



ORIGINAL ARTICLE

Attitudes towards older adults (80 years and older): A measurement with the ageing semantic differential - A cross-sectional study of Austrian students

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Abstract

Introduction: The aims of the study were to investigate the four-factor structure of the German version of the Aging Semantic Differential (ASD) and to gain initial insights into the attitudes of nursing, medical and humanities students towards older people in Austria.

Method: A cross-sectional study design with a convenience sample was chosen.

Results: The ASD was completed by 255 Austrian nursing, medicine, and humanities students, who described their attitudes towards persons who are 80 years of age and older. The applicability of the four-factor structure (instrumentality, autonomy, acceptability and integrity) of the German version was confirmed by performing a confirmatory factor analysis. The mean age of students in our sample was 23.6 years; 79% of these were female. The sample displayed negative attitudes regarding the factors of autonomy and instrumentality, but more positive attitudes regarding the factors integrity and acceptability. The attitudes of the students in the three study programmes differed, with the medical students displaying the most negative attitudes. Students who displayed positive attitudes had statistically significantly higher levels of knowledge about ageism and better possibilities to hold personal conversations with older people (80+) in the family or circle of friends.

Conclusion: We conclude that having more knowledge about ageism and close personal contacts to older persons can support positive attitudes towards older individuals.

KEYWORDS

age, ageing, ageism, aging semantic differential, ASD, gerontology, nursing students

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1 | INTRODUCTION

An 'ageing society' or 'ageing population' reflects the fact that the proportion of older persons in the total population is steadily increasing (United Nations, 2013). In the 27 member states of the European Union (EU 27) in 2020, 20.8% of the total population was 65 years and older. In *The 2018 Ageing Report* issued by the European Commission, this group is referred to as the elderly population. In this report, people 80 years and older are referred to as the very elderly population and represented 6.1% of the total population in 2020 (European Commission, 2018). The size of this very elderly population group is expected to double (13%) by 2070 in the EU 27 (European Commission, 2020). The global very elderly population is expected to triple between 2019 and 2050 (United Nations et al., 2019).

Kydd et al. (2020) showed that the age groups of people 75, 80, or 85 years of age and older are mostly referred to as the 4th age or oldest old. Enßle and Helbrecht (2020) described two predominant stereotypes that exist in society regarding these age groups and, namely, that refer to people in these groups as the 'active ageing' or 'frail and dependent elders'.

Stereotypes are defined as a 'set of cognitive generalisations (e.g. beliefs and expectations) about the qualities and characteristics of the members of a group or a social category' (American Psychological Association, 2020). If these stereotypes are based on negative attitudes about ageing and age, these attitudes are described as ageism (WHO, 2020). The term was coined by Robert Butler in his article entitled *Age-Ism: Another form of Bigotry* (Butler, 1969). The negative impact of ageism – especially in health care – was recently shown in a systematic review by Chang et al. (2020). The authors stated that the poor quality of life of older people or reduced longevity is influenced by ageism and showed that older people are more often excluded from health care research. This is even the case when diseases with a high prevalence in older age groups are investigated, such as Parkinson disease (Chang et al., 2020). This implies that health care professionals should be especially sensitive to detecting negative attitudes towards older people and ageing as a result. Ageist attitudes or negative perceptions may be held by professionals in all sectors of health care, but nurses represent a highly influential group as the largest group to provide direct care to patients and residents (Ben-Harush et al., 2017; WHO, 2017). Veronek et al. (2020) measured the attitudes of 825 nursing students in Slovenia and Croatia towards advanced age and ageing. Positive attitudes were expressed more frequently by students who were studying full-time and had received previous education in gerontic nursing. Negative attitudes were more frequently detected among students who were married at the time of the study and had had previous work experience with the elderly. An investigation of 1100 Finnish nursing students showed that most held positive attitudes towards older adults. The attitudes were measured with the Kogan's Attitude towards Old People (KAOP) tool, whereby the participants are asked to agree or disagree with 17 statements. High levels of agreement were reported

What does this research add to existing knowledge in gerontology?

The applicability of the four-factor structure of the Aging Semantic Differential (ASD) can be confirmed for describing attitudes and stereotypes towards people aged 80 years and older.

Attitudes of students (nursing, medicine, humanities) towards people aged 80 years and older are slightly negative, by attributing them as dependent on others, insecure and unhealthy.

