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Examining the factor structure of the Fraboni scale of ageism among students in the Austrian–Hungarian border region

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The ageing population poses notable challenges, including the rise of ageism-stereotypes, prejudices and discrimination based on chronological age. Ageism can negatively influence the well-being of individuals across all age groups, particularly the elderly, and can disrupt social integration. Reliable and comprehensive assessment tools are essential to effectively address and measure ageism. The Fraboni scale of ageism (FSA) is a widely recognised instrument that assesses ageism through a multi-dimensional framework, making it a valuable tool for research in this area. This study investigated the factor structure of the scale of ageism among students in the Austrian–Hungarian border region using data collected through an online survey. The analysis revealed a clear factor structure that elucidated the dimensions of ageism in this specific geographical context. This study highlights the ability of FSA to capture the complexities of ageism in the region and supports its application in comparative international studies.

Keywords: ageism, factor structure, Fraboni scale of ageism, country-specific differences

Population ageing is one of the most notable demographic challenges of the 21st century. Ageing refers to an increase in the proportion of older individuals and a decrease in the proportion of younger individuals. Population ageing is directly influenced by three factors: fertility, mortality and migration. Declining birth rates and increasing life expectancy are the primary factors contributing to population ageing, whereas migration plays a lesser role *(Rychtaříková, 2019)*. Consequently, the age structure of the population has changed considerably in recent decades, with the number and proportion of older people rising, making this age group

increasingly prominent *(Zniva, 2016)*. In this era of demographic transformation, where societies face major challenges owing to the growing elderly population and the decrease in intergenerational contacts, established perceptions of age play a substantial role in shaping attitudes towards ageing *(Endter, 2021)*. However, population ageing should not be viewed as a problem requiring a solution; rather, it is an integral part of overall demographic development. Therefore, strategies must be devised to recognise and adapt to these demographic changes *(Hablicsek–Pákozdi, 2004)*.

With these demographic changes, ageism has garnered increasing attention in research. Ageism refers to stereotypes, prejudices and discrimination based on the chronological age of an individual *(Loos–Ivan, 2018)*. Consequently, older people are often associated with negative attributes *(Drury et al., 2016)*. Measuring the prevalence of ageism is essential to mitigate and address ageism. Various tools are available for this purpose, each tailored to specific research contexts. One of the most widely used instruments is the Fraboni Scale of Ageism (FSA), which is valued for its comprehensive, three-dimensional approach *(Ayalon et al., 2019)*.

This study analysed the factor structure of the FSA among students in the Austrian–Hungarian border region. The study evaluated the effective reflection of various dimensions of ageism using the FSA within this regional context. Additionally, the study explored the perceptions and attitudes of students towards the elderly. By examining the factor structure of the scale and its total index, this study aimed to compare the perceptions of students from both sides of the border, providing valuable insights into ageism. This comparison enhances our understanding of regional differences and contributes to comparative international studies.

1. Theoretical background

1.1 Ageing and country-specific perspectives on ageing

Society is increasingly facing the challenges of an older population. Between 1950 and 2010, the global population rose from 2.53 billion to approximately 6.9 billion *(United Nations, 2019)*. By 2100, it is projected that in Austria, 18.6% of the population will be under 20, 51.7% will be aged 20–64 and 29.6% will be 65 years of age or older. The younger and middle-aged populations are expected to decline, whereas the elderly population will increase *(Statistik Austria, 2021)*. In Hungary,

20% of the population was 65 or older in 2020, accounting for 1.94 million people *(Boros et al., 2021)*. As early as 2002, Hungary was described as a 'society of the elderly and retirees' *(Iván, 2002)*. By 2050, the number of elderly individuals per 100 working-age individuals is expected to rise from 30 to 47 *(Obádovics–Tóth, 2021)*.

The pace of ageing is now significantly faster than in the past *(Zniva, 2016; Hablicsek, 2009; Obádovics–Bruder, 2019; Obádovics, 2018)*. In 2020, 20.2% of the Hungarian population was 65 years of age and older, exceeding 14.4% of children under 15 years of age. By 2050, the proportion of individuals over 65 years will increase by 8%, whereas the proportion of children is projected to decline by 4% *(Obádovics, 2019)*. Traditional family structures are weakened, potentially influencing attitudes towards older adults. Studies have indicated that older people are particularly vulnerable to the negative effects of ageism *(Kutlu et al., 2012)*.

