

# The Generation Alpha Scale for Parents: Development and Psychometric Evaluation: Methodological Study

## Ebeveynler İçin Alfa Kuşağı Ölçeği: Geliştirme ve Psikometrik Değerlendirme: Metodolojik Çalışma

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**ABSTRACT Objective:** What distinguishes generation Alpha from earlier generations is that they are born into a digital world. The aim of this study was to develop the Generation Alpha Scale for Parents (GASP) and evaluate its content validity and psychometric properties. **Material and Methods:** This methodological study was conducted with 419 parents of generation Alpha. Data were collected using a socio-demographic characteristics questionnaire and GASP. The data were analyzed using t-test, Cronbach's alpha coefficient, Pearson's correlation coefficient, and factor and item-total score analysis. **Results:** The scale had a content validity index of 0.93 and a Cronbach's alpha of 0.96. The exploratory factor analysis (EFA) showed that the scale consisted of 26 items and three subscales: learning methods, communication-social network, and personality prerequisites, respectively. The item-total correlations ranged from 0.479 to 0.912. The EFA showed that the scale explained 61.33% of the total variance. The confirmatory factor analysis also showed that the factor loadings ranged from 0.52 to 0.93. Root mean square error of approximation was less than 0.080 and was significant. **Conclusion:** The GASP is a valid and reliable measurement tool that can use by parents, health professionals, educators, and political groups to assess the characteristics of generation Alpha.

**Keywords:** Child; generation Alpha; parents; psychometric; scale development

**ÖZET Amaç:** Alfa kuşağını diğer nesillerden ayıran özellik dijital dünyada doğmalarıdır. Bu çalışmanın amacı, Ebeveynler için Alfa Kuşağı Ölçeği'ni (EAKÖ) geliştirmek ve kapsam geçerliliği ile psikometrik özelliklerini değerlendirmektir. **Gereç ve Yöntemler:** Bu metodolojik çalışma, Alfa kuşağına sahip 419 ebeveyn ile yürütülmüştür. Veriler, sosyodemografik özellikler soru formu ve EAKÖ kullanılarak toplanmıştır. Veriler t-testi, Cronbach alfa katsayısı, Pearson korelasyon katsayısı, faktör ve madde toplam puan analizi kullanılarak analiz edilmiştir. **Bulgular:** Ölçeğin kapsam geçerlilik indeksi 0,93 ve Cronbach alfa değeri 0,96'dır. Açıklayıcı faktör analizi, ölçeğin 26 maddeden ve sırasıyla öğrenme yöntemleri, iletişim-sosyal ağ ve kişilik ön koşulları olmak üzere 3 alt boyuttan oluştuğunu göstermektedir. Madde-toplam puan korelasyonları 0,479 ile 0,912 arasında değişmektedir. Açıklayıcı faktör analizi, ölçeğin toplam varyansın %61,33'ünü açıkladığını göstermektedir. Doğrulayıcı faktör analizi ise faktör yüklerinin 0,52 ile 0,93 arasında değiştiğini göstermektedir. Tahmin hatalarının ortalamasının karekökü 0,080'den küçük ve anlamlıdır. **Sonuç:** EAKÖ, Alfa kuşağının özelliklerini değerlendirmek için ebeveynler, sağlık profesyonelleri, eğitimciler ve siyasi gruplar tarafından kullanılabilir geçerli ve güvenilir bir ölçüm aracıdır.

**Anahtar Kelimeler:** Çocuk; Alfa kuşağı; ebeveynler; psikometrik; ölçek geliştirme

A generation is a group of people born in a similar period and raised under similar conditions.<sup>1,2</sup> Generations are classified biologically and sociologically. Biological classification is based on the average time interval between the birth of parents and their children (20-30 years).<sup>1,3</sup> Sociological classification; generations are born between certain years

(25-30 years), as well as the political, social, economic, and technological developments that occurred in the period of society events are taken into account. Today, generations are defined by various parameters, such as motherhood at older ages, changes in social values, working conditions, leaders, different occupations, and advances in technology.<sup>1,4</sup> Advances

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in technology have paved the way for the classification of generations based on the way they use technology. Generation X, Y, Z and Alpha are the generations defined by advances in technology.<sup>3,5</sup> Generation Alpha, the first generation of the twenty-first century, consists of individuals born between 2010 and 2025.<sup>3,6</sup> More than 2.5 million generation Alpha children are born every week worldwide.<sup>7</sup> It is estimated that generation Alpha will be around two billion by 2025.<sup>3,6</sup> Generation Alpha was named after the first letter of the Greek alphabet.<sup>8</sup> Generation Alpha is the largest, most technologically savvy, and most globally connected and influential generation.<sup>3</sup> Generation Alpha is defined as homo tablets, Generation Z intersecting the digital age, digital natives, tech-literate, and creative.<sup>9-13</sup> Social media and technology were introduced to the market for the first time when generation Alpha children were born.<sup>3,7</sup> Generation Alpha is also called “Screenagers” or “Generation Glass,” who are addicted to the touchscreen world and fluid screen experiences.<sup>3,14</sup>