Knowledge about the meaning of ageism and having the possibility of personal conversation with people over 80 years of age in the family/circle of friends are predictors of more positive attitudes.

What are the implications of this new knowledge for nursing care with older people?

Educational interventions regarding the diversity of older people's degrees of dependency are of critical importance for nursing practice.

Educators in practice settings should be aware that students can have stereotypical attitudes about older people and should conduct special educational interventions.

While providing supervision for health care professionals, supervisors should provide opportunities for reflection regarding their attitudes towards old people and guide the ensuing discussions to raise awareness and increase self-reflection.

How could the findings be used to influence policy or practice or research or education?

Further research including a larger sample measuring the attitudes towards people aged 80 years and older will generate more representative data that can be used to raise awareness in health care practice institutions to stimulate the adaption of policies concerning ageism.

Content referring to the care of older people and especially content which can influence the attitudes of professionals in health care positively should be included in all education programmes for health care professionals.

for statements about the experiences of older people, the diversity of older people, and that they are capable of independent actions. Participants with more than five years of work experience in the field of nursing displayed more positive attitudes than those who had no or less working experience. The participants in the older age group (30–56) displayed more positive attitudes than those in the younger age groups (Salin et al., 2020). A longitudinal mixed method study conducted with 310 undergraduate nurses in the UK showed that the nurses' attitudes improved during the

longitudinal study, which required them to answer questionnaires, make drawings and take part in photo-elicitation interviews. The authors concluded that theoretical and practical educational experience influenced the nurses' attitudes and perceptions positively (Ridgway et al., 2018). Jeste et al. (2018) showed that taking part in a geriatric research programme positively influenced the attitudes of medical students towards ageing.

The positive impact of educational interventions was also shown in a meta-analysis by Burnes et al. (2019). These study findings indicate extensive, detailed knowledge about the attitudes of health care professionals is needed to tailor educational interventions that can improve their attitudes towards older adults.

Various instruments can be used to measure attitudes towards and stereotypes about older people and ageing or ageism. In their review, Klusmann et al. (2020) identified 89 instruments that could be used as self-report measures to assess views on ageing. Frequently used instruments include the Attitudes Toward Older People Scale (Tuckman), Ageing Semantic Differential (ASD), Subjective Age (SA) measure, Fabroni Scale of Ageism (FSA), Anxiety About Aging Scale (AAS), Kogans' Old People Scale and Palmore's Facts on Aging Quiz (FAQs). In an integrated review, Hovey et al. (2017) described nine instruments which were used especially to measure the nursing students' attitudes towards older persons, including the Kogan's Attitudes Toward Old People Scale (KATOPS), Perspectives of Caring for Older People Scale (PCOP), Palmore's Facts on Ageing Quiz (FAQs) and the Aging Semantic Differential (ASD).

Wilson et al. (2018) conducted a critical review of instruments used to measure attitudes towards older people, describing the ASD as one of the most widely used instruments. These conclusions had been previously reached by Iwasaki and Jones (2008). The ASD was originally developed by Rosencranz and McNevin in 1969 in the United States to measure the attitudes of young adults towards older people. The original instrument comprises 32 binary adjective terms which are assessed on a 7-point Likert scale (from 1 = most positive adjective to 7 = most negative adjectives). The binary adjectives in the ASD are applied with the so-called semantic differential technique, which is technique recommended to measure attitudes and especially to measure social stereotypes. Adjective pairs – to be precise, an adjective and its antonym – are used to describe a concept (Rosenberg and Navarro 2018). The German version of the ASD is based on a four-factor model of the English version, which was confirmed by Intrieri et al. (1995). The factors are instrumentality, autonomy, acceptability and integrity. Instrumentality is a measure of adaptability, vitality, or the active pursuit of a goal. Acceptability reflects the extent to which one is socially at ease and pleasing to others. Autonomy is a measure of self-sufficiency and active participation in social life. Integrity reflects a sense of personal satisfaction or inner peace (Intrieri et al., 1995). This four-factor structure was also confirmed once for the German version by Gluth et al. (2010). The four-factor version of the ASD shows acceptable internal reliability, and the construct validity has been confirmed several times by performing

confirmatory factor analyses (Gluth et al., 2010; Holmberg et al., 2020; Intrieri et al., 1995). As an overall concept, the ASD can be applied to measure 'stereotypic attitudes towards older persons' (Ayalon et al., 2019; Gonzales et al., 2010).

