




## ORIGINAL ARTICLE OPEN ACCESS

# Ageism and Empathy Among Dental Students in Southern Brazil

Luísa Helena do Nascimento Tôrres<sup>1</sup> | Magáli Beck Guimarães<sup>2</sup>  | Leonardo Marchini<sup>3</sup>  | Oscar Rysavy<sup>4,5</sup> | Patrick Barlow<sup>6</sup> | Chandler Pendleton<sup>5</sup> | Alexandre Fávero Bulgarelli<sup>1</sup> 

<sup>1</sup>Department of Preventive and Social Dentistry, School of Dentistry, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil | <sup>2</sup>Department of Restorative Dentistry, School of Dentistry, Universidade Federal de Santa Maria, Santa Maria, Brazil | <sup>3</sup>Department of Preventive and Community Dentistry, The University of Iowa College of Dentistry and Dental Clinics, Iowa City, Iowa, USA | <sup>4</sup>Department of Biostatistics, University of Iowa College of Public Health, Iowa City, Iowa, USA | <sup>5</sup>Division of Biostatistics and Computational Biology, University of Iowa College of Dentistry and Dental Clinics, Iowa City, Iowa, USA | <sup>6</sup>Carver College of Medicine, University of Iowa, Iowa City, Iowa, USA

**Correspondence:** Leonardo Marchini ([leonardo-marchini@uiowa.edu](mailto:leonardo-marchini@uiowa.edu))

**Received:** 15 November 2024 | **Revised:** 17 February 2025 | **Accepted:** 4 March 2025

**Keywords:** ageism | attitude of health personnel | dental care for aged | dental education | empathy

## ABSTRACT

**Purpose:** To investigate the association of ageism, empathy, and other possible explanatory factors among dental students in southern Brazil.

**Methods:** An online questionnaire and in-person visits were used for collecting sociodemographic data, dental training experiences, and attitudes toward aging, and employing the validated Brazilian versions of the Ageism Scale for Dental Students (ASDS-Braz) and Jefferson Scale of Empathy (JSE). Confirmatory factor analysis (CFA) was used to validate the JSE and ASDS-Braz, and structural equation modeling (SEM) was then employed to explore the relationships between total ageism score, total empathy score, and other factors.

**Results:** CFA for ASDS-Braz and JSE and the SEM showed marginal root mean square error of approximation (RMSEA) values and displayed expected loading directions. Among 626 predoctoral dental students (91.5% response rate), SEM revealed significant associations between the university attended and total empathy score with total ageism score, and sex with total empathy score.

**Conclusion:** Among southern Brazilian dental students, university attended and overall empathy levels are strongly linked to the total ageism score. At the same time, gender shows a significant correlation with the overall empathy score.

## 1 | Introduction

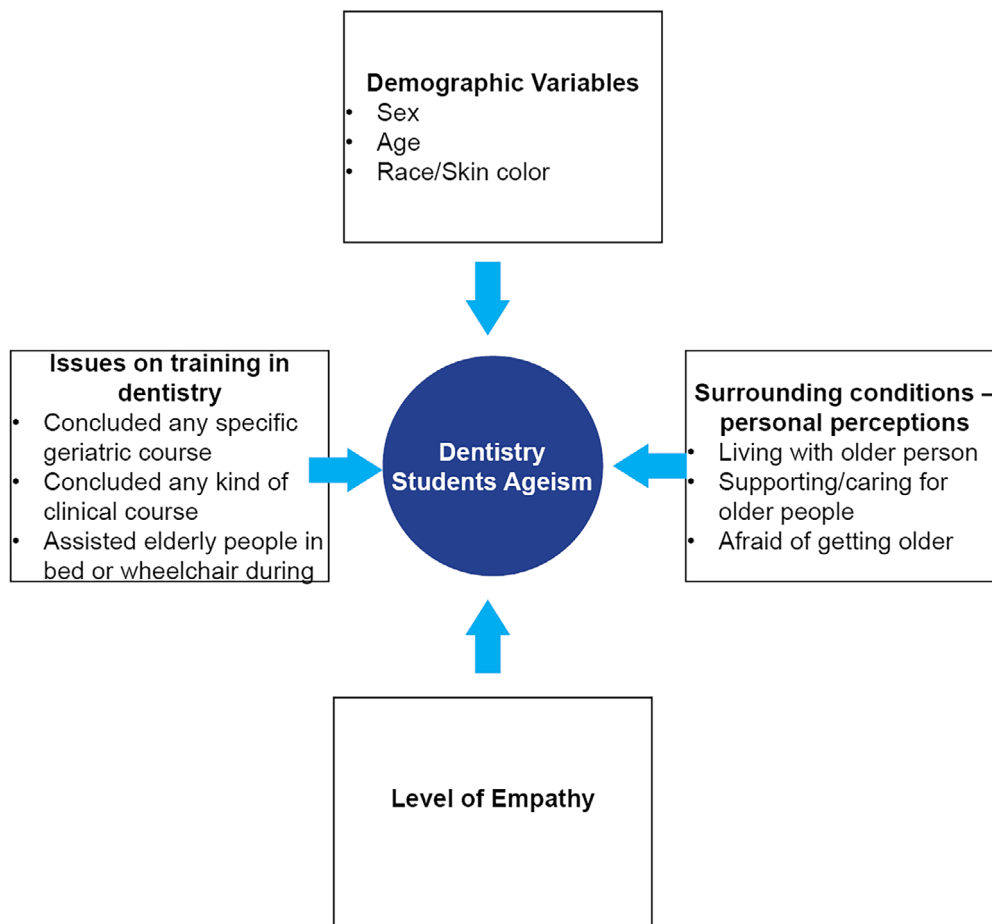
Ageism, defined as stereotypes, prejudice, and discrimination against individuals based on their age [1], is a pervasive issue in healthcare that significantly impacts the quality of healthcare provided to older adults [2]. The United Nations has identified combating ageism as a crucial component of its “Decade of Healthy Aging” initiative, recognizing its detrimental effects on both mental and physical health [3]. Ageism in healthcare can lead to the denial of services, biased treatment decisions, and

