The 2021 microdata contain records for 14,264 households, 30,530 adults aged 16–74 and 7034 children aged 6–15; the 2024 microdata contain 7072 children aged 6–15 in 4555 households. Regular internet users are those who use the internet at least once a week. The analysis sample is 2914 adolescents in Study 1 and 3242 in Study 2.

3.2. Measures

The variables are organized according to the three components of the consumer socialization model: outcomes, socialization processes (agents), and antecedents (Moschis & Churchill, 1978). The variables and their coding are presented in Table 2.

Outcomes. Two outcomes were measured using the same variables in both studies: the use of the internet to search for information about goods and services, and online shopping. Considering these two outcomes together is consistent with the finding that obtaining product information and shopping are grouped under the same usage type (van Deursen & van Dijk, 2014). The two outcomes were modeled separately. The data do not indicate the sequence of the two behaviors. It is unknown whether, for the same product, a search was conducted first and then a purchase made. For this reason, the results have not been interpreted as stages of a process.

Item wording and reference periods. The wording, response options and reference periods of all items are given in Supplementary Table S11, together with the source of each wording. In both surveys the adolescent outcomes are two yes/no items in a list introduced by the question "For which of the following activities do you use the internet? (Including mobile applications)": "searching for information about goods and services" and "shopping over the internet". According to TÜİK, the child items in both surveys refer to the twelve months preceding the interview (Türkiye İstatistik Kurumu, personal communication, 8 November 2026); the question text itself does not state a recall window. The adolescent items do not distinguish purchases made independently from purchases made jointly with a parent or through a parent's account. The outcome should therefore be read as participation in online shopping in any of these forms, which in this age group often involves parental payment or permission (Thaichon, 2017; Williams & Willick, 2025). The social media indicator is measured differently in the two surveys: in 2021 it is one of the purposes of internet use ("social media (Facebook, Twitter, Instagram, Snapchat, etc.)"), whereas in 2024 it is a separate yes/no question on social media use, followed by the seven platform items (Supplementary Table S11). The parental items come from the adult questionnaire, which follows the Eurostat model questionnaire: product information search is one of the activities carried out for private purposes in the last three months, and online shopping is coded 1 when the parent reported buying or ordering goods or services over the internet in the last three months. The reference period of the parental shopping item is thus shorter than that of the adolescent item; a sensitivity analysis therefore uses a parental indicator for purchases in the twelve months before the interview, which matches the adolescent window (Section 4.5), and a further analysis counts any purchase ever made.

The wording of the 2021 and 2024 child items was supplied by TÜİK on request; the wording of the 2021 adult items is taken from the questionnaire and guide of the same household survey for 2022–2023, in which the variable names and codes are identical to those of the 2021 microdata.

Table 2. Variables and coding.

Role	Variable	Study	Coding
Outcome	Product information search	1, 2	1 = used the internet to find information about goods and services
Outcome	Online shopping	1, 2	1 = shopped online
Agent	Parental online shopping	1	1 = at least one parent bought goods or services online in the last three months
Agent	Parental information search	1	1 = at least one parent searched online for information about goods and services in the last three months
Agent	Adolescent social media use	1, 2	1 = yes
Agent	Platforms	2	Seven binary indicators: Instagram, TikTok, Snapchat, Pinterest, YouTube, Facebook, Twitter
Antecedent	Age	1, 2	11 to 15; categorical, or linear where a per-year estimate is reported
Control	Gender	1, 2	1 = girl
Antecedent	Household income	1	log(1 + monthly household income/square root of household size)
Antecedent	Parental education	1	Highest level completed by either parent; five levels from no schooling to tertiary, entered as categories (as a linear term in the decomposition)
Control	Household size and region	1	Number of members; 12 NUTS-1 regions
Control	Parental social media use	1	1 = at least one parent used social media
Control	Time online	1, 2	Study 1: reported weekly hours online outside classes, top-coded at the 99th percentile and log-transformed. Study 2: daily time online on weekdays and at weekends, each in five categories, converted to representative hour values (0.5, 1, 2.5, 4.5 and 6 h; the open-ended top category is assigned 6 h), averaged with weights 5:2 and log-transformed
Control	Frequency of use	2	1 = uses the internet several times a day (platform models)
Control	Breadth of online activities	1, 2	Number of five activities: homework or online classes, messaging, gaming, music, video (0 to 5)
Control	Own devices	1, 2	Separate indicators for phone, tablet, laptop and desktop
Negative control outcome	Gaming, music, homework	1, 2	1 = yes; gaming and music in Study 1, homework and gaming in Study 2

Note. Parent refers to the head of household (the household reference person) and his or her spouse. All adolescent variables come from the child module (Study 1) or the child survey (Study 2); all parental and household variables come from the adult and household files of the 2021 survey.

Agents. Parental behavior was derived from the parents' own responses to the adult questionnaire. Each indicator takes a value of 1 when at least one of the two parents (the head of household or the spouse) reported the relevant behavior. This measure represents the agent behavior that is the subject of modeling in the theory. The modeling process itself was not observed. Social media was measured at two levels: usage status in both studies, and, in Study 2, each of the seven platforms individually. The decision to treat the platforms separately is based on the finding that each platform offers a distinct user experience (Voorveld et al., 2018).

Antecedents and controls. Household income was equivalized using the square-root scale that is, divided by the square root of household size (Dudel et al., 2021). The time adolescents spent online and the breadth of their online activities were controlled for in order to distinguish the relationship between social media and outcomes from general usage intensity. The breadth measure does not include the outcome items or the social media item.

3.3. Analysis Strategy

With the exception of the conditional logit model used in the within-household comparison, all models are weighted logistic regression models. The microdata do not contain information on strata or the primary sampling unit. The available design information consists of the weights and household identifiers. Since more than one adolescent from the same household could be included in the sample, standard errors are clustered at the household level (Lumley, 2004). Because strata and primary sampling units are not identified in the microdata, standard errors may not fully reflect the stratification and clustering of the 2021 design (clusters of addresses within NUTS-1 by urban–rural strata); the 2024 design is a simple random sample of addresses. Results are reported as odds ratios (OR) and 95% confidence intervals. In addition, the average marginal effect is presented in percentage points. For binary variables, the average marginal effect is the average difference in predicted probability when the variable changes from 0 to 1. Confidence intervals for marginal effects were calculated using the delta method (Arel-Bundock, 2024). Unadjusted odds ratios for the main variables are also provided. Model fit was assessed using Nagelkerke R^2 (Lumley, 2017), defined for complex samples, and the Wald test for the block of added variables. Multicollinearity was examined using the variance inflation factor.

Study 1. Three models were constructed sequentially for each outcome. Model 1 includes the antecedents (H3, H4a, and H4b). In Model 2, the adolescent's internet use and social media use are added (H2). In Model 3, parental behavior is added (H1). Variables related to internet use and device ownership may serve as common causes in some relationships, while in others they may be characteristics that emerge in conjunction with parental behavior or social media use. The coefficients in the full model should therefore be interpreted as the relationships when these characteristics are held constant. Logit coefficients cannot be directly compared across nested models (Mood, 2010). Therefore, the extent to which socioeconomic differences covary with the subsequently added variables (RQ1) was calculated using the method of Karlson et al. (2012). Percentile confidence intervals were obtained from 500 household-level bootstrap replications. Households were drawn with replacement in each replication, and the survey weights were used unchanged. Details of the procedure are provided in Supplementary Note S1. Parental education was treated as a linear variable by level in this analysis. The sensitivity of the results to the coding of education was also tested. The variables included in the decomposition were grouped into three blocks: adolescent internet use, adolescent device ownership, and parental online behavior (Breen et al., 2013, pp. 172–173). The included binary variables were analyzed in this model using a linear probability model (Breen et al., 2013, p. 175). In supplementary analyses, parental indicators were modeled separately for mothers and fathers among the 2392 adolescents for whom data were available for both parents. The interaction between parental behavior and age was also tested. The equality of the coefficients for mothers and fathers was tested using the Wald test.

Study 2. H2 and H3 were tested again in the 2024 data using a model built with variables common to both studies. Because logit coefficients cannot be compared directly across models, marginal effects are reported on a common scale. Because time spent online was measured differently in the two studies (weekly hours in 2021, daily hours derived from categories in 2024), the common model does not assume that the measurements are equivalent; each survey is modeled separately, and the surveys are not compared formally in the main text (a test of the difference in marginal effects is given in Supplementary Table S13). For the platform question (RQ2), seven platforms were included together in the same model for each of the two outcomes among adolescents who use social media. The Benjamini and Hochberg (1995) correction was applied to the fourteen platform coefficients. The Wald test was used to determine whether the seven platform coefficients were equal to

one another. In an additional analysis, two models were constructed: in the first, engaging in at least one of the two behaviors was used as the outcome variable; in the second, shopping among these adolescents was used as the outcome variable (Supplementary Table S10).

Within-household comparison. For RQ3, data from the two studies were combined, and a conditional logit model with fixed household effects was estimated. Household fixed effects were defined by the household identifier combined with the survey year. The model includes variables that differ among adolescents aged 11–15 within the same household: social media use, age, gender, and cell phone ownership. The estimation is based solely on differences within the household and holds the household's unmeasured common characteristics constant. Since time spent online was measured differently in the two surveys, it was not included in the model. The conclusions are unchanged when breadth of online activities is added (Supplementary Table S3). In the 2024 data, 94.7% of adolescents are children of the head of household. The models were re-estimated for adolescents in households where the sibling relationship was supported by the data. These adolescents were recorded as the head of household's children in 2024 and belonged to the restricted subsample in 2021. The pooling assumes that the social media coefficient is common across the two studies. This assumption was tested via an interaction with the study year. The conditional logit model was estimated unweighted.