Generation Alpha is also the first generation shaped by portable digital devices.<sup>3,10,14</sup> What distinguishes generation Alpha from other generations is advances in technology.<sup>10</sup> These developments are so dramatic that most generation Alpha children are pre-occupied with tech gadgets rather than pacifiers.<sup>3</sup> Technology is at the heart of the lives of generation Alpha.<sup>10</sup> In other words, technology has a tremendous impact on generation Alpha’s communication, social interaction, personal development, interests, friendships, shopping habits, learning process, and learning methods.<sup>3,10,13-15</sup> Generation Alpha children are curious, creative, careful, determined, innovative researchers and entrepreneurs with high technological self-efficacy, perception, and numerical intelligence. They are open to learning new things through their own experiences and methods and adapting their thinking accordingly. They look at things from a broader perspective, live in the moment, and do visual research.<sup>3,6,10,13-15</sup> However, generation Alpha has some faults as well. For example, they are egocentric, dissatisfied, tech-addicted, stubborn, disrespectful, introverted, impatient, and disobedient. They have limited social interaction and verbal intelligence, and little respect for privacy. They are not in-

terested in being a part of religious communities, do not like being told what to do, and cannot imagine a world without technology and social networks.<sup>3,6,10,13-15</sup> Generation Alpha children are worse at acquiring practical skills, setting and attaining goals, and assessing risks than earlier generations because they are addicted to technology.<sup>3</sup>

Parents are responsible for identifying their generation Alpha children’s strengths and weaknesses and taking measures to help them overcome their weaknesses and build on their strengths. We need up-to-date, valid, and reliable measurement tools for parents to evaluate the characteristics of their generation Alpha children. In the literature, there are no current, valid, reliable, and user-friendly measurement tools for parents to evaluate their generation Alpha children’s characteristics objectively. A valid and reliable instrument can help parents, healthcare professionals, educators, and political groups understand generation Alpha better.

## OBJECTIVE

The objective of this study was to develop a scale to help parents identify their generation Alpha children’s characteristics.

## MATERIAL AND METHODS

### STUDY DESIGN

This study adopted a methodological design to develop Generation Alpha Scale for Parents (GASP) and evaluate its psychometric properties. [Figure 1](#) shows the methods.

### SETTING AND SAMPLE

The sample consisted of 419 parents of generation Alpha children studying in a primary school in Türkiye between July and August 2021. This primary school is a co-educational school with compulsory education applied by the Türkiye government to students in grades 1-4. This school is in the city center and children of parents with similar socio-demographic characteristics are studying. Scale development research is to have a sample size that is 5 to 10 times the scale’s number of items. A researcher should take at least 5 people per item to perform fac-

tor analysis.<sup>16</sup> Because the GASP includes 42 items, the number of parents per item was calculated as between 5 to 10, and it was planned to include 420 parents in the study. There are 631 generation Alpha children in the primary school where the research was conducted. However, the sample consisted of 419 parents of generation Alpha children due to not volunteering, refusing to participate research, pilot study and not being able to send the form to the determined phone number. The oldest generation Alpha children are 12 years old.<sup>3,14</sup> Thus, the sample was drawn using a simple random selection procedure from parents having children aged 7-12 years. Participation was voluntary.

“Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA)” should be performed on separate samples.<sup>17</sup> Therefore, separate samples were recruited for EFA and CFA. To that end, the sample was divided into EFA (n=220) and CFA (n=199) groups. A pilot study was conducted with 30 parents. The main study did not include the pilot study’s participants. Fifty participants were recruited to check for test-retest reliability 4 weeks after the study.

The inclusion criteria for parents were as follows: (a) having children aged 7-12 years, (b) being voluntary, and (c) being able to read and understand the survey. The exclusion criteria for parents were as follows: (a) declining to participate.

## PROCEDURE

The literature on generation Alpha was reviewed form an item pool the GASP.<sup>3,6,10,13-15</sup> Thus, a draft scale consisting of 54 items was created. Ten experts (two pediatricians, one school counselor, one educational technologist, one computer education and instructional technology teacher, one child psychologist, one Turkish language and literature specialist, and three child health and diseases nursing specialists) checked the draft for intelligibility and relevance. They used a four-point scoring system to evaluate each item’s relevance, intelligibility, and necessity in order to generate the content validity index (CVI).<sup>18</sup> They also wrote down their opinions and suggestions about each item in suggestion boxes. CVI of each item was calculated. CVI of an item was

equal to the number of experts who chose option (a) or (b) for that item divided by the total number of experts. The acceptable limit for CVI was  $\geq 0.80$ .<sup>18,19</sup> Twelve items were removed based on expert opinion and analyses (Figure 1).

## DATA COLLECTION TOOLS

A socio-demographic characteristics questionnaire and the GASP made up the 2 components of the data collection tool.

## SOCIO-DEMOGRAPHIC CHARACTERISTICS QUESTIONNAIRE

The socio-demographic characteristics questionnaire was based on a literature review conducted by the researchers. The questionnaire comprise 4 open-ended and 10 closed-ended questions on children’s and parents’ socio-demographic characteristics. Technology is an integral part of life for generation Alpha.<sup>3,6,10,14,15</sup> Therefore, the questionnaire contained 6 questions on technological tools and screen time (TV/smartphone/computer/tablet).

## GASP

Calculating CVI and removing 12 items and developing a 42- item draft scale. It consisted of 42 items on technology, social media, learning methods, communication, personality traits, and parent and social relations. The items were graded on a 5-Likert-type scale. There are no items with reversed scores.

## PILOT TESTING

Thirty parents participated in pilot research to evaluate the 42-item draft for clarity, legibility, and intelligibility. All participants wrote down the time they started filling out the draft and finished filling it out. Participants gave no negative feedback about the draft. Therefore, no changes were made to the draft. Before the pilot research, each participant was assigned an ID “the first three letters of the child’s name + the first digit of the child’s class number + the last 2 letters of the child’s last name Example: ABC1DE”.

