Castro, D., Rodriguez-Gomez, D., Muñoz, J. L., & Calatayud, A. (2023). The intergenerational climate of Spanish university research. *Studies in Higher Education*, 48 (11), 1696-1707. https://doi.org/10.1080/03075079.2023.2211088

The intergenerational climate of Spanish university research

Diego Castro-Ceacero[a]*, David Rodriguez-Gomez, José Luís Muñoz and Amparo Calatayud[b]

[a]*Center for Research and Studies for Organizational Development, Universitat Autònoma de Barcelona, Cerdanyola del Valles, Spain;* [b]*Department of Didactics and School Organization, Universitat de Valencia, Valencia, Spain*

* Correspoding author: diego.castro@uab.cat; Dpt. de Pedagogia Aplicada, Edifici G6, Campus de la UAB · 08193- Bellaterra (Cerdanyola del Vallès), Barcelona, Spain

Diego Castro-Ceacero

diego.castro@uab.cat

Center for Research and Studies for Organizational Development, Universitat Autònoma de Barcelona

https://orcid.org/0000-0003-2842-0894

Reader in the Applied Pedagogy Department, Faculty of Educational Science (Universitat Autònoma de Barcelona). Currently, he is the head of the department and vice-principal of the CRIEDO research centre. He researches governance and management in Higher Education Institutions, vulnerable groups in the university, and new trends in higher education in Europe and Latin-American contexts.

David Rodríguez-Gómez

david.rodriguez.gomez@uab.cat

Center for Research and Studies for Organizational Development, Universitat Autònoma de Barcelona

https://orcid.org/0000-0001-9845-0744

Reader in the Applied Pedagogy Department, Faculty of Educational Science (Universitat Autònoma de Barcelona). Currently, he is the head of the Teaching and Educational Management Unit. His research interest includes, among others, knowledge management and informal learning, educational administration and leadership, organisational learning, organisational development and ICT in Education.

José Luís Muñoz Moreno

joseluis.munoz@uab.cat

Center for Research and Studies for Organizational Development, Universitat Autònoma de Barcelona

https://orcid.org/0000-0003-2572-4155

Reader in the Applied Pedagogy Department, Faculty of Educational Science (Universitat Autònoma de Barcelona). Currently, he is the Student Welfare Coordinator at the Faculty of Educational Sciences. His research interest includes, among others, intergenerational learning, student participation in the university, organisational development and educational transformation processes.

María Amparo Calatayud Salom

amparo.calatayud@uv.es

University of Valencia

https://orcid.org/0000-0003-3250-4580

Professor of the Department of Didactics and School Organization, Faculty of Philosophy and Educational Sciences (University of Valencia). Currently, she is the director of the University Master's Degree in Politics, Management and Direction of Educational Organizations. Her research interest

includes, among others, evaluation and professional development, school leadership and management, educational leadership, permanent teacher training, quality and educational innovation.

The intergenerational climate of Spanish university research

The knowledge economy has transformed society and the university environment, which has moved towards the market model. The profound changes produced under this new model have had implications for institutional functions, especially research. In Spain, this transformation has also coincided with the intergenerational overlap of researchers. Consequently, research on intergenerational relations has become an area of interest and concern. This study analyses the intergenerational climate of Spanish research by administering the Workplace Intergenerational Climate Scale. This questionnaire has five subscales: lack of generational stereotypes, positive intergenerational affect, intergenerational contact, workplace generational inclusiveness, and workplace intergenerational retention. A total of 2,003 researchers from 10 Spanish public universities participated in this study. The findings suggest a favourable intergenerational climate in Spanish research, albeit with some generational stereotypes. Older researchers (Baby Boomers and Generation X) showed the most positive perception of the various aspects of the intergenerational climate of Spanish research, represented by the different subscales. As a positive intergenerational climate in research settings leads to improvements at the individual, group, and institutional levels, higher education institutions should regularly diagnose and improve their intergenerational climate towards overcoming generational stereotypes, which often results from intuitions and beliefs than from actual and confirmed difficulties.