overall devaluation of older adults’ lives, contributing to reduced longevity, increased social isolation, and poorer health outcomes [4].

The detrimental effect of ageism goes beyond the impact on the healthcare of older adults. Levy et al. [5] calculated the economic cost of ageism predictors on health and found that a 1-year cost of ageism was more than 60 billion dollars. Also, the authors observed that a 10% reduction in the prevalence of ageism could potentially result in 1.7 million fewer cases of health conditions

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2025 The Author(s). *Special Care in Dentistry* published by Special Care Dentistry Association and Wiley Periodicals LLC.



**FIGURE 1** | Diagrammatic representation of the proposed theoretical framework for analyzing dental students' ageism, including demographic characteristics, aspects of dental training, attributes related to interaction with older people, the aging process, and empathy.

in the United States. These effects underscore the urgent need to address ageism within healthcare systems to ensure equitable and effective care for all age groups [3].

Ageism poses distinct challenges in oral healthcare as well [2]. Older adults often face significant barriers to accessing dental care [6], including assumptions about their ability to maintain oral hygiene and the perceived complexity of their treatment needs. These biases can result in suboptimal care, such as the preference for extractions over restorative procedures [7]. Given the growing older adult population and the critical role of oral health in overall well-being, addressing ageism in dental care is essential [8]. Dental professionals must be equipped to provide age-appropriate care that respects the dignity and needs of older patients, thereby improving their quality of life and health outcomes [9].

The Ageism Scale for Dental Students (ASDS) has been developed and validated to measure ageist attitudes specifically within this group [10]. This scale captures the multidimensional nature of ageism, including stereotypes, prejudice, and discrimination, and provides valuable insights into the prevalence and determinants of ageism among future dental professionals [11]. The ASDS has undergone extensive validation across various countries, including the United States [12], Brazil [13], Greece [14], and others [15–22], demonstrating its robustness and adaptability to different

cultural contexts [11]. Assessing ageism among dental students in order to understand these attitudes is crucial for developing targeted educational interventions that can reduce ageism and improve the quality of care provided to older adults [8, 9].

Empathy, the ability to understand and share the feelings of others, seems to be a key factor that may influence ageist attitudes [9]. Research suggests that higher levels of empathy are associated with lower levels of ageism, as empathetic individuals are more likely to appreciate the experiences and challenges faced by older adults [9, 23, 24]. In the context of dental education, fostering empathy through gerontological education and intergenerational contact may be an effective strategy to combat ageism [9, 25]. Enhancing students' ability to empathize with older patients can significantly reduce ageist attitudes and promote more compassionate care within the dental profession [9].

This study aims to investigate the association between ageism, empathy, and other explanatory factors among dental students in southern Brazil. By examining these relationships, we seek to identify the key determinants of ageist attitudes and allow for the development of pedagogic strategies to mitigate them. The insights gained from this research will inform educational interventions and policy changes, ultimately seeking to foster a more inclusive and respectful approach to dental care for older adults.