Sensitivity analyses. Negative-control outcomes (Lipsitch et al., 2010) provide indirect evidence as to whether the relationship is limited to commercial behavior. Two assumptions were made in this analysis. First, the adolescent's internet use for gaming, music, or homework shares confounders—such as the household's overall digital affinity—with commercial outcomes. Second, these uses are not influenced by parental consumer behavior or by a specific platform. The second assumption may be violated, as the use of a particular platform could alter the adolescent's time allocation and activity preferences. The results have therefore been interpreted as an indicator of specificity. The breadth measure in these models does not include the activity taken as the outcome variable. The specification curve (Simonsohn et al., 2020) illustrates the sensitivity of the relationships between platforms and shopping to control variables and weighting choices. Each combination of the seven control blocks was estimated with and without weights. Thus, 256 models were constructed for each platform. The significance of these models was assessed based on a 95% confidence interval without correction for multiple comparisons. The specifications are not independent replicates; they show the sensitivity of the estimates to modeling choices on the same data. The E-value (VanderWeele & Ding, 2017) indicates how strong an unmeasured confounder must be to nullify the finding. Since the behaviors examined are common, the square root of the odds ratio was used in the calculation (VanderWeele, 2017). This is an approximate transformation. For Study 1, five additional sensitivity analyses were conducted: excluding multigenerational households; restricting the sample to the restricted subsample; restricting the sample to adolescents for whom both parents (head of household and spouse) were observed; defining parental shopping over the twelve months before the interview or without any time limit; and clustering standard errors by the 12 NUTS-1 regions. Since the number of clusters was small, the confidence interval in the region-clustered analysis was calculated using a t distribution with 11 degrees of freedom.

The hypotheses were derived from the theory. The platform analysis, within-household comparison, and age interaction are exploratory in nature. The analyses were conducted in the R 4.3.3 environment (R Core Team, 2024) using the survey (Lumley, 2004, 2023), survival (Therneau, 2024), and marginaleffects (Arel-Bundock, 2024) packages.

4. Results

4.1. Sample Characteristics and Prevalence

The analysis samples from the two studies are similar in terms of age and gender (Table 3). The proportion of online shoppers is 16.1% (95% CI [14.6, 17.6]) in the 2021 sample and 26.8% [25.0, 28.6] in the 2024 sample. The proportion of those seeking product or service information is 28.0% [26.1, 29.9] and 59.0% [56.9, 61.1], respectively. The proportions of social media users are 50.9% and 84.3%, respectively. Since the two studies differ in terms of data collection methods and questionnaire design, these percentages should not be interpreted as reflecting a trend over time.

Table 3. Characteristics of the analytic samples.

Characteristic	Study 1 (2021), n = 2914	Study 2 (2024), n = 3242
Age 11	558 (19.2)	655 (20.1)
Age 12	593 (20.5)	615 (18.2)
Age 13	587 (19.8)	612 (18.5)
Age 14	628 (21.9)	677 (20.9)
Age 15	548 (18.6)	683 (22.3)
Girl	1425 (48.3)	1557 (47.5)
Own phone	1823 (62.9)	2246 (68.8)
Social media use	1426 (50.9)	2735 (84.3)
Product information search	782 (28.0)	1938 (59.0)
Online shopping	444 (16.1)	831 (26.8)
Neither behavior	1961 (65.9)	1172 (36.4)
Product information search only	509 (18.0)	1239 (36.7)
Online shopping only	171 (6.1)	132 (4.5)
Both behaviors	273 (10.0)	699 (22.3)
Parent shopped online in the last three months	1173 (40.0)	–
Parent searched online for product information	1795 (62.7)	–
Parent used social media	2178 (75.2)	–
Parental education: no schooling	128 (4.4)	–
Parental education: primary	935 (33.5)	–
Parental education: lower secondary	503 (17.8)	–
Parental education: upper secondary	756 (24.8)	–
Parental education: tertiary	592 (19.5)	–
Household size, mean	5.1	–
Monthly household income, median (TRY)	3500	–
Instagram, among social media users	–	1726 (63.1)
TikTok, among social media users	–	977 (36.4)
Snapchat, among social media users	–	872 (32.1)
Pinterest, among social media users	–	590 (21.3)
Facebook, among social media users	–	349 (13.6)
Twitter, among social media users	–	221 (7.9)
YouTube, among social media users	–	2604 (94.9)

Note. Values are unweighted n (weighted %) unless stated otherwise. A dash indicates that the variable was not collected in that survey. Platform percentages refer to the 2735 social media users in Study 2. The two surveys differ in data collection mode and questionnaire, so differences between the two surveys should be read with this in mind.

Participation is higher at older ages in both studies (Figure 2). In 2021, the percentage of shoppers was 4.3% at age 11 and 31.3% at age 15. In 2024, these percentages were 9.3% and 46.5% for the same ages. The age gradient in product information search is flatter.

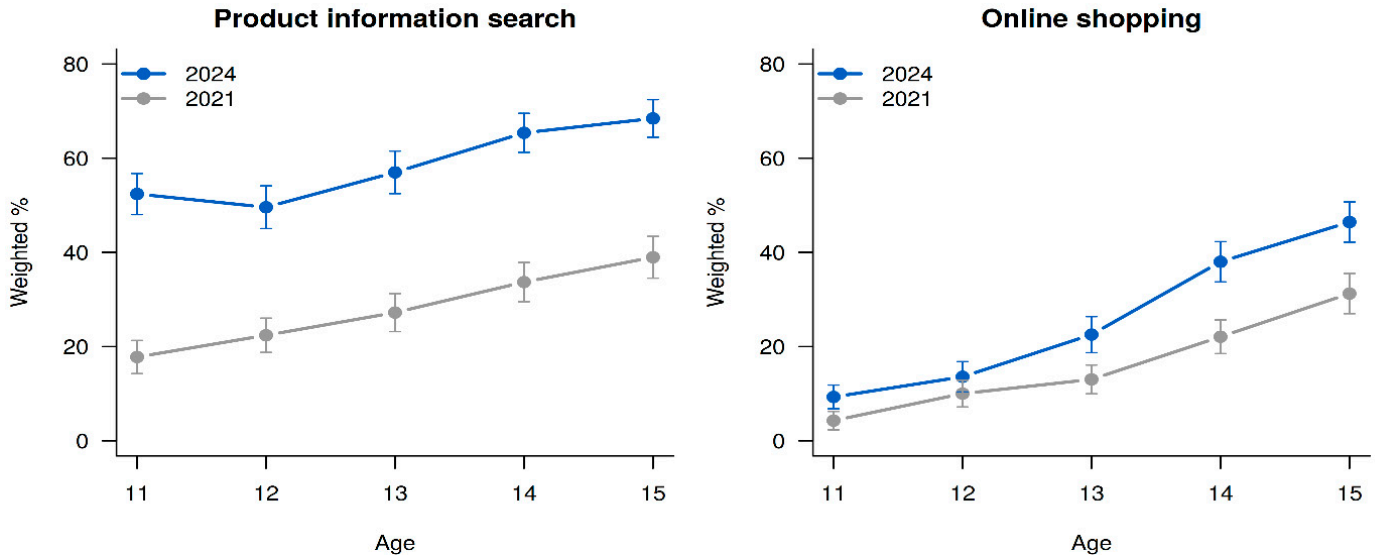


Figure 2. Product information search and online shopping by age and survey year (weighted %; bars show 95% confidence intervals).

The two behaviors overlap, but one does not encompass the other (Table 3). In the 2021 sample, 18.0% of adolescents reported only product information search, 6.1% reported only shopping, and 10.0% reported both. In the 2024 sample, these percentages were 36.7%, 4.5%, and 22.3%. Since a portion of those who shopped did not report product information search, the two behaviors were treated as separate outcomes rather than as ordered stages.

4.2. Study 1: Parental Behavior, Social Media, and Socioeconomic Status

The sequential (nested) models for the 2021 survey, the only survey with parental data, are presented in Table 4 (shopping) and Table 5 (information search). There are no multicollinearity issues in the models. The highest variance inflation factor is 1.62.

Antecedents (Model 1). Age is strongly associated with both outcomes. Compared with 11-year-olds, the odds ratio for shopping among 15-year-olds is 13.51 [8.00, 22.80]. For product information search, this ratio is 3.49 [2.53, 4.80]. H3 is supported. Parental education is associated with both outcomes, and H4b is supported. The odds ratio for children of parents with tertiary education is 2.79 [1.10, 7.12] for shopping and 3.27 [1.65, 6.45] for product information search, compared with children of parents with no schooling. Because the reference group is small (128 adolescents), the confidence intervals for these estimates are wide. When education is treated as a linear term, the odds ratio per level is 1.15 [1.03, 1.30] for shopping and 1.24 [1.13, 1.36] for product information search. Household income is associated with product information search (OR = 1.18 [1.04, 1.34]). No significant association was found between household income and shopping (OR = 1.11 [0.94, 1.30]). H4a is supported only for product information search.

