

ICT, Leisure Time, and Personality Traits of Members of Generation Z: Those Who Spend More Time With Friends Feel Happier

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Abstract

This study examined how adolescents and young adults perceive themselves, their personal characteristics, leisure habits, media usage habits, vitality, activity, belonging, happiness, self-esteem, determination, initiative and motivation, and belonging to a global and local community. Data from 537 adolescents and young adults aged 13-24 were collected in Israel in 2022. The findings revealed a connection between spending leisure time with friends and happiness. Two different clusters emerged from the study. The participants associated with cluster 1 were characterized by higher averages on all scales; a higher percentage of participants aged 18+ was found in cluster 1; participants in cluster 1 spent more hours with friends than did participants in cluster 2.

Keywords: happiness, information and communication technology (ICT), smartphones, adolescents, young adults, generation Z, wellbeing, leisure, grit, initiator, cluster analysis, average silhouette

1. Introduction

This study investigated how adolescents and young adults aged 13-24, members of Generation Z, perceive themselves, their personal characteristics, media usage habits, vitality, activity, belonging, happiness, self-esteem, determination, initiative and motivation, and belonging to a global and local community.

1.1 Generation Z

Individuals are shaped by changing factors that affect people in the same age group, such as living environment, technological developments, shared experiences and issues, events of local and global significance, and more. Generation Z was born toward the end of the last century and at the beginning of the 21st century (up to 2010). It was born into the digital technological age—the environment of smartphones, the Internet, social networks, and technology in general. Members of Generation Z are called “digital natives” because the adoption of digital technology became widespread and digital devices are widely used daily (Carter, 2018; Chicioreanu & Amza, 2018; Zilka, 2023). Researchers (Zilka, 2023; Carter, 2018) claim that this generation makes extensive use of technological means in all areas of life and note that one of the characteristics of this generation is “globalization,” including the consumption of music, fashion, food, cultural entertainment, and global connections. Carter (2018) and Turner (2015) emphasized the extensive use made by this generation of mobile digital technologies such as smartphones and tablets, rather than desktop computers, with phones serving as the main means of accessing information on the Internet (Zilka, 2019, 2023). Whereas previous generations used phones mainly for communication, this generation also uses many technological applications, for example, for creating nonverbal symbolic communication using emojis (Zilka, 2019, 2021a, 2021b, 2023). This generation has a capability for much faster digital communication than that of the previous generation, and their social presence and the nature of their digital interactions are much more advanced. One of the main characteristics of this generation, compared to its predecessors, is the degree of use and exposure to the Internet for a variety of uses, such as watching videos, gaming, searching for information, and using applications such as scanners, cameras, recordings, scheduler applications, ringtones, and more (Zilka, 2018a, 2020a, 2023).

Leisure. Researchers (Dąbrowski & Środa-Murawska, 2022; Nimrod & Adoni, 2012; Schultz & McKeown, 2018; Silk et al., 2016) have defined leisure as the preoccupation with needs that are not necessary for existence. Generation Z members consume media daily to create and maintain social relationships, but also create films, edit photos and music clips, and produce multimedia presentations and content. They write more than any other generation, and they are interested in the writing process and in the final product (Rosen, 2010). Socially, they have more friends than previous generations, including global social connections that transcend geographic and cultural boundaries. Social media is an important part of their lives. It provides opportunities for socializing, updating, sharing information, and spending time with others. They use the media to openly express their autonomy (Asterhan & Bouton, 2018; Carter, 2018; Chicioreanu

& Amza, 2018; Rosenberg & Asterhan, 2018; Shatto & Erwin, 2016).

2. Internal Resources: Social-Emotional Aspects, Belonging, Motivation, Initiative, and Grit

This study examined social-emotional aspects using research tools that focused on self-esteem, vitality, feelings of belonging, motivation, meaningful interactions, positive experiences and successes, a sense of self-worth and of being needed, and contribution to the environment.

Self-esteem refers to a set of traits that one attributes to oneself. Researchers pointed out the importance of self-esteem for academic achievements, social relationships, coping strategies, and more. Rosenberg (1965) found that there are three main factors in the formation of self-esteem: one's inner belief in oneself, reflection, and social comparison. Inner belief is the belief of people in their abilities and skills, which serves as an "anchor" for their self-identity, even in a changing environment and when one's performance changes. Inner belief contains experiences that have left their mark on the conscious and subconscious levels of a person. Reflection refers to the processes of observation that one makes of oneself, including habits, behavior patterns, and the feedback that a person receives from other people (the looking-glass self). Social comparison refers to comparing the self to others. At times, when people change their social environment, their self-esteem changes.

Belonging vs. alienation. Alienation refers to the loss of a person's sense of belonging, estrangement from the environment and distancing from the people around, and not being part of the social fabric of one's environment. The feeling of alienation can lead to social isolation, powerlessness, a sense of not knowing how to behave (normlessness), and lack of social support or social connections. The sense of alienation is likely to disappear when people feel that the environment is inviting and want to accept them (Dean, 1961; Sabatier & Berry, 2008; Berry & Sabatier, 2010; Viner et al., 2012).