**TABLE 1** | Descriptive characteristics of undergraduate students from two southern Brazilian dental schools, 2023.

Characteristic	N = 626 <sup>a</sup>
Demographics	
Sex	
Female	454 (72.5%)
Male	172 (27.5%)
Age	23.9 (4.1)
Race	
Other	107 (17.1%)
White	519 (82.9%)
Education	
Number of semesters completed	4.72 (2.79)
Clinical enrollment	447 (71.4%)
School affiliation	
School A	412 (65.8%)
School B	214 (34.2%)
Concluded any specific geriatric course	205 (32.7%)
Experienced dental clinical practice for bedridden/wheelchair older patients	145 (23.2%)
Needed to guide or talk to caregivers about oral health care	132 (21.1%)
Experience with older persons	
Relationship with older subjects	
Indifferent/bad/terrible	30 (4.8%)
Good/excellent	563 (89.9%)
No contact with older subjects	31 (5.0%)
Missing	2 (0.3%)
Has lived with older people	281 (44.9%)
Presence of older people in social life circle	453 (72.4%)
Has an aged family member	587 (93.8%)
Has taken care/helped an older subject	332 (53.0%)
Afraid of getting old	278 (44.4%)
Psychometric scales	
Total empathy score	118.9 (13.4)
Missing	7
Total ageism score	36.2 (6.1)
Missing	34

<sup>a</sup>n (%); mean (SD).

## 2 | Methods

This cross-sectional study assessed ageism and empathy levels among undergraduate dental students from southern Brazilian dental schools. All 684 predoctoral dental students enrolled in 2023 from two different dental schools were invited to participate. Data collection occurred during the first academic semester of 2023 using two strategies: an online questionnaire and in-person visits to classes. The protocol was approved by all involved dental

schools institutional review boards (UFRGS: 6.064.421/ UFSM: 6.145.713).

The online questionnaire was sent via institutional email. After 1 month, researchers visited all classes to reach students who had not responded online. During these visits, researchers presented the study, invited participation, and provided either a QR code for the online questionnaire or a printed version. The questionnaire comprised three sections. The first section collected sociodemographic data, including sex, age, and race/skin color. It also included questions about dental training experiences, such as participation in geriatric dentistry courses, clinical courses, and outreach activities with older adults. Additionally, it inquired about living with older adults and attitudes toward aging. The second section featured the validated Brazilian version of Ageism Scale for Dental Students (ASDS-Braz), a 12-item scale, scores ranging from 12 to 72, with components addressing negative views of older adults, the complexity of providing care, and positive views of older people [13]. The third section included the validated Brazilian version of the Jefferson Scale of Empathy [26] with scores ranging from 20 to 140. For both the scales, higher scores correspond to greater levels of ageism and empathy. Figure 1 presents the diagrammatic representation of the theoretical framework proposed to analyze dental students' ageism.

The Brazilian version of the Jefferson Scale of Empathy and the ASDS-Braz were each submitted to a confirmatory factor analysis (CFA) to confirm if the latent structures of these surveys conformed to the hypothesized relationships. Then, data were analyzed to explore the association between ageism, empathy, and other explanatory factors among the dental students using a structural equation modeling (SEM) framework, which seeks to combine regression of observed variables with modeling of underlying latent variables. The structure for the proposed model was conceived as follows. The continuous latent variable "clinical exposure" is a predictor for the observed variables: number of semesters completed, enrollment in a clinical discipline, conclusion of any specific geriatric course, experience with bedridden/wheelchair bound older patients, and guiding caregivers through oral health care. The continuous latent variable "personal relationships" is a predictor for the observed variables: living with older people, presence of older people in the social life circle, taking care of older subjects, and relationship with older family members. These two latent variables were then used to construct the following models: (1) Total Empathy Score: Age + Sex + Race + Clinical Exposure + Personal Relationships + University Attended; and (2) Total Ageism Score: Age + Sex + Race + Clinical Exposure + Personal Relationships + University Attended + Fear of Getting Old + Total Empathy Score.

Relationships with older family members were treated as categorical variables, using a rating of "good/excellent" as a baseline. To accommodate the small amount of missing data, models were fit using full information maximum likelihood estimation [27].

Model fit for both CFA and SEM was primarily assessed using the root mean square error of approximation (RMSEA). An RMSEA value below 0.06 is conventionally designated as a good model fit [28]. Other measures of fit, including the Comparative Fit Index (CFI) and the Standardized Root Mean Square Residual (SRMR), were also evaluated.