The ageing of the population is a universal phenomenon, leading to profound demographic shifts *(Hofmeister-Tóth et al., 2021)* with significant effects on all aspects of human life, particularly in the economic, social and political spheres. As such, engaging the elderly population is crucial *(Zniva, 2016)*. Ageing should be analysed both globally and on a country-specific basis because age-related differences vary among nations *(Couto et al., 2021)*. Discrimination against older adults exists across cultures, although the intensity of discrimination differs by region *(Ackerman–Chopik, 2021)*.

The Global AgeWatch Index (2015) compares countries on ageing metrics such as income security and health. Austria ranks 13th, while Hungary ranks 39th *(HelpAge International, 2015)*. Country-specific factors, including development and economic status, affect attitudes towards ageing. Higher levels of modernisation tend to correlate with greater respect for older adults, whereas lower levels result in more negative experiences of ageing *(Ackerman–Chopik, 2021; Couto et al., 2021)*.

Both Austria and Hungary are experiencing significant ageing; however, negative perceptions of the elderly in Hungary may stem from their socialist past *(Bálint–Spéder, 2012)*.

1.2 Concept of ageism

Ageism refers to stereotypes (how one thinks), prejudices (how one feels) and discrimination (how one acts) against individuals based on their chronological age. Although ageism can affect people of all ages, it is particularly harmful to the health and well-being of older adults *(Ayalon et al., 2019)*. With the global rise in

the ageing population, ageism has become an increasingly important area of research. Negative trends show that generations often develop negative attitudes and stereotypical views based on age. Older individuals are often perceived as less adaptable to change or have diminished cognitive abilities *(Drury et al., 2016).*

The way people judge others is influenced by various factors, including individual characteristics such as gender, age, socio-economic status and societal context. These factors affect the extent to which age-related prejudices and stereotypes differ *(Hofmeister-Tóth et al., 2021)*.

The concepts and definitions of ageism and age discrimination have evolved. The term was first defined by Robert Butler, a pioneer in age studies *(Ayalon–Tesch-Römer, 2018)*. In 1969, Butler coined the term 'ageism' to describe the prejudices and discrimination faced by older adults based on their chronological age *(Hofmeister-Tóth et al., 2021)*. Since then, the number of studies on ageism has increased. Ageism affects everyone; thus, it continues to be an important area of research *(Ng, 2021)*.

In 1999, American gerontologist Palmore expanded the concept of ageism by considering both cognitive and affective aspects towards older people. These aspects included negative attitudes, feelings and behaviours towards older adults *(Fan et al., 2020)*. Palmore identified four forms of ageism: negative prejudice, negative discrimination, positive prejudice and positive discrimination *(Hofmeister-Tóth et al., 2021).*

According to Palmore, negative and positive ageism should be distinguished. He identified the following negative stereotypes about older people: illness, impotence, unattractiveness, mental decline, uselessness, isolation, poverty and depression. Positive ageism, though less common, is characterised by eight positive stereotypes: kindness, wisdom, reliability, prosperity, political power, freedom, eternal youth and happiness. Levy and Banaji differentiated between explicit (conscious) and implicit (unconscious) ageism *(Hofmeister-Tóth et al., 2021)*. Explicit ageism refers to intentional or controlled thoughts, feelings or actions towards older adults based on age. Implicit ageism occurs when attitudes towards older adults are based on minimal awareness or intention. Further categorisations can be made depending on the target person. Ageism can be directed at others, such as in jokes about older adults, or towards oneself, such as concerns about one's own ageing *(Ayalon et al., 2019)*.

Ageism is a complex and multi-faceted concept owing to its three dimensions of stereotyping, prejudice and discrimination *(Hofmeister-Tóth et al., 2021)*.

The first dimension, stereotyping, addresses the cognitive aspect of ageism. Stereotyping involves attributing specific characteristics to a category. In Lippmann's model, stereotypes are defined as 'pictures in our heads'. He argued that because one cannot comprehend the world in its entirety, people form mental

images before gaining personal experience *(Thiele–Atteneder, 2019)*. The researcher demonstrated that a small amount of information is sufficient to categorise individuals into specific types. Thus, stereotypes can reduce complexity and simplify understanding *(Atteneder, 2017)*.