Determination. Determination is persistence and passion for achieving long-term goals (Duckworth et al., 2007). Determination is a flexible and changeable ability: when people try to achieve a goal, their degree of determination increases (Datu et al., 2018; Duckworth, 2016). The characteristics of people with high determination (Duckworth, 2016) are the awareness that there are parts of the job that they enjoy less but they see the overall picture; a drive to improve their performance, knowing how to use self-persuasion to find value in it; and pushing forward even when they encounter difficulties; and rising every time after they fall. A study that examined organizations in Austria showed that determination and innovation were predictors of entrepreneurial success. Questionnaires answered by 1,500 respondents from a variety of organizations suggested that determination affected entrepreneurial success (Mooradian et al., 2016).

Initiative. Entrepreneurs define tasks and do not limit themselves to existing resources (Praszkiec & Nowak, 2011; Shani & Yemini, 2022). They have high motivation, personal resilience, dedication to solving problems, and a desire to implement changes (Yemini, 2018). Entrepreneurs are involved in processes that require creativity, adaptation, and learning, and they have a deep commitment to the populations they serve and to the results they seek to achieve (Dees, 1998). Many studies have focused on entrepreneurial consciousness, which plays an important role in the success or failure of entrepreneurs (Belousova et al., 2020; Davis et al., 2016; Wardana et al., 2020). Entrepreneurial consciousness is the motivation to act in situations of uncertainty; it is a combination of motives, abilities, and thought processes that distinguish those who are from those who are not entrepreneurs, and that contribute to entrepreneurial success (Davis et al., 2016; McGrath & MacMillan, 2000).

3. Research questions

How do teenagers and young adults aged 13-24 perceive themselves, their personality traits, leisure habits, media use habits, vitality, activity, belonging, happiness, self-esteem, determination, initiative and motivation, belonging to a global and local community?

4. Methodology

This was a quantitative study. An anonymous questionnaire was distributed online to young respondents, aged 13 to 24, throughout Israel. Participation was voluntary. The questionnaire was anonymous and no identifying information was collected. Permission was obtained from the parents of participants under the age of 18. The study received approval from the Institutional Review Board (IRB). The data were collected in Israel in 2022.

Data Availability Statements. All data generated or analyzed during this study are included in this article.

4.1 Sample

Five hundred thirty-seven Israeli adolescents and young adults aged 13-24 years participated in the study; average age was 17.1 years with a standard deviation of 3.1; 65% were male. Table 1 presents the demographics of the sample.

Table 1. Sample description, N=537

Variable	M(SD)/N(%)
Age_group:	
13-15	188 (35.0%)
16-18	182 (33.9%)
18+	167 (31.1%)
Sex:	
F	187 (35.0%)
M	348 (65.0%)
Birth_country:	
Israel	526 (98.0%)
Other	11 (2.05%)
Economics:	
Quite below average	7 (1.32%)
Below average	40 (7.53%)
Average	308 (58.0%)
Above average	164 (30.9%)
Quite above average	12 (2.26%)
Sector:	
Jewish	498 (92.7%)
Minority	39 (7.26%)

4.2 Research Tools

1. Demographic questionnaire that included ten items: age; sex; sector; country of birth; year of immigration; number of rooms in the house; number of siblings; marital status of the parents; economic situation; and area of residence.
2. The Self-esteem Scale (Rosenberg, 1965). The questionnaire contained 12 items scored on a 5-point Likert scale ranging from 1 (Not at all) to 5 (Very much). For example, "On the whole, I'm satisfied with myself. I feel that I have several good qualities. I take a positive attitude toward myself."
3. Vitality. The questionnaire, developed by Bostic, Rubio, and Hood (2000), included 7 items. The respondents were asked to rate how much they agree with each statement. Answers were provided on a 5-point Likert scale ranging from 1 (Not at all) to 5 (Very much). For example, "I feel active and full of vitality. I'm energetic and full of life."
4. Belonging vs. alienation. The questionnaire was based on Dean's (1961), Berry's (1990), and Sabatier & Berry's (2010) research tools. The respondents were asked to rate the extent they felt belonging vs. alienation. Answers were provided on a 5-point Likert scale ranging from 1 (Not at all) to 5 (Very much). For example: "You feel social solidarity. You manage to do the things you love."
5. Happiness index. The questionnaire was based on existing research tools (Hills & Argyle, 2002; Lyubomirsky & Lepper, 1999; Lyubomirsky & Tucker, 1998). The questionnaire contained 8 statements. Respondents were asked to rate how much they agree with each statement. Answers were provided on a 5-point Likert scale ranging from 1 (Not at all) to 5 (Very much). For example: "Usually you feel happy. You're an active and entrepreneurial person."
6. Leisure. The questionnaire was based on the research tool of Zilka (2018a, 2018b). Respondents were asked to rate on a scale of 1 to 5 "How many hours a week they usually spend" on 9 leisure activities. Answers included the following options 1 (none), 2 (1-5 hours), 3 (6-10 hours), 4 (11-15 hours), and 5 (over 15 hours). The following items appeared in the questionnaire:
 1. Being with friends after school hours
 2. Watching TV