## DATA COLLECTION

Data were collected between July and August 2021. The research’s goal and process were explained to all

teachers and school administrators. Six hundred thirty one parents who appropriated the inclusion criteria were then identified with the help of the teachers and school administrators. At the time of the research, distance learning was being practiced in Türkiye. Therefore, on the days determined by the teachers and school administrators, an online meetings was held to inform the participants, who were registered in the designated classes and agreed to participate in the research, about the purpose and procedure of the research. Accordingly, our research was conducted with 419 participants. Also, they were informed that participation was completely optional and that they could stop at any time. The questionnaire was prepared on online forms. All participants were sent a link to the survey via mobile message or SMS. Participants were asked to read and accept Google's privacy policy.<sup>20</sup>

All participants (n=419) filled out the 42-item GASP. They were then informed that a second data collection session for the test-retest reliability analysis would take place 4 weeks after the primary study. According to the literature, the sample for a test-retest reliability analysis should consist of at least 30 paired participants. Fifty parent retests were conducted in this study.<sup>21-23</sup> The difference between the 2 mean scores was evaluated.<sup>19</sup>

## DATA ANALYSIS

This scale development study was conducted by analyzing the data obtained from 2 groups of participants. Davis technique was used in the determining CVI.<sup>18,19</sup> To examine construct validity, the EFA and CFA were carried out. Cronbach's alpha was calculated to assess the reliability of the scale and its subscales. The item-total correlation was calculated to test the reliability of the items. To determine whether GASP could produce consistent results over time, a test-retest was used. The data were evaluated using LISREL (Linear Structural Relationships) and SPSS (Statistical Package for Social Science, Inc., Chicago, Illinois, USA).

## ETHICAL CONSIDERATIONS

In order to conduct the study, ethics committee approval was obtained from Gümüşhane University

Ethics Committee (date: April 14, 2021; no: 2021/03). Permission was obtained from the Provincial Directorate of National Education to conduct the research in the primary school. All parents were informed of the research purpose and procedure. All parents are informed that participation is voluntary and can withdraw from the study at any time. Verbal and written consent was obtained from those who agreed to participate. All parents' anonymity was preserved. The study was conducted according to the ethical principles outlined by the World Medical Association Declaration of Helsinki.

## RESULTS

### DEMOGRAPHIC CHARACTERISTICS

The EFA sample comprised of 220 parents with a mean age of 36.18. The CFA sample consisted of 199 parents with a mean age of 37.16. [Table 1](#) shows the parents' demographic characteristics.

The majority of the EFA participants had computers at home (75%). Most EFA participants had internet access at home (90.9%). Less than half the CFA participants had 2 children (49.2%). The majority of the CFA participants had computers at home (83.9%). Most CFA participants had Internet access at home (94%).

### VALIDITY ANALYSIS

#### Content Validity

The GASP items were evaluated by the ten experts. The scale had a CVI of 0.93, which was an acceptable score ([Figure 1](#)).<sup>18</sup>

#### Construct Validity

##### EFA

In this study the Promax, an oblique rotation technique was used.<sup>18</sup> [Table 2](#) shows the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity indices. The KMO was 0.955, indicating that the sample was large enough for EFA. Bartlett's test of sphericity was statistically significant, indicating that the data was sufficient for EFA ( $p < 0.05$ ).

Items loaded on more than one factor and 16 items with a factor loading of less than 0.40 were re-

**TABLE 1: Socio-demographic characteristics (n=419).**

Variable		EFA group (n=220)		CFA group (n=199)	
		n	%	n	%
Parent	Mother	172	78.2	147	73.9
	Father	48	21.8	52	26.1
Mother's education (degree)	Primary school	28	12.7	30	15.1
	Middle school	51	23.2	41	20.6
	High school	87	39.5	50	25.1
	Master's or higher	54	24.5	78	39.2
Father's education (degree)	Primary school	11	5.0	14	7.1
	Middle school	27	12.3	18	9.0
	High school	74	33.6	57	28.6
	Master's or higher	108	49.1	110	55.3
Child's gender	Girl	105	47.7	125	62.8
	Boy	115	52.3	74	37.2
Child's age (years)	7	58	26.4	31	15.6
	8	73	33.2	46	23.1
	9	56	25.5	65	32.7
	10	18	8.2	29	14.6
	11	8	3.6	20	10.1
	12	7	3.2	8	4.0
Does the child have a phone?	Yes	41	18.6	29	14.6
	No	179	81.4	170	85.4
How many hours a day does the child spend on the phone?	None	11	5.0	16	8.0
	0-1	20	9.1	25	12.6
	1-2	80	36.4	48	24.1
	2-3	48	21.8	44	22.1
	≥3	61	27.7	66	33.2
How many hours a day does the child spend on social media?	Never	19	8.6	26	13.1
	0-1	41	18.6	34	17.1
	1-2	80	36.4	40	20.1
	2-3	32	14.5	44	22.1
	≥3	48	21.8	55	27.6
How many hours a day does the child spend watching TV?	Never	11	5.0	3	1.5
	0-1	37	16.8	36	18.1
	1-2	51	23.2	56	28.1
	2-3	85	38.6	69	34.7
	≥3	36	16.4	35	17.6

EFA: Exploratory factor analysis; CFA: Confirmatory factor analysis.

moved from the draft scale consisting of 42 items (Figure 1). The analysis was then performed again. The K1 eigenvalue method; was used to decide under how many factors the data set was collected.<sup>18</sup> It is recommended to take into account the factors with an eigenvalue greater than 1. There were 3 factors with an eigenvalue greater than 1. A scree plot was also used to determine the number of factors. This method involves calculating the eigenvalues in the correla-

tion matrix and plotting them in descending order.<sup>18</sup> The scree plot demonstrates the three-factor structure of the scale.