The second dimension, prejudice, describes the emotional aspects of ageism. Feelings of pity or sympathy are common forms of prejudice towards older adults that may lead to a desire to exclude oneself from older individuals in society *(Ayalon–Tesch-Römer, 2018).*

The third dimension, discrimination, pertains to the behavioural aspect of ageism. Age discrimination manifests in various areas of life, including public spaces, healthcare, the job market and consumer markets. To mitigate such discriminatory behaviour and facilitate a paradigm shift in attitudes, one must effectively address negative attitudes and discrimination against older generations *(Ayalon–Tesch-Römer, 2018).*

An important issue in ageism is the neglect of individual differences among older adults. The heterogeneity and uniqueness of older individuals are often overlooked, which can contribute to discrimination *(Wangler–Jansky, 2021).*

Cultural and social values also contribute to ageism. Cultural perspectives are categorised into collectivist and individualist approaches. Studies have confirmed that groups with a more collectivist outlook tend to be less age friendly. This phenomenon can be attributed to the fact that older people in collectivist cultures are more integrated into social spaces, and their roles within family units are highly valued. In conclusion, although culture is not the sole determinant of ageism, it is a significant factor. Understanding cultural perceptions and attitudes towards ageing in country-specific contexts is essential *(Bergeron–Lagacé, 2021).*

1.3 Measurement of ageism

The significance of ageism is continuously increasing, making the measurement of ageism increasingly relevant. Various instruments and scales can be used to determine the extent of ageism *(Ayalon et al., 2019)*. Over the past decades, many scales have been developed to measure ageism in terms of different aspects and dimensions, both explicitly and implicitly *(Hofmeister-Tóth et al., 2021)*. Most of these scales originate from the USA, reflecting Western and particularly North American perspectives and concepts *(Klusmann et al., 2020)*. The scales related to ageism were identified and systematically analysed by Ayalon et al. in 2019. This comprehensive review included 106 studies on the measurement of ageism. This study emphasised the importance of scales with multi-dimensional characters. A key finding was that the dimensions of ageism are not always clearly defined

(Ayalon et al., 2019). Another study by Klusmann et al. grouped 89 ageism scales into eight dimensions: ecosystem, balance, stability, dynamics, complexity, manifestation, awareness and time perspective. Most of these scales are explicit because they specifically examine beliefs about one's own age and ageing or about other older individuals. Further differences were noted in the approaches taken at various scales. Some scales viewed ageing as a long-term process, whereas others focused more on the characteristics of ageing *(Klusmann et al., 2020)*. *Ayalon et al. (2019)* highlighted the need to develop scales that encompass all three dimensions of ageism, whereas *Klusmann et al. (2020)* advocated for the expansion of scales to better capture the implicit aspects of.

The Scale of Ageism was developed by *Fraboni et al.* in 1990 in Canada, which was based on Butler's concept of ageism. In the following text, the scale is referred to as the FSA, which is a commonly used term in the literature. The developers of the FSA – Fraboni, Saltstone and Hughes – noted that earlier ageism scales focused solely on cognitive components. To overcome this limitation, they created the FSA *(Rupp et al., 2005)*. This scale was selected from numerous scales owing to its frequent use. Consequently, it has been validated and used in various international studies across diverse cultures. Its multi-dimensional construct, which measures stereotypes, prejudices and discrimination, is a key reason for its widespread adoption *(Hofmeister-Tóth et al., 2021).*

The two systematic reviews mentioned above have analysed the FSA. According to *Klusmann et al. (2020)* the FSA is characterised by a combination of cognitive, affective and behavioural manifestations of multi-dimensional ageism traits. This study highlighted the multi-dimensional nature of the FSA and noted that unlike other scales, the FSA items were not time bound *(Klusmann et al., 2020).*

The purpose of the FSA is to measure the extent of ageism by examining both cognitive and affective aspects of ageism *(Fraboni et al., 1990).* Three dimensions were identified. 1) Anti-locution: This dimension stems from false beliefs, misinformation or myths about older people. An example statement is, 'Many old people only live in the past'. 2) Avoidance: Avoidance refers to withdrawal from social interactions with older adults. Statements such as 'I don't like it when older people try to talk to me' exemplify this category. 3) Discrimination: This dimension addresses discriminatory attitudes towards the rights, segregation and activities of older people. For instance, the statement 'Older people should feel welcome at social gatherings of younger people' *(Rupp et al., 2005)* exemplify this category. The scale comprises 29 statements that evaluate cognitive, affective and behavioural components *(Fan et al., 2020).* Respondents rate their agreement with these statements on a 4-point scale (1 for 'strongly agree', 2 for 'agree somewhat', 3 for 'disagree somewhat' and 4 for 'strongly disagree'). The results provide a

comprehensive measurement of ageism. The mean FSA score was calculated, with higher mean scores reflecting higher levels of ageism *(Fraboni et al., 1990).*