No data, however, have been published on the attitudes of health care professionals towards older persons in Austria. Therefore, the first aim of the study was to obtain more comprehensive and detailed knowledge about the attitudes of these professionals towards older persons and specifically towards a cohort that is mainly located in a health care setting. Individuals in the age group of 80 years and more were addressed based on the theoretical assumption that the stereotype of these individuals as frail and dependent mainly is applied to people who are 80 years of age and older. This assumption was supported by the existence of two predominant, yet contrary stereotypes of these individuals as either active ageing or frail and dependent elders (Enßle & Helbrecht, 2020). We assumed that the stereotype of active ageing is more frequently applied to adults between 65 and 80 years old, although this term is somewhat unclear, while the adjectives frailty and dependency are more frequently applied to adults aged 80 years and older (i.e. those individuals in the 4th age or the oldest old) (Kydd et al., 2020).

It is also necessary to gain more knowledge about the attitudes held by health care students and professionals towards older people, because studies have shown that these attitudes influence whether and how these professionals choose to work in settings where care is primarily provided to older people (i.e. as long-term care) (Zisberg et al., 2021). After conducting a comprehensive literature review to identify a suitable instrument, we chose the Aging Semantic Differential as the measurement instrument. The psychometrically tested German version of the ASD was used, as the semantic differential is suitable for measuring stereotypes and can be used to measure complex attitudes in a short time (Gluth et al., 2010; Rosenberg & Navarro, 2018; Wilson et al., 2018). Seaman et al. (2017), for example, used the ASD to measure the attitudes of students from different study programmes, such as nursing, social work, physiotherapy and occupational therapy. The second aim of our study was to confirm the previous results of Gluth et al. (2010), namely, the applicability of the four-factor structure of the ASD to the Austrian sample, and especially to a young cohort of health care students.

2 | RESEARCH DESIGN

We chose a cross-sectional study design with a convenience sample of students from three different study programmes.

2.1 | Data collection

Data were collected in May and June 2019 with a paper-based, self-reported questionnaire distributed to students in the nursing science and medicine programme offered at the Medical

University of Graz and to students in the humanities programme at the University of Graz. The students were recruited in seminar rooms by lecturers who were involved in this project and were asked to participate voluntarily in the research project by filling out the questionnaire at the end of the courses. The sample comprises students in the nursing science programme who were in their 3rd and 4th years of a four-year bachelor's degree programme and medical students who attended a study module entitled *Society and Health*, which is recommended to students in their third year of the 6-year programme. Since we decided to conduct this study with a convenience sample, we also invited students from the humanities, social sciences and law programmes who attended an elective course entitled *Specialized Topics in Cultural Studies: Forget – Forgot – Forgotten: Dementia in Film and Literature*. Based on the results of a pilot test, the questionnaire took a maximum of 10 minutes to complete. A targeted sample of 350 (CI 95% SD +/- 5%) participants in this particular group of students was calculated by conducting a power analysis to measure the attitudes towards people aged 80 years and older.

2.2 | Ethical considerations

The Ethical Committee of the Medical University of Graz approved this study. Participation was on a voluntary basis, and students were informed that non-participation had no influence on their grade. Participation was implied by their consent.

2.3 | Measuring instrument

In addition to the German version of the Aging Semantic Differential (ASD) comprising 32 items, the survey contained demographic questions about the academic field (nursing, medicine, humanities, social sciences, or law), sex and age. Further questions were asked to assess the participants' knowledge of ageism, experience with assisting or caring for people over 80 in practical placements, private contacts with people over 80 in their families or circle of friends, and personal conversations about personal relationships with people over 80 in their families or circle of friends.

To measure the potential effects of personal influencing factors on attitudes, some characteristics of the students were measured with the Big Five Inventory 10 (BFI-10). The complete Big Five Inventory is used to assess personal characteristics such as neuroticism, extraversion, openness, agreeableness and conscientiousness (Gluth et al., 2010; Musek, 2007). The BFI-10 is a short form of the inventory with 10 questions, comprising two questions to describe each characteristic. Each question can be rated with a 5-point Likert scale. For instance, the characteristic of openness is assessed by asking the questions 'I see myself as someone who has few artistic interests' and 'I see myself as someone who has an active imagination.' The psychometric test included in the German version showed

satisfying reliability and stability results (Rammstedt et al., 2010, 2013; Rammstedt & John, 2007).