Keywords: intergenerational climate; intergenerational relationships; higher education; research; researchers

Introduction

Population ageing has far-reaching implications in most developed countries, generating social, labour, and economic challenges, such as redesigning pension systems, improving the efficiency of public administration services, ensuring the inclusion of older adults in the job

market and their employability, and developing new skills and professional areas catering to older adults (Crowe et al. 2022; Rouzet 2019). Similarly, there are several studies assessing population ageing effects on organisational flag issues such as age-related motivational differences, generational stereotypes, the social climate in generational diverse organisations, new references to organisational culture, or social dynamics regarding retirement (Gerpott and Fasbender 2020; Lyons and Kuron 2014; Truxillo, Cadiz and Hammer 2015). Thus, age has gone from being a control variable in organisational research to being a key research focus.

In addition, during the Great Recession (2008–2014), a key emphasis of government policy focused on reducing public service numbers and pay. Brown and Hoxby (2015) explained how universities responded to the crisis by implementing cost-cutting policies, such as drastic reductions in the number of faculty members, and by increasing matriculation, tuition, and student fees. The crisis mainly affected southern European countries, and its impact was especially severe in research and development systems (e.g. investments, knowledge infrastructures, hiring, and grants for early career researchers; Cruz-Castro and Sanz-Menéndez 2016). These factors have markedly impacted research groups, which form the core structure of university research.

Currently, in Spanish universities, as a result of both circumstances (i.e., population ageing and faculty hiring freeze in the higher education system due to the economic crisis), various generations of researchers coexist. Although their constituent age groups differ between studies (Edge 2014; Edge, Descours, and Frayman 2016), the following generations can be identified: Baby Boomers (born between 1948 and 1966); Generation X (born between 1967 and 1982); Generation Y, also known as Millennials (born between 1983 and 1998); and Generation Z (born after 1999). During the 2021–2022 academic year, 129,904

researchers worked in Spain. Their average age was 49.4 years, although it rose to 55.6 years when including only lecturers, readers, and professors (Ministerio de Universidades 2022).

This demographical issue is compounded by the fact that public policies capable of reversing this situation have not been promoted in all Spanish higher education institutions. University researchers have been working primarily in research groups, suggesting that staff of different generations interact in these groups. For this reason, a good organisational climate favourable to intergenerational relationships must be promoted to enhance research performance.

Despite advances in the analysis of intergenerational relationships, scant studies have delved into the intergenerational climate among academics conducting research, which makes it difficult to identify the factors that improve intergenerational relationships. Hence, the present study focuses on this research question: how is the intergenerational climate in Spanish university research?

Literature review

In Spain, universities have three essential functions—teaching, research, and knowledge transfer. These functions have been greatly affected by recent changes to the model of higher education institutions, which have moved from a model with shared bureaucratic (strong administrative dependence) and academic (internal control through certain collegiate structures) characteristics towards a decidedly market model (Carvalho and Videira 2019). The market model stands out in its greater openness to societal demands, efficiency-oriented management, an institutional identity that favours differentiation between universities (Pinheiro and Stensaker 2014); closer links between the university, labour market, and economic system (Gornitzka, Maassen, and de Boer 2017), and, lastly, research intensification among academic staff (Wilkins, Hazzam, and Leanb 2021).

Research is possibly the function that has most and best adapted to the market-oriented university because, in a context with knowledge as the predominant value, university research is the key to economic development. As stated by Lucas (2009), in recent decades, universities have established a culture focused on academic capitalism to meet the economy's scientific and technological innovation needs. In some manner, the market model links research output to economic development and reveals deep interactions between economic dynamics and research (Jaffe et al. 2020). This phenomenon is the origin of the knowledge economy, and it enables a deeper understanding of the role that research may play in shaping the economy and identifying reference resource allocations across all disciplines.