Ageism is not limited to older individuals; it can affect any age group. *Kolos et al.* measured the extent of ageism between two groups – students and older adults – using the FSA. Their findings confirmed that ageism existed in both age groups, although the degree varied. Younger individuals exhibited higher levels of ageism and harboured more frequent negative and derogatory thoughts and concerns about interacting with older adults. In contrast, the prejudices of older adults are based on their past experiences *(Kolos et al., 2020).* Numerous international studies have demonstrated that the FSA is an effective tool for measuring ageism, with its validity assessed in several countries *(Hofmeister-Tóth et al., 2021)*, including the USA *(Rupp et al., 2005)*, Turkey *(Kutlu et al., 2012)*, Hungary *(Hofmeister-Tóth et al., 2021)* and China *(Fan et al., 2020)*.

Rupp et al. (2005) validated the FSA in the USA, revealing a revised three-factor structure that accounted for 36.4% of the variance. Research conducted in Turkey also confirmed that the FSA is an effective tool for measuring ageism in the Turkish population, with the three factors accounting for 38.31% of variance *(Kutlu et al., 2012)*. In Hungary, Hofmeister-Tóth et al. established the reliability and validity of the FSA in the Hungarian population and adapted it to the Hungarian language. Their study confirmed that the Hungarian version of the FSA is an appropriate tool for measuring ageism, with the three factors accounting for 44.49% of variance *(Hofmeister-Tóth et al., 2021)*. Research in China also revealed a similar three-factor structure that accounted for 34.84% of variance *(Fan et al., 2020).*

Notably, a shortened version of the FSA was used in these studies. The reasons for this adaptation include cultural differences, ethical issues and a low overall correlation among the statements *(Hofmeister-Tóth et al., 2021)*. For example, the Chinese sample used only 22 items from the original scale *(Fan et al., 2020)*, whereas the representative Hungarian sample used a modified 12-item version of the FSA *(Kolos et al., 2020)*.

2. Methodology

The methodology chosen for this study was a quantitative survey. Using a quantitative method, assessing the prevalence of specific attitudes within the study group is possible *(Rüdiger et al., 2013).* For the empirical research, FSA was

selected owing to its multi-dimensional structure. The online survey was conducted using Qualtrics (qualtrics.com). Two separate questionnaires were designed, one in German and the other in Hungarian. Links to these questionnaires were distributed according to country-specific contexts. The research population comprised all students from Austria and Hungary who resided in the border region. The border region includes certain Austrian states and Hungarian counties: Burgenland (AT), Vienna (AT), Wiener Umland-Südteil (AT), Lower Austria (AT), Graz and Styria (AT), Győr-Moson-Sopron (HU), Vas (HU) and Zala (HU). Educational institutions, including universities and colleges from these regions, were included in this study.

To reach students in the Austrian–Hungarian border region, the links were primarily sent via a standardised email through the distribution lists of the Fachhochschule Wiener Neustadt Campus Wieselburg, Fachhochschule Wiener Neustadt and Fachhochschule Campus 02 to various study programmes. Additionally, four universities in the Hungarian border region were contacted: Soproni Egyetem, Széchenyi István Egyetem, Pannon Egyetem Zalaegerszeg and ELTE Savaria Egyetemi Központ Szombathely.

The questionnaire consisted of two sections. The first section includes a screener with three questions on socio-demographic data. The first two questions ensured that only students aged 18–35 years participated in the survey.

The FSA was selected for this empirical research owing to its multi-dimensional construct, which encompasses three dimensions – stereotypes, prejudices and discrimination. This scale explicitly measures ageism, ensuring both simplicity and clear interpretability. The use of the Likert scale facilitated easy understanding and quick completion by respondents. In this section, respondents were presented with 18 statements sequentially, which they were asked to rate on a 4-point scale (1 = ‘strongly agree’, 2 = ‘somewhat agree’, 3 = ‘somewhat disagree’ and 4 = ‘strongly disagree’). The statements were presented in a fixed order and addressed cognitive, affective and behavioural components of ageism. For this study, 18 of 29 statements from the FSA were analysed. This abbreviated version was chosen to account for the cultural context because some statements may conflict with prevailing social norms in Austria and Hungary (e.g. ‘Suicide among youth is more tragic than among older people’). Additionally, the questionnaire length was considered.