According to EFA, 26 items were loaded on three factors, which accounted for 61.335% of the total variance. Also, Table 2 stated the rotated factor loadings of the items and the eigenvalues of the factors, and the total variance they account for.

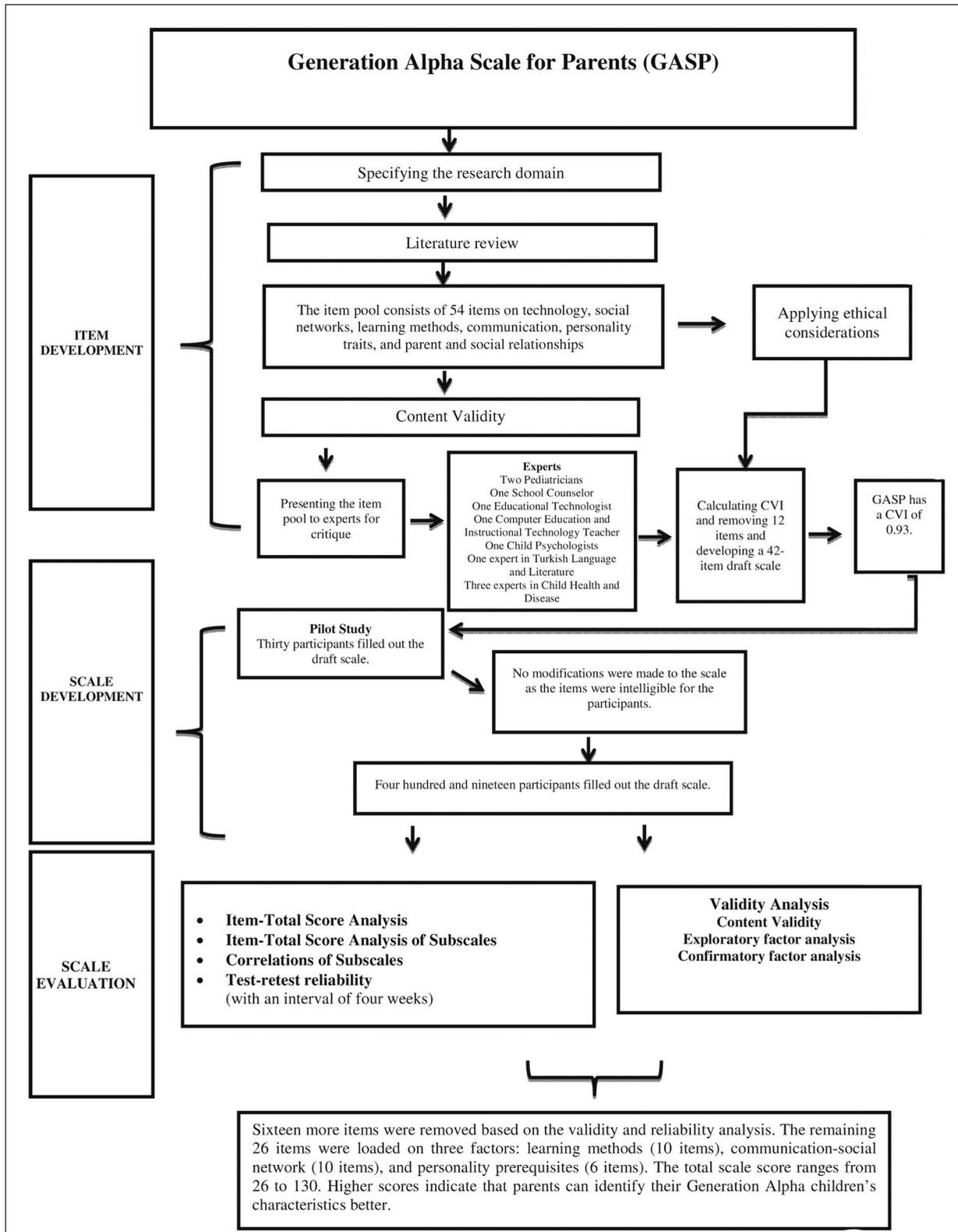


FIGURE 1: Research process.

