



Issues in Informing Science + Information Technology

An Official Publication
of the Informing Science Institute
InformingScience.org

IISIT.org

Volume 21, 2024

INFORMATION AND COMMUNICATIONS TECHNOLOGY AND RESILIENCE OF FIRST-GENERATION STUDENTS COMPARED TO STUDENTS WITH EDUCATED PARENTS

Ilan Daniels Rahimi*	Ono Academic College, Kiryat Ono, Israel	irahimi@ono.ac.il
Gila Cohen Zilka	Bar-Ilan University, Ramat Gan, Israel	gila.zilka@gmail.com
Orit Avidov-Ungar	Achva Academic College, Arugot, Israel	Oritav65@gmail.com

* Corresponding author

ABSTRACT

Aim/Purpose	In this study, we examined, from the perspective of the participants, aspects of information and communications technology (ICT) and resilience, comparing first-generation students in higher education with students whose parents had higher education.
Methodology	We examined self-image, motivation, happiness, and the use of ICT. This was a quantitative study. Respondents answered a questionnaire that contained open and closed questions. The sample included 307 students from academic institutions in Israel between the ages of 18 and 64.
Findings	The findings were grouped into four clusters: (a) second-generation students under the age of 25 years, members of Generation Z; (b) second-generation students over the age of 25; (c) first-generation students over the age of 25 years (the largest group in the sample), mostly members of the Generation Y; and (d) first-generation students under the age of 25. We found consistent differences on all scales between the group of first-generation students over the age of 25 years and those in the other groups. The research findings indicate that the group with the highest resilience was students who were the first generation acquiring higher education and were over 25, mostly members of the Y generation.

Accepted by Editor Eli Cohen | Received: April 14, 2024 | Revised: June 9, June 13, 2024 |

Accepted: June 14, 2024.

Cite as: Rahimi, I. D., Zilka, G. C., & Avidov-Ungar, O. (2024). Information and communications technology and resilience of first-generation students compared to students with educated parents. *Issues in Informing Science and Information Technology*, 21, Article 8. <https://doi.org/10.28945/5340>

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Impact on Society	This research allows an instructive look at Generation Y and Generation Z and the academic abilities of this generation.
Future Research	Future studies should examine the correlation between a sense of resilience (which was examined in this study) and academic achievement (which was not).
Keywords	higher education, social gaps, multiculturalism, first-generation students, generation Z, generation Y

INTRODUCTION

The research literature discusses variables that affect the adaptation of students to studies in institutions of higher education. Previous research on the resilience of students shows that, based on their academic experience, first-generation students have difficulties in adapting and have a sense of dissatisfaction, stress, and anxiety (Schwartz et al., 2005; Stallman, 2010).

In this study, from the point of view of participants, we examined aspects of resilience and emotional and social characteristics, comparing first-generation students with students who have educated parents. We examined students' self-image, motivation, happiness, and use of information and communications technology (ICT).

HIGHER EDUCATION IN ISRAEL

Academic studies in Israel are a main means of social mobility and a key component in the development and growth processes of men and women, as well as of the entire Israeli economy (Knesset Research and Information Center, 2014; Malchi et al., 2008; Shaviv et al., 2013). According to Haliva (2020), the Council for Higher Education in Israel had to cope with the demand for higher education that emerged worldwide in the 1970s and increased in the 1980s. The higher education system in Israel underwent a structural change in the 1990s, from a system in which a limited number of universities operated to one in which many universities and colleges operate throughout the country, including in the geographic periphery. This change resulted in a considerable increase in academic institutions and undergraduate and graduate students. Higher education became available to populations in the social and geographic periphery. The spread of higher education was a welcome process for society and the academic system, and it pushed for a structural change that created institutional diversity, allowing numerous populations to enter the circle of education (Guri-Rosenblit, 2005).

The diversity approach sees structural change as a process that leads to equal opportunities in higher education and the reduction of social disparities in Israeli society (Haliva, 2020). By expanding the circle of potential learners for advanced degrees, institutional diversity supplies the professional needs of the economy and society, which continue to grow, driven by numerous social variables. In Israel, institutional diversity has led to the opening of colleges that train students in various fields. The range of institutions and the variety of programs allow candidates to find their place according to their choice and academic abilities. At the same time, the expansion of the number of students completing a bachelor's degree increases the pool of postgraduate researchers, which in turn is likely to increase the pool of scientists. Studies by the OECD indicate that a bachelor's degree contributes to social mobility (OECD, 2018).