Under the market model, university research has changed in academic and organisational terms. Castro and Ion (2019) highlighted a context that increasingly values the generation of economic income and focuses on professional development, which is externally evaluated based on research output. These effects on organisations result in increased internationalisation, diversification of funding sources, collaborations between the government, business sector, and university, and the emergence of networking and research groups.

Research is increasingly becoming a group activity for its multiple benefits that enable people to productively combine perspectives, knowledge, skills and efforts. Research groups are the basic unit of scientific organisation and production of the Spanish university system (García-Sánchez, Díaz-Díaz, and De Saá-Pérez 2019). Additionally, research groups are socialisation spaces where researchers interact and consequently promote professional development, shared work, and intergenerational relationships (Jones 2021).

Intergenerational relationships are inherent to the human condition and derive from interactions between members of different generations who live in the same period (Núñez,

Míguez, and García 2018). In a society characterised by generational distance (Zaidi, Gasior, and Manchin 2012), universities must find new forms of collaboration and solidarity between generations (Gutiérrez and Hernández 2013; Wilkins, Hazzam, and Lean 2021). Each generation meets the demands and needs of other generations and contributes and receives something from them in return (Albuerne and Juanco 2002; Bagnasco et al. 2020). In fact, intergenerational relationships have been promoted for some time now, and the United Nations World Assembly on Aging has already expressed the convenience of supporting intergenerational solidarity through measures that favour exchange between different age groups (UN 2002).

Researchers who work in groups comprising members of heterogeneous ages build social capital by occupying central positions in the community, and they are more effective than researchers who work individually (Rotolo and Petruzzelli 2012). The interaction between people of different ages benefits society. In addition, good intergenerational contact improves the attitudes of younger generations towards more experienced generations and vice versa (Canedo, García, and Pacheco 2017; Gerpott, Lehmann-Willenbrock, and Voelpel 2017). Based on the dynamics of social influence on organisations, Perkmann et al. (2021) explained that researchers are part of a community that influences their behaviour and engagement, professional development, and research output both quantitatively and qualitatively. Differences in each generation's beliefs, values, and priorities have implications for professional development, workplace communication, and interpersonal relationships (Çelik and Polat 2022; Kaye, Scheff, and Thielfoldt 2003; Kazak and Polat 2018; Zemke, Raines, and Filipczak 2000).

Moreover, generational differences between researchers can influence their professional success (Portela et al. 2020). In other words, understanding is facilitated by

maintaining relationships and sharing experiences between workers of various generations (Bagnasco et al. 2020; Boström and Schmidt-Hertha 2017; Çağlar and Soner 2022). Further, workplace sensitivity and collaboration are fostered, and cultural and human enrichment is improved between generations through information exchange and knowledge transfer.

Materials and methods

A survey-based descriptive study was conducted using an ex post facto methodology to analyse the intergenerational climate of Spanish university research. The fieldwork was performed between February and July 2021 using a self-administered online questionnaire sent to a sample of 2,003 researchers working in Spanish universities. A maximum margin of error of 2% was accepted, with a 95% confidence level (p=q=0.50 and k=2). Before completing the questionnaire, all participants signed the informed consent form, clearly stating their participation was free and voluntary, they could leave the study at any time, and their anonymity and data protection were ensured. Table 1 outlines the sociodemographic characteristics of the participants.

