*Research Paper*

# A dimension of well-being among talented students – An empirical study at the University of Debrecen

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**Abstract**

Talent management in higher education remains a key issue, as university students are inherently talented when pursuing academic studies. Beyond this, many students engage in extracurricular activities, reflecting deeper personal motivations. This examines participants' future career orientation in a university Talent Management Program by examining their life goals. While many students lack clear aims during their studies, we hypothesize that talented students show stronger self-acceptance, autonomy, and a commitment to continuous development and growth. The Ryff-18 questionnaire assessed students' psychological well-being across six dimensions: self-acceptance, quality of relationships, autonomy, environmental mastery, purpose in life, and personal growth. The research is part of a longitudinal study, launched in the 2016/2017 academic year and repeated in 2023/2024, allowing for generational comparison between Generation Z and Millennials. All Talent Program students were invited to participate. In 2016/2017, 359 of 489 students responded (73.41%), and in 2023/2024, 201 of 671 (16.69%). Students rated "living day by day" highly in both years, and acquiring new experiences was low. Despite this, results indicate that participants are generally goal-oriented and prioritize long-term aims over novelty-seeking. These findings highlight consistent traits among talented students across generations.

*Keywords:* talent management; higher education; psychological well-being; personal growth; longitudinal studies

## Introduction

Talent management in higher education is essential for identifying and nurturing students with exceptional potential, helping them reach personal, academic, and professional excellence. It supports the development of critical skills such as leadership, creativity, and problem-solving, which are increasingly demanded in the 21st-century labour market (OECD, 2012). By offering targeted opportunities – such as mentoring, research projects, or honours programs – universities can foster motivation, retention, and long-term achievement among high-potential students (Subotnik et al., 2011).

Moreover, talent development programs contribute to institutional prestige and innovation, as these students often become leaders in academia, business, or public service. Cultivating talent also promotes social mobility, especially when inclusive programs ensure access for students from underrepresented backgrounds (VanTassel-Baska, 2005). Importantly, investing in student potential aligns with broader goals of human capital development and national competitiveness (European Commission, 2013).

Talent development in higher education is not merely a pedagogical tool but a strategic necessity. The term refers to organizational and educational strategies aimed at identifying, supporting, and developing students, lecturers, and researchers with outstanding abilities. Talent development may be implemented in a narrow, exclusive manner, when the institution focuses solely on the highest-performing individuals, or in an

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inclusive way, which takes into account the various forms and manifestations of talent in a broader sense (Nijs, Meyers & Van Woerkom, 2024).

The rapidly changing social, technological, and economic environment requires new types of skills: creativity, collaboration, critical thinking, and adaptability. The role of higher education institutions is not limited to the transmission of knowledge but also includes the development of these skills. In both Hungary and the international context, talent development is increasingly recognized as a key factor in the competitiveness, sustainability, and social embeddedness of institutions (Bodnár & Mező, 2024).

One of the most important aims of talent development in higher education is to increase institutional competitiveness. In the global higher education race, it is crucial that universities support students and researchers capable of conducting high-level research, fostering innovation, and generating new knowledge. Ramaditya and colleagues (2022) demonstrated in their research that talent management is closely linked to knowledge management and the improvement of university performance, thus directly contributing to institutional transformation and development.

In the Hungarian context, the Scientific Students' Associations Conference (TDK) movement is one of the most important tools for student talent development. Bán and colleagues (2023) showed that the TDK not only strengthens scientific preparedness but also plays a significant role in motivation, community building, and labor market prospects.

Talent development also improves organizational efficiency, strengthens staff commitment, and reduces turnover. Gerhardt and Karsan (2022), for example, found that in the case of private universities in the UK, talent development is closely linked to institutional effectiveness. According to Musakuro (2022), a well-designed talent management framework enhances the stability and adaptability of institutions, which is particularly important in times of crisis, such as during the COVID–19 pandemic.

In Hungarian higher education, institutional sustainability and the strategic foundation of talent development are also key issues. The volume Talent Development in Higher Education (Bodnár & Mező, 2024) provides a comprehensive overview of Hungarian experiences from the past decade and emphasizes that long-term success requires a stable and well-thought-out institutional strategy.

Talent development is not only performance-oriented but also socially significant. If talent is identified solely on the basis of narrowly defined metrics—such as publication output or citation indicators—many students and academics may be disadvantaged, including women, minority groups, or those who demonstrate excellence in alternative areas. Inclusive talent development therefore not only promotes equal opportunities but also provides a broader creative base for institutions, which, in the long run, raises the quality of research and education (Nijs, Meyers & Van Woerkom, 2024).

In Hungarian literature, Görbe (2012) emphasizes the importance of integrated talent development, which aims to coordinate colleges for advanced studies, scientific student associations, and mentoring programs in order to identify and support the widest possible range of talent types.