THE STUDY EXPERIENCE OF FIRST-GENERATION STUDENTS

The experience of beginning academic studies entails many challenges and requires adaptation. According to Rubin and Taib (2021), upon entering the academic world, every student is likely to face normative adjustment difficulties at the academic, social, and emotional levels. These difficulties are more prominent when it comes to students who are the first generation in their families acquiring higher education. Studies show that first-generation students face more challenges in academia (Ives

& Castillo-Montoya, 2020) because of a low level of preparedness, a lack of familiarity with institutional practices and norms, and the absence of a relevant network of connections that could help.

Studies (Billson & Brooks-Terry, 1982, 1987; Fuligni, 1997; London, 1989; Sewell & Hauser, 1975; Tinto, 1988; York-Anderson & Bowman, 1991) have examined the relationship between parental education, perseverance, and academic achievement. Researchers have found that parental education was a predictive factor for success in academic studies. Students who were the first generation to be educated faced more difficulties than those who were second generation, placing them in a risk group for dropping out of studies. Three parameters characterize the process of adaptation of students to academic studies: physical adaptation to orientation in the campus space; systemic adaptation to the administrative system, preparation of a schedule, etc.; adaptation to higher education studies where students are required to read materials, submit assignments, deal with workload, etc.; and social adaptation and creation of social relationships. The process of the student's adaptation to the academic world is affected by personality, cognitive, family, social, and economic factors, qualifications and skills, motivation, age, family status, etc. In addition, researchers (Brooks-Terry, 1988; Pascarella & Chapman, 1983; Stage & Hossler, 1989) have found that parents convey views and goals based on their personal experience; therefore, there is a positive correlation between parents' education and that of their children. Likewise, researchers (Brooks-Terry, 1988; Levi, 2010) have found a connection between parents' education and their children's persistence in higher education, so that first-generation students had greater difficulty persevering in higher education than did students whose parents had higher education.

Advantages of second-generation over first-generation students were also found in the level of parental encouragement and support, in parental support with preparation for academic studies, and the expertise of parents in academic studies (Billson & Brooks-Terry, 1982, 1987; Fuligni, 1997; London, 1989; Sewell & Hauser, 1975; Tinto, 1988; York-Anderson & Bowman, 1991). These factors also affected the level of students' commitment, with first-generation students showing a lower level of commitment than second-generation ones. All this shows that first-generation students found it difficult to obtain information from their parents about the academic world, which could have helped them in the process of coping and adapting to their studies, increasing their experience of difficulty that manifested throughout their studies.

INTERNAL RESOURCES: SELF-IMAGE, MOTIVATION, SELF-EFFICACY, HAPPINESS

We investigated personal resources and social-emotional aspects using research tools that examine self-image, motivation, self-efficacy, and happiness.

Self-image

Self-image represents a set of characteristics that one attributes to oneself. Researchers point to the importance of self-image for academic achievements, social relationships, ways of coping, and more. Rosenberg (1965) found that there are three main factors in the consolidation of self-image: (a) a person's inner belief about oneself, (b) reflection, and (c) social comparison. Inner belief is the belief individuals have about their abilities and skills. This belief "anchors" one's self-identity, even when the environment and performance change. This inner belief is based on experiences that left an imprint on the person's conscious and unconscious layers. The second factor, mirroring or self-reflection, is the observation process one engages in to ponder one's habits, behavior patterns, and the feedback that one receives from others. Social comparison refers to the comparison one makes between oneself and others. When individuals change their social environment, their self-image may also change.

Motivation and self-efficacy

Researchers defined motivation and self-efficacy as individuals' judgment of their ability to organize and successfully perform tasks and actions. Both Bandura (1977, 1986, 1988, 1989) and Schunk

(1983, 1984, 1989a, 1989b) pointed out that motivation and self-efficacy affect the choice of activities, effort, and persistence of the learner. People with high motivation and perception of self-efficacy persevere and invest greater effort than those who doubt their abilities. Motivation and self-efficacy derive from previous experience, feedback received, and physiological arousal. If students feel capable of performing a certain task, their sense of self-efficacy increases; if they do not feel that way, the opposite happens. Likewise, studies have shown that self-efficacy is based on self-perception about knowledge, personal abilities, performing tasks, and being in control when performing complex assignments (Goddard et al., 2004).

The research literature discusses possible variables that affect the adaptation of students to academia. Some refer to the psychological qualities of the student, such as emotional stability, resilience, self-encouragement, optimism, and the ability to create a social support network (Riulli et al., 2012). Others focus on socio-demographic aspects and explain that students with different levels of education who come from different cultural and social backgrounds display uneven potential. In addition, different past needs and experiences may affect their adaptation to the academic framework, their coping with the challenges it poses, and harm the nurturing experience of their studies (Luthans et al., 2007). Psychological studies show that as a result of the academic experience, identity changes tend to occur in students (Schwartz et al., 2005). Academic studies in early adulthood are challenged by academic values, which prompt students to ask identity questions and stimulate the process of identity clarification. In this situation, a sense of threat arises in students from minority groups who join a framework that represents the majority culture. For students from traditional societies, internal conflict may arise in response to the fact that one social framework drives a process of change while the other blocks it (Novis-Deutsch & Rubin, 2017).