[Insert Table 1 here]

We used the self-administered questionnaire 'The Workplace Intergenerational Climate Scale' (WICS) to measures attitudes and perceptions of members of an organisation regarding other colleagues of different ages at their workplace (King and Bryant 2017). Initially, the questionnaire consisted of 20 items grouped into five subscales: lack of generational stereotypes (LGS), positive intergenerational affect (PIA), workplace generational inclusiveness (WGI), and workplace intergenerational retention (WIR), intergenerational contact (IC). In the version of the questionnaire used in this study, all items were scored on a 7-point Likert scale (1=strongly disagree and 7=strongly agree, except for the IC subscale, in which 1=never and 7=always). The factor analysis of the five subscales

shows an acceptable structure of a single factor in each (KMO=0.696, KMO=0.688, KMO=0.703, KMO=0.578 and KMO=0.742, respectively, and a significant Bartlett's test, p=0.000), which explain 45.80%, 53.55%, 57.54%, 46.65% and 62.97% of the total variance, respectively. The reliability analysis shows a Cronbach's α ranging between 0.567 for WIR and 0.794 for IC.

First, the variables determining each WICS subscale (i.e. LGS, PIA, IC, WGI, and WIR) were subjected to descriptive data analysis. Second, the means were compared using the F statistic (Miller 1981; Toothaker 1991) to assess initial differences as a function of the selected comparison variables (i.e., gender, generation, position, knowledge field, and university size). Welch's correction was used when the variance was not homogeneous (as determined by Levene's test; Tomarken and Serlin 1986). In analysing more than two comparison categories, Tukey's *post-hoc* honestly significant difference (HSD) tests were used under homogeneity of variance, and Games-Howell correction was used when this condition was not met.

Results

The information provided by researchers from Spanish universities (hereinafter 'the researchers') indicates that overall, no generational stereotypes exist in research groups despite differences in ways of working depending on age (mean [m]=3.84; Table 2).

Researchers usually feel comfortable working and interacting with colleagues from other generations, as indicated by m ranging from 6.31 (standard deviation [SD]=1.22) to 5.57 (SD=1.73). These data are in line with the high scores on the degree of intergenerational inclusion (from m=6.16 [SD=1.35] to m=5.23 [SD=1.91]).

Although these score were high for WIR as well, none of the generations feels

pressured by others to surrender their responsibilities (m=6.5, SD=1.26 and m=6.39, SD=1.46); some of the youngest researchers are ignored in promotion and communication processes, based on researchers' perception.

The analysis of the frequency of intergenerational contact shows that there are few interactions beyond purely work-related issues, such as conversations about non-work issues (m=4.55, SD=1.83), personal lives (m=3.89, SD=1.86), and lunches with colleagues from other generations (m=3.38, SD=2.09).

[Insert Table 2 here]

The aggregate results of each subscale of the WICS questionnaire (Table 2) confirm that, overall, the intergenerational climate among researchers is positive. However, the LGS subscale, with a mean of 5.06 (SD=1.24) on a 7-point Likert scale, and the IC subscale, with a mean of 4.39 (SD=1.44), scored slightly lower than the other subscales.

The organisational climate, which was focused on intergenerational relationships in this study, is a highly complex organisational dimension subject to a wide variety of factors (Powell et al. 2021; Schneider, Ehrhart, and Macey 2013). However, the significant differences were not particularly important despite some noteworthy nuances. Below, we review these differences by generation, gender, and position of currently employed university researchers and by university size.

The analysis by generation (i.e. Baby Boomers, Generation X, Millennials, and Generation Z), one of this study's main variables, showed significant differences in four of the five subscales of the WICS questionnaire (Table 3). The *post-hoc* tests indicated that Baby Boomers and Generation X have a lower perception of generational stereotypes and coherently appreciate intergenerational relationships (i.e. PIA and WGI) more positively than

Millennials. In turn, when focusing on the frequency of intergenerational contact, we found significant differences between Generation Z, Baby Boomers, and Generation X. Again, the latter two generations (m=4.47, SD=1.33 and m=4.53, SD=1.44, respectively) identify a higher frequency of intergenerational interaction than Generation Z researchers (m=3.86, SD=1.53). As shown in Table 3, gender was the only variable without significant differences in the intergenerational climate of Spanish university research as a function of the category (i.e. male, female, and non-binary) under study.