**TABLE 2:** Exploratory factor analysis: factor loadings of GASP items (n=419).

Items	Factor 1	Factor 2	Factor 3
Item 1: Generation Alpha children are open to lifelong learning.	0.865		
Item 2: Generation Alpha children love to explore.	0.863		
Item 3: Generation Alpha children have their own learning methods (research, experiment, etc.).	0.827		
Item 4: Generation Alpha children are highly perceptive.	0.807		
Item 5: Generation Alpha children have creative ideas.	0.804		
Item 6: Generation Alpha children have a broad imagination.	0.795		
Item 7: Generation Alpha children are curious.	0.728		
Item 8: Generation Alpha children use computer-assisted systems (videos, augmented reality, simulations, graphic designs, etc.) for education.	0.689		
Item 9: Generation Alpha children are entrepreneurs.	0.642		
Item 10: Generation Alpha children are overly influenced by their parents.	0.471		
Item 11: Social media influences Generation Alpha children's buying behavior.		0.709	
Item 12: Generation Alpha children often use social media platforms.		0.676	
Item 13: Generation Alpha children imitate social media influencers.		0.648	
Item 14: Technological games are always a daily activity for Generation Alpha children.		0.645	
Item 15: Generation Alpha children often use symbols (facial expressions, emojis) when communicating on the phone.		0.591	
Item 16: Generation Alpha children are influenced by videos on social media.		0.574	
Item 17: Generation Alpha children often sustain their friendships online.		0.554	
Item 18: Generation Alpha children prefer face-to-face communication less.		0.503	
Item 19: Generation Alpha children spend most of their day on technological devices.		0.474	
Item 20: Generation Alpha children love to post on social media.		0.466	
Item 21: Generation Alpha children do not like to be restricted.			0.758
Item 22: Generation Alpha children do not want to follow the rules.			0.654
Item 23: Generation Alpha children want everything customized to their needs.			0.639
Item 24: Generation Alpha children are impatient.			0.629
Item 25: Generation Alpha children's friends influence their buying behavior.			0.591
Item 26: Generation Alpha children live in the moment.			0.578
Eigenvalues	7.333	4.806	3.809
Explained variance	28.203%	18.483%	14.649%
KMO coefficient	0.955		
Bartlett test	7467.221 (p<0.001)		

GASP: Generation Alpha Scale for Parents; KMO: Kaiser-Meyer-Olkin.

## CFA

The data-model fit index values of the three-factor structure. A chi-square ( $c^2$ )/degrees of freedom (df)<3 indicates a perfect fit, while an  $c^2/df < 5$  indicates a good fit.<sup>24</sup> It was 2.074 in the present study. The values were analyzed based on the ideal fit indices suggested by Marsh et al.<sup>24</sup> The finding stated that the three-factor model had a good model-data fit (root mean square error of approximation=0.072; Normed Fit Index=0.960; Standardized Root Mean Square Residual=0.053; Comparative Fit Index=0.988; Incremental Fit Index=0.980; Tucker-Lewis Index=0.980).

Figure 2 shows the first-order CFA item-construct parameters of the correlated three-factor measurement model (standardized factor loads and correlations between constructs). The item-construct parameters showed that the standardized factor loadings of the three subscales of the model ranged from 0.52 to 0.93. The factor loadings were statistically significant (Figure 2).

## RELIABILITY ANALYSIS

### Internal Consistency Analysis

Table 3 shows the internal consistency coefficients of the total scale and its subscales. The item-total cor-

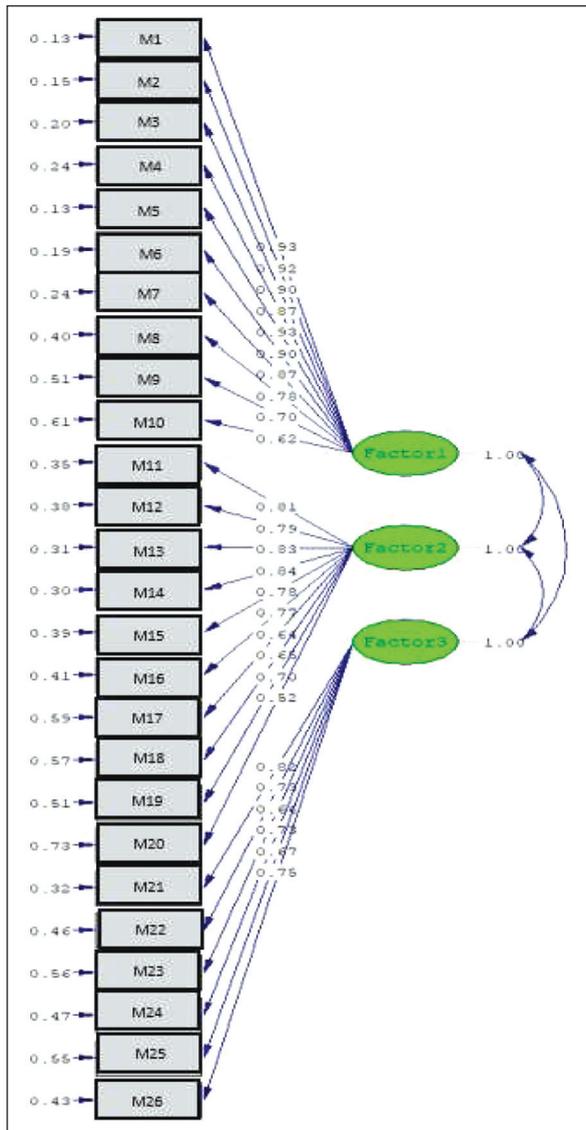


FIGURE 2: Confirmatory factor analysis.

relation coefficients were within the acceptable range of 0.479 to 0.912 ( $p < 0.001$ ). This study found that the learning methods, communication-social network and personality prerequisites subscale correlation coefficients ranged from 0.678 to 0.933, 0.606 to 0.837, and 0.754 to 0.844, respectively ( $p < 0.001$ ). The total scale and its subscales had average mean scores and standard deviations between -1.5 and +1.5, indicating normal distribution. The internal consistency coefficients were higher than 0.70, which is recommended by Nunnally and Bernstein.<sup>25</sup> The total scale had a Cronbach's alpha of 0.96. To examine if participant responses to the items were biased,

Hotelling's T2 test was used. Factors 1, 2, and 3 had a Hotelling T<sup>2</sup> score of 149.436 ( $p < 0.001$ ), 70.578 ( $p < 0.001$ ), and 36.286 ( $p < 0.001$ ), respectively. The total scale had a Hotelling T<sup>2</sup> score of 271.449 ( $p < 0.001$ ). The findings indicated that participants' responses to the items were not equal.