3. Watching YouTube
 4. Watching movies and programs on the computer
 5. Surfing the Internet
 6. Being on social networks
 7. Reading a newspaper
 8. Reading a book
 9. Talking on the phone
7. ICT use questionnaire on usage habits in digital environments. The questionnaire was based on the research tool of Zilka (2018a, 2018b) and contained 6 items. Respondents were asked to rate on a 5-point Likert scale the extent to which they agreed with each statement, ranging from 1 (Not at all) to 5 (Very much). For example: "I feel that I have skills, knowledge and experience that are required in digital technology-integrated learning. I feel that digital technology-integrated learning is at least as good for me as face-to-face learning."
 8. Entrepreneurial Consciousness Questionnaire (Davis et al., 2016). The questionnaire included 14 dimensions of entrepreneurial consciousness: independence, preference for a flexible framework, not accepting conventions, willingness to take risks, action-orientation, passion, need for achievement, focus on the future, generating ideas, ability to execute, self-confidence, optimism, perseverance, and personal sensitivity. The respondents were asked to indicate the answer that best described them consistently and over time. Answers were provided on a 5-point Likert scale ranging from 1 (Not at all) to 5 (Very much). For example, "I find unconventional solutions. I'm not afraid to take risks."
 9. Grit. The questionnaire was based on the Grit Scale Questionnaire for measuring the degree of determination (Duckworth & Quinn, 2009). The questionnaire consisted of 8 items. Answers were provided on a 5-point Likert scale ranging from 1 (Does not suit me at all) to 5 (Suits me very much).. For example, "Obstacles on the road do not scare me. I finish everything I start."
 10. Motivation. The questionnaire, derived from the questionnaire by Pintrich, Smith, Garcia, and McKeachie (1991), contained 14 statements. Answers were provided on a 5-point Likert scale ranging from 1 (Not at all) to 5 (Very much). The questionnaire contained two indicators: the desire to face challenges, and self-efficacy and belief in personal abilities. An example of statements for the coping with challenges index: "I'm able to motivate myself to try again and again in case of delays or obstacles. I don't give up even if I don't get quick results." An example of statements for the self-efficacy index: "I'm usually able to do what I have to do emotionally, to bring myself to a high level of performance. I'm able to immerse myself in what I do."

5. Statistical Method

Continuous variables were reported by means and standard deviations; categorical variables were reported by frequencies and proportions. Pearson correlation coefficients were calculated between leisure scales and personality scales.

Some data were missing, as 38 of the 537 participants did not respond to some questionnaire variables. No discernable patterns were found by inspecting the missing data, which suggested that they were missing at random. For data missing at random, valid multiple imputations have been shown to reduce bias even when the proportion of missingness is large (Madley-Dowd et al., 2019). Before cluster analysis, missing observations were imputed using multiple imputations (replacement values) with the R mice package.

In the mice approach, regression models treating each missing value as a dependent variable generated multiple predictions for missing values by including all other variables in the dataset as predictors (Azur et al., 2011).

The silhouette method followed by the K-means method were used to divide individuals into homogeneous clusters according to means of eight scales: self-esteem, vitality, belonging, happiness, initiative, ICT, perseverance, and motivation. To characterize the clusters and identify the scales that best differentiate between them, a univariate analysis was used.

K-means clustering is an unsupervised machine learning algorithm, developed by Hartigan and Wong (Hartigan & Wong, 1979). This method defines clusters where the total within-cluster variation is minimized. Total within-cluster variation is defined as the sum of squared Euclidean distances between items and the corresponding centroid. Each observation is assigned to a given cluster so that the sum of the squares distance of the observation from its assigned cluster center is minimized. The average silhouette approach was used to determine the optimal number of clusters that best fit the data (Rousseeuw & Silhouettes, 1987), which computes the average silhouette of observations for different values of K. Finally, the effect of demographics and leisure habits on the happiness index, initiator, and motivation scales was

evaluated by a series of multiple linear regressions. A stepwise method was used to build the final model, and selected variables for inclusion based on the lower Akaike information criterion (AIC). The candidate predictors were age and sex as well as self-report of the hours spent in the following leisure activities: speaking on the phone, reading books, reading the paper, social networking, surfing the web, playing computer games, and watching movies, YouTube, and TV.

The analysis was performed by the R Foundation for Statistical Computing version (4.2.2).

6. Findings

This section presents the findings in the following order: description of the scales, sex differences, differences between age groups, correlation between variables, and characterization of homogeneous groups: clusters and models for predicting happiness, motivation, and initiative.

6.1 Description of the Scales

Table 2 describes the measured scales. The scales describing leisure reveal relatively low scores (i.e., spending fewer hours) in the categories of watching TV, YouTube, and reading a newspaper or a book. Respondents spent the most time on social networks.

Table 2. Measured scales (N=537)

Variable	M(SD)/N(%)
1. Spending time with friends	2.55 (1.08)
2. Watching TV	2.23 (1.06)
3. Watching YouTube	2.13 (1.03)
4. Movies and computer programs	2.32 (1.16)
5. Browsing the web	3.03 (1.18)
6. Being on social networks	3.15 (1.20)
7. Reading a newspaper	1.31 (0.67)
8. Reading a book	1.87 (1.06)
9. Making phone calls	2.39 (1.03)
Vitality	3.40 (0.87)
Belonging	3.76 (0.69)
Leisure	2.33 (0.63)
ICT	3.27 (0.81)
Init	3.57 (0.59)
Perseverance	3.29 (0.65)
Self-esteem	3.69 (0.69)
Happiness index	3.70 (0.79)
Mot_challenge	3.47 (0.68)
Mot_ability	3.62 (0.78)
Motivation	3.51 (0.67)

6.2 Sex Differences

Table 3 describes differences between the sexes in the different scales. Females spent more time watching YouTube and less time using social media, reading a book, and making phone calls. Females said that they were more comfortable technologically and had more challenge-type motivation and motivation in general.