Adolescents' internet use and social media (Model 2). When time spent online, breadth of online activities and device ownership are controlled for, social media use is associated with both outcomes: online shopping (OR = 2.24 [1.60, 3.12]) and product information search (OR = 1.33 [1.05, 1.69]). H2 is supported. The unadjusted association is stronger (odds ratios of 5.95 and 3.47, Supplementary Table S7).

Parental behavior (Model 3). Among adolescents whose parents had shopped online in the past three months, the odds ratio for online shopping is 1.70 [1.27, 2.29]. This corresponds to an average difference of 5.7 percentage points [2.5, 9.0] in the probability of online shopping. Among adolescents whose parents searched for product information online, the odds ratio for product information search is 2.15 [1.62, 2.86]. The corresponding average difference is 12.1 percentage points [7.8, 16.4]. H1a and H1b are supported. The parent block significantly improves the fit of both models (shopping: $F(3, 2382) = 9.70$, $p < 0.001$; product information search: $F(3, 2382) = 11.63$, $p < 0.001$). Both associations are maintained in the subsample where parental matching was based on more restrictive criteria (shopping: OR = 1.80 [1.32, 2.45]; product information search: OR = 2.21 [1.64, 2.97]; Section 4.5).

Table 4. Study 1: survey-weighted logistic regression of online shopping (n = 2914).

Variable	Model 1	Model 2	Model 3
Age 12 (ref. 11)	2.59 (1.48–4.55)	2.42 (1.36–4.31)	2.46 (1.38–4.39)
Age 13	3.61 (2.15–6.05)	3.04 (1.76–5.26)	3.13 (1.81–5.41)
Age 14	7.85 (4.65–13.24)	5.26 (3.03–9.12)	5.56 (3.21–9.64)
Age 15	13.51 (8.00–22.80)	9.03 (5.19–15.71)	9.86 (5.66–17.18)
Girl	1.25 (0.98–1.61)	1.54 (1.18–2.02)	1.52 (1.15–1.99)
Household income (log)	1.11 (0.94–1.30)	1.07 (0.93–1.24)	1.04 (0.91–1.20)
Parental education: primary (ref. no schooling)	2.11 (0.87–5.13)	1.88 (0.87–4.08)	1.71 (0.80–3.64)
Parental education: lower secondary	2.33 (0.94–5.80)	1.75 (0.78–3.92)	1.40 (0.64–3.08)
Parental education: upper secondary	3.26 (1.32–8.06)	2.52 (1.13–5.63)	1.69 (0.77–3.69)
Parental education: tertiary	2.79 (1.10–7.12)	2.08 (0.88–4.92)	1.18 (0.51–2.76)
Household size	0.89 (0.80–0.99)	0.96 (0.86–1.06)	0.96 (0.86–1.07)
Social media use		2.24 (1.60–3.12)	2.20 (1.57–3.07)
Time online (log)		1.26 (1.10–1.45)	1.26 (1.09–1.46)
Breadth of online activities		1.39 (1.16–1.65)	1.37 (1.14–1.64)
Own phone		1.14 (0.81–1.60)	1.06 (0.75–1.49)
Parental online shopping			1.70 (1.27–2.29)
Parental information search			1.61 (1.17–2.22)
Parental social media use			1.14 (0.80–1.63)
Nagelkerke R^2	0.23	0.30	0.32
Wald F for the added block (df)		12.89 (7, 2385)	9.70 (3, 2382)

Note. Cells are odds ratios with 95% confidence intervals; standard errors are clustered by household. All models include region (12 categories); Models 2 and 3 also include ownership of a tablet, laptop and desktop. Both Wald tests are significant at $p < 0.001$. Full models are given in Supplementary Table S1.

A different pattern of significance was observed in the cross-associations. No significant association was found between parental shopping and the adolescent's product information search behavior (OR = 1.08 [0.85, 1.39]). In contrast, the parent's product information search behavior is associated with the adolescent's shopping behavior (OR = 1.61 [1.17, 2.22]). No significant association was found between the parent's social media use and either of the two outcomes. The coefficient for social media use remains nearly the same when parental behavior is included. In Model 3, the average differences associated with social media use are 8.0 percentage points [4.8, 11.3] for shopping and 4.9 percentage points [1.0, 8.9] for product information search. One observation not included in the hypotheses relates to

gender. The odds ratio for girls (vs. boys) for online shopping is not significant in the unadjusted model (1.13 [0.90, 1.41]; Supplementary Table S7). In Model 3, however, this ratio is 1.52 [1.15, 1.99]. A similar difference is also observed in the 2024 study (OR = 1.45 [1.19, 1.78], Section 4.3) and in the within-household comparison (OR = 1.76 [1.02, 3.04], Section 4.4).

Table 5. Study 1: survey-weighted logistic regression of product information search (n = 2914).

Variable	Model 1	Model 2	Model 3
Age 12 (ref. 11)	1.37 (0.99–1.90)	1.25 (0.89–1.75)	1.28 (0.91–1.80)
Age 13	1.81 (1.31–2.49)	1.53 (1.09–2.14)	1.57 (1.12–2.21)
Age 14	2.70 (1.99–3.67)	1.85 (1.33–2.58)	1.92 (1.37–2.70)
Age 15	3.49 (2.53–4.80)	2.44 (1.72–3.46)	2.57 (1.81–3.66)
Girl	0.86 (0.71–1.04)	0.98 (0.80–1.20)	0.96 (0.78–1.18)
Household income (log)	1.18 (1.04–1.34)	1.13 (1.03–1.25)	1.11 (1.00–1.22)
Parental education: primary (ref. no schooling)	1.74 (0.91–3.34)	1.51 (0.81–2.79)	1.21 (0.66–2.22)
Parental education: lower secondary	2.02 (1.03–3.99)	1.47 (0.77–2.81)	1.06 (0.56–2.03)
Parental education: upper secondary	2.38 (1.23–4.63)	1.72 (0.92–3.25)	1.09 (0.58–2.04)
Parental education: tertiary	3.27 (1.65–6.45)	2.20 (1.15–4.23)	1.28 (0.66–2.47)
Household size	0.86 (0.79–0.94)	0.92 (0.84–1.01)	0.93 (0.85–1.01)
Social media use		1.33 (1.05–1.69)	1.36 (1.06–1.73)
Time online (log)		1.12 (1.00–1.26)	1.11 (0.99–1.25)
Breadth of online activities		1.67 (1.50–1.87)	1.65 (1.48–1.85)
Own phone		1.46 (1.13–1.90)	1.41 (1.08–1.84)
Parental online shopping			1.08 (0.85–1.39)
Parental information search			2.15 (1.62–2.86)
Parental social media use			1.00 (0.75–1.33)
Nagelkerke R^2	0.17	0.27	0.29
Wald F for the added block (df)		22.62 (7, 2385)	11.63 (3, 2382)

Note. See the note to Table 4. The confidence interval for household income in Model 3 excludes 1 before rounding (1.003–1.218, $p = 0.044$).

Statistical decomposition of socioeconomic differences (RQ1). Table 6 decomposes the coefficients for parental education and household income on a common scale. The relationship between parental education and the two outcomes is substantially attenuated when the adolescent's internet use, device ownership, and parental behavior are included in the model. The indirect coefficient is 0.264 [0.193, 0.361] for shopping and 0.249 [0.184, 0.320] for product information search. The confidence intervals for the direct coefficients include zero (shopping: −0.071 [−0.213, 0.045]; product information search: 0.012 [−0.104, 0.111]). The negative value of the direct coefficient for shopping should therefore not be interpreted as evidence of an inverse relationship. The indirect component of household income is smaller, and the direct relationship between income and information search is partially preserved. Since the total coefficient for income in shopping is uncertain (the confidence interval includes zero), no share is reported for this row. When the indirect component is broken down by group, the largest share is attributed to the parent's online behavior. For parental education, this share accounts for 68.6% [52.0, 83.9] of the indirect component in shopping and 55.3% [41.6, 69.5] in product information search. The adolescent's internet use accounts for 27.0% [14.3, 41.2] and 32.8% [21.2, 43.7], respectively. The shares in

household income are more balanced, and the confidence intervals are wide. Even when education is considered as a binary indicator (upper secondary or above), the indirect component accounts for nearly the entire total coefficient (Supplementary Table S5). This decomposition does not imply a causal mediation claim. It merely describes which variables the coefficient varies with.

Table 6. Study 1: decomposition of the socioeconomic gradient (KHB method).