To evaluate the FSA, we first conducted an exploratory factor analysis using principal component analysis with Varimax rotation. Before performing the analyses, 18 statements from the FSA were reviewed. The scale included both positive and negative statements, which were considered during the evaluation. The negative statements were recoded to align with the direction of the positive statements. Exploratory factor analysis was performed using SPSS 26.0.

3. Results

3.1 Sample description

A total of 819 individuals participated in the empirical research, completed the questionnaire and were included in the analysis. The first sample consisted of 416 (50.8%) students from Austrian educational institutions, whereas the second sample comprised 403 (49.2%) Hungarian students. Additionally, gender distribution was uneven because the research questions did not account for the gender of the respondents. Approximately three-quarters of the respondents were women (609 individuals), whereas the remaining respondents were men (210 individuals).

The filter question ensured that respondents were between 18 and 35 years. Consequently, the average age of the entire sample (n = 819) was 23.05 years, with 73.7% of respondents falling within the 18–24 age range. A further 22.1% of participants were aged between 25 and 30 years, whereas less than 5% were over 30 years. This distribution reflects the typical composition of higher education institutions.

The two separate samples (sample Austria, n = 416 and sample Hungary, n = 403) from the Austrian and Hungarian border regions were analysed independently.

The demographic characteristics of the Hungarian and Austrian samples revealed notable differences in age distribution. The Hungarian sample exhibited an average age of 21.99 years, with most participants (87.1%) under 25 years, 11.7% between 25 and 30 years and 1.2% above 30 years. In contrast, the Austrian sample had a higher average age of 24.8 years: 60.8% of participants were under 25 years, 32.2% were 25 and 30 years and 7% were over 30 years.

3.2 Factor structure of the FSA

To assess the extent of ageism and attitudes towards older individuals in the sample, we used the FSA. In this study, the 18 items from the FSA were categorised according to the original categories established by *Fraboni et al. (1990)*. Each item was labelled corresponding to its category: ‘St’ for stereotype and anti-locution, ‘Av’ for avoidance and ‘D’ for discrimination. In addition, items within each category were numbered sequentially, facilitating statistical analysis and enhancing the visual representation of results.

The 18 FSA items were examined through exploratory factor analysis using principal component analysis with Varimax rotation to assess the factor structure

of the FSA. First, the suitability of the variables was evaluated by analysing the correlation matrix for correlation coefficients and significance levels, which revealed a significant correlation between the variables. However, this is only a preliminary observation. Both Bartlett's test of sphericity, $\chi^2(153) = 3220.667$; $p < 0.001$, and the Kaiser–Meyer–Olkin measure of sampling adequacy (KMO = 0.904) confirmed the suitability of the variables for factor analysis.

In summary, the presence and significance of the correlations, corresponding KMO values and significant Bartlett's test indicate that the variables were suitable for factor analysis. Exploratory factor analysis identified four factors with eigenvalues greater than 1, accounting for 48.455% of the cumulative variance.

The aim was to account for a substantial proportion of the total variance of the variables. After the review, six variables were excluded from the analysis: D1, 'Older people deserve the same rights and freedoms as other members of society'; D2, 'It is best if older people live where they do not disturb anyone'; D3, 'The company of most older people is quite pleasant'; AV1, 'I do not like it when older people try to converse with me'; AV6, 'I personally would not want to spend much time with an older person' and AV7, 'I feel depressed when I am with older people'. These variables were excluded because three of them (D1, D2 and D3) exhibited cross loadings, complicating their clear assignment to a single factor. In all cases, cross loadings were contextually meaningful. In addition, the communalities of items AV1, AV6 and AV7 were relatively low, indicating that these variables contributed a minimal amount of information to the factor.

Subsequently, principal component analysis with Varimax rotation was conducted. Although this analysis identified four factors with eigenvalues greater than 1.0, a three-factor solution was chosen based on the scree plot and theoretical considerations. Given that the original FSA was based on a three-factor model, the number of factors to be extracted was limited to three. Consequently, the revised principal component factor analysis included 12 FSA items. This analysis confirmed a significant correlation between the variables.

Repeated principal component analysis focused on 12 items of the FSA and revealed significant correlations between variables.