### Test-Retest Reliability

Another component of scale reliability is yielding consistent results when repeated over time. Simple correlation analysis was used to determine the consistency between test-retest mean scores. A retest was conducted with 50 participants 4 weeks after the test. The results showed a significant correlation between the test and retest mean scores ( $r = 0.89$ ,  $p < 0.001$ ). The test and retest mean scores did not significantly differ ( $p > 0.05$ ).

### Scale Scoring

The analyses on different samples showed that the items had similar factor loadings. Each item in the GASP is scored between 1 to 5. The GASP total score ranges from 26 to 130. There are no items with reversed scores. Higher scores remark that parents can identify their generation Alpha children's characteristics better.

## DISCUSSION

The GASP is a valid and reliable instrument for parents and pediatric nurses to assess generation Alpha children's characteristics. It is an effective measurement tool that helps determine whether parents can identify their generation Alpha children's characteristics. It is an appropriate scale that elicits important information that can be of interest to pediatric experts, caregivers, educators, and policymakers.

A 54-item draft GASP was developed based on a literature review on generation Alpha. Ten experts were consulted for content validity. Twelve items were removed based on expert opinions. One indicator of content validity is the consensus of most experts on scale items.<sup>19,23</sup> The scale had a CVI of 0.93, which was adequate.<sup>18</sup> A three-factor structure with 26 items was revealed by EFA. The total GASP had a Cronbach's alpha of 0.96. The subscales were named "learning methods ( $\alpha = 0.95$ )," "communica-

TABLE 3: Correlations.

Subscales	Items	Item total score	Item-subscale total score	Test-re test	X	SD	Cronbach's alpha ( $\alpha$ )
		correlations* (n=419)	correlation* (n=419)	correlations of items* (n=50)			
Factor 1	Item 1	0.912	0.933	0.844	3.633	1.187	0.957
Learning methods	Item 2	0.896	0.921	0.856			
	Item 3	0.878	0.902	0.734			
	Item 4	0.856	0.880	0.926			
	Item 5	0.905	0.928	0.875			
	Item 6	0.874	0.901	0.931			
	Item 7	0.840	0.880	0.866			
	Item 8	0.758	0.807	0.808			
	Item 9	0.675	0.750	0.763			
	Item 10	0.554	0.678	0.793			
Factor 2	Item 11	0.762	0.832	0.771	3.389	1.162	0.918
Communication-social network	Item 12	0.762	0.818	0.844			
	Item 13	0.774	0.829	0.789			
	Item 14	0.797	0.837	0.728			
	Item 15	0.755	0.803	0.887			
	Item 16	0.719	0.783	0.769			
	Item 17	0.623	0.702	0.674			
	Item 18	0.616	0.694	0.831			
	Item 19	0.650	0.720	0.841			
	Item 20	0.479	0.606	0.763			
Factor 3	Item 21	0.755	0.844	0.798	3.251	1.133	0.867
Personality prerequisites	Item 22	0.685	0.780	0.896			
	Item 23	0.640	0.755	0.854			
	Item 24	0.673	0.774	0.807			
	Item 25	0.586	0.754	0.710			
	Item 26	0.650	0.776	0.775			
Scale					3.451	1.038	0.960

\*p&lt;0.001; SD: Standard deviation

tion-social network ( $\alpha=0.91$ ),” and “personality prerequisites ( $\alpha=0.86$ ).” The Cronbach’s alpha values demonstrate that GASP is highly reliable.<sup>21,25</sup>

Reliability is defined as an indicator of how consistently a variable measures the construct it aims to measure.<sup>26</sup> The test-retest method was used to determine the reliability of GASP. The item-total correlations of the items and the internal consistency coefficients of the subscales were calculated. Internal consistency coefficients are used to determine the reliability of a scale.<sup>21</sup> Internal consistency coefficients give us information about how accurately a scale measures a conceptual structure and whether the scale items are consistent with each other.<sup>25</sup> The item-total score correlation coefficients ranged from

0.479 to 0.912. The subscale “learning methods” had item-total score correlation coefficients of 0.554 to 0.912. The subscale “communication-social network” had item-total score correlation coefficients of 0.479 to 0.797. The subscale “personality prerequisites” had item-total score correlation coefficients of 0.586 to 0.755. Both item-total scores and item subscale scores were above 0.40, indicating that all items had “very good” discrimination. This result shows that the items measure the same constructs and have high internal consistency.<sup>25,27</sup>

Fifty participants took the retest four weeks after the first test. The results showed a strong positive correlation between the test and retest scores. Test-retest is a common method for assessing consistency over

time.<sup>28,29</sup> Our results indicated that GASP had good reliability and consistency and that the scale items explained the construct they aimed to explain.