2.4 | Analytic strategy

Data analyses were conducted with the IBM SPSS Statistics 26 (IBM 2019) and R-package lavaan (v0.6–4) software (Rosseel, 2012).

A confirmatory factor analysis (CFA) was carried out to verify the previously tested four-factor structure of the German version with the Austrian sample of a young cohort. The CFA was also chosen because the number of factors and the pattern of the indicator-factor loadings could be specified in advance based on the previously performed CFA by Gluth et al. (2010) (Brown & Moore, 2013). In order to measure both the four constituting factors (instrumentality, autonomy, acceptability, integrity) and the overall construct 'attitudes towards older persons,' we assessed the fit of a second-order model (see Figure 1) based on the items outlined by Gluth et al. (2010). Missing values per item (< 3%) and in total (9.4%) were addressed by making a full information maximum likelihood (FIML) estimation.

To perform some descriptive analyses, the sample was stratified by study programme to detect possible differences among the groups. Regarding statistical tests, the chi-square test was performed; to analyse ordinal data, we used the Kruskal–Wallis *H* test and for the interval-scaled data, the one-factorial ANOVA was used. For descriptive analyses of the subscales, the mean value was used. *P*-values <.05 were considered as statistically significant.

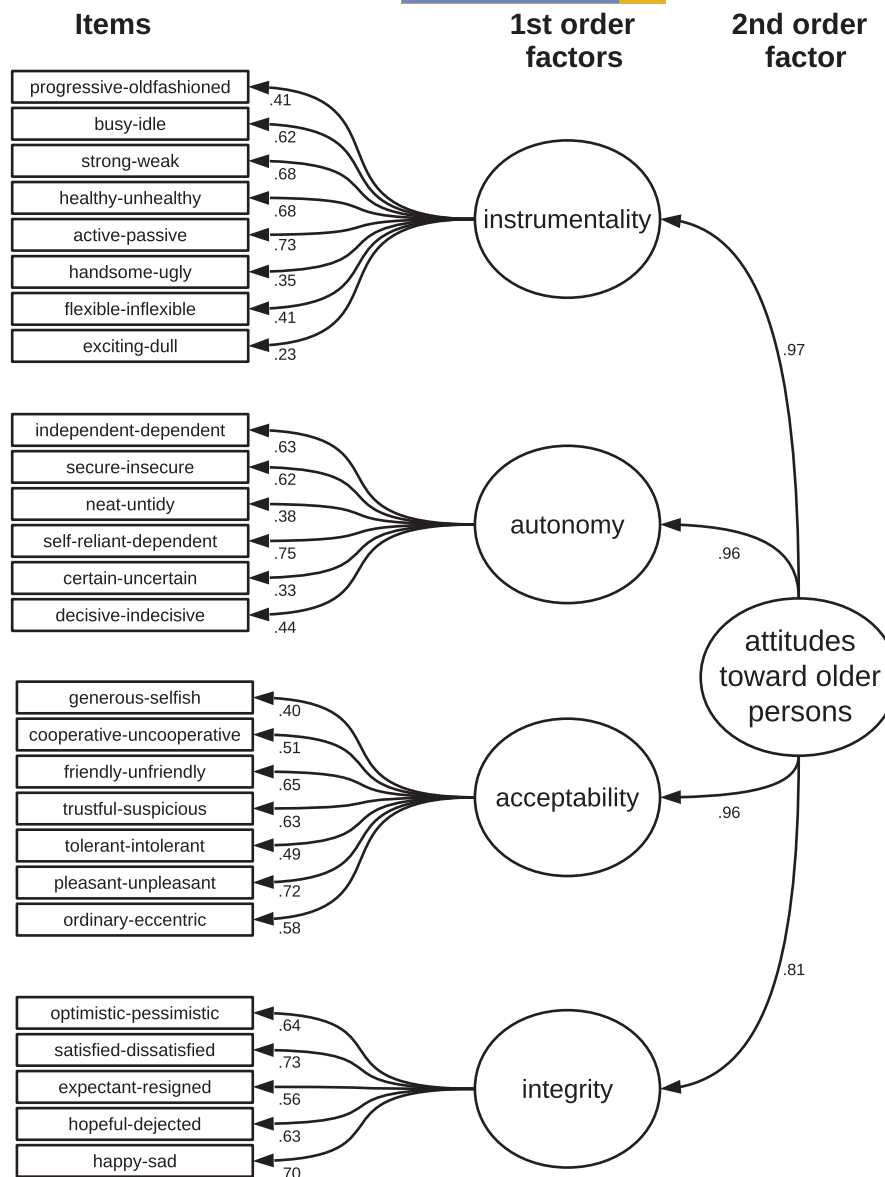
A linear regression analysis was performed to analyse possible influencing factors of the attitudes.