Panel A. Total, direct and indirect components

Outcome	Variable	Total (95% CI)	Direct (95% CI)	Indirect (95% CI)	Share Accounted For
Online shopping	Parental education (per level)	0.192 (0.078 to 0.322)	−0.071 (−0.213 to 0.045)	0.264 (0.193 to 0.361)	More than 100%
Online shopping	Household income (log)	0.107 (−0.026 to 0.281)	0.034 (−0.106 to 0.181)	0.072 (0.030 to 0.134)	Not reported
Product information search	Parental education (per level)	0.261 (0.157 to 0.354)	0.012 (−0.104 to 0.111)	0.249 (0.184 to 0.320)	96%
Product information search	Household income (log)	0.183 (0.090 to 0.323)	0.106 (0.015 to 0.243)	0.078 (0.038 to 0.129)	42%

Panel B. Share of the indirect component by group of added variables, % (95% CI)

Outcome	Variable	Parental Online Behavior	Adolescent's Internet Use	Adolescent's Device Ownership
Online shopping	Parental education (per level)	68.6 (52.0 to 83.9)	27.0 (14.3 to 41.2)	4.4 (−8.1 to 15.4)
Online shopping	Household income (log)	52.5 (29.6 to 85.9)	45.4 (6.4 to 71.7)	2.1 (−28.1 to 24.1)
Product information search	Parental education (per level)	55.3 (41.6 to 69.5)	32.8 (21.2 to 43.7)	11.9 (2.3 to 21.2)
Product information search	Household income (log)	34.6 (16.1 to 59.9)	42.3 (11.3 to 64.8)	23.1 (6.7 to 45.0)

Note. Coefficients are logits on the scale of the full model. The indirect component is the part of the total coefficient accounted for by the adolescent's internet use (including social media use), the adolescent's device ownership and parental behavior. Confidence intervals are percentile intervals from 500 household-level bootstrap replications. Shares are computed from unrounded coefficients. A share above 100% indicates that the direct coefficient changes sign. Panel B divides the indirect component among three groups of added variables (Breen et al., 2013); the three shares sum to 100% in each row. Parental online behavior: online shopping, product information search and social media use. Adolescent's internet use: time online, breadth of online activities and social media use. Device ownership: the adolescent's own phone, tablet, laptop and desktop. The confidence intervals of the direct coefficients for parental education include zero, so the negative direct coefficient for online shopping does not indicate a reversed association. For household income and online shopping the confidence interval of the total coefficient includes zero, so the share is not reported for that row. Parental education is entered as a linear term; results with a binary indicator (upper secondary or above) are given in Supplementary Table S5.

4.3. Study 2: The 2024 Survey and Social Media Platforms

Second survey. The model built using variables common to both studies supports H2 and H3 in the 2024 data as well (Table 7). The average difference in shopping associated with social media use is similar across the two studies: 9.4 percentage points [6.1, 12.8] in 2021 and 11.6 percentage points [5.9, 17.3] in 2024. For product information search, however, the estimate for 2024 is higher: 5.4 percentage points [1.3, 9.5] in 2021 and 15.0 [8.7, 21.3] in 2024. The two surveys are treated as separate sources of evidence for H2 and H3 and are not compared formally in the main text: they differ in sampling design, interview mode, question format and the time-online measure, and TÜİK states that the 2024 results are

not comparable with those of earlier rounds (Türkiye İstatistik Kurumu, 2024c). A formal test of the difference between the two marginal effects is reported for completeness in Supplementary Table S13; it reflects the surveys' measurements and sample compositions as well as any change in the population and is not interpreted. Age is associated with both outcomes in both studies. The age gradient is steeper for shopping than for product information search.

Table 7. Common model for both outcomes in the two surveys.

Outcome	Variable	2021: OR (95% CI)	2021: AME, pp (95% CI)	2024: OR (95% CI)	2024: AME, pp (95% CI)
Online shopping	Social media use	2.41 (1.73–3.36)	9.4 (6.1–12.8)	2.23 (1.41–3.53)	11.6 (5.9–17.3)
Online shopping	Age (per year)	1.53 (1.38–1.70)	5.3 (4.0–6.5)	1.63 (1.51–1.76)	8.3 (7.1–9.6)
Online shopping	Girl	1.59 (1.22–2.06)	5.2 (2.3–8.2)	1.45 (1.19–1.78)	6.0 (2.8–9.2)
Product information search	Social media use	1.37 (1.08–1.74)	5.4 (1.3–9.5)	2.04 (1.52–2.75)	15.0 (8.7–21.3)
Product information search	Age (per year)	1.19 (1.11–1.28)	3.0 (1.7–4.3)	1.11 (1.04–1.18)	2.0 (0.7–3.2)
Product information search	Girl	1.03 (0.85–1.26)	0.6 (−2.8 to 3.9)	1.40 (1.17–1.68)	6.6 (3.1–10.2)

Note. n = 2914 (2021) and 3242 (2024). The common model includes social media use, age, gender, time online, breadth of online activities, and ownership of a phone, tablet, laptop and desktop. AME = average marginal effect in percentage points. AMEs are reported because odds ratios are not directly comparable across samples. A formal test of the between-survey difference is given in Supplementary Table S13 for completeness but is not interpreted, because the surveys differ in design and measurement.

Platforms (RQ2). Among 2735 adolescents who use social media, seven platforms were modeled together for each of the two outcomes (Table 8). Each coefficient compares adolescents who use that platform with those who do not, while holding other platforms and control variables constant. Since an adolescent may use more than one platform, the coefficients do not compare the platforms with one another. The platform block is significant in both models (product information search: $F(7, 2304) = 5.90$, $p < 0.001$; shopping: $F(7, 2304) = 10.76$, $p < 0.001$). The highest variance inflation factor (VIF) is 1.44. The hypothesis that all seven platform coefficients are equal was rejected in both models (information search: $\chi^2(6) = 38.84$, $p < 0.001$; shopping: $\chi^2(6) = 29.74$, $p < 0.001$). Ten of the fourteen coefficients have adjusted p-values below 0.05 after the Benjamini–Hochberg correction; two of these (Instagram and product information search; Pinterest and online shopping) are only marginally below the threshold (adjusted $p = 0.0496$) and are interpreted with corresponding caution. Assigning 7 or 8 h instead of 6 to the open-ended top category of time online leaves all platform coefficients essentially unchanged (Supplementary Table S12).

The relationships between the platforms and the two outcomes are as follows:

Instagram, Snapchat, and Pinterest are positively associated with both outcomes. The odds ratios for product information search are 1.30 [1.02, 1.65], 1.34 [1.04, 1.72], and 1.65 [1.23, 2.23], respectively; the corresponding odds ratios for online shopping are 1.73 [1.31, 2.28], 1.45 [1.13, 1.85], and 1.33 [1.02, 1.74]. The Instagram coefficient for information search and the Pinterest coefficient for shopping are only marginally below the adjusted significance threshold.

Twitter is positively associated with shopping (OR = 2.26 [1.58, 3.23]). No significant association was found between Twitter and product information search (OR = 1.07 [0.69, 1.67]). Facebook is negatively associated with shopping (OR = 0.60 [0.43, 0.85]).

The estimates for these two platforms are based on a relatively small number of users (221 and 349).

Table 8. Study 2: social media platforms, product information search and online shopping among social media users (n = 2735).

Platform (Users)	Product Information Search: OR (95% CI)	Product Information Search: Adjusted *p*	Online Shopping: OR (95% CI)	Online Shopping: Adjusted *p*
Instagram (1726)	1.30 (1.02–1.65)	0.0496	1.73 (1.31–2.28)	0.001
TikTok (977)	0.65 (0.51–0.82)	0.001	1.24 (0.99–1.56)	0.085
Snapchat (872)	1.34 (1.04–1.72)	0.038	1.45 (1.13–1.85)	0.009
Pinterest (590)	1.65 (1.23–2.23)	0.003	1.33 (1.02–1.74)	0.0496
Twitter (221)	1.07 (0.69–1.67)	0.757	2.26 (1.58–3.23)	<0.001
Facebook (349)	0.81 (0.59–1.11)	0.215	0.60 (0.43–0.85)	0.009
YouTube (2604)	1.95 (1.18–3.20)	0.017	1.11 (0.66–1.88)	0.746

Note. Cells are odds ratios with 95% confidence intervals from two survey-weighted logistic regressions, one for each outcome. All seven platforms are entered together with age, gender, time online, frequency of use, breadth of online activities and device ownership. Adjusted *p*-values use the Benjamini–Hochberg procedure across the fourteen platform coefficients. Adjusted *p*-values between 0.049 and 0.050 are shown with four decimals. The two outcomes are not treated as successive stages. Full models are given in Supplementary Table S2; models of any participation and of shopping among participants are given in Supplementary Table S10.

TikTok is negatively associated with product information search (OR = 0.65 [0.51, 0.82]). This association emerges only when other platforms and control variables are included in the model. The unadjusted odds ratio is 1.11 [0.92, 1.36] (Supplementary Table S8). TikTok's association with shopping is not significant (OR = 1.24 [0.99, 1.56]; adjusted $p = 0.085$).

YouTube use is positively associated with product information search behavior (OR = 1.95 [1.18, 3.20]). Since 95% of social media users use YouTube, this estimate is based on a small number of adolescents who do not use YouTube.

The fact that one coefficient is significant while the other is not does not prove a difference between the two platforms. For example, the difference between the Instagram and Snapchat coefficients regarding shopping is not significant ($p = 0.38$). In an additional analysis that models any participation and then shopping among participants (Supplementary Table S10), Instagram and Twitter are positively associated with the outcome in both models, whereas Snapchat and Pinterest are positively associated only with any participation. Which platform appears to be associated with both behaviors is therefore sensitive to the model specification.

4.4. Within-Household Comparison

When adolescents within the same household are compared, the findings differ for the two outcomes (Table 9). Social media use remains associated with product information search (OR = 5.85 [2.50, 13.66]). However, the association with shopping is not statistically significant (OR = 1.12 [0.48, 2.65]). The confidence interval for this estimate encompasses both the absence of an association and the magnitude observed in the main model (2.20). The estimates are based on a small number of households. The number of households in which adolescents differed in terms of outcomes was 211 (438 adolescents) for shopping and 218 (458 adolescents) for product information search. The social media coefficient, however, is based on only 55 and 71 households, respectively, in which adolescents also differed in terms of social media use. Consequently, the confidence intervals are wide, and these households do not represent the entire sample. There is no evidence that the social media

coefficient differed across the two studies (interaction with study year: shopping, $p = 0.32$; product information search, $p = 0.27$). Because the model is unweighted, pools two surveys with very different prevalence of social media use (50.9% and 84.3%), and is identified from a small subset of households, these estimates are supplementary evidence; the non-significant estimate for shopping should not be read as evidence of no association. The estimates are similar when restricted to adolescents identified as siblings (product information search: OR = 6.12 [2.46, 15.24]; shopping: OR = 1.21 [0.50, 2.96]; Supplementary Table S3). Age is associated with both outcomes within households. The odds ratio for shopping is 2.09 [1.69, 2.58] per year.