The role of talent development is not confined to academia. The labor market is changing rapidly and requires skills for which student preparation is essential. In the era of the digital economy, higher education has the crucial task—besides classical knowledge transfer—of fostering creativity, problem-solving, and interdisciplinarity. Hungarian programs—such as the college for advanced studies system or the support provided under the National Talent Program—serve precisely this purpose: to promote students' labor market success and support their social integration (OECD, 2019; World Economic Forum, 2020).

Talent development in higher education is not a luxury but an indispensable factor for successful and sustainable operation. It contributes to institutional competitiveness, improves organizational efficiency, promotes social justice, supports adaptation to changing challenges, and ensures the long-term viability of higher education institutions.

Academic literature (Ramaditya et al., 2022; Gerhardt & Karsan, 2022; Nijs et al., 2024; Bán et al., 2023; Bodnár & Mező, 2024; Sipos, 2012) confirms that where talent development is implemented consciously, strategically, and inclusively, institutions are characterized by higher levels of innovation, satisfaction, and sustainability.

Further research also highlights that the psychological and self-assessment dimensions of talent development are essential. Kun, Boros and Kotsis (2022) revealed that students in business higher education often underestimate or overestimate their own knowledge due to the Dunning–Kruger effect. This distortion in self-assessment may hinder the accuracy of talent identification, which is why talent development systems need to integrate tools that support objective feedback and self-reflection.

Talented students in higher education are typically exposed to a substantially higher academic workload than their peers, as they often engage simultaneously in advanced coursework, talent development programs, research activities, and extracurricular academic commitments. In the Hungarian higher education context, talented students are frequently involved in institutional excellence programs, scientific student associations, and competitive academic pathways, which further intensify their academic responsibilities (Kun et al., 2022). While such opportunities support professional socialization and skill development, the cumulative demands may also increase vulnerability to psychological strain.

Research has consistently demonstrated a strong association between excessive academic workload and reduced well-being, manifested in elevated stress levels, emotional exhaustion, and symptoms of burnout among university students (Schaufeli et al., 2002; Salmela-Aro & Read, 2017). Talented students may be particularly affected, as they often operate at or beyond the limits of their coping capacities, driven by high external expectations and internalized performance standards (Neihart, 1999). In line with this, studies focusing on the Hungarian higher education system highlight that sustained academic overload may undermine students' subjective well-being and adaptive functioning, even among those who are otherwise considered successful (Czeglédi, 2018; Gebregergis & Csukonyi, 2025)). Empirical research emphasizes that academic success in higher education cannot be interpreted independently of students' psychological and social resources. High levels of commitment and engagement – while generally associated with persistence and achievement – may also entail increased emotional costs if not accompanied by adequate institutional and interpersonal support (Czeglédi, 2018). This is particularly relevant for talented students, whose strong achievement motivation and sense of responsibility may lead to self-exploitative patterns of overwork and difficulties in maintaining balance across life domains (Gebregergis & Csukonyi, 2025)

The examination of well-being among talented students is therefore of central importance not only from an educational effectiveness perspective but also from a mental health standpoint. Hungarian and international studies alike indicate that prolonged academic pressure, especially during the sensitive developmental period of emerging adulthood, may contribute to chronic stress, anxiety, and reduced sense of purpose if students' well-being remains insufficiently supported (Arnett, 2015; Ryff & Singer, 2008; Czeglédi, 2018). These findings underscore the need to assess multidimensional aspects of well-being in talent development contexts, in order to ensure the long-term sustainability of high performance and personal development.

In sum, talent management is not just about academic enrichment – it is a strategic investment in individuals who will shape the future of society.

## Research design and Methods

The research aims to examine the young participants in the university's Talent Management Program as future employees, to understand their life goals. Many university students do not have specific goals during their studies, and we hypothesize that, in contrast, talented students achieve high scores on scales of self-acceptance, action autonomy, and prioritize continuous development and growth. The Ryff-18 questionnaire assesses the level of well-being of the respondents. These aspects include self-acceptance, establishing quality relationships with others, a sense of autonomy in thinking and action, the ability to handle complex environments in accordance with personal needs and values and achieving meaningful goals and a sense of life purpose, continuous personal growth and development. The Ryff Scales of Psychological Well-Being offer a comprehensive framework for understanding the multidimensional nature of human well-being. Developed by Carol D. Ryff in the late 1980s, the model was designed to capture what it means to function well psychologically, drawing from developmental, clinical, existential, and humanistic psychology, particularly the works of Erikson, Maslow, Rogers, and Jahoda (Ryff, 1989). Unlike traditional measures of well-being that focus mainly on happiness or life satisfaction, Ryff's model adopts a eudaimonic perspective, emphasizing personal growth, meaning, and self-realization (Ryan & Deci, 2001).