Table 1

Kaiser–Meyer–Olkin measure of sampling adequacy and Bartlett test of sphericity

KMO and Bartlett's Test	
	values
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0,839
Bartlett's Test of Sphericity Approximately Chi-Square	1569,215
df	66
Significance	0,000

Source: author's own representation.

Both Bartlett's test of sphericity, $\chi^2(66) = 1569.215$; $p < 0.001$, and the Kaiser–Meyer–Olkin measure of sampling adequacy (KMO = 0.839) confirmed the suitability of the variables for factor analysis.

We limited the number of factors to three. All three factors had loadings with eigenvalues greater than 1, accounting for 48.416% of the variance, with factors 1, 2 and 3 contributing 19.501%, 16.535% and 12.380%, respectively. Varimax rotation was applied to interpret the factors, and the following factors were identified:

Table 2

Factor loadings

Loading of Statements for the Factor Structure				
statement		1	2	3
St5	Most elderly people can be annoying because they often repeat the same stories.	0,683	0,069	0,103
St3	Many elderly people are stuck in the past.	0,655	0,154	0,148
St2	You cannot expect complex and interesting conversations from most elderly people.	0,617	0,226	0,137
St4	Elderly people complain more than others.	0,597	0,07	0,183
D4	Most elderly people should not be trusted to take care of young children.	0,596	0,086	0,013
Av3	Elderly people should feel welcome at social gatherings of younger people.	0,055	0,72	0,162
D6	It is sad to hear about the hardships faced by elderly people in our society.	0,035	0,711	0,05
Av4	Elderly people can be very creative.	0,237	0,709	0,118
D5	Most elderly people are interesting, individualistic individuals.	0,431	0,554	-0,032
Av5	Many elderly people are happiest when they are with people of their own age.	0,085	0,068	0,821
Av2	Elderly people should seek friends of their own age.	0,105	0,232	0,724
St1	Many elderly people are not interested in making new friends and instead prefer the circle of friends they have had for years.	0,296	–0,014	0,398

Source: Own calculation.

Table 2 demonstrates that the following five statements load onto factor 1:

- 'Most elderly people can be annoying because they often repeat the same stories'.
- 'Many elderly people are stuck in the past'.
- 'You cannot expect complex and interesting conversations from most elderly people'.
- 'Elderly people complain more than others'.
- 'Most elderly people should not be trusted to take care of young children'.

Overall, the statements reflect common beliefs and misconceptions about older individuals, particularly about intergenerational communication and perceived difficulties in interacting with older people. Consequently, the first factor was identified as a *stereotype*.

The following four statements were found to load onto factor 2:

- 'Elderly people should feel welcome at social gatherings of younger people'.
- 'It is sad to hear about the hardships faced by elderly people in our society'.
- 'Elderly people can be very creative'.
- 'Most elderly people are interesting, individualistic individuals'.

Factor 2 focuses on *emotional attitudes* and involves the emotional evaluation of the situations and conditions of elderly individuals.

The following three statements are loaded into factor 3, which is labelled as *avoidance*:

- 'Many elderly people are happiest when they are with people of their own age'.
- 'Elderly people should seek friends of their own age'.
- 'Many elderly people are not interested in making new friends and instead prefer the circle of friends they have had for years'.

These statements reflect behaviours towards elderly individuals, indicating a tendency to avoid intergenerational interactions and contact.

These three factors partially resemble the findings of previous international studies. Table 3 provides a comparative overview of the existing research. In summary, the three dimensions identified in this study align to some extent with the results of earlier studies *(Fraboni et al., 1990; Kutul et al., 2012; Fan et al., 2020; Hofmeister-Tóth et al., 2021)*.

Table 3

Comparison of item-factor associations with previous research

Labelling of the statement	Fraboni et al. (1990)	Kutul et al. (2012)	Fan et al. (2020)	Hofmeister-Tóth et al. (2021)	Own research (2022)
	Canada	Turkey	China	Hungary	Hungary–Austria
St1–Nr.4	Antilocation	Stereotype	Stereotype	Stereotype	Avoidance
St2–Nr.9	Antilocation	Discrimination	Excluded	Avoidance	Stereotype
St3–Nr.5	Antilocation	Stereotype	Stereotype	Stereotype	Stereotype
St4–Nr. 28	Antilocation	Stereotype	Stereotype	Excluded	Stereotype
St5–Nr27	Antilocation	Stereotype	Stereotype	Avoidance	Stereotype
D4–Nr18	Discrimination	Stereotype	Stereotype	Avoidance	Stereotype
D5–Nr.24	Discrimination	Avoidance	Excluded	Positive emotional attitudes	Emotional attitudes
D6–Nr.22	Discrimination	Excluded	Excluded	Positive emotional attitudes	Emotional attitudes
Av2–Nr.11	Avoidance	Avoidance	Excluded	Avoidance	Avoidance
Av3–Nr.12	Avoidance	Avoidance	Avoidance	Positive emotional attitudes	Emotional attitudes
Av4–Nr.14	Avoidance	Avoidance	Avoidance	Positive emotional attitudes	Emotional attitudes
Av5–Nr.19	Avoidance	Stereotype	Stereotype	Stereotype	Avoidance