Table 9. Within-household comparison: conditional logistic regression with household fixed effects (surveys pooled).

Variable	Online Shopping	Product Information Search
Social media use	1.12 (0.48–2.65)	5.85 (2.50–13.66)
Age (per year)	2.09 (1.69–2.58)	1.54 (1.30–1.83)
Girl	1.76 (1.02–3.04)	1.10 (0.69–1.74)
Own phone	1.82 (0.77–4.26)	0.65 (0.34–1.24)
Households with discordant adolescents	211	218

Note. Cells are odds ratios with 95% confidence intervals. Estimates are identified only from households in which adolescents aged 11 to 15 differ on the outcome. The coefficient for social media use is identified from the 55 (online shopping) and 71 (product information search) households that are also discordant on social media use. The interaction of social media use with survey year is not significant (online shopping, $p = 0.32$; product information search, $p = 0.27$). The model is estimated without weights. Survey-specific estimates and estimates restricted to adolescents identified as siblings (recorded as children of the head of household in 2024; in the restricted subsample in 2021) are given in Supplementary Table S3.

4.5. Sensitivity Analyses

Findings regarding parental behavior are consistent across the sensitivity analyses (Table 10). Among the platforms, the findings for Instagram, Snapchat, Twitter and Pinterest are consistent across specifications, whereas those for TikTok, Facebook and YouTube depend on the specification. The E-values indicate that a confounder of moderate strength could account for the associations, so consistency across specifications should not be read as robustness to unmeasured confounding.

Negative-control outcomes. No significant association was found between parents' online shopping or product information search and adolescents' use of the internet for gaming or music, nor between the use of Instagram, Twitter, and Snapchat and adolescents' use of the internet for homework or gaming (Supplementary Table S4). The fact that the same pattern was not observed in alternative digital activities suggests that the findings may be more closely related to commercial behaviors. However, this result does not rule out a general digital propensity explanation. For example, the confidence interval for the relationship between parental shopping and adolescents' music listening (0.94–1.53) includes non-negligible positive relationships. Pinterest is positively associated with homework use (OR = 1.97 [1.36, 2.84]), while TikTok is negatively associated (OR = 0.50 [0.38, 0.65]). YouTube is positively associated with gaming (OR = 2.43 [1.47, 4.00]). The relationship between these three platforms and product information search may also reflect general usage patterns.

Table 10. Summary of sensitivity analyses.

Analysis	Association Examined	OR	95% CI
Negative control outcome	Parental online shopping and adolescent gaming	1.01	0.78–1.30
Negative control outcome	Parental online shopping and adolescent music listening	1.20	0.94–1.53
Negative control outcome	Parental information search and adolescent gaming	1.09	0.85–1.40
Negative control outcome	Parental information search and adolescent music listening	1.05	0.83–1.33
Negative control outcome	Instagram and homework or online classes	1.01	0.74–1.38
Negative control outcome	Instagram and gaming	1.17	0.89–1.54
Excluding multigenerational households (n = 2727)	Parental and adolescent online shopping	1.65	1.22–2.23
Excluding multigenerational households (n = 2727)	Parental and adolescent information search	2.14	1.60–2.86
Restricted subsample: parenthood supported by household composition and age gaps (n = 2585)	Parental and adolescent online shopping	1.80	1.32–2.45
Restricted subsample: parenthood supported by household composition and age gaps (n = 2585)	Parental and adolescent information search	2.21	1.64–2.97
Parental shopping in the twelve months before the interview (window of the child items)	Parental and adolescent online shopping	1.94	1.42–2.65
Parental shopping without time limit (ever)	Parental and adolescent online shopping	1.53	1.12–2.10
Standard errors clustered by region (t distribution, 11 df)	Parental and adolescent online shopping	1.70	1.12–2.59
Mother and father entered separately (n = 2392)	Mother's and adolescent's online shopping	2.04	1.43–2.92
Mother and father entered separately (n = 2392)	Father's and adolescent's online shopping	1.79	1.27–2.51
Mother and father entered separately (n = 2392)	Mother's and adolescent's information search	2.73	2.06–3.60
Mother and father entered separately (n = 2392)	Father's and adolescent's information search	1.37	1.04–1.80

Note. E-values (point estimate; confidence limit closer to 1): parental and adolescent online shopping 1.94; 1.50. Parental and adolescent information search 2.30; 1.87. Social media use and online shopping 2.33; 1.82. Instagram and online shopping 1.96; 1.55. E-values use the square-root transformation of the odds ratio for common outcomes. E-values are computed from unrounded odds ratios. The E-value for Instagram refers to the online shopping model in Table 8. The restricted subsample includes households in which only the head of household, the spouse and their children are present and age gaps are compatible with parenthood. Mother and father denote the female and the male among the head of household and spouse. Detailed results are given in Supplementary Tables S4–S6 and S9.

Parental matching and the parental shopping item. The coefficient for parental shopping is preserved when multigenerational households are excluded; when parental shopping is defined over the twelve months before the interview (the window of the adolescent items; OR = 1.94 [1.42, 2.65]) or without any time limit; and when standard errors are clustered by region. The two main associations are also preserved in the restricted subsample defined in Section 3.1 (shopping: OR = 1.80 [1.32, 2.45]; product information search: OR = 2.21 [1.64, 2.97]; n = 2585). The results are similar when the composite indicators are restricted to adolescents for whom both parents (head of household and spouse) were observed (shopping: OR = 1.90 [1.37, 2.65]; product information search: OR = 2.17 [1.57, 3.00]; n = 2392; Supplementary Table S5). When the mother and father are considered separately, the behavior of both is associated with the adolescent's behavior. In product information search, the mother's coefficient is larger than the father's, and the difference is significant ($p = 0.001$). In shopping, the difference is not significant ($p = 0.61$). The interaction between parental behavior and age is not statistically significant in either outcome (shopping: OR = 0.81 [0.65, 1.00], $p = 0.055$; product information search: OR = 0.93 [0.78,

1.10], $p = 0.38$; Supplementary Table S9). The average difference associated with parental behavior ranges from 10.6 to 13.1 percentage points in product information search. There is no clear evidence that the relationship varies by age. In shopping, this difference ranges from 3.8 to 6.8 percentage points among 11- to 14-year-olds. For 15-year-olds, the estimate is uncertain (4.4 [−2.9, 11.7]).

Model specifications and unmeasured confounders. The relationship between Instagram and shopping shown in Table 8 is positive and significant across all 256 specifications (odds ratios ranging from 1.66 to 3.90, with a median of 2.29; the estimate in the full model is 1.73; see Supplementary Figure S1). The same analysis was conducted for other platforms (Supplementary Table S6). The relationships of Twitter and of Snapchat with shopping are also positive and significant across all 256 specifications, while that for Pinterest is positive and significant in all but one specification (99.6%) and that for TikTok in 87.5% of specifications. Estimates for Facebook and YouTube vary depending on the specification. The large number of specifications does not resolve the measurement issues common to all models. The E-values range from 1.94 to 2.33. For an unmeasured confounder to fully explain the underlying relationships, it must be associated with both the exposure and the outcome with a risk ratio of approximately 2. The values required to shift the confidence interval to 1 range from 1.50 to 1.87. A confounder of this magnitude cannot be ruled out.

4.6. Summary of Hypotheses and Research Questions

H1a, H1b, H2 and H3 are supported. H4b is supported in Model 1 but attenuated once internet use, device ownership and parental behavior are added. H4a is supported only for information search (Table 11).

Table 11. Results for the hypotheses and research questions.

Code	Expectation or Question	Result	Key Evidence
H1a	Parental online shopping is positively associated with adolescent online shopping.	Supported	OR = 1.70 (1.27–2.29), Table 4
H1b	Parental online product information search is positively associated with adolescent online product information search.	Supported	OR = 2.15 (1.62–2.86), Table 5
H2	Social media use is positively associated with adolescents' online product information search and online shopping, after accounting for general internet use.	Supported in both surveys	Tables 4, 5 and 7
H3	Within the 11–15 age range, older adolescents are more likely than younger adolescents to search for product information online and to shop online.	Supported in both surveys	Tables 4, 5 and 7
H4a	Household income is positively associated with adolescents' online product information search and online shopping.	Supported for information search only	Tables 4 and 5
H4b	Parental education is positively associated with adolescents' online product information search and online shopping.	Supported in Model 1; attenuated once internet use, device ownership and parental behavior are added	Tables 4–6

Table 11. *Cont.*

Code	Expectation or Question	Result	Key Evidence
RQ1	To what extent do socioeconomic differences change after accounting for adolescents' internet use, device ownership, and parental behavior?	Education: the direct coefficient is not significant for either outcome once the added variables are included (indirect share more than 100% for shopping, 96% for information search), with parental online behavior the largest component (69% of the indirect component for shopping, 55% for information search); income: 42% of the information-search coefficient covaries with the added variables, mainly internet use and parental behavior	Table 6
RQ2	Which social media platforms are associated with online product information search, and which are associated with online shopping?	Instagram, Snapchat and Pinterest with both (Instagram–information search and Pinterest–shopping marginal after correction); Twitter with shopping; YouTube with information search; TikTok negatively with information search; Facebook negatively with shopping	Table 8; sensitivity analyses in Table 10 and Supplementary Tables S4, S6 and S10
RQ3	Are the associations observed at the adolescent level also evident when comparing adolescents within the same household?	Supplementary evidence only: association retained for information search (71 informative households); inconclusive for shopping (55 informative households)	Table 9

5. Discussion

This study related adolescents' participation in the online marketplace to their parents' own online consumer behavior, social media use, and socioeconomic status; the two outcomes do not show the same pattern across these conditions.