Table 3. Sex comparisons

	F N=187	M N=348	p.overall
Age	16.8 (2.97)	17.3 (3.13)	0.065
Age group:			0.186
13-15	70 (37.4%)	116 (33.3%)	
16-18	68 (36.4%)	114 (32.8%)	
18+	49 (26.2%)	118 (33.9%)	
1. Spending time with friends	2.64 (1.16)	2.51 (1.03)	0.200
2. Watching TV	2.18 (0.96)	2.27 (1.11)	0.354
3. Watching YouTube	2.41 (1.01)	1.99 (1.01)	<0.001
4. Movies and computer programs	2.34 (1.13)	2.32 (1.18)	0.801
5. Browsing the web	2.95 (1.14)	3.07 (1.21)	0.245
6. Being on social networks	2.90 (1.16)	3.30 (1.21)	<0.001
7. Reading a newspaper	1.32 (0.70)	1.31 (0.66)	0.866
8. Reading a book	1.53 (0.82)	2.05 (1.13)	<0.001
9. Making phone calls	2.21 (0.94)	2.49 (1.06)	0.002
Vitality	3.46 (0.83)	3.36 (0.89)	0.207
Belonging	3.81 (0.69)	3.73 (0.69)	0.207
Leisure	2.28 (0.58)	2.37 (0.66)	0.105
ICT	3.42 (0.72)	3.19 (0.84)	0.001
Init	3.58 (0.58)	3.56 (0.60)	0.731
Perseverance	3.30 (0.58)	3.30 (0.68)	0.955
Self-esteem	3.73 (0.67)	3.67 (0.70)	0.352
Happiness index	3.73 (0.73)	3.69 (0.81)	0.511
Mot_challenge	3.57 (0.57)	3.42 (0.72)	0.012
Mot_ability	3.69 (0.73)	3.58 (0.80)	0.107
Motivation	3.60 (0.58)	3.47 (0.70)	0.018

6.3 Differences Between Age Groups

No significant differences were found between the three age groups (13-15, 16-18, and 18+) on any of the scales (Table 5). Therefore the age groups 13-15 and 16-18 were combined into one group and tested against the 18+ age group. Table 4 presents differences between age groups up to 18 and above 18. The younger group spent more time with friends; watched more TV, YouTube, and movies; and spent more time using computer programs, surfing the Internet, and on social networks. The 18+ group spent more time reading newspapers and described itself as more entrepreneurial; it was more comfortable with technology and had greater determination and higher self-esteem and motivation than did the group of younger respondents.

Table 4. Differences between age groups (up to 18 and 18+)

	Age<18 N=314	Age>=18 N=223	p.overall
Sex:			0.082
F	119 (38.1%)	68 (30.5%)	
M	193 (61.9%)	155 (69.5%)	
1. Spending time with friends	2.59 (1.13)	2.51 (1.01)	0.375
2. Watching TV	2.34 (1.15)	2.09 (0.90)	0.005
3. Watching YouTube	2.26 (1.06)	1.95 (0.95)	<0.001
4. Movies and computer programs	2.46 (1.20)	2.13 (1.07)	0.001
5. Browsing the web	3.17 (1.23)	2.83 (1.09)	0.001
6. Being on social networks	3.28 (1.29)	2.98 (1.04)	0.003
7. Reading a newspaper	1.23 (0.56)	1.43 (0.79)	0.001
8. Reading a book	1.80 (1.07)	1.96 (1.04)	0.098
9. Making phone calls	2.33 (1.07)	2.47 (0.96)	0.126
Vitality	3.35 (0.85)	3.45 (0.89)	0.191
Belonging	3.77 (0.70)	3.73 (0.68)	0.481
Leisure	2.38 (0.66)	2.26 (0.60)	0.021
ICT	3.18 (0.75)	3.38 (0.88)	0.006
Init	3.52 (0.55)	3.64 (0.64)	0.030
Perseverance	3.18 (0.62)	3.45 (0.66)	<0.001
Self-esteem	3.60 (0.73)	3.81 (0.60)	<0.001
Happiness index	3.67 (0.80)	3.74 (0.77)	0.322
Mot_challenge	3.38 (0.66)	3.59 (0.68)	<0.001
Mot_ability	3.53 (0.77)	3.73 (0.77)	0.004
Motivation	3.42 (0.65)	3.63 (0.68)	<0.001