In the university context, position is usually directly associated with age and, therefore, with the generation of the researcher. Hence, some coincidences were detected between the variation in this variable and the generation variable. In the three subscales with significant differences, the *post-hoc* tests indicated that professors and associate professors have slightly more positive perceptions of the intergenerational climate (LGS, PIA, and IC) in their research groups and centres than pre-doc researchers. Similarly, the perception of pre-doc researchers was also significantly lower than that of other researchers with positions closer to theirs, such as assistant lecturers, in the PIA and IC subscales and that of post-doctoral researchers in the IC subscale. In addition, the perception of adjunct lecturers stood out as the most common position in the Spanish university research context. Although the differences were very subtle, these staff perceived a less positive intergenerational climate than other researchers with permanent positions, such as associate professors (LGS, PIA, and IC) and professors (PIA and IC).

University size usually strongly affects the variation of other variables and organisational phenomena (Bloch 2022; Talacchi 1960). However, in this study, the differences identified were only significant in two subscales: WGI and IC. More specifically, regarding WGI, researchers from medium-sized universities (between 25,000 and 40,000

students) have a slightly more negative perception (m=5.64, SD=1.29) than researchers from small (less than 25,000 students) and large (more than 40,000 students) universities. Similarly, researchers from medium-sized universities also have a lower perception of IC (m=4.27, SD=1.47) than their colleagues from large universities (m=4.48, SD=1.43).

The results from the analysis by field of knowledge only showed significant differences in two subscales: WGI and IC. Health Science researchers generally have a slightly more positive perception of WGI and IC than researchers from Arts and Humanities, and Social Sciences. Similarly, the perception of IC of researchers in Science and Bioscience (m=4.47, SD=1.35) and Engineering and Architecture (m=4.55, SD=1.42) were found to differ significantly from that of researchers in the field of Arts and Humanities (m=4.11, SD=1.49).

Discussion and conclusion

One feature of current organisations is the increasing interaction between age-diverse workers as the workforce gradually ages in most industrialised economies due to demographic changes (Gerpott and Fasbender 2020). In this context, universities have been adapting to the knowledge economy, wherein research holds the highest value. In addition, the economic situation of universities has also worsened owing to the latest economic crises. The result is a staff in which up to four different generations coexist for the first time, and researchers with different values, expectations, and perceptions work together (Lyons and Kuron 2014). These differences affect performance, collaborations, learning, social relationships, especially workplace climate (Weston 2001). Therefore, they are a strategic challenge for universities. These institutions must learn how to maximise the benefits of intergenerational work, including knowledge exchange, talent retention, collaborations, professional development, and informal learning, especially considering the strong and

positive relationship between intergenerational knowledge sharing, worker learning, and education organisational climate (Çelik and Polat 2022).

We found that the intergenerational climate at Spanish universities is suitable for research primarily because of the absence of actions involving pressure between groups and the positive perception of communication and social interaction processes, which accounts for the high level of intergenerational affection. The researchers' perception of the intergenerational climate is more strongly determined by their academic rank or level than by gender. Hence, researchers of younger generations have a less positive perception of the intergenerational climate than researchers with a permanent position, with non-significant gender differences in this perception. These data corroborate the findings of Christian et al. (2021) in the field of medicine, who concluded that the main concerns of early-career researchers are the lack of support from senior researchers, the appropriation of their ideas or work, and the poor workplace dynamics at universities. Nevertheless, despite numerous studies (e.g. Huang et al. 2020) on differences in biases experienced by men and women during their research career (output, access to scientific management positions, glass ceiling, and working conditions, among others), no gender differences in intergenerational climate were found in this study.

Conversely, in line with Scherer et al. (2021), we found that higher education disciplines frame the professional culture of researchers based on specific values and different behaviours. Hence, researchers from Science, Bioscience, Engineering, and Architecture have a better perception of IC than their colleagues from Arts and Humanities, and Health Science researchers have a better perception of WGI than researchers from Social Sciences, and Arts and Humanities.