Students who experience difficulties in adapting to the academic framework and its demands suffer from feelings of dissatisfaction, stress, and anxiety. The students' adaptation reflects not only their academic potential but also the degree of motivation they feel, their academic goals, the way they strive to achieve these, and their satisfaction with the academic environment (Stallman, 2010). In extreme cases, the difficulties of students' adjustment and functioning may lead to their dropping out of the academic framework.

INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

The digital environment has broken down the boundaries of time and space. Today, learners have diverse possibilities for cooperation and learning, which are not limited by these boundaries (Feenberg, 2010; Mahler, 2012). The digital environment refers to access to information and communication technology, content infrastructures, the Internet, computers, and other computerized devices. It allows quick access to sources of information, texts with multiple representations (text, animation, sound, video, etc.), hypertext, and visual means of illustration (through images, simulations, and more). Interactive environments assist in the process of building knowledge in a friendly and playful way. Digital environments contain diverse information sources, data processing software, and more. Technology is a key component in imparting 21st-century skills. The OECD defines 21st-century skills as skills and competencies that people will need to be effective workers and citizens in the society of knowledge in the 21st century (Ananiadou & Claro, 2009), with emphasis on digital literacy. Hanover Research (2011) states that 21st-century skills are often defined as skills in collaboration, communication, creativity, and innovation. This diverse set includes creative thinking, critical thinking, problem solving, communication and cooperation, and teamwork skills. Voogt and Roblin (2012) noted that most definitions of 21st-century skills include collaboration, communication, digital literacy, problem solving, critical thinking, creativity, and productivity. Gamage et al. (2016) presented four skills relevant to the 21st century: critical thinking, collaboration, communication, and creativity and innovation. One of the characteristics of learning adapted to the 21st century is the heutagogic learning approach, which is based on self-learning. Heutagogic learning is based on double learning

and self-reflection, and it consists of the ability to acquire knowledge and skills, as well as the learners' confidence in their competence (Blaschke, 2012). This learning method, which has been adapted to online learning, is highly relevant for the 21st century.

In this study, we examined, from the point of view of study participants, aspects of resilience and social-emotional characteristics of first-generation students, comparing them to students with educated parents. We examined their self-image, motivation, self-efficacy, happiness, and use of ICT.

The research question was:

Do first-generation and second-generation students differ in motivation, self-image, happiness, and use of ICT?

METHODOLOGY

This was a quantitative study. Respondents answered a questionnaire that contained open and closed questions. The link to the questionnaire was sent to five institutions of higher education in Israel. The students received the link, and those who chose to do so completed the questionnaire. The questionnaire was anonymous, and no identifying details were collected. The data were collected in Israel in 2022. The study received the approval of the Institutional Review Board (IRB).

PARTICIPANTS

The sample consisted of 307 students from various academic institutions in Israel, 18-64 years old (average = 33.5, S.D. = 12.0), 254 (82.7%) women and 53 (17.3%) men; 271 (88.3%) studying toward the BA degree; 119 (38.8%) second-generation students. We defined a second-generation student as one with at least one parent who had an academic degree. One hundred eighty-eight participants (61.2%) were first-generation students. We defined a first-generation student as one whose parents did not have an academic degree. Demographically, the first-generation group was older (average age of 35.3 vs. 30.7 in the second-generation group). The first-generation group had a lower percentage of students under 25 (30.9% vs. 49.6% in the second-generation group). Table 1 describes the demographic data of the sample.

Table 1. Demographic description (N=307)

Demographic	N
Gender:	
F	254 (82.7%)
M	53 (17.3%)
Age, M(SD)	33.5 (12.0)
Birth country:	
Israel	271 (88.3%)
Other	36 (11.7%)
Ethnicity:	
Jewish	231 (75.2%)
Minority	76 (24.8%)
Mother's education:	
Academic	87 (28.3%)
Non-academic	220 (71.7%)
Father's education:	
Academic	77 (25.1%)
Non-academic	230 (74.9%)

Demographic	N
Economic status:	
above average	52 (16.9%)
average	172 (56.0%)
below average	58 (18.9%)
Quite above average	15 (4.89%)
Quite below average	10 (3.26%)
Degree:	
Graduate	4 (1.30%)
Preparatory program	32 (10.4%)
Undergraduate	271 (88.3%)
Group:	
At least one of the parents has an academic degree	119 (38.8%)
Neither parent has an academic degree	188 (61.2%)
Age<25:	
0	190 (61.9%)
1	117 (38.1%)