The model identifies six core dimensions that together define psychological well-being. The first is Self-Acceptance, which refers to a person's ability to maintain a positive attitude toward the self, acknowledging and accepting multiple aspects of one's personality, including strengths and weaknesses. This dimension is considered foundational to well-being and is often associated with self-esteem and emotional resilience (Ryff, 1989). The second dimension is Positive Relations with Others, highlighting the importance of warm, trusting, and empathetic interpersonal relationships. Individuals scoring high in this domain tend to have deep connections with others, a sense of belonging, and a capacity for intimacy and compassion (Ryff & Keyes, 1995). The third domain, Autonomy, refers to self-determination and independence. Autonomous individuals

regulate their behavior based on internal standards rather than conforming to external expectations. This dimension is closely related to authenticity and personal agency (Ryff, 1989). Environmental Mastery is the fourth dimension, capturing how individuals feel competent in managing their life circumstances. It includes creating environments suitable to one's psychological needs and effectively managing everyday responsibilities (Ryff & Keyes, 1995). The fifth component is Purpose in Life, which encompasses having goals, direction, and a sense of meaning in life. It reflects the belief that one's life is purposeful and that daily activities are aligned with broader life aims. This dimension has been strongly linked to existential fulfilment and resilience, particularly in the face of adversity (Ryff, 2013). Finally, Personal Growth refers to a person's ongoing development and openness to new experiences. Individuals high on this scale view themselves as growing and evolving over time, with a continuous drive to realize their potential (Ryff, 1989). This dynamic aspect of well-being captures the pursuit of self-actualization. The scales themselves have been developed in several versions, including 84-, 54-, 42-, and 18-item forms. Respondents rate statements on a Likert-type scale, typically from 1 ("strongly disagree") to 6 ("strongly agree"), with about half of the items reverse-scored to reduce response bias (Ryff, 1989). The more extended versions show good psychometric reliability and validity, while shorter forms offer practicality at the expense of some internal consistency (Seifert, 2005).

Based on this theoretical framework, the present study addresses the following research questions:

RQ1. Which dimensions of well-being are associated with higher levels of satisfaction among talented university students, and which dimensions indicate potential areas for development or targeted support?
RQ2. What differences can be observed between the 2016 and 2024 samples in terms of well-being as measured by the Ryff-18 Scale?
RQ2a. What gender differences can be identified on the Ryff-18 Scale within the 2016 and the 2024 samples, respectively?
RQ2b. What differences between BSc and MSc students can be observed on the Ryff-18 Scale within the 2016 and the 2024 samples, respectively?

The questionnaire contained 18 questions related to psychological well-being. The research is part of a longitudinal study, the first phase began in the 2016/2017 academic year, with the questionnaire being re-administered in the 2023/2024 academic year. The study aimed to examine generational differences, as the university-aged cohort in 2016 belonged to Generation Z, while those attending university in 2023 belong to the Millennial generation. The seven-year interval between waves of data collection was not only a function of generational change, but also reflects significant environmental and contextual factors that have arisen during this period. The COVID-19 pandemic and subsequent societal disruptions have been shown to have prolonged effects on psychological functioning, health behaviors, and emotional well-being in longitudinal studies of student populations, underscoring the relevance of extended time frames for capturing meaningful change (Reuter et al., 2021).

Furthermore, methodological research on longitudinal surveys highlights that external events and environmental changes occurring between waves can influence response patterns and participant engagement, supporting the use of longer intervals when investigating life course and well-being outcomes (Taherdoost & Madanchian, 2025).

The seven-year interval between the two waves of data collection was justified by several contextual factors. The period between the first and second surveys encompassed the COVID-19 pandemic, during which universities were required to transition to modes of instruction substantially different from traditional in-person higher education. Among respondents who completed the questionnaire in the 2023/2024 academic year were students who had begun their university studies during the pandemic, participated primarily in online courses, and experienced reduced access to face-to-face interactions. As a result, some students missed formative university-related events commonly associated with higher education, such as orientation activities, freshman ceremonies, and graduation events. In the years following the pandemic, additional contextual stressors, including geopolitical uncertainty and the energy crisis, may have further influenced students' psychological well-being (Győri & Pusztai, 2022).

As part of the longitudinal design, data were collected using three questionnaires administered to the participants. All instruments were standardized and Likert-type response scales. The present study focuses on the results of the Ryff Psychological Well-Being Scale, highlighting those dimensions that allow for the assessment and comparison of talented students. In addition to the well-being measures, the questionnaire included a demographic section focusing on students' place of residence during the academic term, age, field of study, and involvement in other talent development programs (e.g., colleges for advanced studies). Data

collection was conducted not only at the University of Debrecen but also at the University of Pécs, where members of the local talent development program distributed the questionnaire to students via email.