**TABLE 2** | Unstandardized and standardized latent factor loadings for final structural equation model.

Latent factor	Indicator	Unstandardized		Standardized					
		Loading	95% CI	Loading	95% CI	sig	SE	z	p
Clinical exposure	Clinical enrollment	0.244	0.204–0.283	0.574	0.494–0.654	***	0.041	14.069	<0.001
Clinical exposure	Geriatric course	0.297	0.259–0.335	0.675	0.610–0.739	***	0.033	20.477	<0.001
Clinical exposure	Guide caregivers	0.185	0.152–0.218	0.484	0.410–0.558	***	0.038	12.822	<0.001
Clinical exposure	Practice bedridden wheelchair	0.223	0.188–0.258	0.562	0.491–0.634	***	0.037	15.383	<0.001
Clinical exposure	Semesters completed	2.119	1.895–2.342	0.811	0.748–0.874	***	0.032	25.218	<0.001
Personal relations	Helped older subject	0.236	0.177–0.295	0.483	0.369–0.596	***	0.058	8.325	<0.001
Personal relations	Lived with older	0.215	0.158–0.272	0.441	0.331–0.552	***	0.056	7.818	<0.001
Personal relations	Older social circle	0.237	0.178–0.296	0.540	0.417–0.664	***	0.063	8.585	<0.001
Personal relations	Relationship indiff bad terrible	−0.034	−0.057–0.011	−0.163	−0.273–0.053	**	0.056	−2.901	0.004
Personal relations	Relationship no contact	−0.038	−0.062–0.014	−0.178	−0.291–0.066	**	0.057	−3.116	0.002

Note: Tsukahara J (2023). semoutput: SEM Output. <https://github.com/dr-JT/semoutput>.

\*\* $p < 0.01$ .

\*\*\* $p < 0.001$ .

All analyses were performed in R version 4.4.1 [29]. Models were fit using the R package lavaan version 0.6-19 [30].

### 3 | Results

From the initial 684 predoctoral dental students invited to participate, 626 (response rate = 91.5%) completed the questionnaires. Female (72.5%) and white (82.9%) students were more prevalent, and the average age was 23.9 years ( $\pm 4.1$ ). The majority of the students had a good or excellent relationship with older adults (89.9%) and had an aged family member (93.8%). The average empathy score was 118.9, and the average ageism score was 36.2. Table 1 presents the characteristics of the respondents.

Confirmatory factor analysis (CFA) revealed that both the Brazilian version of the Jefferson Scale of Empathy and the ASDS-Braz demonstrated a marginal level of adherence to previously defined constructs, with RMSEA values of 0.085 (90% CI: 0.076, 0.095) and 0.062 (90% CI: 0.057, 0.068), respectively. All loadings for each scale were positive and significant, with the exception of a positive view of older adults on Question 5 from the ASDS-Braz. The complete CFA analysis can be found in the [Supporting Information](#).

As for the SEM results, an initial RMSEA of 0.073 (90% CI: 0.066, 0.080) was obtained, also indicating a marginal model fit. The CFI of 0.773 was markedly lower than the recommended

minimum value of 0.95. Modification indices were referenced to select additional theoretically justified paths that resulted in the greatest model improvement while maintaining the original hypothesized paths. A covariance term was added between the error terms of semesters completed and clinical enrollment, as well as between the errors of guiding caregivers and experience with bedridden/wheelchair bound patients. Regression paths were added from age to clinical exposure and age to personal relationships. Additionally, an initial version of the model allowed for a covariance term between the two latent variables, but its negligible estimate led to the term's removal. These model adjustments resulted in improved fit indices, with an RMSEA of 0.053 (90% CI: 0.045–0.060), an SRMR of 0.045 (recommended maximum value is 0.08), and a CFI of 0.886. Table 2 shows the SEM factor loadings for the final model. From Table 2, it seems important to highlight that a larger number of semesters completed, enrollment in a clinical discipline, conclusion of any specific geriatric course, experience with bedridden/wheelchair bound older patients, and guiding caregivers through oral health care are all positively associated with the latent variable of “clinical exposure.” In addition, living with older people, the presence of older people in the social life circle, and taking care of older subjects were positively associated with the latent variable of “personal relationships.” Conversely, having no older family member or an indifferent/bad/terrible relationship with this person was negatively associated with the latent variable of “personal relationships,” although these loadings were weaker in magnitude.

**TABLE 3** | Full regression paths from final structural equation model.

Predictor	DV	Unstandardized		Standardized					
		<i>b</i>	95% CI	$\beta$	95% CI	sig	SE	<i>z</i>	<i>p</i>
Age	Clinical exposure	0.089	0.066–0.112	0.345	0.266–0.424	***	0.040	8.584	<0.001
Age	Personal relations	0.050	0.022–0.078	0.203	0.093–0.312	***	0.056	3.623	<0.001
Afraid getting old	Total ageism score	0.697	–0.244–1.639	0.057	–0.020–0.134		0.039	1.455	0.146
Age	Total ageism score	–0.064	–0.192–0.063	–0.044	–0.130–0.043		0.044	–0.988	0.323
Clinical exposure	Total ageism score	–0.219	–0.755–0.318	–0.038	–0.132–0.056		0.048	–0.799	0.424
University attended	Total ageism score	1.230	0.225–2.235	0.096	0.018–0.174	*	0.040	2.415	0.016
Personal relations	Total ageism score	–0.358	–1.023–0.308	–0.060	–0.171–0.051		0.057	–1.054	0.292
Race	Total ageism score	0.298	–0.920–1.516	0.018	–0.057–0.094		0.038	0.480	0.631
Sex	Total ageism score	0.457	–0.617–1.532	0.034	–0.045–0.112		0.040	0.835	0.404
Total empathy score	Total ageism score	–0.144	–0.179–0.109	–0.315	–0.389–0.242	***	0.037	–8.411	<0.001
Age	Total empathy score	0.220	–0.065–0.506	0.068	–0.020–0.156		0.045	1.519	0.129
Clinical exposure	Total empathy score	0.075	–1.145–1.295	0.006	–0.091–0.103		0.050	0.121	0.904
University attended	Total empathy score	2.136	–0.068–4.340	0.076	–0.002–0.154		0.040	1.908	0.056
Personal relations	Total empathy score	0.959	–0.531–2.449	0.073	–0.040–0.187		0.058	1.264	0.206
Race	Total empathy score	–1.227	–3.990–1.537	–0.035	–0.112–0.043		0.040	–0.871	0.384
Sex	Total empathy score	–4.668	–7.017–2.320	–0.156	–0.233–0.079	***	0.039	–3.964	<0.001