RESEARCH TOOLS

The study used a quantitative questionnaire that also included some open questions. The questionnaire consisted of the following parts:

1. *Demographic variables.* Age, gender, sector, studies towards a bachelor's or advanced degree, year of academic studies, parents' education, economic status.
2. *Entrepreneurial mindset questionnaire.* The questionnaire is based on that of Davis et al. (2016). The questionnaire contained one question: "Do I perceive myself as an entrepreneur?" It was rated on a 5-point scale (1 = to a very little extent, 5 = to a great extent).
3. *Self-esteem questionnaire.* The questionnaire was developed by Rosenberg (1965). The questionnaire contained 12 items rated on a 5-point scale: 1 = don't agree at all, 5 = strongly agree. Statements 2, 5, 6, 8, and 9 were reversed. The reliability of the questionnaire was $\alpha = .86$.

Sample statements: All in all, I'm satisfied with myself. Sometimes, I think I'm not good at all. I feel that I have several good qualities. I can do things as well as most other people. I feel like I don't have much to be proud of. I feel helpless sometimes. I feel that I'm a valuable person, at least on par with other people. I wish I had more respect for myself. All in all, I tend to feel like a failure. I take a positive attitude toward myself. I love my body. I feel at ease with my body.

4. *Happiness index questionnaire.* Based on previous research instruments (Hills & Argyle, 2002; Lyubomirsky & Lepper, 1999; Lyubomirsky & Tucker, 1998). The questionnaire contained eight items rated on a 5-point scale: 1 = don't agree at all, 5 = strongly agree. The reliability of the questionnaire was $\alpha = .90$.

Sample statements: Usually, you feel happy. Usually, you're satisfied with your company. You're an active and enterprising person. Most of the time, you're satisfied with yourself, with what

you have. You manage to do the things you love. You manage to fulfill yourself in your studies/work. You manage to fulfill yourself socially. Do you see yourself as someone who is able to deal with unpleasant situations that may occur in life?

5. *Motivation and self-efficacy questionnaire.* The questionnaire was derived from Pintrich et al. (1991). The questionnaire contains 14 items ranked on a 5-point scale: 1 = not true at all, 5 = extremely true. The reliability of the questionnaire is $\alpha = .90$. The questionnaire contained two measures: willingness to face challenges and self-efficacy and belief in personal abilities.

Sample statements for willingness to face challenges: I'm able to motivate myself to try again and again in cases of delays or obstacles. I don't give up even though I don't get quick results. When I do a boring task, I think about the more interesting parts of the task and try to have fun. I try to be creative about the challenges I face. I like to stretch my abilities to the limit. When I face an important task, I'm often able to use my full potential to carry it out. I rarely feel exhausted or desperate in stressful situations. When needed, I'm able to enter a state of calmness, alertness, and focus. I often lose the sense of time and space, when I am doing a task that involves challenges. When I have to perform, I have no problem keeping emotions away.

Sample statements for self-efficacy and belief in personal abilities: I'm usually emotionally able to do what is needed to bring myself to perform well. I reach my peak performance in stressful situations. I'm able to immerse myself in what I do. When I'm satisfied, I have no problem concentrating my full attention on the task I'm performing.

6. *ICT use questionnaire, habits of using digital environments.* The questionnaire was based on the research tool developed by Zilka (2018a, 2018b). The questionnaire contained six statements rated on a 5-point scale: 1 = don't agree at all, 5 = strongly agree. The reliability of the questionnaire was $\alpha = .79$. Questions 2 and 6 were reversed.

Sample statements: I feel that I have the skills, knowledge, and experience that are required in combined learning that integrates digital technology. I feel overloaded in combined learning that integrates digital technology. I feel that I understand the contents conveyed in combined learning that integrates digital technology. I carry out thoroughly and well the learning assignments in combined learning that integrates digital technology. I feel that combined learning that integrates digital technology is at least as good for me as face-to-face learning. I feel that combined learning that integrates digital technology causes tension in me.

7. *Open questions*

Are you learning what you wanted to learn? Yes/No? Please explain:
Describe what you do when you feel overloaded, difficulty in studies, dissatisfaction, etc.
Are you satisfied with your academic achievements? Please explain:
Are you satisfied with your learning skills and abilities?
Do you value your investment in studies?
Where will you be in 10 years? Please explain:

Statistical method

Continuous variables were reported by means and standard deviations, and categorical variables were reported by frequencies and ratios. We removed 32 responses out of 339 because they had more than 20% missing data in responses to questionnaires. Analysis was performed on the responses of the remaining 307 participants, 265 of whom had complete data. For 32 participants, missing answers 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). For data missing at random, valid multiple imputation has been shown to reduce bias even when the proportion of missingness is large (Madley-Dowd et al., 2019). In our sample, data were

missing at random, and the subsample of $N = 265$ did not significantly differ from the sample with missing values ($N = 32$) regarding demographics and measurements.