One needs an appropriate dataset and adequate sample size to conduct factor analyses. To that end, one should employ Bartlett's test of sphericity and KMO measure of sampling adequacy. Bartlett's test of sphericity determines whether the correlation matrix is the unit matrix.<sup>18,23</sup> KMO measure of sampling adequacy developed by DeVellis provides information about whether a sample is large enough or not.<sup>18</sup> KMO of >0.80 indicates that the sample is large enough for factor analyses.<sup>18</sup> The KMO measure of sampling adequacy was 0.95, for which Bartlett's test of sphericity was  $\chi^2=7467.221$ ,  $p<0.001$ . This result indicated that the dataset was suitable for factor analysis.

Factor loading explains the relationship between an item and a factor. Items describing factors should have certain factor loadings.<sup>21,22</sup> The results showed that all items had factor loadings of greater than 0.40, which is ideal according to Johnson and Christensen.<sup>26</sup> Moderate and high factor loadings indicate a strong factor structure.<sup>21,22</sup>

CFA was conducted to determine whether a different dataset confirmed the EFA three-factor structure. CFA is used to answer 4 questions: 1) Which variables are correlated with which factors?, 2) Is there a correlation between the factors?, 3) Do the factors explain the model well enough?, and 4) Are the factors independent of one another?<sup>16</sup> The  $\chi^2/df$  ratio was 2.074. A  $\chi^2/df$  ratio <3 points to a perfect fit.<sup>16</sup> Therefore, our result indicated that the data-model fit was perfect.<sup>22</sup> The goodness of fit indices indicated that the model was acceptable.<sup>18</sup>

The scale consisted of 26 items and three subscales. According to the indices, the scale had factor loadings of 0.52 to 0.93. The items and subscales had statistically significant t scores, indicating that the model was acceptable.<sup>18</sup> According to Brown item factor loadings should be greater than 0.5, and t scores should be statistically significant.<sup>16</sup> Both confirmatory and explanatory factor analyses revealed a similar item-construct pattern, indicating that GASP had factorial validity. These results indicate that the GASP has a high level of construct validity.

Response bias is defined as the tendency of a participant to respond to scale items based on group or social expectations rather than her own opinions.<sup>21</sup> The Hotelling T<sup>2</sup> test was used to determine response bias. The results indicated no response bias.<sup>21,25</sup>

## PRACTICAL IMPLICATIONS

The GASP has three implications. First, it will help researchers determine the characteristics of generation Alpha. Second, it will provide parents with the opportunity to shape their children's education. Third, it will be a guide for healthcare professionals for care and treatment. Healthcare and education professionals, especially nurses, constantly interact with people from different generations.<sup>1,4,15,30</sup> Nurses who know the characteristics of generation Alpha children are more likely to understand their problems, identify their needs, and provide better care and treatment.<sup>15,30</sup> Nurses with a sound grasp of the "learning methods, communication-social network, and personality prerequisites" in GASP are likely to have better care experiences. Based on GASP results, they can identify generation Alpha children's needs and problems and address them effectively. Further research is warranted to establish the validity and reliability of GASP on parents of children of different age groups.

## LIMITATIONS

This study had three limitations. First, the results were sample-specific, and therefore, not generalizable to the whole population. Second, the study focused only on generation Alpha and recruited the parents of children 7-12 years of age.

## CONCLUSION

Generation Alpha is the generation of tomorrow. The GASP was developed to determine the characteristics of generation Alpha children. The instrument consists of "26 items scored on a 5-point Likert-type scale." It has 3 subscales: 1) Learning methods, 2) Communication-social network, and 3) Personality prerequisites. The GASP total score ranges from 26 to 130. Higher scores remark that parents can identify their generation Alpha children's characteristics better.

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### Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

### Authorship Contributions

**Idea/Concept:** Vildan Apaydın Cırık, Bahar Aksoy; **Design:** Vildan Apaydın Cırık, Bahar Aksoy; **Control/Supervision:** Vildan Apaydın Cırık; **Data Collection and/or Processing:** Bahar Aksoy; **Analysis and/or Interpretation:** Vildan Apaydın Cırık, Bahar Aksoy; **Literature Review:** Vildan Apaydın Cırık, Bahar Aksoy; **Writing the Article:** Vildan Apaydın Cırık, Bahar Aksoy; **Critical Review:** Vildan Apaydın Cırık, Bahar Aksoy; **References and Fundings:** Vildan Apaydın Cırık, Bahar Aksoy; **Materials:** Vildan Apaydın Cırık, Bahar Aksoy.