Note: Tsukahara J (2023). semoutput: SEM Output. <https://github.com/dr-JT/semoutput>.

\**p* < 0.05.

\*\*\**p* < 0.001.

Table 3 shows the SEM regression paths. From Table 3, it seems important to highlight that university attended and total empathy score are significantly associated with total ageism score, and sex is significantly associated with total empathy score. Figure 2 shows a diagrammatic representation of these associations.

#### 4 | Discussion

This study aimed to investigate the associations between ageism, empathy, and other explanatory factors among dental students in southern Brazil. The CFA results indicated that both the Brazilian versions of the JSE [26] and the ASDS-Braz [13] had reasonable levels of fit and displayed expected loading directions, validating the use of the chosen instruments to test this proposed conceptual approach. Nevertheless, there is room for improvement in the CFA model fit, and more research might be necessary for further validation of the instruments.

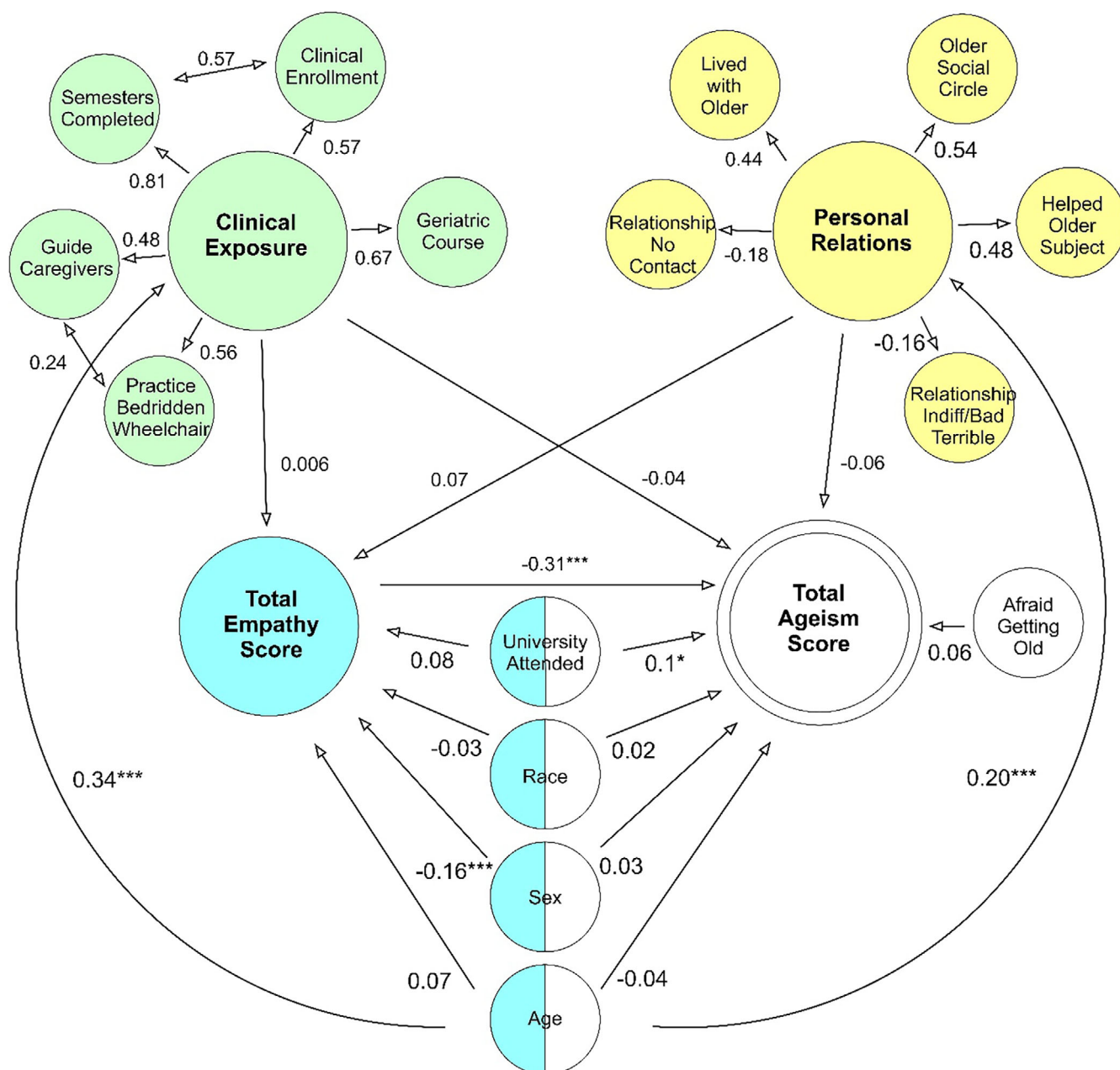
The SEM further revealed significant associations between the university attended and total empathy score with the total ageism score, and sex with the total empathy score. These findings provide valuable insights into the determinants of ageist attitudes and the role of empathy in shaping these attitudes. The significant association between sex and empathy score suggests that female dental students may possess higher levels of empathy compared to their male counterparts, which has been shown before [31].