To further increase our confidence in including the imputed data, we conducted all analyses twice, once on imputed data ($N = 261$) and once on the subsample that had all observations ($N = 194$). The internal consistency of scales was evaluated by Cronbach's α coefficient. A Cronbach's α coefficient of 0.7 or higher was considered satisfactory (Bland & Altman, 1997). Pearson correlation coefficients were calculated to evaluate the association between scales.

Univariate analysis was performed using chi-square or two sample t-tests to test for the association of the measured variables with being a first-generation student or not. A one-way ANOVA was performed to test the association between four age and study generation groups and scale means. *Post hoc* pairwise comparisons used Tukey's method for multiple testing. The four groups were defined as follows: (a) first generation, age ≤ 25 ; (b) first generation, age > 25 ; (c) second generation, age ≤ 25 ; and (d) second generation, age > 25 . The analysis was performed using the R Foundation for Statistical Computing version (4.0.5).

FINDINGS

We present the findings in the following order: the sample scales and the connection between them; differences between first-generation and second-generation students; demographic differences between the scales and between students whose mothers have an academic degree vs. those whose mothers do not have an academic degree; differences between the scales and between students whose fathers have an academic degree vs. those whose fathers do not have an academic degree; and differences between the age groups.

Sample scales and the connection between them

Descriptive statistics of the sample scales are shown in Table 2. In all sample scales, the maximum score that can be obtained is 5, and it represents a positive value of the scale. The connection between the scales was tested by Pearson correlations and their correlation values (r , also shown in Table 2). It can be seen that strong positive correlations ($r > 0.5$) were found between the scales of initiative and happiness, motivation, and use of ICT; between self-image and happiness and motivation; and between happiness and motivation. Cronbach's alpha ranged between 0.86 and 0.90.

Table 2. Statistical description for measures and Pearson correlation coefficients (N=307)

	M	SD		1	2	3	4	5	6	7	8
1. Initiator	3.23	0.77		-							
2. Self-esteem	3.73	0.68		0.18	0.45	0.53	0.23	(0.86)			
3. Happiness index	3.77	0.79		0.23	0.59	0.52	0.10	0.66	(0.90)		
4. Motivation	3.68	0.66		0.27	0.64	0.42	0.00	0.45	0.66	(0.90)	
5. Comfort using technology	3.50	0.80		0.12	0.33	0.39	0.22	0.34	0.35	0.37	(0.79)

Notes: 1. A correlation coefficient > 0.12 is considered significant at $p < .05$; 2. Cronbach's alpha appears in parentheses.

Differences between first-generation and second-generation students

Table 3 shows demographic and between-scale differences measured between first-generation and second-generation students. It can be seen that there is no statistical difference between the groups on the following scales: motivation, self-image, happiness, and use of ICT. Demographically, the first-generation group is comprised of older students (average age of 35.3 years vs. 30.7 years in the second-generation group). There is a lower percentage of students under the age of 25 in the first-generation group (30.9% vs. 49.6% in the second-generation group).

Table 3. Differences between first-generation and second-generation groups

	At least one parent with an academic degree (N = 119)	No parent with an academic degree (N = 188)	P value
Gender:			0.544
F, N (%)	96 (80.7%)	158 (84.0%)	
M, N (%)	23 (19.3%)	30 (16.0%)	
Age, M(SD)	30.7 (11.7)	35.3 (11.8)	0.001
Age <= 25:			0.002
No, N (%)	60 (50.4%)	130 (69.1%)	
Yes, N (%)	59 (49.6%)	58 (30.9%)	
Economic status:			0.002
Much below average	0 (0.00%)	10 (5.32%)	
Below average	33 (27.7%)	25 (13.3%)	
Average	64 (53.8%)	108 (57.4%)	
Above average	16 (13.4%)	36 (19.1%)	
Much above average	6 (5.04%)	9 (4.79%)	
Degree:			0.792
Graduate	1 (0.84%)	3 (1.60%)	
Preparatory program	11 (9.24%)	21 (11.2%)	
Undergraduate	107 (89.9%)	164 (87.2%)	
Initiator	3.17 (0.76)	3.27 (0.77)	0.276
Self-esteem	3.66 (0.68)	3.77 (0.68)	0.162
Happiness index	3.72 (0.78)	3.79 (0.79)	0.446
Mot_challenge	3.61 (0.66)	3.64 (0.68)	0.707
Mot_ability	3.77 (0.74)	3.85 (0.79)	0.399
Motivation	3.65 (0.63)	3.70 (0.68)	0.573
Comfort using technology	3.40 (0.78)	3.57 (0.80)	0.054

Table 4 shows demographic differences between scales and between students whose mothers had an academic degree compared to those whose mothers did not have an academic degree. It can be seen that in the group of students whose mothers had an academic degree, there was a higher percentage of students under the age of 25. Students who had mothers with an academic degree showed lower motivation scores and lower comfort using ICT than did students of mothers without an academic degree.