3 | RESULTS

3.1 | Sample description

The study sample included 255 students as participants. Of these, 154 (60%) participants studied nursing science, 75 studied medicine and 26 studied a humanity discipline. Even though not all questionnaires were completed fully, all useable data were included in the data analysis. The mean age of the entire student sample was 23.6 years (SD: 3.4 years), and 96% of the participants were younger than 30 years. In this sample, 79% of the participants were female. Regarding their experience, 208 (82%) had experience in caring for and/or assisting people over the age of 80. Eighty-four per cent of the students reported that they had a person over the age of 80 in their family or circle of friends, and 60% were aware of the meaning of ageism. Over 80% had the possibility to talk about personal topics with a person over the age of 80 (referred to as a 'personal conversation' in Table 1). The sample characteristics stratified by

FIGURE 1 ASD Confirmatory factor analysis



study programme are shown in Table 1. Regarding the BFI-10 values, significant differences were detected for two items (Table 1).

3.2 | ASD

The model fit was acceptable ($\chi^2=647715$, $df=295$, p -value=0.000; CFI = 0.822; TLI = 0.803; RMSEA = 0.07, SMR = 0.07). Reliability as measured by applying the coefficient omega to the four first-level factors (instrumentality = 0.743, autonomy = 0.666, acceptability = 0.778, integrity = 0.789) and the second-order factor (overall structure = 0.921) was also acceptable. Based on these results, we constructed a sum index for the second-order factor (attitudes towards older persons) and for each constituting factor (instrumentality, integrity, acceptability, autonomy) (Figure 1). Six item pairs could not be allocated to the four-factor structure (rich-poor, aggressive-defensive, productive-unproductive, organised-disorganised,

liberal-conservative, consistent-inconsistent) and were not used for further analysis.

3.3 | Descriptive analysis

The mean sum score for the ASD for the whole sample was 125.3 (SD = 40.0). The mean sum scores for female participants (125.3, SD: 40.4) and male participants (125.4, SD: 38.5) were similar. Stratified by study programme, the mean sum scores differed significantly ($p > 0.05$) between the programmes of nursing 122.68 (SD: 39.0), medicine 132.44 (SD: 40.1) and the humanities, social sciences, or law. 120.1 (SD: 41.6). (Table 2).

In a first step, the differences among the sum scores of the four factors between the study groups regarding the attitudes were analysed. Significant differences were identified between the study programmes regarding the instrumentality and autonomy of the subscales.

	Nursing science	Medicine	Humanities
n	154	75	26
Sex (female)*	90%	55%	92%
Age (mean, (SD))	24.16 (3.88)	22.65 (1.72)	23.12 (3.65)
Experience (care/assistance) % *	100	62.7	28
Old person in the family %	86	81	71
Meaning of ageism %*	96.8	12	65.4
Personal conversation %	89.6	85.2	80
BFI-10			
Reserved (mean (SD))	2.52 (1.19)	2.65 (1.15)	3.15 (1.27)
Generally trusting (mean (SD))	3.69 (1.02)	3.48 (1.01)	3.5 (1.17)
Tends to be lazy (mean (SD))	2.41 (1.18)	2.45 (1.13)	2.88 (1.21)
Is relaxed, handles stress well (mean (SD))	3.48 (2.65)	3.01 (1.12)	3.03 (1.34)
Has few artistic interests (mean (SD))*	2.94 (1.36)	2.57 (1.31)	2 (1.29)
Is outgoing, sociable (mean (SD))*	4.0 (0.98)	3.6 (0.98)	3.46 (1.06)
Tends to find fault with others (mean (SD))	2.81 (1.08)	3.0 (1.0)	2.73 (1.18)
Does a thorough job (mean (SD))	4.22 (0.85)	4.25 (0.73)	3.96 (1.03)
Gets nervous easily (mean (SD))	3.06 (1.12)	3.21 (1.24)	3.03 (1.28)
Has an active imagination (mean (SD))	3.84 (0.97)	3.69 (1.13)	4.15 (0.92)

* $p < .05$.