This gender difference in empathy has been documented in various studies and may be attributed to biological, social, and cultural factors that influence emotional development and interpersonal skills [32]. Furthermore, female dental students have more positive attitudes toward older patients compared to male students [33].

The association between the university attended and the total ageism score highlights the importance of specialized education in shaping students' attitudes toward older adults [9, 25]. Students whose dental school curriculum included gerodontology courses demonstrated lower levels of ageism, suggesting that targeted educational interventions can effectively reduce ageist attitudes [9, 24, 34]. This finding underscores the need for dental schools to integrate comprehensive geriatric education into their curricula, ensuring that future dental professionals are well-equipped to provide compassionate and age-appropriate care to older adults [9].

Furthermore, the significant relationship between the total empathy score and the total ageism score indicates that higher levels of empathy are associated with lower levels of ageism among dental students. This aligns with existing literature suggesting that empathy can mitigate prejudiced attitudes by fostering a deeper understanding and appreciation of the experiences and challenges faced by older adults [9, 24]. Enhancing empathy through educational strategies, such as intergenerational contact





**FIGURE 2** | Diagrammatic representation of the associations found in the final structural equation model. Arrows represent directions of regression paths with corresponding standardized loadings. Covariance terms are indicated with bidirectional arrows. Clinical Exposure and Personal Relations represent unobserved latent constructs. Significant regression paths are designated using significance stars (\* $p < 0.05$ , \*\* $p < 0.01$ , and \*\*\* $p < 0.001$ ).

and reflective practice, could, therefore be a key approach in combating ageism within the dental profession [9, 24]. It has been suggested that dental students who reported high-quality intergenerational contact were up to 45% less likely to demonstrate ageism compared to those who reported poor-quality contact, highlighting the importance of not only promoting intergenerational contact but also investing in fostering high-quality relationships [35].

This study has some important limitations that include but are not limited to the following: While the RMSEA and SRMR of our SEM model were within recommended thresholds, the CFI is indicative of some degree of misfit. This may be due to

several causes, such as unmodeled covariances or measurement error. Additionally, the sample size, while substantial, is limited to a specific region in southern Brazil, which may affect the generalizability of the findings. In addition, the ASDS-Braz has shown to be sensitive to cultural norms, which may influence the responses and interpretations of the scale in different settings [11]. Therefore, the regional focus restricts the ability to extrapolate the results to other areas with different cultural and educational contexts.

Despite the limitations, this study presents strengths, such as the concomitant use of both ageism and empathy scales to assess ageism in Brazilian dental students. In addition, most of the

sample recruited was composed of women. A similar trend has been observed in Brazil since the 90s, with a predominance of female dentists. Results from the Research on the Current Profile and Trends of Dentists [36] already indicated a female majority among new entrants and graduates in dental schools (2007: 64.3% new entrants; 65.8% graduates). In addition, according to the Brazilian Federal Dentistry Council [37], women account for approximately 64% of those working as dentists in Brazil.

Future research should consider larger and more diverse samples to enhance the robustness and applicability of the findings. Moreover, it is essential to explore additional factors that may influence ageism and empathy among dental students, such as cultural attitudes, the quantity and quality of students' previous experiences with older adults, and the impact of specific educational interventions through the evaluation of communal values [38] and psychological flexibility, mindfulness, perceived control [39], for example.