Table 4. Differences in mother's education

	Academic (N=87)	Non-academic (N=220)	P value
Sex:			0.862
F	73 (83.9%)	181 (82.3%)	
M	14 (16.1%)	39 (17.7%)	
Age:	28.8 (10.8)	35.4 (11.9)	<0.001
Age <= 25:			<0.001
No	36 (41.4%)	154 (70.0%)	
Yes	51 (58.6%)	66 (30.0%)	

	Academic (N=87)	Non-academic (N=220)	P value
Degree:			0.583
Graduate	0 (0.00%)	4 (1.82%)	
Preparatory program	8 (9.20%)	24 (10.9%)	
Undergraduate	79 (90.8%)	192 (87.3%)	
Initiator	3.09 (0.76)	3.28 (0.77)	0.050
Self-esteem	3.64 (0.70)	3.77 (0.67)	0.141
Happiness index	3.67 (0.81)	3.81 (0.78)	0.176
Mot_challenge	3.50 (0.66)	3.67 (0.66)	0.044
Mot_ability	3.68 (0.75)	3.88 (0.77)	0.043
Motivation	3.55 (0.64)	3.73 (0.67)	0.030
Comfort using technology	3.31 (0.80)	3.58 (0.79)	0.008

Table 5 shows demographic differences between scales and between students whose fathers had an academic degree compared to those whose fathers did not have an academic degree. No demographic or between-the-scale differences were found between students whose fathers had an academic degree and those whose fathers did not.

Table 5. Differences in father's education

	Academic N = 77	Non-academic N = 230	P value
Gender:			0.674
F	62 (80.5%)	192 (83.5%)	
M	15 (19.5%)	38 (16.5%)	
Age	31.7 (11.9)	34.1 (11.9)	0.130
Age <= 25:			0.260
No	43 (55.8%)	147 (63.9%)	
Yes	34 (44.2%)	83 (36.1%)	
Degree:			0.742
Graduate	1 (1.30%)	3 (1.30%)	
Preparatory program	6 (7.79%)	26 (11.3%)	
Undergraduate	70 (90.9%)	201 (87.4%)	
Initiator	3.23 (0.78)	3.23 (0.77)	0.940
Self-esteem	3.66 (0.67)	3.75 (0.68)	0.276
Happiness index	3.70 (0.81)	3.79 (0.78)	0.399
Mot_challenge	3.61 (0.67)	3.63 (0.67)	0.872
Mot_ability	3.86 (0.71)	3.80 (0.79)	0.533
Motivation	3.69 (0.64)	3.68 (0.67)	0.941
Comfort using technology	3.48 (0.80)	3.51 (0.80)	0.800

Characterization of Generation Z

Generation Z was defined as age equal to or below 25 years. Table 6 shows demographic differences between scales and between Generation Z students and the rest of the sample. More students under

the age of 25 had mothers with academic degrees, and a higher percentage of them were second-generation students (at least one of the parents had an academic degree). They were characterized by lower scores in all measured scales: motivation, self-image, happiness, and use of ICT.

Table 6. Demographic differences between scales and between Generation Z students and the rest of the sample

	Age >25 N=190	Age <=25 N=117	p overall
Gender:			0.597
F	155 (81.6%)	99 (84.6%)	
M	35 (18.4%)	18 (15.4%)	
Mother's education:			<0.001
Academic	36 (18.9%)	51 (43.6%)	
Non-academic	154 (81.1%)	66 (56.4%)	
Father's education:			0.260
Academic	43 (22.6%)	34 (29.1%)	
Non-academic	147 (77.4%)	83 (70.9%)	
Group:			0.002
At least one academic	60 (31.6%)	59 (50.4%)	
Both non-academic	130 (68.4%)	58 (49.6%)	
Degree:			0.537
Graduate	3 (1.58%)	1 (0.85%)	
Preparatory program	17 (8.95%)	15 (12.8%)	
Undergraduate	170 (89.5%)	101 (86.3%)	
Initiator	3.28 (0.74)	3.14 (0.80)	0.108
Self-esteem	3.84 (0.63)	3.55 (0.72)	<0.001
Happiness index	3.89 (0.71)	3.56 (0.85)	0.001
Mot_challenge	3.71 (0.66)	3.48 (0.66)	0.004
Mot_ability	3.93 (0.77)	3.65 (0.73)	0.002
Motivation	3.77 (0.66)	3.53 (0.64)	0.002
Comfort using technology	3.71 (0.76)	3.18 (0.76)	<0.001