Age not only determines the specific generation to which an individual belongs but

also has other implications for job stability and security, tenure track, institutional trajectory, and the professional (and life) development stage. In short, the different manifestations of intergenerational climate are not only attributable to age but also to its implications for academic development (Waaijer 2015).

These implications are valid for generational stereotypes as well. Despite differences in the ways of conducting research between generations, not too many generational stereotypes were perceived, and the few that emerged were identified in the youngest generations, Millennials and Generation Y. For this reason, as they advance in their career, late-career (and older) researchers perceive fewer generational stereotypes than early-career (and younger) researchers. The pressure to publish and the need for increased research productivity to which early career academics are subjected in the neo-liberal university could explain this situation (Aprile, Ellem, and Lole 2021; Ball 2012).

The possibility of establishing collaborations between researchers of different generations may be an appropriate strategy for reducing stereotypes, as explained by Wilkins, Hazzam, and Leanb (2021), who determined that many early-career researchers appreciate the benefits of networking and collaborating with established and successful researchers as they seek to demonstrate their legitimacy and achieve their professional goals. Therefore, by working in research groups with members of different ages, they may be able to undertake more complex studies, which would be otherwise unfeasible if conducted individually, and reduce their levels of stress and burnout, which commonly occurs in higher education.

Although each generation is defined by different identities and subcultures (Kuyken 2012), researchers reported feeling comfortable working with colleagues from other generations and regarded these intergenerational experiences as beneficial. Baby Boomers and Generation X researchers, in particular, enjoy working and interacting with researchers

from younger generations. The idea that working with researchers of the same generation is better is not prevalent. Moreover, we agree with Albuerte and Juanco (2002), who highlighted the need for each generation to become aware that they should meet the demands and needs of other generations, contributing and receiving something from the others in return. Both younger and more experienced scholars should share the responsibility for motivating and encouraging each other when collaborating for research purposes (Wilkins, Hazzam, and Lean 2021).

Overall, WGI is positively perceived by researchers and gradually improves with age. In other words, Baby Boomers better perceive their work environment, respect among colleagues, and communication processes than Generation Z researchers. This perception may be explained by the lack of equity in academic communication processes and the availability of channels or access to sources for the entire community despite the intensive use of technology among the youngest researchers. In a study with 434 members of academic staff, Kleinhans et al. (2015) found that a growing body of evidence has highlighted differences in work ethics and communication styles between the four generations. Addressing these differences is crucial for closing possible workplace generational gaps, contributing to intergenerational learning, and discovering new and different ways of thinking and solving problems and conflicts (Hahn 2011; Polat and Kazak 2015). For this reason, different communication strategies must be considered, recognised, and valued by all (de Blois and Lagacé 2017).

The WICS subscale that was perceived best among researchers is WIR, which is specified in the nature of social interactions between generations by not forcing, pressuring, displacing, or ignoring researchers from other generations, among other actions. Thus, researchers do not feel pressured to promote or surrender their responsibilities. This

perspective was also highlighted by Sumbal et al. (2017) when considering that eliminating fear and reinforcing confidence and job security are the keys to WIR in the business sector. In this regard, Lavoie-Tremblay et al. (2010), in their study on the health sector, suggested that retention strategies that focus on improving workplace relationships and reducing conflicts benefit all generations. However, Romero-Tena et al. (2020) stated that relationships with peers are not a significant factor in predicting early retirement for Spanish faculty members.

The present study of the intergenerational climate of Spanish research also included communication aspects and social and informal interactions (IC), which are the most complex and difficult goals to achieve among the WICS subscales. Intergenerational informal and social spaces are not perceived as an advantage, especially among the youngest generations. Accordingly, they tend to interact informally with members of the same generation and, to a lesser extent, with older colleagues. Developing a better intergenerational climate requires the exchange of knowledge and experiences (Kuyken, Ebrahimi, and Saives 2018) among the professionals of an organisation while promoting collaboration (Kazak and Polat 2018). Therefore, researchers should interact with colleagues from other generations to help them understand their co-workers (Bagnasco et al. 2020; Çağlar and Soner 2022).