Table 5. Age group comparisons

	12-15 N=188	16-18 N=182	18+ N=167	p.over all	p.13-15 vs 16-18	p.13-15 vs 18+	p.16-18 vs 18+
Sex:				0.186	1	0.211	0.211
F	70 (37.6%)	68 (37.4%)	49 (29.3%)				
M	116 (62.4%)	114 (62.6%)	118 (70.7%)				
Economics:					0.015	0.015	0.088
Above average	48 (25.8%)	62 (34.1%)	54 (33.1%)				
Average	126 (67.7%)	98 (53.8%)	84 (51.5%)				
Below average	7 (3.76%)	19 (10.4%)	14 (8.59%)				
Quite above average	4 (2.15%)	3 (1.65%)	5 (3.07%)				
Quite below average	1 (0.54%)	0 (0.00%)	6 (3.68%)				
Leisure1	2.48 (1.03)	2.73 (1.18)	2.44 (0.99)	0.024	0.071	0.932	0.034
Leisure2	2.38 (1.23)	2.29 (1.01)	2.01 (0.87)	0.003	0.709	0.003	0.031
Leisure3	2.27 (1.13)	2.10 (0.91)	2.01 (1.01)	0.053	0.283	0.045	0.642
Leisure4	2.31 (1.22)	2.46 (1.17)	2.20 (1.06)	0.112	0.439	0.64	0.094
Leisure5	2.98 (1.28)	3.20 (1.13)	2.89 (1.11)	0.045	0.191	0.745	0.042
Leisure6	3.18 (1.30)	3.30 (1.23)	2.97 (1.03)	0.037	0.621	0.223	0.03
Leisure7	1.18 (0.50)	1.29 (0.66)	1.49 (0.81)	<0.001	0.244	<0.001	0.018
Leisure8	1.76 (1.03)	1.88 (1.08)	1.97 (1.07)	0.155	0.468	0.136	0.731
Leisure9	2.26 (1.00)	2.37 (1.06)	2.55 (1.00)	0.028	0.57	0.021	0.218
Vitality	3.38 (0.82)	3.29 (0.91)	3.53 (0.88)	0.042	0.586	0.263	0.033
Belonging	3.84 (0.75)	3.68 (0.64)	3.75 (0.68)	0.082	0.065	0.485	0.554
Leisure	2.31 (0.68)	2.40 (0.58)	2.28 (0.63)	0.166	0.35	0.883	0.166
ICT	3.22 (0.80)	3.12 (0.73)	3.48 (0.86)	<0.001	0.439	0.005	<0.001
Init	3.54 (0.57)	3.46 (0.55)	3.71 (0.64)	<0.001	0.418	0.02	<0.001
Perseverance	3.19 (0.61)	3.17 (0.68)	3.54 (0.61)	<0.001	0.978	<0.001	<0.001
Self-esteem	3.66 (0.67)	3.53 (0.77)	3.88 (0.58)	<0.001	0.15	0.01	<0.001
Happiness index	3.75 (0.75)	3.57 (0.84)	3.78 (0.76)	0.025	0.066	0.952	0.037
Mot_challenge	3.39 (0.69)	3.40 (0.62)	3.63 (0.70)	0.001	0.989	0.003	0.005
Mot_ability	3.52 (0.80)	3.54 (0.74)	3.80 (0.76)	0.001	0.96	0.002	0.006
Motivation	3.43 (0.68)	3.44 (0.62)	3.68 (0.68)	<0.001	0.98	0.001	0.003

6.4 Correlation Between Variables

Table 6 shows a strong (<0.6) correlation between vitality and self-esteem, happiness, and motivation, belonging and happiness, initiative and happiness and motivation, and self-esteem and happiness.

Table 6. Pearson correlation coefficients of scales

Item	Vitality	Belonging	ICT	Init	Perseverance	Self- esteem	Happiness index	Motivation
Vitality	1.00	0.53	0.24	0.56	0.41	0.60	0.61	0.60
Belonging	0.53	1.00	0.29	0.57	0.39	0.50	0.68	0.52
Leisure	0.24	0.29	1.00	0.41	0.28	0.29	0.36	0.38
ICT	0.56	0.57	0.41	1.00	0.42	0.46	0.67	0.70
Init	0.41	0.39	0.28	0.42	1.00	0.51	0.51	0.54
Perseverance	0.60	0.50	0.29	0.46	0.51	1.00	0.71	0.43
Self-esteem	0.61	0.68	0.36	0.67	0.51	0.71	1.00	0.59
Happiness index	0.60	0.52	0.38	0.70	0.54	0.43	0.59	1.00

Note: all correlation coefficients are significant at $p < .001$

6.5 Characterization of Homogeneous Groups (clusters) by Scale

The average silhouette approach indicates that two clusters are best suited to the data (Figure 1): cluster 1 (N=327) and cluster 2 (N=210). The clusters were significantly different on all eight scales chosen to define them (Figure 2). As seen in Table 7, participants belonging to cluster 1 were characterized by higher averages on all scales: self-esteem, happiness, belonging, motivation, initiative, determination, and level of comfort with technology. Examination of the relationships of the clusters with other variables shows that a smaller percentage of the 16-18 age group is in cluster 1, and a larger percentage of the 18+ group is in cluster 1. Regarding leisure time: participants in cluster 1 spent more hours with friends and less time watching movies, using computer programs, and reading books.