The questionnaire was distributed through the university's unified academic administration system to all students enrolled in the Talent Management Program in the given academic year. Participants were given two weeks to complete the survey. In the 2016/2017 academic year, 489 students received an email invitation to participate in the study, while in the 2023/2024 academic year, 671 students were informed about the opportunity. All students in the Talent Management Program were invited to complete the questionnaire. Thus, in the 2016/2017 academic year, 489 students received an email notification about the questionnaire; in the 2023/2024 academic year, 671 students. Of these, 359 students (73.41%) completed the questionnaire the first time, while in 2023/2024, only 201 students (16.69%) did so. The substantially lower response rate observed in the 2023/2024 academic year compared to the 2016/2017 data collection may be attributed to several interrelated contextual and structural factors. One important explanation concerns the increasing phenomenon of survey fatigue among university students. Over the past decade, students have been exposed to a growing number of institutional surveys related to academic satisfaction, quality assurance, digital learning environments, and well-being, which has been shown to significantly reduce willingness to participate in additional research studies (Porter & Whitcomb., 2005; Fan & Yan, 2010).

In addition, changes in students' patterns of digital engagement may have contributed to the decline in response rates. Research indicates that younger cohorts increasingly demonstrate selective attention toward institutional email communication, often prioritizing messages perceived as immediately relevant to academic performance or administrative requirements (Dillman et al., 2014; Poláková & Klímová, 2019). As a result, survey invitations distributed via university email systems may be more easily overlooked or deprioritized, particularly when participation is voluntary.

Furthermore, the post-pandemic higher education context may have played a significant role. Studies conducted after the COVID-19 pandemic highlight elevated levels of academic workload, emotional exhaustion, and reduced engagement among university students, which negatively affect their motivation to participate in non-mandatory academic activities, including research surveys (Salmela-Aro et al., 2022; Aristovnik et al., 2020). This effect may be particularly pronounced among talented students, who typically face intensified academic demands and multiple performance-related commitments.

Taken together, these findings suggest that the lower response rate observed in the 2023/2024 sample is likely not indicative of reduced interest in the research topic itself, but rather reflects broader generational, institutional, and post-pandemic trends in student engagement and research participation. Similar declines in response rates have been widely documented in contemporary higher education research, particularly in longitudinal and repeated cross-sectional designs (Porter & Whitcomb, 2005).

In addition to broader generational and post-pandemic factors, the decline in response rates observed in the 2023/2024 academic year should be interpreted in light of the structural transformation of Hungarian higher education that occurred during the intervening period. Beginning in 2021, a substantial number of Hungarian universities underwent a governance reform, transitioning from a state-operated model to a foundation-maintained institutional framework. This model change introduced significant organizational, administrative, and strategic transformations within higher education institutions (Zsatku & Kováts, 2022)

Previous research suggests that large-scale institutional restructuring may influence students' perceptions of institutional trust, participation, and engagement, particularly during transitional periods characterized by uncertainty and increased administrative demands (Lewicka, 2022). In the Hungarian context, studies indicate that the model change was accompanied by intensified performance expectations, redefined institutional priorities, and an increased emphasis on efficiency and output-oriented indicators, which may have indirectly affected students' willingness to engage in voluntary academic activities, including research participation (Zsatku & Kováts, 2022).

Furthermore, organizational changes within universities often lead to shifts in communication channels and institutional practices. Empirical findings highlight that during periods of governance transformation, students may experience reduced clarity regarding institutional processes and decreased identification with the university as an organization, which in turn may weaken their motivation to respond to institutionally distributed surveys (Trowler, 2010). This effect may be particularly salient among highly engaged and high-performing students, who tend to prioritize academic and professional commitments over optional institutional interactions.

Taken together, the governance reform and model change in Hungarian higher education represent an important contextual factor that may have contributed to the lower response rate observed in the later data collection. Rather than reflecting a lack of interest in the research topic, the reduced participation is more

plausibly understood as a consequence of systemic transformation and its impact on student engagement patterns. Similar effects of institutional restructuring on survey participation and student involvement have been documented in international higher education research, particularly in systems undergoing rapid organizational change (Lewicka, 2022).

Although the instrument allows for more detailed analyses (e.g., by gender or social background), the present study focuses on the six dimensions of the questionnaire. As the distribution of the variables deviated from normality, the Mann–Whitney U test was applied.

## Results

Table 1 shows that, based on independent Mann-Whitney U tests, there is a statistically significant difference at the 5% level between the 2016 and 2024 respondents in the mean scores for statement 5 ("In some ways, I feel disappointed with my achievements in life.") and statement 15 ("I tend to accept the viewpoints of people who express strong opinions."). In both cases, the 2016 respondents reported higher average scores.

For statement 4 ("I often feel overwhelmed by the demands of everyday life."), 13 ("People would likely describe me as a giving person, willing to devote time to others") and statement 14 ("I gave up trying to make major improvements or changes in my life a long time ago.") the mean scores were also higher among the 2016 respondents, with the difference being significant at the 10% level. However, in the case of statement 2 ("When I look at the story of my life, I am satisfied with how things have turned out so far.") and 17 ("I trust my own judgment even when it differs strongly from what others think") the mean scores were higher among the 2024 respondents, with the difference being significant at the 10% level.