One of the limitations of this study derives from the nature of the organisational climate, which is constantly changing and requires the consideration of longitudinal data to test temporal relationships and generation of new data by assessing other types of universities (i.e. private universities or those outside the top of the national ranking), according to Obeng et al. (2021). Additionally, the analysis of the intergenerational climate in university research contexts should be followed by an analysis of the characteristics of intergenerational relationships in teaching and management contexts. Taken together, these analyses may make it possible to compare the three functions of professors (teaching, research and management)

and generate more comprehensive staff policies.

Nevertheless, the intergenerational climate has clearly become a priority on the university agenda. For this reason, universities must continue to improve and develop their intergenerational climate in research settings. In this regard, certain specific strategies could be implemented, such as those proposed by Leon (2020), which aim at culture development (volunteering and storytelling) or staff satisfaction (mentoring and training). Gairín (2020) proposed exchange and collaboration strategies such as establishing knowledge-sharing and transfer agendas, age and talent management plans, generational exchange programs, knowledge maps, and intergenerational workshops. Additionally, Sumbal et al. (2017) advocated building professional communities comprising people of different ages and trajectories as the most reasonable solution and appropriate strategy for intergenerational work.

A positive intergenerational research climate leads to improvements at the individual, group, and institutional levels (King et al. 2019). Considering these benefits, higher education institutions should regularly diagnose and improve their intergenerational climate towards overcoming generational stereotypes, which often result from intuitions and beliefs than from actual and confirmed difficulties (Hirsh 2020).

Funding

This work was supported by the Spanish Ministry of Science and Innovation (*Ministerio de Ciencia e Innovación de España* – MCIN) under Grant PID2019-107747RB-I00.

Declaration of interest statement

The authors report that there are no competing interests to declare.

References

Albuerne, Fernando, and Angeles Juanco. 2002. “Intergeneracionalidad y escuela: trabajamos juntos, aprendemos juntos.” *Revista Interuniversitaria de Formación del Profesorado* 45: 77-88.

Aprile, Kerry Therese, Ellem Pammie, and Lisa Lole. 2021. “Publish, Perish, or Pursue? Early Career Academics’ Perspectives on Demands for Research Productivity in Regional Universities.” *Higher Education Research & Development* 40.6 (2021): 1131–1145. doi: https://doi.org/10.1080/07294360.2020.1804334

Bagnasco, Anamaria, Mark Hayter, Silvia Rossi, Milko Zanini, Ramona Pellegrini, Giuseppe Aleo, Gianluca Catania, and Loredana Sasso. 2020. “Experiences of Participating in Intergenerational Interventions in Older People’s Care Settings: A Systematic Review and Meta-synthesis of Qualitative Literature.” *Journal of Advanced Nursing* 76 (1): 22–33. doi: https://doi.org/10.1111/jan.14214

Ball, Stephen J. 2012. “Performativity, Commodification and Commitment: An I-spy Guide to the Neoliberal University.” *British Journal of Educational Studies* 60 (1): 17–28. doi: https://doi.org/10.1080/00071005.2011.650940

Bloch, Roland. 2022. “Performing Size. On the Effects of ‘Critical Mass’ in Science.” *Globalisation, Societies and Education* 20 (4): 450–462. doi: https://doi.org/10.1080/14767724.2021.1992751

Boström, Ann-Kristin, and Bernhard Schmidt-Hertha. 2017. “Intergenerational Relationships and Lifelong Learning.” *Journal of Intergenerational Relationships* 15 (1): 1–3. doi: https://doi.org/10.1080/15350770.2017.1260408

Brown, Jeffrey R., and Caroline M. Hoxby. 2015. *How the Financial Crisis and Great Recession Affected Higher Education*. Chicago: University of Chicago Press - Chicago Scholarship Online.