Table 7. Comparison of indices and demographics between the two clusters

	1 N=327	2 N=210	p.overall
Age	17.3 (3.24)	16.9 (2.75)	0.227
Sex:			0.058
F	125 (38.2%)	62 (29.8%)	
M	202 (61.8%)	146 (70.2%)	
Age18:			0.229
18<	184 (56.3%)	130 (61.9%)	
18=>	143 (43.7%)	80 (38.1%)	
Age_group:			0.001
13-15	117 (35.8%)	71 (33.8%)	
16-18	92 (28.1%)	90 (42.9%)	
18+	118 (36.1%)	49 (23.3%)	
Economics:			0.032
Above average	102 (31.6%)	62 (29.8%)	
Average	189 (58.5%)	119 (57.2%)	
Below average	18 (5.57%)	22 (10.6%)	
Quite above average	11 (3.41%)	1 (0.48%)	
Quite below average	3 (0.93%)	4 (1.92%)	
1. Spending time with friends	2.71 (1.11)	2.30 (0.98)	<0.001
2. Watching TV	2.24 (1.08)	2.24 (1.03)	0.977
3. Watching YouTube	2.07 (1.03)	2.22 (1.01)	0.083
4. Movies and computer programs	2.22 (1.16)	2.49 (1.14)	0.009
5. Browsing the web	3.09 (1.19)	2.94 (1.18)	0.173
6. Being on social networks	3.18 (1.22)	3.12 (1.17)	0.580
7. Reading a newspaper	1.28 (0.62)	1.37 (0.74)	0.119
8. Reading a book	1.77 (1.06)	2.00 (1.04)	0.015
9. Making phone calls	2.45 (0.99)	2.29 (1.07)	0.071
Vitality	3.85 (0.63)	2.69 (0.70)	<0.001
Belonging	4.12 (0.45)	3.19 (0.62)	<0.001
Leisure	3.53 (0.78)	2.86 (0.69)	<0.001
ICT	3.88 (0.43)	3.08 (0.46)	<0.001
Init	3.55 (0.57)	2.89 (0.56)	<0.001
Perseverance	4.02 (0.48)	3.16 (0.63)	<0.001
Self-esteem	4.16 (0.48)	2.97 (0.60)	<0.001
Happiness index	3.79 (0.51)	2.96 (0.59)	<0.001
Mot_challenge	3.93 (0.63)	3.12 (0.73)	<0.001
Mot_ability	3.83 (0.50)	3.01 (0.58)	<0.001