**Table 1.** Differences between the 2016 and 2024 scores on the Riff-18 Scale examined using Mann-Whitney U tests

| Statements | Group | Mean | Std. Deviation | P value |
|---|---|---|---|---|
| 1. I like most parts of my personality. | 2016 | 2.35 | 1.09 | 0.67 |
| | 2024 | 2.41 | 1.19 | |
| 2. When I look at the story of my life, I am satisfied with how things have turned out so far. | 2016 | 2.36 | 1.18 | 0.05** |
| | 2024 | 2.57 | 1.24 | |
| 3. Some people wander aimlessly through life, but I am not one of them. | 2016 | 1.89 | 1.20 | 0.10 |
| | 2024 | 2.01 | 1.17 | |
| 4. I often feel overwhelmed by the demands of everyday life. | 2016 | 3.85 | 1.40 | 0.06** |
| | 2024 | 3.62 | 1.45 | |
| 5. In some ways, I feel disappointed with my achievements in life. | 2016 | 4.53 | 1.39 | 0.04** |
| | 2024 | 4.32 | 1.38 | |
| 6. Maintaining close relationships brings me difficulties and is often filled with disappointment. | 2016 | 4.57 | 1.55 | 0.51 |
| | 2024 | 4.52 | 1.49 | |
| 7. I live my life one day at a time and rarely think about the future. | 2016 | 5.26 | 1.19 | 0.33 |
| | 2024 | 5.25 | 1.05 | |
| 8. I generally feel responsible for the situation I am in. | 2016 | 1.92 | 1.12 | 0.81 |
| | 2024 | 1.93 | 1.14 | |
| 9. I am capable of managing the responsibilities of my daily life. | 2016 | 2.27 | 1.04 | 0.35 |
| | 2024 | 2.39 | 1.16 | |
| 10. Sometimes I feel like I have done all there is to do in life. | 2016 | 5.11 | 1.23 | 0.87 |
| | 2024 | 5.09 | 1.27 | |
| 11. For me, life is a continuous process of learning, change, and growth. | 2016 | 2.06 | 1.16 | 0.29 |
| | 2024 | 1.98 | 1.19 | |
| 12. I believe it is important to have new experiences that challenge how I think about myself and the world. | 2016 | 1.62 | 0.90 | 0.31 |
| | 2024 | 1.61 | 1.02 | |
| 13. People would likely describe me as a giving person, willing to devote time to others. | 2016 | 2.73 | 1.10 | 0.08** |
| | 2024 | 2.62 | 1.29 | |
| 14. I gave up trying to make major improvements or changes in my life a long time ago. | 2016 | 5.22 | 1.11 | 0.06** |
| | 2024 | 5.01 | 1.26 | |
| 15. I tend to accept the viewpoints of people who express strong opinions. | 2016 | 3.63 | 1.37 | 0.03* |
| | 2024 | 3.34 | 1.31 | |
| 16. I do not experience much warmth and trust in my relationships with others. | 2016 | 4.67 | 1.36 | 0.58 |
| | 2024 | 4.75 | 1.32 | |
| 17. I trust my own judgment even when it differs strongly from what others think. | 2016 | 2.33 | 1.06 | 0.07** |
| | 2024 | 2.52 | 1.18 | |
| 18. I judge myself by what I think is important, not by the values others think are important. | 2016 | 2.16 | 1.17 | 0.22 |
| | 2024 | 2.27 | 1.17 | |

Note: *= significant at the 5% level,** = significant at the 10% level
N2016=359, N2024=201
Source: Own research**

In Table 1, the observed statistically significant differences can be attributed to several factors. Table 2 shows which statements exhibited a statistically significant difference between women and men at the 5% or 10% level in each sample.

By comparing Table 1 and Table 2, it becomes evident that for statement 17, differences were observed between the two samples and genders. In both samples, women reported higher average scores, while the new generation, overall, demonstrated greater self-confidence.

**Table 2.** Examination of gender differences on the Riff-18 scale separately in the 2016 and 2024 samples using Mann-Whitney U tests

| **Statements** | | **2016** | | | **2024** | | |
|---|---|---|---|---|---|---|---|
| | **Gender** | **Mean** | **Std. deviation** | **p value** | **Mean** | **Std. deviation** | **p value** |
| 1. I like most aspects of my personality. | Women | 2.45 | 1.10 | 0.02* | 2.42 | 1.134 | - |
| | Men | 2.18 | 1.07 | | 2.38 | 1.331 | |
| 4. I am often discouraged by the demands of everyday life. | Women | 3.81 | 1.39 | - | 3.46 | 1.445 | 0.01* |
| | Men | 3.91 | 1.43 | | 4.08 | 1.370 | |
| 8. I generally feel responsible for the situation in which I live. | Women | 1.99 | 1.15 | 0.07** | 1.91 | 1.102 | - |
| | Men | 1.78 | 1.05 | | 1.98 | 1.244 | |
| 12. I believe it is important to have new experiences that challenge how I think about myself and the world. | Women | 1.57 | 0.91 | 0.06** | 1.61 | .978 | - |
| | Men | 1.72 | 0.89 | | 1.62 | 1.140 | |
| 13. People would likely describe me as a giving person, willing to devote time to others. | Women | 2.70 | 1.11 | - | 2.46 | 1.233 | <0.01* |
| | Men | 2.78 | 1.08 | | 3.08 | 1.341 | |
| 17. I trust my own opinions even when they differ greatly from those of others. | Women | 2.42 | 1.07 | 0.03* | 2.63 | 1.176 | 0.02* |
| | Men | 2.17 | 1.02 | | 2.19 | 1.155 | |
| 18. I judge myself by the values I consider important, not by those others hold important. | Women | 2.25 | 1.21 | 0.09** | 2.35 | 1.196 | - |
| | Men | 2.02 | 1.07 | | 2.06 | 1.074 | |