Table 7 examines the correlations between four groups and the measured scales:

- (a) Second-generation students under 25 years of age, Generation Z (n = 59)
- (b) Second-generation students over 25 years of age, most of them Generation Y (n = 58)
- (c) First-generation students over 25 years of age (the largest group in the sample), most of them Generation Y (n = 130)
- (d) First-generation students under 25 years of age, Generation Z (n = 60)

It can be seen that group (c) has the highest averages on all scales. It is significantly higher than group (a) on self-image, happiness, motivation (general scale and ability), and use of ICT. It is significantly higher than group (d) on self-image, happiness, and use of ICT. Group (b) is higher than group (d) on ICT use. There is no difference in the over 25 years of age group between first- and second-generation students.

Table 7. Generation Z and parental education scale differences

	(a) At least one academic, age ≤25 N=59	(b) At least one academic, age >25 N=58	(c) Both non- academic, age >25 N=130	(d) Both non- academic, Age ≤25 N=60	P value	Multiple comparisons
Initiator	3.07 (0.81)	3.29 (0.68)	3.29 (0.76)	3.18 (0.81)	0.251	
Self-esteem	3.56 (0.72)	3.78 (0.60)	3.89 (0.65)	3.49 (0.70)	<0.001	c>a; c>d
Happiness index	3.62 (0.81)	3.84 (0.74)	3.95 (0.69)	3.48 (0.92)	0.001	c>a; c>d
Mot_challenge	3.47 (0.64)	3.73 (0.67)	3.71 (0.64)	3.49 (0.70)	0.022	Non-significant*
Mot_ability	3.61 (0.71)	3.89 (0.78)	3.95 (0.77)	3.68 (0.78)	0.014	c>a
Motivation	3.51 (0.60)	3.78 (0.67)	3.78 (0.65)	3.54 (0.69)	0.012	c>a
Comfort using technology	3.21 (0.77)	3.57 (0.70)	3.75 (0.78)	3.15 (0.75)	<0.001	c>a; b>d; c>d

Note: No multiple comparison significance.

DISCUSSION

In this study, from the point of view of the participants, we examined aspects of resilience as well as emotional and social characteristics, comparing first-generation students with those who had parents with a college education. We examined the students' self-image, motivation, happiness, and use of ICT.

In general, the research findings indicate that the group with the highest resilience was that of first-generation students over the age of 25 years; the majority of students in this group were members of Generation Y. The findings of the study were grouped into four clusters: (a) second-generation students under 25 years of age, Generation Z; (b) second-generation students over 25 years of age; (c) first-generation students over 25 years of age (the largest group in the sample), most of them Generation Y; and (d) first-generation students under 25 years of age. We found consistent differences on all scales between the group of first-generation students over the age of 25 years and the students from the other groups.

DIFFERENCES BETWEEN FIRST-GENERATION AND SECOND-GENERATION STUDENTS

The comparison between first-generation and second-generation students (Table 3) indicates that there was no statistical difference between the groups on the motivation, self-image, happiness, and use of ICT scales. These findings contradict those of previous studies. Many studies (Billson & Brooks-Terry, 1982, 1987; Fuligni, 1997; London, 1989; Sewell & Hauser, 1975; Tinto, 1988; York-Anderson & Bowman, 1991) have reported that parental education was a predictive factor for success in academic studies and that compared to second-generation students, first-generation students had difficulties that put them at risk of dropping out of school in various aspects related to adaptation and facing the challenges that characterize higher education studies. Researchers (Billson & Brooks-Terry, 1982, 1987; Fuligni, 1997; London, 1989; Sewell & Hauser, 1975; Tinto, 1988; York-Anderson & Bowman, 1991) have found differences between first-generation and second-generation college students and identified differences in the encouragement and support provided by parents in preparation for academic studies and in advance knowledge about academic studies. Differences were found also in the level of commitment of the students, in favor of those whose parents were educated. First-generation students could not obtain information from their parents that would have helped them in the process of coping and adapting to higher education studies, increasing the persisting experience of difficulty.

COMPARISON BETWEEN AGE GROUPS

Generation Z is defined in the literature (Carter, 2018; Chicioreanu & Amza, 2018; Zilka, 2018a, 2018b, 2019, 2020a, 2020b, 2020c, 2021a, 2021b) as born between the end of the last century and 2010; that is, students aged 25 years and younger. The findings of this study (Table 6) revealed differences between the Generation Z scales and those of the rest of the sample. More students under the age of 25 had mothers with academic degrees, and a higher percentage of them were second-generation students (at least one of the parents had an academic degree). The personal reports of the students in this group were characterized by lower scores on all measured scales (motivation, self-image, happiness, use of ICT) than those of older students.