	Total	Nursing	Medicine	Humanities
Instrumentality (SD)*	4.34 (0.72)	4.23 (0.72)	4.65 (0.56)	4.08 (0.85)
Autonomy (SD)*	3.84 (0.80)	3.77 (0.79)	4.0991 (0.77)	3.52 (0.78)
Acceptability (SD)	3.28 (0.81)	3.2056 (0.76)	3.4530 (0.84)	3.27 (0.90)
Integrity (SD)	4.02 (0.91)	3.9562 (0.84)	4.1987 (0.85)	3.9 (1.18)

* $p < 0.001$.

The subscale instrumentality showed the highest values (i.e. the most negative attitudes) followed by the subscale integrity.

The highest values were observed among medical students as compared to those of the other student groups (Figure 2).

3.4 | Bivariate correlation

A bivariate correlation was performed between each subscale of the ASD and every item of the BFI 10 to identify possible correlations between personal factors and the attitudes. Only four items (reserved, generally trusting, has an active imagination and tends to find fault with others) showed significant correlations in each case with one or more factors, but the correlation coefficient was very low (< 0.2), so no further data analyses were performed.

Another bivariate correlation was performed for factors identified in the literature review as possibly influencing attitudes towards older persons. A correlation analysis was performed for each subscale, and the items sex, age, study programme, the knowledge

TABLE 1 Sociodemographic Characteristics and BFI 10

TABLE 2 Mean Scores of Subscales

about the meaning of ageism, experience in caring for/assisting people over the age of 80, having the possibility to hold personal conversations with people over 80 in the family or circle of friends, and if an older person lives in the family were correlated with each of these subscales. Statistically significant correlations are displayed in Table 3.

3.5 | Multivariable Analysis

A model for the linear multiple regression analysis had already been established for the multivariable analysis. Those factors which showed significant correlations in the bivariate analysis results were included in the model. This resulted in a linear multiple regression for the subscale instrumentality, with the independent factors 'older person lives in the family', 'personal conversation' and 'knowledge about ageism'. For the other three factors, a simple linear regression model was used with the independent factors of 'knowledge of ageism' and 'personal conversation'. The factors 'possibility to talk about personal topics with a person