*= significant at the 5% level,** = significant at the 10% level
N2016 = 359, N2024 = 201
Source: Own research

Students from BSc, MSc, and undivided programs were included in both samples. We considered it worthwhile to examine whether there are any differences between students enrolled in bachelor's programs and those studying at the master's level, who are assumed to be more self-aware. Table 3 shows which statements exhibited a statistically significant difference between BSc and MSc students in each sample at the 5% or 10% level.

A statistically significant 10% difference was observed between the 2016 and 2024 MSc student cohorts, in agreement with the statement: “Maintaining close relationships is difficult and mostly filled with disappointment.”

**Table 3.** Examination of Differences Between BSc and MSc Students on the Riff-18 Scale Using Mann-Whitney U tests, Conducted Separately for the 2016 and 2024 Samples

| **Statements** | | **2016** | | | **2024** | | |
|---|---|---|---|---|---|---|---|
| | **Level of education** | **Mean** | **Std. deviation** | **p value** | **Mean** | **Std. deviation** | **p value** |
| 2. When I look at the story of my life, I am satisfied with how things have turned out so far. | BSc | 2.50 | 1.25 | 0.07** | 2.59 | 1.24 | - |
| | MSc | 2.23 | 1,10 | | 2.97 | 1.36 | |
| 6. Maintaining close relationships is difficult for me and often leads to feelings of disappointment. | BSc | 4.33 | 1.65 | 0.04* | 4.38 | 1.55 | - |
| | MSc | 4.74 | 1.44 | | 4.24 | 1.64 | |
| 12. I believe it is important to have new experiences that challenge how I think about myself and the world. | BSc | 1.69 | 0.98 | - | 1.61 | 0.99 | 0.09** |
| | MSc | 1.60 | 0.83 | | 1.97 | 1.28 | |

Note: *= significant at the 5% level,** = significant at the 10% level
N2016 = 263, N2024 = 130
Source: Own research

## Discussion

This study aimed to examine the psychological well-being of talented university students through the lens of Ryff's multidimensional model, using longitudinal data collected in 2016 and 2024. The findings partially support our hypothesis: talented students generally exhibit stronger self-acceptance, autonomy, and long-term orientation indicators. However, generational and educational level differences revealed deeper layers of complexity.

The overall results indicate that talented students tend to report relatively high levels of well-being in dimensions related to autonomy, purpose in life, and personal growth. These findings suggest that students involved in talent development programs generally perceive themselves as self-directed, future-oriented, and committed to continuous development. Such patterns are consistent with theoretical models of eudaimonic well-being, which emphasize meaning, agency, and self-realization as core components of optimal functioning (Ryff, 1989; Ryan & Deci, 2001).

At the same time, dimensions related to interpersonal relationships and environmental mastery appear more uneven, pointing to potential challenges in managing academic demands alongside personal and social life. Previous research highlights that talented students often experience intensified academic workloads and heightened performance expectations, which may undermine aspects of well-being related to balance and relational stability (Czeglédi, 2018; Kun et al., 2022). These findings underline the importance of interpreting high achievement alongside indicators of strain and vulnerability.

Consistent with the Results section, notable differences were observed between the 2016 and 2024 samples across several well-being dimensions. These differences may reflect broader changes in the higher education environment and in the social context of emerging adulthood. Students participating in the later data collection entered higher education under conditions characterized by increased uncertainty, intensified academic competition, and the long-term effects of global crises.

In their 2023 study, researchers focused on Generation Z and identified a specific profile of university students belonging to this generational cohort. According to their findings, students from Generation Z tend to display a strong sense of responsibility and persistence in areas aligned with their interests. However, they often seek external validation and motivation, and their performance tends to decline under time pressure (Surugiu et al., 2025).

The Results section revealed several gender-related differences in well-being across both cohorts. Female students tended to report higher levels of satisfaction in dimensions associated with self-acceptance and meaning-making (Ceglédi et. al., 2022). This pattern is consistent with previous longitudinal research indicating

that women often demonstrate greater self-reflection and narrative coherence during emerging adulthood (McLean & Pratt, 2006; Kroger, 2007).