The findings produced four clusters (their characteristics are shown in Table 7). The findings show that Group (c) had the highest averages on all scales, significantly higher than Group (a) on self-image, happiness, motivation (general scale and ability), and use of ICT. Group (c) was significantly higher than Group (d) on self-image, happiness, and use of ICT scales. Group (b) was higher than Group (D) on the ICT use scale.

In conclusion, the findings of this study, unlike those of previous ones, reveal a sense of resilience in first-generation students over the age of 25 years. The research literature discusses various variables that affect the adaptation of students to academia. The present study focused on variables related to mental resilience, emotional stability, use of self-encouragement, optimism, and the ability to create a social support network. Studies of students' resilience show that academic studies cause first-generation students to experience difficulties adapting and a sense of dissatisfaction, stress, and anxiety (Schwartz et al., 2005; Stallman, 2010). The difference between the findings of this study and those of previous ones can be explained by the resilience that characterizes the children of Generation Y. Although they were the first generation to be educated, they had a sense of resilience and were able to cope with difficulties.

The children of Generation Y, also referred to as “millennials,” were born between the beginning of the 1980s to the end of the 1990s (one generation before Generation Z). The parents of the members of Generation Y belong mostly to the baby boom generation, born between 1946 and 1964. Generation Y grew up in a period of many technological developments, especially the rapid development of the Internet. Researchers (Bolton et al., 2013; Eastman & Liu, 2012; Parment, 2013) argued that members of Generation Y are independent, entrepreneurial, self-confident, and tend to be innovative. They adopt new technologies and new technological services, especially everything related to social networks. They look for technological innovation and tend to adopt it quickly. They are aware of social status (Eastman & Liu, 2012). Not only do they consume digital hardware and software, but they are also total digital consumers. Researchers describe them as sophisticated consumers with an online orientation (Eastman & Liu, 2012; Jackson et al., 2011), as well as consumers of luxury brands (Butcher et al., 2017).

Given the characteristics of Generation Y, it appears that Generation Y students are aware of their social status and have mental resilience and self-confidence. The findings of this study strengthen the characterization of Generation Y but contradict previous findings on first-generation students. It can be cautiously concluded that according to this study, students of Generation Y do not have the characteristics of the first-generation students found in previous studies.

The parameters examined by previous researchers (Billson & Brooks-Terry, 1982, 1987; Fuligni, 1997; London, 1989; Sewell & Hauser, 1975; Tinto, 1988; York-Anderson & Bowman, 1991) as characteristic of the process of adaptation to academic studies – physical adaptation to the campus space; systemic adaptation to the administrative system, preparation of a schedule; academic adaptation to higher studies where students are required to read study materials, submit assignments, and cope with workloads; social adaptation and the development of social ties – do not constitute an obstacle for Generation Y students on their way to social mobility and change in social status, which they expect as a result of obtaining an academic degree.

LIMITATIONS OF THE STUDY AND SUGGESTIONS FOR FUTURE STUDIES

In this study, we examined students' sense of resilience, as reflected in personal reports obtained with the help of several research tools and found strong positive correlations between the research scales ($r > 0.5$) of initiative and happiness, motivation, and use of ICT; self-image and happiness and motivation; and happiness and motivation. Future studies should examine the correlation between a sense of resilience (which was examined in this study) and academic achievement (which was not).

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AUTHORS



Dr. Ilan Daniels Rahimi, DBA, Israel. Rahimi is a faculty member at ONO Academic College, Lecturer, researcher and Head of the Pre-Academic Studies. Rahimi's research focuses on E-learning fields: Implementation of E-learning systems, English as a foreign language courses, CRM integration in academic instruction and challenges in post-COVID-19 higher education. The mainly studies aspects are- comparative examination of online, HyFlex, hybrid and face-to-face courses. And students' and teachers' coping with the transition to online learning. Ilan also lecturer on the integration of AI and Machine-Learning in E-learning, information systems and projects management. irahimi@ono.ac.il



Gila Cohen Zilka, Ph.D., Israel. Zilka is affiliated with Bar-Ilan University as a lecturer and researcher, the Director of the Department for Teaching Social Science and Communication, and with Achva Academic College as Head of the Academic Department of Education.

Zilka's research aims to explain the phenomenon of understanding the younger generation in all aspects relating to global changes following digital developments in a digital age that crosses all boundaries.

gila.zilka@gmail.com



Prof. Orit Avidov-Ungar is the Dean of the Faculty of Education and Leadership at Achva Academic College. She is an educator, leader of education systems and researcher in the field of leading change processes in education and learning systems, with an emphasis on assimilating innovation and technologies. avidovo@achva.ac.il