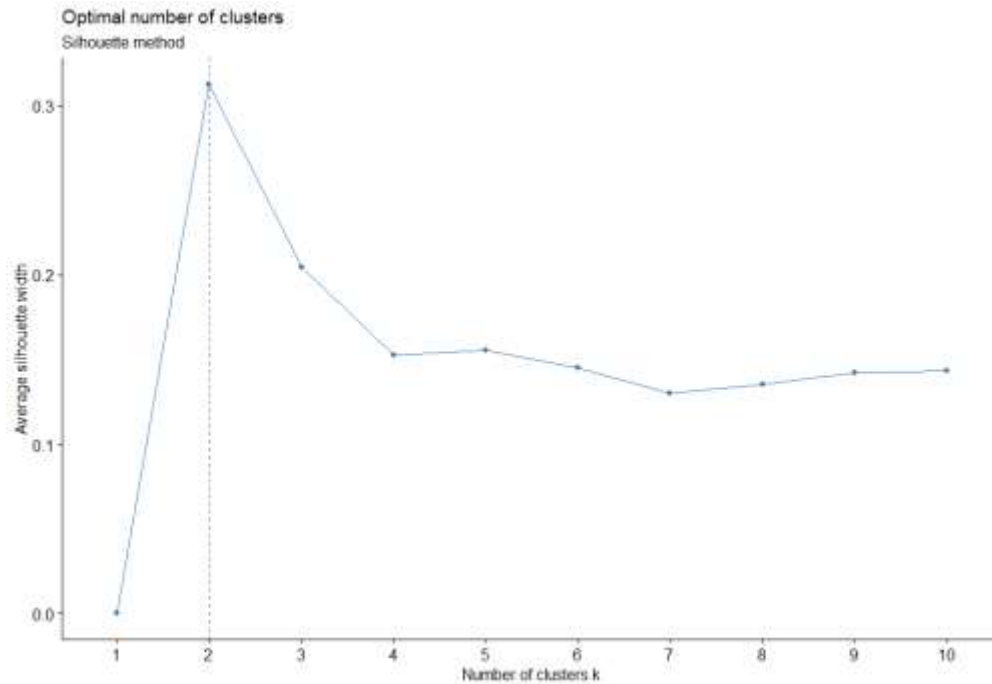


Figure 1. Optimal number of clusters, based on 9 scales, N=537

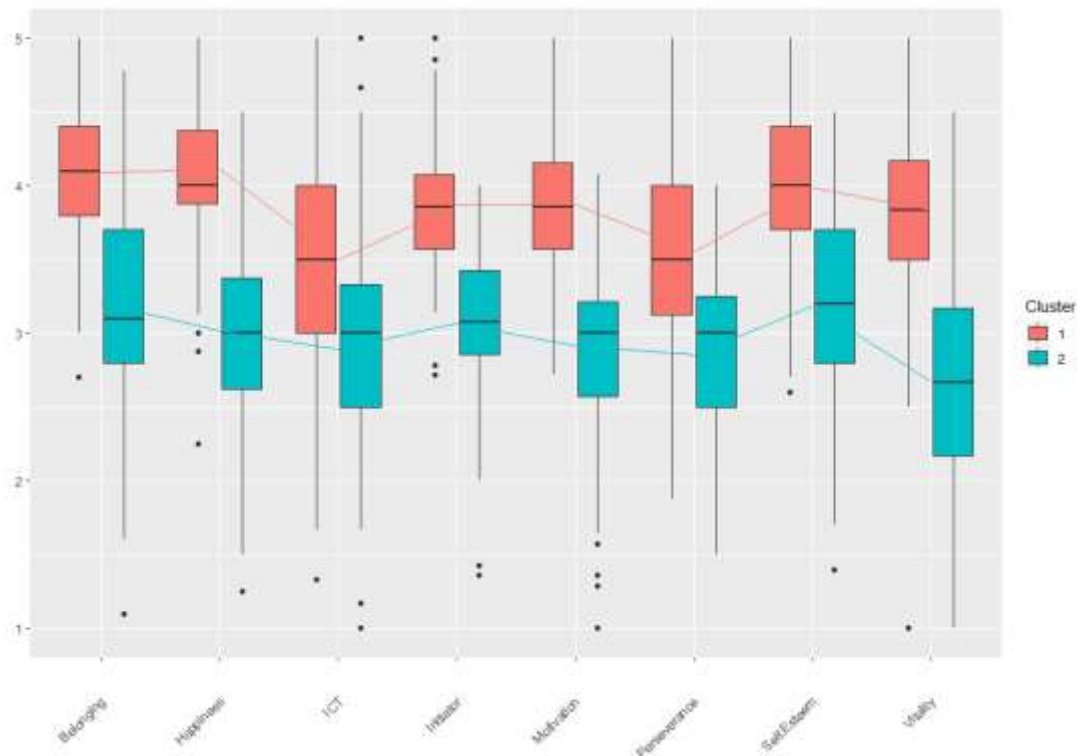


Figure 2. Distribution of the scales that make up the clusters

6.6 Correlation Between Leisure Activities and the Various Scales

Table 8 shows Pearson coefficients between various leisure activities and the measured scales. A positive and significant correlation, with a significance level of $p < .001$, was revealed between the following parameters: spending time with friends and vitality, happiness, and motivation; surfing the Internet and a feeling of belonging and initiative; those who

talk more on the phone saw themselves as more proactive; hours spent watching TV, YouTube, movies, using a computer, and time spent on social networks showed a negative relationship with determination.

Table 8. Correlation coefficient between leisure activity and various scales, N=593

Item	Vitality	Belonging	ICT	Init	Perseverance	Self- esteem	Happiness index	Motivation
Leisure1	0.15	0.10	0.00	0.12	-0.10	0.02	0.17	0.16
Leisure2	0.02	0.04	-0.01	0.05	-0.11	0.03	0.06	0.06
Leisure3	-0.04	-0.07	0.05	0.01	-0.16	-0.05	-0.07	0.02
Leisure4	-0.05	-0.06	0.01	-0.03	-0.17	-0.13	-0.15	-0.03
Leisure5	0.04	0.14	0.07	0.14	-0.08	0.02	0.05	0.07
Leisure6	0.07	0.09	0.03	0.10	-0.16	-0.04	0.00	0.01
Leisure7	0.07	-0.09	0.05	0.04	-0.04	-0.12	-0.15	0.10
Leisure8	-0.02	-0.08	-0.01	0.00	-0.01	-0.09	-0.12	0.06
Leisure9	0.09	0.10	0.04	0.12	0.04	0.01	0.07	0.10

Models for predicting happiness, motivation, and initiative

A model for predicting happiness. Table 9 shows that participants who spent more hours meeting with friends were found to have higher levels of happiness, as did those who spent more time surfing the Internet. Participants who spent more hours on social media and on reading a newspaper were found to have lower levels of happiness.

Table 9. Linear regression results for evaluation of the effect of demographics and leisure habits on the happiness index

	Estimate	Std. error	t	P value
(Intercept)	3.64	0.13	28.76	<0.001
Meeting friends	0.14	0.03	4.42	<0.001
TV	0.06	0.03	1.85	0.07
Computers / movies	-0.16	0.03	-4.63	<0.001
Web	0.12	0.04	3.17	<0.001
Social networks	-0.10	0.04	-2.59	0.01
Reading a newspaper	-0.17	0.06	-3.15	<0.001
Reading a book	-0.05	0.03	-1.44	0.15
Making phone calls	0.07	0.04	1.77	0.08

A model for predicting motivation. Table 10 shows that older participants were associated with a higher level of motivation, as were females, participants who spent more time meeting friends, and those who spent more time surfing the Internet. Participants who spent a great deal of time playing computer games and watching movies tended to have lower motivation scores.

Table 10. Linear regression results for evaluating the effect of demographics and leisure habits on motivation

	Estimate	Std. error	t	P value
(Intercept)	3.64	0.13	28.76	<0.001
Meeting friends	0.14	0.03	4.42	<0.001
TV	0.06	0.03	1.85	0.07
Computers / movies	-0.16	0.03	-4.63	<0.001
Web	0.12	0.04	3.17	<0.001
Social networks	-0.10	0.04	-2.59	0.01
Reading a newspaper	-0.17	0.06	-3.15	<0.001
Reading a book	-0.05	0.03	-1.44	0.15
Making phone calls	0.07	0.04	1.77	0.08

A model for predicting initiative. Table 11 shows that the factors associated with a high level of initiative were maturity, spending more hours meeting friends, and spending more hours surfing the Internet. Participants who spent more time playing computer games and watching movies tended to have lower initiative scores.

Table 11. Linear regression results for evaluation of the effect of demographics and leisure habits on initiative

	Estimate	Std. error	t value	Pr (> t)
(Intercept)	2.5	0.22	11.6	<0.001
Age	0.03	0.01	2.86	0.04597
Meeting friends	0.16	0.06	2.55	<.01
Computers / movies	0.09	0.03	3.33	<.01
Web	-0.06	0.03	-2.23	<0.001

7. Discussion

This study examined how adolescents and young adults aged 13-24 perceive themselves, their personality characteristics, leisure habits, media usage habits, vitality, activity, belonging, happiness, self-esteem, determination, initiative and motivation, and belonging to a global and local community.