Respondents from Generation Z and the Millennial generation share many similarities, particularly due to integrating digital technologies into their education. This exposure has contributed to their technological receptiveness and multitasking abilities. Nevertheless, differences have been observed between the two groups in learning styles, preferences, communication practices, and their engagement in online environments (Seemiller & Grace, 2019; Twenge, 2017).

Millennial respondents entered the workforce or pursued education during the 2008 global financial crisis, which generated uncertainty and challenged long-term stability – factors that impact subjective well-being and confidence (Pew Research Center, 2011; Twenge & Campbell, 2010). Generation Z individuals grew up as digital natives, but their formative experiences include the COVID-19 pandemic and the climate crisis. During the early phase of the pandemic, Gen Z reported significantly higher rates of depression, anxiety, stress, and loneliness compared to older cohorts (Racine et al., 2021). Moreover, Gen Z exhibits pronounced eco-anxiety: surveys and reviews document widespread fear, sadness, and powerlessness related to climate change, often motivating environmental engagement (Clayton et al., 2023).

Our findings align with previous research showing that certain personality traits differ by gender across generations. Women tend to score higher in emotional instability and empathy, and lower in vitality, while men typically show higher levels of openness to experience and a greater inclination toward thrill-seeking behaviors (Vecchione et al., 2012; Costa et al., 2001; Rahmani & Lavasani, 2012). Although differences in dominance did not reach statistical significance, women generally presented themselves in a more socially desirable manner across all generations. This pattern may reflect the influence of gender roles or the pressure to conform to perceived expectations in male-dominated fields (e.g., aviation) (Wirthwein et al., 2023).

The most striking differences were found in self-reflection, interpersonal relationships, and attitudes toward personal development. For instance, in 2016, BSc students showed significantly higher agreement with the idea of life as a continuous growth process, possibly reflecting both developmental positioning and the optimism of the early 2010s educational discourse. Conversely, 2024 MSc students reported greater openness to transformative experiences, which may reflect the growing relevance of identity work and critical engagement in the face of global instability.

According to the research findings, within the 2016 sample, female bachelor's degree students significantly more often agreed with the statement, "When I reflect on the story of my life, I am satisfied with how things have turned out so far." This difference can be attributed to several interrelated factors. On the one hand, increased self-reflection is more frequently observed among young adult women, facilitating a positive framing of their life narratives (Baxter Magolda, 1992). Longitudinal studies examining gender differences in development further confirm that female students typically possess a more mature self-concept and a more coherent life narrative at the beginning of higher education (Kroger, 2007; McLean & Pratt, 2006). On the other hand, female students are more likely to successfully adapt to the higher education environment during their undergraduate studies, which is partly accompanied by better academic achievement and stronger social support (Sax, 2008). These positive academic and social experiences may contribute to greater life satisfaction. Research also indicates that female students process their past experiences in a more emotionally differentiated manner, which facilitates their interpretation of difficult life phases as opportunities for growth (McAdams, 2001). An additional interpretative perspective is that by the mid-2010s, societal and media discourses – such as those promoting self-development and empowerment – had significantly intensified, particularly targeting young women, prompting many to engage more consciously with their roles and life trajectories (Arnett, 2000). Consequently, some young female students at the bachelor's level may have already been capable of constructing positive life narratives, enhancing their sense of satisfaction.

First, generational transitions appear to play a central role. While the 2016 respondents primarily belong to the Millennial generation, the 2024 cohortcomprises Generation Z students. Previous research has demonstrated that Generation Z displays higher levels of emotional awareness and tends to delay entry into long-term romantic relationships, often approaching intimacy with greater caution and reflexivity (Twenge, 2017). This increased emotional self-regulation and the more deliberate construction of close relationships may contribute to a reduced sense of relational disappointment in the later cohort.

Second, transforming communication patterns – particularly the normalization and integration of digital relational tools – has profoundly shaped interpersonal dynamics. As Baym (2015) and Callais (2020) argue, the widespread adoption of mediated communication has led to new forms of emotional expression and maintenance of intimacy. Students in 2024 are more likely to have internalized these digital communicative

norms early, facilitating more adaptive coping mechanisms within close relationships and potentially reducing the frequency or intensity of disappointment.

Furthermore, shifts in cultural discourse surrounding mental health and emotional intelligence may also offer explanatory power. In recent years, mental health literacy and open discourse around psychological well-being have been markedly amplified, especially within higher education contexts (Greenfield, 2009; Pew Research Center, 2019). Emerging adults in 2024 thus navigate intimate relationships with greater access to emotional vocabulary, self-help resources, and institutional support. These factors may enable more effective processing of relational tensions and foster resilience in the face of interpersonal challenges.

Finally, Arnett's (2015) theory of emerging adulthood underscores the increasing developmental emphasis on identity exploration and personal growth during the third decade of life. For today's students, intimate relationships are more frequently conceptualized as opportunities for emotional development rather than sources of validation, potentially reframing the experience of relational conflict or disappointment as normative and constructive.

Taken together, these psychological and sociocultural developments suggest that the lower agreement rate with the negative relational statement among the 2024 MSc students may reflect not only changing generational values and practices but also a more sophisticated and supportive context for managing close interpersonal connections.