5.1. Parents' Own Online Behavior

Adolescents whose parents shop online or search for product information online are more likely to report the same behavior (H1a, H1b). This pattern is consistent with the definition of modeling as the imitation of an agent's behavior (Moschis & Churchill, 1978), although the modeling process itself was not observed. Similarities may also reflect shared preferences, joint shopping, or purchases made through a parent's account or payment method; qualitative evidence suggests that online purchases in this age group often involve parental payment or permission (Thaichon, 2017; Williams & Willick, 2025). The finding is consistent with results from matched family data on green consumption (Gong et al., 2022). The behaviors of the mother and the father are each associated with the adolescent's behavior, in line with the recommendation to examine family relationships separately (John, 1999). Although parental influence has been reported to decrease during adolescence (John, 1999; Ward, 1974), parental behavior is associated with adolescent participation throughout the 11–15 age range, with similar estimates across ages for product information search and a less certain estimate at age 15 for shopping.

The association appears to be more specific to consumer behavior than to the indicators of general digital activity that were examined: parental social media use was not significantly associated with either outcome, and parental shopping and information search were not significantly associated with adolescents' use of the internet for gaming or music. This evidence is limited to these indicators, and a general household orientation toward digital technology cannot be ruled out.

In the cross-associations, parental product information search was associated with adolescent shopping (OR = 1.61, 95% CI [1.17, 2.22]), whereas the association between parental shopping and adolescent product information search was not significant (OR = 1.08 [0.85,

1.39]). This pattern was not anticipated and, because the difference between the two estimates was not tested directly, is interpreted with caution. Parental information search may reflect a broader orientation toward informed purchasing, in line with the role of the family in learning the rational aspects of consumption (Moschis & Churchill, 1978), or commercial use that the three-month shopping indicator did not capture. Whether the parent–adolescent associations reflect modeling or shared household resources is considered in Section 5.4.

5.2. Social Media and Platforms

Social media use is associated with both outcomes when time spent online and the breadth of online activities are held constant (H2). This result is consistent with the finding that learning from television is linked more to how the medium is used than to mere exposure to it (Moschis & Churchill, 1978) and with evidence on peer communication and influencers on social media (Lou & Kim, 2019; Wang et al., 2012).

The platforms are not associated with the two outcomes in the same way (RQ2). Instagram, Snapchat, and Pinterest are positively associated with both outcomes, although two of these six coefficients (Instagram with information search, Pinterest with shopping) are only marginally below the adjusted significance threshold. The findings for Instagram and Snapchat were consistent across the sensitivity analyses, and neither platform was significantly associated with homework or gaming use (Supplementary Table S4). Pinterest's association with product information search accords with its profile as a platform used to gain useful ideas (Voorveld et al., 2018), but Pinterest is also associated with homework-related use, so the finding is not specific to the online marketplace. The association between Twitter and shopping rests on a small group of users. TikTok's negative association with product information search emerges only when the other platforms and the control variables are held constant. One reading is that TikTok use in this age group is driven primarily by entertainment rather than information needs (Bucknell Bossen & Kottasz, 2020), so that product content encountered on its algorithmically curated feed (Montag et al., 2021) may not be experienced or reported as searching for product information. Alternatively, once use of Instagram, Snapchat and Pinterest is held constant, the remaining TikTok users may differ in orientation from other social media users (self-selection); TikTok is also negatively associated with homework-related use (Section 4.5). Because commercial content, peer communication and exposure to influencers were not measured, the data cannot distinguish these readings, and which platforms appear to be associated with both behaviors depends on the model specification. The platform findings are therefore exploratory and need replication in other samples.

When adolescents within the same household are compared, so that stable household characteristics are held constant, social media use remains associated with product information search (RQ3). For shopping, the estimate is inconclusive: its confidence interval includes both the absence of an association and the magnitude observed in the main model. Both estimates are identified from a small number of households and are imprecise, so the comparison is supplementary evidence rather than a validation of the main findings, and the difference between the two outcomes is not interpreted.

5.3. Age and Socioeconomic Status

Participation is higher at older ages, with a steeper age gradient for online shopping than for product information search. Because the data are cross-sectional, these are differences between age groups, not within-person changes. Age may reflect not only cognitive development (Moschis & Churchill, 1978) but also opportunities for consumption and

market experience (Thaichon, 2017). Since shopping requires a means of payment, the steeper gradient for shopping may also reflect opportunities that differ by age.

In the baseline model, parental education is associated with both outcomes; the coefficients are no longer significant once internet use, device ownership and parental behavior are added (H4b). Household income is associated only with product information search (H4a). Because prevalence rather than consumer competence was measured, the expectation that children from low-income households might be more competent consumers (Ward, 1974) was not tested. Most of the education-related difference covaries with adolescents' internet use and parents' online behavior, and parental behavior accounts for the largest share (RQ1). This resembles the observation that socioeconomic differences in children's internet use are linked to home conditions (Livingstone & Helsper, 2007), but it does not show whether the difference stems from opportunities or from socialization, since parental online behavior can be an indicator of both. Whereas commercial use among adults was found to be associated with income but not with education (van Deursen & van Dijk, 2014), among adolescents it is parental education that shows a baseline association with both outcomes. Finally, girls were more likely to shop online once internet use was held constant in both surveys, and also in the within-household comparison; gender was not part of the hypotheses, and this difference, also reported by Moschis and Churchill (1978), merits further examination.

5.4. Contributions to the Consumer Socialization Literature

The findings do not demonstrate the process of consumer socialization; they provide behavioral-level evidence for expectations derived from the framework. Three findings confirm theoretically anticipated associations: adolescents whose parents shop or search for product information online are more likely to do so themselves (H1), social media use is associated with both behaviors (H2), and participation is higher at older ages (H3). Three further points go beyond confirmation. First, the family has mostly been measured through intra-family communication (John, 1999; Moschis & Churchill, 1978), and the limitations of relying on adolescent reports for parental measures have been noted (Chen et al., 2023; J. Liu et al., 2023). Here, the agent behavior that modeling presupposes was taken from the parents' own survey responses in a nationally representative sample and matched with the adolescent's behavior in the same household; the association held for both behaviors and for mothers and fathers separately. In another consumption domain, adolescents' behavior has been related to family norms particularly as these are manifested in parents' own behavior (Grønhøj & Thøgersen, 2012); the present results extend this behavioral reading of modeling to the online marketplace.

Second, the data cannot distinguish modeling from access to resources, but they indicate where the two readings lead to different expectations. If the parent–adolescent association reflected resources alone, it would be expected mainly for shopping, which requires a means of payment, and to be weaker at older ages, when adolescents depend less on a parent's account. The association is, however, also observed for product information search, which requires no payment and for which it is similar across ages (interaction $p = 0.38$; Supplementary Table S9); it persists when income, device ownership and household size are held constant; and parental social media use is not significantly associated with either outcome. For shopping, the age interaction is borderline and points to a weaker association at older ages (OR = 0.81, $p = 0.055$), and adolescent shopping is also associated with parental information search. Parental modeling and access to household resources are therefore both plausible explanations for the observed associations between parents' and adolescents' behaviors; the present data cannot distinguish between them. Unmeasured household characteristics, such as digital literacy or shared consumption preferences,

could produce both associations, and the decomposition in Table 6 describes how the socioeconomic coefficients covary with the added variables without establishing a mediation mechanism. Third, the two behaviors show different patterns, and the platform results provide exploratory evidence that, as Moschis and Churchill (1978) found for television and newspapers, platforms within social media are related to consumer behavior in different ways.

5.5. Practical Implications

Subject to the limitations noted below, the findings have implications for three groups. For consumer education, because adolescents' participation in the online marketplace is linked to their parents' own behavior, programs aimed at adolescents may benefit from including parents. For public policy, more than a quarter of the adolescents who regularly used the internet in 2024, and nearly half of the 15-year-olds, had shopped online, so this age group and the platforms associated with adolescents' shopping may warrant attention when protective regulations on online purchases by minors are designed; the regulation of influencer marketing to adolescents has been recommended in the context of beverage marketing (Hou et al., 2023). For marketing practice, product information search is more common than purchasing in this age group, which makes the accuracy and age-appropriateness of the product information presented to adolescents important, and the differences between platforms suggest that social media should not be treated as a single channel when communications aimed at adolescents are planned.