Source: own representation.

3.3 Extent of ageism

The results of the factor analysis were examined, focusing on three factors derived from 12 statements, and potential differences between the Hungarian and Austrian student samples from the border region were explored.

To incorporate the factor analysis results into the analysis, the three factors derived from the 12 statements were analysed separately to identify potential differences between the two samples using the t-test.

Stereotype factor

The t-test results indicate no significant difference in stereotypes between Austrian students in the border region ($M = 0.038$; $SD = 0.91$) and Hungarian students in the border region ($M = -0.039$; $SD = 1.08$), with $t(784.36) = 1.088$ and $p > 0.05$.

Emotional attitude factor

The second factor addresses emotional attitudes. Austrian students in the border region showed lower levels of emotional attitudes towards older people ($M = -0.262$; $SD = 0.874$) than Hungarian students in the border region ($M = 0.270$; $SD = 1.05$), with $t(781.798) = -7.867$ and $p < 0.001$. This significant difference indicates that as the level of emotional attitudes increases, respondents tend to reject positive statements about older individuals.

Avoidance factor

Finally, the avoidance factor was examined. Austrian students in the border region ($M = -0.093$; $SD = 0.94$) exhibited lower levels of avoidance towards older people than Hungarian students in the border region ($M = 0.096$; $SD = 1.05$), with $t(802.567) = -2.712$ and $p < 0.05$, revealing a significant difference.

4. Conclusion

The objective of this study was to examine the factor structure of the FSA among students in the Austrian–Hungarian border region. Although the FSA has been widely used in various cultural contexts, this study is the first to fully apply it to the investigation of ageism in this specific region. The FSA test provided new insights into the manifestation of ageism in this geographic area. Given the cultural diversity of the Austrian–Hungarian border region, we predicted that the FSA would reveal a multi-dimensional structure similar to those identified in previous international research. The findings validate the multi-dimensionality of FSA and endorse its use in cross-cultural ageism studies.

The *'Decade of Healthy Ageing' (2021–2030)* is a global initiative led by the United Nations aimed at promoting sustainable development for the next 10 years. Its primary objective is to unite governments, civil society, international organisations, professionals, academia, media and the private sector to improve the lives of older people, their families and communities *(WHO 2022)*.

A key aspect of societal responsibility is fostering the integration of people across different life stages and enhancing intergenerational relationships. This includes ensuring adequate social support for older adults to reduce feelings of loneliness and depression *(Sipowicz et al., 2021)*. Intergenerational projects provide an opportunity to promote a solidaristic civil society and strengthen intergenerational interactions *(Höpflinger, 2010)*.

Such projects and contacts are instrumental in breaking down stereotypes, challenging age-related perceptions, raising awareness among different generations and encouraging active intergenerational engagement.

Austria and Hungary must address ageism by developing strategies that cater to the physical, psychological and social needs of older adults while minimising its negative effects. Governments play a crucial role in developing policies to tackle the challenges faced by the elderly and in promoting intergenerational programmes. These initiatives bridge the generational divide by helping to reduce and manage ageism.

Exploring the issue of ageism has considerable potential. An exploratory approach, such as cluster analysis, can identify similarities among respondents, thus enabling the formation of groups or segments. This method could create homogeneous segments that are well differentiated from one another, providing a solid foundation for strategies and models to effectively address age discrimination, particularly among students.

This exploratory study demonstrates that the methodology is effective for identifying differences among specific groups, such as students from different countries. However, its applicability extends beyond this context. Future research could examine the potential to highlight distinctions based on factors such as educational level, age and generational differences using more targeted segmentation tools. Understanding these diverse segments will enable the development of effective and specific interventions, ultimately leading to greater success in reducing ageism.

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