In contrast, the 2024 cohorts entered higher education in a period marked by global instability, post-pandemic uncertainty, and economic precarity—factors that may temper idealistic views of learning and growth (Purcell & Lumbreras, 2021; Aristovnik et al., 2020). Additionally, MSc students in 2016 and 2024 often occupy a later developmental phase where pragmatic concerns and career consolidation take precedence over open-ended growth ideals (Kegan, 1994; Mezirow, 2000).

Thus, the elevated growth orientation observed in the 2016 BSc group likely reflects a confluence of early developmental stage, aspirational identity formation, and a historically optimistic educational climate.

In the 2024 MSc cohort, agreement with the statement "I believe it is important to seek out new experiences that challenge the way I think about myself and the world" was significantly higher ($p < .05$) compared to both the 2016 MSc and BSc cohorts. The increasing relevance of transformative learning, generational shifts in student identity, and the evolving function of postgraduate education can explain this difference.

Drawing on Mezirow's (2000) transformative learning theory, it is evident that contemporary postgraduate students are more inclined to interpret learning as a process of profound personal and epistemic change. Disorienting experiences are no longer perceived as threats but as opportunities for reflection and self-reconstruction – especially amid global disruptions such as the pandemic, climate anxiety, and social justice movements (Illeris, 2014).

Generation Z, to which most 2024 MSc students belong, is characterized by reflexivity, social critique, and openness to challenging dominant narratives (Twenge, 2017). These students often view higher education as a platform for meaning-making rather than mere career preparation (Roy et. al., 2025).

Moreover, postgraduate study increasingly serves as a site of specialization and an extended space for identity development and reorientation (Kegan, 1994). This may explain the heightened appeal of experiences that push students to re-evaluate both their self-concept and worldview. For many students, this stage of education facilitates critical engagement with alternative perspectives and a conscious restructuring of self-concept in relation to complex global realities. The 2024 MSc students' stronger agreement with the value of challenging experiences may thus reflect both a generational openness to transformation and a reframing of postgraduate study as a site for existential as well as intellectual development.

These findings contribute to the literature on generational psychology and talent development by illustrating how students' perceptions of well-being are shaped by their academic excellence and broader social and cultural dynamics. The stronger self-confidence and autonomy seen in the 2024 cohort may reflect Generation Z's increased exposure to discourses of self-efficacy, resilience, and empowerment. Likewise, gender differences observed across both samples – particularly in self-trust and emotional expressiveness – highlight the need for gender-sensitive approaches in talent management programs.

Methodologically, using Ryff's 18-item scale proved effective for capturing nuanced differences across samples. Although the 2024 response rate was lower, the sample size remains acceptable for identifying statistically significant trends. Future research should explore qualitative dimensions of well-being (e.g., narrative identity, life goals) to deepen the understanding of talented students' developmental trajectories.

## Conclusions

This research offers new insights into the psychological well-being of talented students in higher education, revealing enduring traits and generational shifts. While core strengths such as autonomy and purpose remain characteristic of talented youth, the meaning and manifestation of these traits evolve in response to societal context, generational identity, and academic stage.

Notably, the findings highlight that talent development cannot be decoupled from well-being. Institutions must consider how psychological and emotional support, particularly during periods of crisis and transition, can enhance the effectiveness of talent programs. Generation Z students appear increasingly open to transformative learning and self-reflection – resources that can be actively cultivated through mentoring, experiential learning, and inclusive program design.

By applying a longitudinal perspective and focusing on both intra- and intergenerational dynamics, this study contributes to a more holistic understanding of talent in higher education. Future studies may build on this foundation by integrating mixed-methods approaches, examining career outcomes, or exploring the intersection of well-being with digital identity, activism, or intercultural competence.

## Limitations and Future Directions

Although research on talented students in higher education remains a relatively underexplored area, several limitations of the present study should be acknowledged. Between the first (2016) and second (2024) waves of data collection, changes were introduced in the institutional context of the university's talent development program. These included the acquisition of funding through the National Talent Program, which supported initiatives targeting talented students, as well as the introduction of new program components such as competency-oriented trainings, personal development sessions, team-based activities, and initiatives involving international students. These developments broadened opportunities for interaction in more diverse settings, including communication beyond students' native language. While these programmatic elements formed part of the broader educational environment during the study period, their specific impact on participants' psychological well-being was not examined within the scope of the present research and therefore cannot be isolated from generational or contextual effects.

Building on the present findings, future research may benefit from systematically examining how competency-based program elements relate to the psychological well-being and developmental trajectories of talented students. In particular, longitudinal designs that explicitly incorporate program exposure measures could help clarify the role of institutional interventions. From a practical perspective, the results may also inform the further refinement of talent development programs in alignment with evolving labor market demands, including challenges associated with the increasing prevalence of remote work arrangements and the expanding use of artificial intelligence in professional contexts.

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