5.6. Limitations and Future Research

The findings are subject to the following limitations: The data are cross-sectional, so the direction of the associations cannot be determined; similarities between parents and adolescents may also reflect the adolescent's influence on the parent (Dhondt et al., 2025; Ward, 1974). Unmeasured confounders cannot be ruled out: the E-values, which do not account for measurement error, indicate that a confounder of moderate strength could explain the main associations. Since the 2021 child file contained no information on kinship, the head of household and his or her spouse were considered the parents. In the 88.7% of the sample that meets stricter composition and age-gap criteria (the restricted subsample) the estimates are similar (Table 10); in the remaining households an adult other than a parent may have been counted as a parent. In the 2024 data, where kinship is recorded, 94.7% of adolescents are children of the head of household. Whether a parent was present during the interview is not recorded in the microdata of either survey, so reporting in the presence of a parent cannot be ruled out. Since the microdata do not include stratum or primary sampling unit information, standard errors may not fully reflect the sampling design. The estimates pertain to adolescents aged 11–15 who use the internet regularly, and because the two surveys differ in sampling design, questionnaire and data collection mode, differences in rates between them cannot be interpreted as a trend. Peers, the agent with the strongest association in a meta-analysis (Mishra & Maity, 2021), were not measured, and the social media indicators capture neither peer communication nor exposure to commercial content and influencers. Nor do they capture interaction dynamics within online communities, such as emotional contagion or linguistic accommodation between users and firms (D. Liu et al., 2022a, 2022b), which may underlie some of the platform differences observed here. The outcome variables record only whether a behavior occurred: frequency, spending and product type are unknown, as is whether a purchase was made with the adolescent's own account, through a parent's account, or jointly. The parental shopping item refers to the last three months and the adolescent items to the last twelve months, although the association was not weaker when parental shopping was measured over twelve months (Table 10).

Since parental data were available only in the 2021 survey and platform data only in the 2024 survey, the two could not be analyzed together; data that combine the child and adult modules with platform-level measures would allow the joint role of parental behavior and platforms to be examined. Finally, the findings need to be replicated in other countries, as also recommended in studies on parental socialization (Chen et al., 2023).

6. Conclusions

Using two nationally representative surveys from Türkiye, this study examined the family and media conditions associated with adolescents' participation in the online marketplace. Adolescents' online shopping and online product information search are associated with the same behaviors reported by their parents; the absence of a comparable association for the indicators of general digital activity that were examined does not rule out a broader household orientation toward digital technology. Social media use is associated with both behaviors in both surveys, and the associations differ by platform. Participation is higher at older ages. Differences based on parental education largely covary with parents' online behavior and adolescents' own internet use. In a supplementary within-household comparison based on a few informative households, the association between social media use and product information search is retained, whereas the estimate for shopping is inconclusive.

These findings are consistent with the consumer socialization framework and suggest that the role of parents can be captured through their own behavior as well as through communication within the family, and that social media is better treated as a set of distinct platforms than as a single agent. Consumer education and protective measures aimed at adolescents may therefore benefit from considering parents and individual platforms. Because the data are cross-sectional and do not establish causal effects, data that track parents and adolescents in the same household over time are needed to determine the direction of these associations.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/bs16112199/s1. Note S1: Implementation of the decomposition and the bootstrap; Tables S1–S13: Supplementary regression results, sensitivity analyses, item wording and the between-survey comparison; Figure S1: Specification curve for Instagram and online shopping; File S1: Analysis code; File S2: Analysis output tables.

Author Contributions: Conceptualization, O.H.A. and M.K.; methodology, O.H.A. and M.K.; validation, O.H.A. and M.K.; formal analysis, O.H.A. and M.K.; resources, O.H.A. and M.K.; data curation, O.H.A. and M.K.; writing—original draft preparation, O.H.A. and M.K.; writing—review and editing, O.H.A. and M.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: This study was based exclusively on secondary analysis of anonymized microdata obtained from the Turkish Statistical Institute (TÜİK). The authors did not recruit participants, collect primary data, or have access to directly identifying information. Institutional ethics committee approval was not obtained for this secondary analysis.

Informed Consent Statement: This study used anonymized secondary data provided by the Turkish Statistical Institute (TÜİK). The authors did not recruit or interact with participants, and no additional informed consent was obtained for this secondary analysis.

Data Availability Statement: The microdata used in this study were obtained from the Turkish Statistical Institute (TÜİK) through a formal data request and are subject to a data use agreement that prohibits redistribution to third parties. Researchers may request access to the microdata directly from the Turkish Statistical Institute (TÜİK), subject to its access procedures and approval. The analysis code is provided as Supplementary File S1.

Acknowledgments: During the preparation of this manuscript, the authors used "DeepL" for language editing and translation into English. The authors have reviewed and edited the output and take full responsibility for the content of this publication.

Conflicts of Interest: The authors declare no conflicts of interest.

References

Arel-Bundock, V. (2024). *Marginal effects: Predictions, comparisons, slopes, marginal means, and hypothesis tests* (Version 0.18.0) [Computer software]. Available online: https://CRAN.R-project.org/package=marginaleffects (accessed on 11 June 2026).

Arıcı Doğan, D., & Pamuk, İ. (2022). Uzaktan eğitim sürecinde ergenlerin çevrimiçi oyunlara yönelik deneyimleri: Fenomenolojik bir araştırma. *International Journal of Social Sciences and Education Research*, *8*(1), 71–86. [CrossRef]

Asadi, K., Yousefi, Z., & Mahdad, A. (2024). The role of family in shaping financial literacy and economic behavior. *Journal of Psychosociological Research in Family and Culture*, *1*(3), 22–29. [CrossRef]

Ateşoğlu, İ., & Türkkahraman, M. (2009). Çocukların tüketici olarak sosyalleşmesi. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, *14*(3), 215–228. Available online: https://dergipark.org.tr/en/download/article-file/194635 (accessed on 10 July 2026).

Balıkçıoğlu, B., & Volkan, P. (2016). Sosyal medya, televizyon ve akran iletişiminin materyalizm ve gösteriş tüketimi üzerindeki etkisi: Tüketici sosyalleşmesi perspektifi. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *13*(35), 299–319. Available online: https://dergipark.org.tr/en/download/article-file/226481 (accessed on 25 July 2026).

Bao, Y., Fern, E. F., & Sheng, S. (2007). Parental style and adolescent influence in family consumption decisions: An integrative approach. *Journal of Business Research*, *60*(7), 672–680. [CrossRef]

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B (Methodological)*, *57*(1), 289–300. [CrossRef]

Breen, R., Karlson, K. B., & Holm, A. (2013). Total, direct, and indirect effects in logit and probit models. *Sociological Methods & Research*, *42*(2), 164–191. [CrossRef]

Bucknell Bossen, C., & Kottasz, R. (2020). Uses and gratifications sought by pre-adolescent and adolescent TikTok consumers. *Young Consumers*, *21*(4), 463–478. [CrossRef]

Chen, S., Qiu, D., Li, X., & Zhao, Q. (2023). Discrepancies in adolescent–parent perceptions of parental phubbing and their relevance to adolescent smartphone dependence: The mediating role of parent–child relationship. *Behavioral Sciences*, *13*(11), 888. [CrossRef] [PubMed]

Clark, L. S. (2011). Parental mediation theory for the digital age. *Communication Theory*, *21*(4), 323–343. [CrossRef]

Dal, N., & Dal, V. (2016). Çocukların tüketici olarak sosyalleşme sürecinde TV reklamlarının ve ailenin rolü hakkında teorik bir çalışma. *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *1*(13), 371–388. Available online: https://dergipark.org.tr/en/download/article-file/181892 (accessed on 1 September 2026).

Dhondt, B., Van de Sompel, D., & Hudders, L. (2025). Becoming competent consumers: Exploring the dynamics of the consumer socialization process between parents and their adolescents. *Journal of Consumer Affairs*, *39*(2), e70012. [CrossRef]

Dhondt, B., Van de Sompel, D., & Hudders, L. (2026). *From For You to the family table: Adolescent consumer learning and reverse socialization on TikTok*. New Media & Society. [CrossRef]

Dotson, M. J., & Hyatt, E. M. (2005). Major influence factors in children's consumer socialization. *Journal of Consumer Marketing*, *22*(1), 35–42. [CrossRef]

Dudel, C., Garbuszus, J. M., & Schmied, J. (2021). Assessing differences in household needs: A comparison of approaches for the estimation of equivalence scales using German expenditure data. *Empirical Economics*, *60*(4), 1629–1659. [CrossRef]

Gong, Y., Li, J., Xie, J., Zhang, L., & Lou, Q. (2022). Will "green" parents have "green" children? The relationship between parents' and early adolescents' green consumption values. *Journal of Business Ethics*, *179*(2), 369–385. [CrossRef]

Grønhøj, A., & Thøgersen, J. (2012). Action speaks louder than words: The effect of personal attitudes and family norms on adolescents' pro-environmental behaviour. *Journal of Economic Psychology*, *33*(1), 292–302. [CrossRef]

Guillemot, S. (2018). Intergenerational transmission in consumer behaviour: An integrative conceptual framework and future research directions. *Recherche et Applications en Marketing (English Edition)*, *33*(2), 93–114. [CrossRef]

Hota, M., & Bartsch, F. (2019). Consumer socialization in childhood and adolescence: Impact of psychological development and family structure. *Journal of Business Research*, *105*, 11–20. [CrossRef]