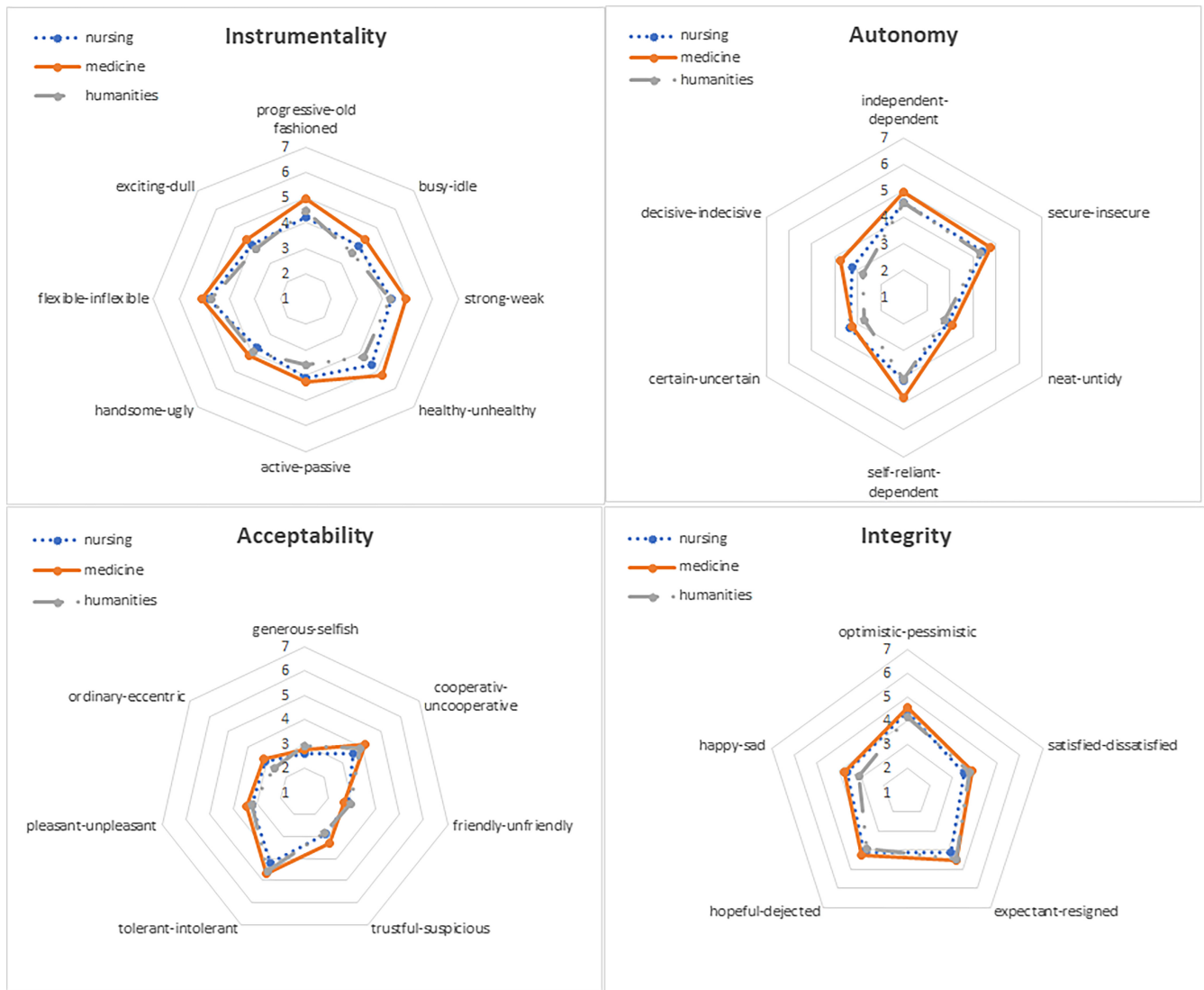


FIGURE 2 Analysis on item level per study programme

TABLE 3 Bivariate Correlation

Variable	N	Older person lives in the family	Possibility to talk with an older person about personal affairs	Knowledge about ageism
Instrumentality	255	.131*	.206*	.221*
Autonomy	255	.093	.101	.200*
Acceptability	255	.078	.192*	.102
Integrity	255	.063	.159*	.061

* $p < .05$.

aged 80 and older' and the 'knowledge about ageism' emerged as significant influencing factors (Table 4). Those participants who had the possibility to talk about personal topics with people over the age of 80 and knew what the term ageism meant held more often positive attitudes than those who did not know the meaning of ageism and who did not have the possibility to talk about personal topics with older people.

4 | DISCUSSION

The results presented in this study contribute to those of other international psychometric ASD studies in that they provide valuable information about the applicability of the four-factor structure in Austria. Our findings enabled us to further confirm the applicability of the four-factor structure of the German version of the ASD.

TABLE 4 Linear regression analysis

	B	SE	95% CI		p
			LL	UL	
Instrumentality					
Older person lives in the family	.59	.336	.073	1.254	.081
Personal conversation	.121	.038	.046	.196	.002
Knowledge ageism	.395	.103	.191	.599	.000
Autonomy					
Knowledge ageism	.323	.107	.112	.534	.003
Acceptability					
Personal conversation	.121	.045	.032	.210	.008
Integrity					
Personal conversation	-.113	.052	.012	.215	.029

* $p < .05$.

Our study reveals a slight general tendency for a young cohort of Austrian students to hold negative attitudes towards people over 80 years of age. A stratification of the data by study programme (nursing, medicine, humanities) revealed small differences regarding the attitudes held by members of the investigated groups. Medical students displayed more negative attitudes as compared to nursing and humanities students. Our findings from the regression analysis of factors influencing attitudes lead us to conclude that having a possibility to talk about personal affairs with an older person and having greater knowledge about the definition of ageism influence people's attitudes towards older people.