The findings revealed a correlation between leisure time spent with friends and the happiness index. The younger group (participants up to age 18) spent more time with friends, than did the group of 18+. Participants in the older group appeared to be more entrepreneurial, more comfortable with technology, more determined, and had higher self-esteem and motivation than did the younger group.

The study revealed two distinct clusters: participants assigned to cluster 1 were characterized by higher averages on all scales: self-esteem, happiness, belonging, motivation, initiative, determination, and level of comfort with technology. Examination of the relationships of the clusters with other variables shows that in the 18+ group, a higher percentage is associated with cluster 1. Regarding leisure time, in cluster 1, participants spent more hours with friends than did those in cluster 2.

7.1 Leisure Time

The data indicate (Table 2) that participants spend most of their time on social networks, with females spending less time than males (Table 3). Females responded that they felt more comfortable with technology than did the males, and were more motivated by challenges and in general than were the males.

Previous studies have reported on the widespread use of social networks. Members of Generation Z use social media daily to create and maintain social relationships. They have more friends than previous generations, including global social connections, transcending geographic and cultural boundaries. Social media is an important part of their lives, providing an arena for creating social connections, sharing updates and information, and spending leisure time with others (Asterhan & Bouton, 2018; Carter, 2018; Chicioeanu & Amza, 2018; Rosenberg & Asterhan, 2018; Shatto & Erwin, 2016; Zilka, 2020b, 2020c, 2021a, 2021b, 2023).

7.2 Differences Between Adolescents and Young Adults

The findings show (Tables 4-5) that participants in the adolescent group (up to age 18) spent more time with friends, watching TV, YouTube, and movies, using computer programs, surfing the Internet, and being on social networks. The 18+ group spent more time reading newspapers and described themselves as more entrepreneurial, more comfortable with technology, and having more determination, higher self-esteem, and motivation, than the group of younger respondents. This can be explained by the fact that 18+ year olds are more cohesive and self-aware than adolescents, who are in the stages of identity formation. In general, previous studies (Zilka, 2018a, 2018b, 2019, 2020c, 2021b, 2023) have indicated that one of the challenges of this generation is identity formation and independent regulation in a digital, global, cross-border age. The present age offers access to a variety of possibilities and communities, yet forces young people to examine the connection between the digital space and the personal space, all along enjoying virtual communities and togetherness, and at the same time maintaining privacy, autonomy, and individuality. Researchers (Schwieger & Ladwig, 2018; Merriman & Valerio, 2016; Ernst & Young, 2016; Zilka, 2023 Adobe, 2016) have argued that members of this generation are characterized by autodidactic and self-search processes. They see technology as an important component of their identity. They are independent, resilient, and know that they must toil to achieve results. They are ambitious, entrepreneurial, and self-developing. They are creative and appreciate a personal tone in communication. They plan for the future and are ready to learn on their own.

7.3 Models for Predicting Happiness, Motivation, and Initiative

Predicting happiness. The results show (Table 9) that participants who spent more hours meeting friends were found to have higher levels of happiness.

Predicting motivation. The results show (Table 10) that older participants, 18+, especially females, reported a higher level of motivation. Participants who met with friends more frequently and those who spent more time surfing the web showed higher levels of motivation. Participants who spent a great deal of time playing computer games and watching

movies tended to have lower motivation scores.

Predicting initiative. The results show (Table 11) that the factors associated with a high level of initiative were age (18+), more hours spent meeting friends, and more hours surfing the Internet. Participants who spent more time playing computer games and watching movies tended to have lower entrepreneurship scores.

7.4 Characterization of Homogeneous Groups (Clusters) by Scale

The differences between the two clusters (Figures 1-2) were significant on all eight scales used in this study. Table 7 shows that participants assigned to cluster 1 had higher averages on all scales: self-esteem, happiness, belonging, motivation, initiative, determination, and level of comfort with technology. Examination of the associations of the clusters with other variables, it shows that a smaller percentage of the 16-18 age group is in cluster 1, whereas in the 18+ group, a larger percentage is in cluster 1. Regarding leisure time: participants in cluster 1 spent more hours with friends and less time watching movies, using computer programs, and reading books.

Participants in cluster 1 had the feeling that the smartphone made functioning easier for them and helped them establish social connections. Researchers (Dąbrowski & Środa-Murawska, 2022; Davis et al., 2016; Schultz & McKeown, 2018; Zilka, 2023) emphasized that this generation was different from previous ones, aspiring to freedom of choice and expression; making decisions based on information and taking into account the great complexity of a situation and different angles to view it. It was easy for them to share and open up to others, and their conduct was characterized by transparency.

Participants in cluster 2 noted difficulties such as posting a message to the wrong group, which caused embarrassment and aggravation. They felt that they needed to be alert and attentive because of the quantity of messages they received, which caused them difficulty following up on all of them. Some noted difficulty understanding interactions that took place in different communities, which could lead to communication failures, crises, and conflicts. These findings reinforce previous ones (Zilka, 2017, 2018a, 2018b, 2019, 2020b, 2020c, 2021a, 2021b, 2023).

8. Limitations of the Study

In this study, some of the participants related to spending time with friends in general and did not distinguish between spending time with friends face-to-face and online, such as real-time computer gaming with other parties from home, correspondence on social networks, and remote surfing together. Future studies should examine the nature of face-to-face and online communication between friends from the perspective of adolescents and young adults.

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