Given the growing population of older adults and the critical importance of addressing ageism [9] and fostering empathy [23] in dental education, this study provides valuable new insights. These findings can guide future pedagogic interventions aimed at developing strategies to enhance the quality of oral healthcare for older adults.

## 5 | Conclusion

Among dental students in southern Brazil, the university attended, and overall empathy levels were associated with the total ageism score, while gender showed a significant association with the overall empathy score. These findings underscore the importance of integrating comprehensive geriatric education and emphasizing compassionate care in dental training to reduce ageism and improve dental students' attitudes toward older adults.

### Author Contributions

All authors have contributed to the conception and design of the article. L.H.N.T., M.B.G., O.R., P.B., C.P., L.M., and A.F.B. have contributed to acquisition, analysis, and interpretation of data. O.R. and L.M. have drafted the manuscript. All authors have approved the final version of the manuscript.

### References

1. R. Butler, "Age-ISM: Another Form of Bigotry," *Gerontologist* 9, no. 4 pt. 1 (1969): 243–246.
2. M. F. Wyman, S. Shiovitz-Ezra, and J. Bengel, "Ageism in the Health Care System: Providers, Patients, and Systems," in *Contemporary Perspectives on Ageism*, ed. L. Ayalon and C. Tesch-Römer (Springer International Publishing, 2018), 193–212.
3. World Health Organization. *Global Report on Ageism* (WHO, 2021).
4. E. S. Chang, S. Kannoth, S. Levy, et al., "Global Reach of Ageism on Older Persons' Health: A Systematic Review," *PLOS ONE* 15, no. 1 (2020): e0220857.
5. B. R. Levy, M. D. Slade, E. S. Chang, et al., "Ageism Amplifies Cost and Prevalence of Health Conditions," *Gerontologist* 60, no. 1 (2020): 174–181.

6. M. J. Prince, F. Wu, Y. Guo, et al., "The Burden of Disease in Older People and Implications for Health Policy and Practice," *Lancet* 385, no. 9967 (2015): 549–562.
7. R. L. Ettinger, "Clinical Decision Making in the Dental Treatment of the Elderly," *Gerodontology* 3, no. 2 (1984): 157–165.
8. P. Sophie, R. L. Valerie, and V. Guillaume, "Specific Form of Ageism in Dental Care: Convergent Validity of the Ageism Scale for Dental Students and Its Implications for Education," *European Journal of Dental Education* 27, no. 2 (2022): 368–373.
9. L. Marchini, "Educating Dental Students to Provide Compassionate Age Friendly Care for Older Adults," *Journal of Dental Education* 87, no. 8 (2023): 1153–1160.
10. R. Rucker, P. B. Barlow, J. Hartshorn, et al., "Development and Preliminary Validation of an Ageism Scale for Dental Students," *Special Care in Dentistry* 38, no. 1 (2018): 31–35.
11. K. Elliott, K. C. Dukes, P. B. Barlow, A. Kossioni, and L. Marchini, "Ageism Scale for Dental Students (ASDS): A Focus Group Review of Content Validity," *Special Care in Dentistry* 44, no. 4 (2024): 1135–1145.
12. R. Rucker, P. B. Barlow, J. Hartshorn, et al., "Dual Institution Validation of an Ageism Scale for Dental Students," *Special Care in Dentistry* 39, no. 1 (2019): 28–33.
13. R. Rucker, P. B. Barlow, M. Bertolini Fernandes Dos Santos, et al., "Translation and Preliminary Validation of an Ageism Scale for Dental Students in Brazil (ASDS-Braz)," *Gerodontology* 37, no. 1 (2020): 87–92.
14. A. Kossioni, K. Ioannidou, D. Kalyva, et al., "Translation and Validation of the Greek Version of an Ageism Scale for Dental Students (ASDS\_Gr)," *Gerodontology* 36, no. 3 (2019): 251–257.
15. A. Charoosae, M. Dehghannejad, O. Fakheran, and L. Marchini, "Translation and Validation of the Ageism Scale for Dental Students in Iran (ASDS-Persian)," *Special Care in Dentistry* 44, no. 2 (2024): 550–555.
16. E. Michalopoulou, M. M. Bornstein, M. Schimmel, et al., "Translation and Validation of an Ageism Scale for Dental Students in Switzerland," *Journal of Oral Science* 64, no. 1 (2022): 74–79.
17. L. Veenstra, P. Barlow, A. Kossioni, et al., "Translation and Validation of the Ageism Scale for Dental Students in Romanian (ASDS-Rom)," *European Journal of Dental Education* 25, no. 1 (2020): 12–17.
18. S. Piaton, P. Barlow, A. Kossioni, S. Tubert-Jeannin, and L. Marchini, "Translation and Preliminary Validation of a French Version of an Ageism Scale for Dental Students," *Gerodontology* 39, no. 3 (2022): 291–296.
19. T. Y. Yong, C. Y. Zhen, J. John, M. Danaee, and L. Marchini, "Translation and Validation of Ageism Scale for Dental Students Into Malay Language," *Special Care in Dentistry* 44, no. 4 (2024): 1245–1252.
20. A. Popovac, J. K. Pficer, I. Stančić, et al., "Translation and Preliminary Validation of the Serbian Version of an Ageism Scale for Dental Students (ASDS-Serb)," *Special Care in Dentistry* 42, no. 2 (2022): 160–169.
21. R. Shenoy, P. S. Jodalli, B. S. Rao, et al., "Validation of Ageism Scale for Dental Students in India: (Ageism Scale for Dental Students- India)—A Cross Sectional Study," *FI000Research* 12 (2023): 413.
22. J. Hajto-Bryk, I. Barańska, K. Szczerbińska, et al., "Validation of the Polish Version of an Ageism Scale for Dental Students (ASDS-PL)," *Special Care in Dentistry* 45 (2025): e13070.
23. R. Lindow, M. Gisch, and L. Marchini, "The Importance of Compassionate Care," *Brazilian Dental Science* 26, no. 1 (2023): e3694.
24. D. Waldrop, T. Nochajski, E. L. Davis, J. Fabiano, and L. Goldberg, "Empathy in Dentistry: How Attitudes and Interaction With Older Adults Make a Difference," *Gerontology & Geriatrics Education* 37, no. 4 (2016): 359–380.
25. M. A. Brondani, A. Chen, A. Chiu, et al., "Undergraduate Geriatric Education Through Community Service Learning," *Gerodontology* 29, no. 2 (2012): e1222–e1229.
26. H. B. Paro, R. M. Daud-Gallotti, I. C. Tibério, R. M. Pinto, and M. A. Martins, "Brazilian Version of the Jefferson Scale of Empathy:

- Psychometric Properties and Factor Analysis,” *BMC Medical Education [Electronic Resource]* 12 (2012): 73.
27. J. L. Arbuckle, “Full Information Estimation in the Presence of Incomplete Data,” in *Advanced Structural Equation Modeling*, ed. G. A. Marcoulides and R. E. Schumacker (1996), 243–277.
28. L. T. Hu and P. M. Bentler, “Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives,” *Structural Equation Modeling: A Multidisciplinary Journal* 6, no. 1 (1999): 1–55.
29. R\_Core\_Team. *R: A Language and Environment for Statistical Computing* (R Foundation for Statistical Computing, 2024), <https://www.R-project.org>.
30. Y. Rosseel, “Lavaan: An R Package for Structural Equation Modeling,” *Journal of Statistical Software* 48, no. 2 (2012): 1–36.
31. V. Díaz-Narváez, M. Oyarzún-Muñoz, A. Reyes-Reyes, et al., “Psychometry and Empathy Levels and Its Dimensions in Postgraduate Students of Dental Specialties,” *European Journal of Dental Education* 25, no. 4 (2021): 785–795.
32. M. J. Rochat, “Sex and Gender Differences in the Development of Empathy,” *Journal of Neuroscience Research* 101, no. 5 (2023): 718–729.
33. A. F. Bulgarelli, C. M. Santos, L. H. N. Tôrres, et al., “What Influences Dental Students’ Attitudes Regarding the Treatment of Older Adults? A Scoping Review,” *Journal of Dental Education* 87, no. 6 (2023): 813–824.
34. D. P. Waldrop, J. A. Fabiano, T. H. Nochajski, et al., “More Than a Set of Teeth: Assessing and Enhancing Dental Students’ Perceptions of Older Adults,” *Gerontology & Geriatrics Education* 27, no. 1 (2006): 37–56.
35. M. B. Guimarães, L. R. Pinto, A. F. Bulgarelli, et al., “Ageism in Dental Students—A Multicentric Study in Southern Brazil,” *Special Care in Dentistry* 44, no. 6 (2024): 1751–1758.
36. M. C. Morita, A. E. Haddad, and M. E. Araújo, *Perfil Atual e Tendências do Cirurgião-Dentista Brasileiro* (Dental Press International, 2010), 33–35.
37. “Federal Dentistry Council—CFO,” accessed January 29, 2025, <https://bi.cfo.org.br/painel.php?id=2>.
38. X. Zhang, C. Xing, Y. Guan, et al., “Attitudes Toward Older Adults: A Matter of Cultural Values or Personal Values?,” *Psychology and Aging* 31, no. 1 (2016): 89–100.
39. D. J. Murphy, M. M. Porter, C. S. Mackenzie, et al., “Development, Feasibility, and Acceptability of a Process Based Intervention to Decrease Internalized Ageism,” *Gerontology & Geriatrics Education* 46, no. 1 (2024): 115–130.

### Supporting Information

Additional supporting information can be found online in the Supporting Information section.