To the best of our knowledge, this was the first study in which the attitudes of students towards people aged 80 and older were specifically investigated in Austria. By confirming the four-factor structure (instrumentality, autonomy, acceptability, integrity), our results support those of other authors (Gluth et al., 2010; Holmberg et al., 2020; Intrieri et al., 1995). Intrieri et al. (1995) confirmed the four-factor structure of ASD in the USA, and Gluth et al. (2010) confirmed the German version of the ASD. Holmberg et al. (2020) confirmed the four-factor structure for the adapted Swedish version of the ASD. Confirmation of the four-factor structure for the adapted Mandarin version of the ASD could not be achieved. The Mandarin ASD was tested with 380 college students in Shanghai, China, who had with a mean age of 21.6 years. With these data, a three-factor structure (personality and mental health, societal participation and physical) could be confirmed. The authors of the Mandarin ASD concluded that the four-factor structure was not appropriate for use with the students from different (i.e. Chinese and Western) cultural backgrounds (Gonzales et al., 2017).

Our analysis of the ASD showed that they students – most of whom were young, female nursing students – had an overall slight tendency to hold negative attitudes towards persons who are 80 years and older. The Swedish study (Holmberg et al., 2020), reported slightly more positive attitudes as compared to our study and had the same target group regarding attitudes, but only investigated nursing students. Interestingly, the items concerning dependency

(independent/dependent, self-reliant/dependent) showed high mean values in both studies. This result supports the assumption that especially individuals over 80 are viewed as dependent (Heckemann et al., 2021). We chose this special age group by following the recommendation of Kydd et al. (2020), who used the defined age group especially for research purposes.

Half of the items regarding instrumentality and autonomy showed values over 4.5. These two subscales comprise the item pairs independent/dependent, self-reliant/dependent, active-passive and healthy/unhealthy. This finding may serve as evidence that supports the prevalence of the predominant stereotype as described by Enßle and Helbrecht (2020), whereby older persons are perceived as 'frail and dependent'.

Using regression analyses, we were able to show significant correlations among more positive attitudes and the factors 'knowledge about ageism' and 'the possibility to talk about personal affairs to older persons'. The importance of the factor 'talking about personal affairs to older persons', which can be interpreted as indicating that a close relationship with an older person exists, has been confirmed in other studies as well. In a study with undergraduate nursing students (mean age 24.5 year, 63% females) in Sri Lanka, about 50% of the students held slightly positive and 45% held slightly negative attitudes. The attitudes held did not depend on gender, ethnic group, religious group, or academic year, but they showed statistically significant differences when participants lived together with older people. Specifically, participants who lived together with older people generally held more positive attitudes (Rathnayake et al., 2016). The importance of having close contact to an older person was already discussed during the ASD development, and the authors showed that persons who had close contact to their grandparents viewed ageing and older people more favourably (Rosencranz & McNevin, 1969). Beside the importance of close contact to an older person, we showed that having knowledge about ageism statistically significantly and positively influenced the attitudes held towards people aged 80 and older. This knowledge may be a result of a specific course that the students took at the time of our study. The influence

of knowledge and education on attitudes has already been confirmed by several authors (Donizzetti, 2019; Liu et al., 2013; Rush et al., 2017). Other possible influencing factors were not revealed by our data analysis, maybe due to the relatively small sample size of our convenience sample, which limits our ability to draw broader conclusions or extrapolate our results. A relatively small convenience sample was chosen, because the focus in this investigation was placed on obtaining initial insights into the situation in Austria and testing the ASD. In addition, the sample was not equally distributed with regard to the participants' study programmes, possibly weakening the results with respect to our ability to compare among the groups. One strength of the ASD is that it has often used to measure attitudes of health care professionals. This study enabled us to confirm applicability of the four-factor structure in Austria, which contributes to the validity of the instrument.

5 | CONCLUSION

The ASD is an appropriate instrument to measure attitudes towards older persons in Austria.

The nursing, medical and humanities students who served as study participants held slightly negative attitudes towards people over 80. The main influencing factors were identified as having close contact to older people and having knowledge about ageism. Old people, respectively people over 80 years of age, were mainly viewed by the participants as dependent on others.

Further investigations into images of ageing, and especially among health care professionals, should be performed. The factors that influence images of ageing should be investigated in depth, and a special focus should be placed on factors like the cultural background, which may influence these attitudes.


CONFLICT OF INTERESTS

none.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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