Hou, C.-Y., Huang, T.-F., Chang, F.-C., Yu, T.-E., Chen, T.-Y., Chiu, C.-H., Chen, P.-H., Chiang, J.-T., Miao, N.-F., & Chuang, H.-Y. (2023). The association of influencer marketing and consumption of non-alcoholic beer with the purchase and consumption of alcohol by adolescents. *Behavioral Sciences*, *13*(5), 374. [CrossRef] [PubMed]

John, D. R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, *26*(3), 183–213. [CrossRef] [PubMed]

Karlson, K. B., Holm, A., & Breen, R. (2012). Comparing regression coefficients between same-sample nested models using logit and probit: A new method. *Sociological Methodology*, *42*(1), 286–313. [CrossRef]

Lipsitch, M., Tchetgen Tchetgen, E., & Cohen, T. (2010). Negative controls: A tool for detecting confounding and bias in observational studies. *Epidemiology*, *21*(3), 383–388. [CrossRef] [PubMed]

Liu, D., Gong, C., Zhang, S., & Ma, Y. (2022a). The influence of firm's feedbacks on user-generated content's linguistic style matching: An explanation based on communication accommodation theory. *Frontiers in Psychology*, *13*, 949968. [CrossRef] [PubMed]

Liu, D., Zhang, S., & Li, Q. (2022b). The analysis of dynamic emotional contagion in online brand community. *Frontiers in Psychology*, *13*, 946666. [CrossRef] [PubMed]

Liu, J., Wu, L., Sun, X., Bai, X., & Duan, C. (2023). Active parental mediation and adolescent problematic internet use: The mediating role of parent–child relationships and hiding online behavior. *Behavioral Sciences*, *13*(8), 679. [CrossRef] [PubMed]

Livingstone, S., & Helsper, E. (2007). Gradations in digital inclusion: Children, young people and the digital divide. *New Media & Society*, *9*(4), 671–696. [CrossRef]

Lou, C., & Kim, H. K. (2019). Fancying the new rich and famous? Explicating the roles of influencer content, credibility, and parental mediation in adolescents' parasocial relationship, materialism, and purchase intentions. *Frontiers in Psychology*, *10*, 2567. [CrossRef] [PubMed]

Lueg, J. E., Ponder, N., Beatty, S. E., & Capella, M. L. (2006). Teenagers' use of alternative shopping channels: A consumer socialization perspective. *Journal of Retailing*, *82*, 137–153. [CrossRef]

Lumley, T. (2004). Analysis of complex survey samples. *Journal of Statistical Software*, *9*(8), 1–19. [CrossRef]

Lumley, T. (2017). Pseudo-R^2 statistics under complex sampling. *Australian & New Zealand Journal of Statistics*, *59*(2), 187–194. [CrossRef]

Lumley, T. (2023). *Survey: Analysis of complex survey samples* (Version 4.2-1) [Computer software]. Available online: https://CRAN.R-project.org/package=survey (accessed on 2 June 2026).

Mishra, A., Maheswarappa, S. S., Maity, M., & Samu, S. (2018). Teenagers' eWOM intentions: A nature vs nurture perspective. *Marketing Intelligence & Planning*, *36*(4), 470–483. [CrossRef]

Mishra, A., & Maity, M. (2021). Influence of parents, peers, and media on adolescents' consumer knowledge, attitudes, and purchase behavior: A meta-analysis. *Journal of Consumer Behaviour*, *20*(6), 1675–1689. [CrossRef]

Mishra, A., Shukla, A., & Roy, R. (2026). Fifty years of consumer socialization research: A structural topic modeling approach and future research agenda. *Journal of Consumer Marketing*, *43*(2), 257–272. [CrossRef]

Montag, C., Yang, H., & Elhai, J. D. (2021). On the psychology of TikTok use: A first glimpse from empirical findings. *Frontiers in Public Health*, *9*, 641673. [CrossRef] [PubMed]

Mood, C. (2010). Logistic regression: Why we cannot do what we think we can do, and what we can do about it. *European Sociological Review*, *26*(1), 67–82. [CrossRef]

Moore, E. S., Wilkie, W. L., & Lutz, R. J. (2002). Passing the torch: Intergenerational influences as a source of brand equity. *Journal of Marketing*, *66*(2), 17–37. [CrossRef]

Moschis, G. P., & Churchill, G. A. (1978). Consumer socialization: A theoretical and empirical analysis. *Journal of Marketing Research*, *15*, 599–609. [CrossRef]

Niu, H.-J. (2017). Cyber purchasing behavior of adolescents: Family communication relationships and parental influence. *Electronic Commerce Research*, *17*(3), 495–519. [CrossRef]

Rahmatullah, R., Inanna, I., & Ampa, A. T. (2020). How informal education fosters economic awareness in children. *Dinamika Pendidikan*, *15*(2), 202–214. [CrossRef]

R Core Team. (2024). *R: A language and environment for statistical computing* (Version 4.3.3) [Computer software]. R Foundation for Statistical Computing. Available online: https://www.R-project.org/ (accessed on 3 July 2026).

Shim, S. (1996). Adolescent consumer decision-making styles: The consumer socialization perspective. *Psychology & Marketing*, *13*(6), 547–569. [CrossRef]

Sigirci, O., Gegez, A. E., Aytimur, H., & Gegez, E. E. (2022). Children in marketing: A review, synthesis and research agenda. *International Journal of Consumer Studies*, *46*(5), 1594–1639. [CrossRef]

Simonsohn, U., Simmons, J. P., & Nelson, L. D. (2020). Specification curve analysis. *Nature Human Behaviour*, *4*(11), 1208–1214. [CrossRef] [PubMed]

Şener, S. (2021). Sosyal medyanın gençlerin düşünce ve değerlerine etkisi. *Akademik Platform İslami Araştırmalar Dergisi*, *5*(3), 529–553. [CrossRef]

Thaichon, P. (2017). Consumer socialization process: The role of age in children's online shopping behavior. *Journal of Retailing and Consumer Services*, *34*, 38–47. [CrossRef]

Therneau, T. M. (2024). *A package for survival analysis in R* (Version 3.5-8) [Computer software]. Available online: https://CRAN.R-project.org/package=survival (accessed on 20 June 2026).

Türkiye İstatistik Kurumu (TÜİK). (2021a). *Çocuklarda bilişim teknolojileri kullanım araştırması, 2021* (Haber Bülteni, 41132). Türkiye İstatistik Kurumu (TÜİK).

Türkiye İstatistik Kurumu (TÜİK). (2021b). *Hanehalkı bilişim teknolojileri kullanım araştırması, 2021* (Mikro veri seti). Türkiye İstatistik Kurumu (TÜİK).

Türkiye İstatistik Kurumu (TÜİK). (2021c). *Hanehalkı bilişim teknolojileri kullanım istatistikleri: Kurumsal kalite raporu 2021* (Institutional quality report). Türkiye İstatistik Kurumu (TÜİK).

Türkiye İstatistik Kurumu (TÜİK). (2024a). *Çocuklarda bilişim teknolojileri kullanım araştırması, 2024* (Haber Bülteni, 53638). Türkiye İstatistik Kurumu (TÜİK).

Türkiye İstatistik Kurumu (TÜİK). (2024b). *Çocuklarda bilişim teknolojileri kullanım araştırması, 2024* (Mikro veri seti ve kullanım kılavuzu). Türkiye İstatistik Kurumu (TÜİK).

Türkiye İstatistik Kurumu (TÜİK). (2024c). *Çocuklarda bilişim teknolojileri kullanım istatistikleri: Kurumsal kalite raporu 2024* (Institutional quality report). Türkiye İstatistik Kurumu (TÜİK).

VanderWeele, T. J. (2017). On a square-root transformation of the odds ratio for a common outcome. *Epidemiology*, *28*(6), e58–e60. [CrossRef] [PubMed]

VanderWeele, T. J., & Ding, P. (2017). Sensitivity analysis in observational research: Introducing the E-value. *Annals of Internal Medicine*, *167*(4), 268–274. [CrossRef] [PubMed]

van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2014). The digital divide shifts to differences in usage. *New Media & Society*, *16*(3), 507–526. [CrossRef]

Voorveld, H. A. M., van Noort, G., Muntinga, D. G., & Bronner, F. (2018). Engagement with social media and social media advertising: The differentiating role of platform type. *Journal of Advertising*, *47*(1), 38–54. [CrossRef]

Wang, X., Yu, C., & Wei, Y. (2012). Social media peer communication and impacts on purchase intentions: A consumer socialization framework. *Journal of Interactive Marketing*, *26*(4), 198–208. [CrossRef]

Ward, S. (1974). Consumer socialization. *Journal of Consumer Research*, *1*(2), 1–14. [CrossRef] [PubMed]

Williams, D. E., & Willick, B. (2025). Co-shopping and e-commerce: Parent's strategies for children's purchase influence. *Electronic Commerce Research*, *25*(1), 193–209. [CrossRef]

Wilska, T.-A., Holkkola, M., & Tuominen, J. (2023). The role of social media in the creation of young people's consumer identities. *Sage Open*, *13*(2), 21582440231177030. [CrossRef]

Wulandari, E. (2026). Shaping young consumers: Unpacking the role of socialization agents in Indonesian adolescents' consumption behavior. *Journal of Human Behavior in the Social Environment*, 1–16. [CrossRef]

Xu, L., Lu, Z., Wang, L., Chen, J., Tian, L., Cai, S., & Peng, S. (2023). The effect of social network use on Chinese college students' conspicuous consumption: A moderated mediation model. *Behavioral Sciences*, *13*(9), 732. [CrossRef] [PubMed]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.