## REFERENCES

- Keleş HN. Y kuşağı çalışanlarının motivasyon profillerinin belirlenmesine yönelik bir araştırma [Research on determining motivation profiles of generation y employees]. J Organ Manag Sci. 2011;3(2):129-39. [Link]
- Türk Dil Kurumu [Internet]. © 2021 - TDK [Erişim tarihi: 12 Temmuz 2021]. Nesil. Erişim linki: [Link]
- McCrindle M. Beyond z: Meet generation alpha. In: McCrindle M, Wolfinger E, eds. The ABC of XYZ: Understanding the Global Generations. 3rd ed. Sydney: University of New South Wales Press Ltd; 2014. p.218-22.
- Kaleli B, Yalçın B. Beş faktör kişilik özellikleri ile iş değerleri ilişkisinin kuşaklar kapsamında analizi [Analysis of five factor personality traits and work values within the scope of generations theory]. Hitit J Soc Sci. 2021;14(1):87-109. [Crossref]
- Arslan A, Staub S. Kuşak teorisi ve girişimcilik üzerine bir araştırma [A study on generational theory and intrapreneurship]. Kafkas University J Fac Econ Admin Sci. 2015;6(11):1-24. [Link]
- dos Reis TA. Study on the generation alpha and the reflections of its behavior in the organizational environment. J Res Hum Soc Sci. 2018;6(1):9-19. [Link]
- The New York Times [Internet]. © 2021 The New York Times Company [Cited: July 10, 2021]. Meet alpha: The next 'next generation'. Available from: [Link]
- Oxford Learners Dictionaries [Internet]. © 2021 Oxford University Press [Cited: July 12, 2021]. Alpha. Available from: [Link]
- Stefanov S, Terziev V, Banabakova V. The understanding of security in the postmodern society. Int J Adv Soc Sci. 2018;4(12):570-9. [Crossref]
- Tootell H, Freeman M, Freeman A. Generation Alpha at the intersection of technology, play and motivation. In: Sprague Jr RH, ed. 47th Hawaii International Conference on System Sciences (HICSS). United States: The Institute of Electrical and Electronics Engineers Inc; 2014. p.82-90. [Crossref]
- Arifah MN, Munir MA, Nudin B. Educational design for alpha generation in the industrial age 4.0. Adv Econ Business Manag Res. 2021;168:37-45. [Crossref]
- Forbes [Internet]. [Cited: July 19, 2021]. The complete guide to Generation Alpha. The children of millennials. Available from: [Link]
- AdAge [Internet]. Copyright © 1994-2023 [Cited: July 19, 2021]. 13 things to know about the generation alpha. Available from: [Link]
- Kayıkcı YM, Bozkurt KA. Dijital çağda z ve alpha kuşağı, robotlar ve turizmde yapay zeka uygulamaları [Generation z and alpha in digital age, artificial intelligence and reflections on tourism]. Soc Sci Texts. 2018;1:54-64. [Link]
- Apaydın Ç, Kaya F. An analysis of the preschool teachers' views on generation alpha. Eur J Educ Stud. 2020;6(11):123-40. [Link]
- Brown TA. Confirmatory Factor Analysis for Applied Research. 2nd ed. New York: The Guilford Press; 2015.
- Çakmak EK, Çebi A, Kan A. E-öğrenme ortamlarına yönelik sosyal bulunuşluk ölçeği geliştirme çalışması [Developing a "social presence scale" for E-learning environments]. Educ Sci Theory Pract. 2014;14(2):755-68. [Link]
- DeVellis RF. Scale Development: Theory and Applications. 26th ed. Thousand Oaks: Sage Publications; 2016.
- Polit DF, Beck CT. Essentials of Nursing Research: Methods, Appraising Evidence for Nursing Practice. 9th ed. Philadelphia: Wolters Kluwer; 2018.
- Google Privacy Policy [Internet]. [Cited: July 15, 2021]. Privacy policy. Available from: [Link]
- Şencan H. Sosyal ve Davranışsal Ölçümlerde Güvenilirlik ve Geçerlilik. 1. Baskı. Ankara: Seçkin Yayıncılık; 2005.
- Çokluk Ö, Şekercioğlu G, Büyüköztürk Ş. Sosyal Bilimler İçin Çok Değişkenli İstatistik SPSS ve Lisrel Uygulamaları. 4. Baskı. Ankara: Pegem Akademi; 2016.
- Büyüköztürk Ş. Sosyal Bilimler İçin Veri Analizi El Kitabı. 15. Baskı. Ankara: Pegem Akademi; 2011.
- Marsh HW, Guo J, Dicke T, Parker PD, Craven RG. Confirmatory Factor Analysis (CFA), Exploratory Structural Equation Modeling (ESEM), and Set-ESEM: Optimal Balance Between Goodness of Fit and Parsimony. Multivariate Behav Res. 2020;55(1):102-19. [Crossref] [PubMed]
- Nunnally JC, Bernstein IH. Psychometric Theory. 3rd ed. New York: McGraw-Hill; 2010.

26. Jonhson B, Christensen L. Educational Research: Quantitative, Qualitative, and Mixed Approaches. 5th ed. California: SAGE Publication; 2014.
27. Souza AC, Alexandre NMC, Guirardello EB. Psychometric properties in instruments evaluation of reliability and validity. *Epidemiol Serv Saude*. 2017;26(3):649-9. English, Portuguese. [[Crossref](#)] [[PubMed](#)]
28. Noble S, Scheinost D, Constable RT. A decade of test-retest reliability of functional connectivity: A systematic review and meta-analysis. *Neuroimage*. 2019;203:116157. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
29. Çapık C, Gözüm S, Aksayan S. Kültürlerarası ölçek uyarlama aşamaları, dil ve kültür uyarlaması: güncellenmiş rehber [Intercultural scale adaptation stages, language and culture adaptation: Updated guideline]. *Florence Nightingale J Nurs*. 2018;26(3):199-210. [[Crossref](#)]
30. Alan H, Peker E, Arslan D, Toprak F, Eşkin Bacaksız F. Türkiye'de "hemşirelikte kuşaklar" konusunda 2014-2019 yılları arasında yayımlanan ulusal çalışmaların değerlendirilmesi: Sistematik bir inceleme [Evaluation of national studies about "generations of nursing" which had been published between the years 2014-2019 in Turkey: a systematic review]. *Journal of Inonu University Health Services Vocational School*. 2020;8(3):1002-17. [[Crossref](#)]