Çelik, Çağlar, and Soner Polat. 2022. "The Relationship Between Intergenerational Knowledge Sharing and Intergenerational Learning Levels Among Teachers." *Journal of Intergenerational Relationships*. Advance online publication. doi: https://doi.org/10.1080/15350770.2022.2084202

Canedo, Alejandro, Jesús-Nicasio García, and Deilis-Inonne Pacheco-Sanz. 2017. "A Systematic Review of the Effectiveness of Intergenerational Programs." *Frontiers in Psychology* 8 (1882): 1–13. doi: https://doi.org/10.3389/fpsyg.2017.01882

Carvalho, Teresa and Pedro Videira. 2019. "Losing Autonomy? Restructuring Higher Education Institutions Governance and Relations between Teaching and Non-teaching Staff." *Studies in Higher Education* 44 (4): 762–773. doi: https://doi.org/10.1080/03075079.2017.1401059

Castro, Diego, and Georgeta Ion. 2019. "Changes in the University Research Approach: Challenges for Academics' Scientific Productivity." *Higher Education Policy* 32: 681–699. doi: https://doi.org/10.1057/s41307-018-0101-0

Christian, Katherine, Carolyn Johnstone, JoAnn Larkins, Wendy Wright, and Michael Doran. 2021. "A Survey of Early-career Researchers in Australia." *Elife* 10: 1–19. doi: https://doi.org/10.7554/eLife.60613

Crowe, David, Jörg Haas, Valentine Millot, Łukasz Rawdanowicz, and Sébastien Turban. 2022. *Population Ageing and Government Revenue: Expected Trends and Policy Considerations to Boost Revenue.* OECD. doi: https://doi.org/10.1787/9ce9e8e3-en.

Cruz-Castro, Laura, and Luis Sanz-Menéndez. 2016. "The Effects of the Economic Crisis on Public Research: Spanish Budgetary Policies and Research Organisations." *Technological Forecasting and Social Change* 113, 157–167. doi: https://doi.org/10.1016/j.techfore.2015.08.001

de Blois, Sarah, and Martine Lagacé. 2017. "Understanding Older Canadian Workers' Perspectives on Aging in the Context of Communication and Knowledge Transfer." *Canadian Journal of Communication* 42 (4): 631–644. doi: https://doi.org/10.22230/cjc.2017v42n4a3071

Edge, Karen. 2014. "A Review of the Empirical Generations at Work Research: Implications for School Leaders and Future Research." *School Leadership & Management* 34 (2): 136–155. doi: https://doi.org/10.1080/13632434.2013.869206

Edge, Karen, Katherine Descours, and Keren Frayman. 2016. "Generation X School Leaders as Agents of Care: Leader and Teacher Perspectives from Toronto, New York City and London." In *How School Leaders Contribute to Student Success,* edited by Leithwood, Kennet, Jingping Sun, and Katina Pollock, 175–202. Cham: Springer International Publishin. doi: https://doi.org/10.3390/soc6020008

Gairín, Joaquín. 2020. "La Gestión del Conocimiento Intergeneracional." In *La Nueva Gestión del Conocimiento,* edited by Gairín, Joaquín, Cecilia Suárez and Anna Díaz, 229–280. Madrid: Wolters Kluwer.

García-Sánchez, Paola, Nieves L. Díaz-Díaz, and Petra De Saá-Pérez. 2019 “Social Capital and Knowledge Sharing in Academic Research Teams.” *International Review of Administrative Sciences* 85 (1): 191–207. doi: https://doi.org/10.1177/00208523166891

Gerpott, Fabiola, Nale Lehmann-Willenbrock, and Sven Voelpel. 2017. “A Phase Model of Intergenerational Learning in Organisations.” *Academic of Management Learning & Education* 16 (2): 193–216. doi: https://doi.org/10.5465/amle.2015.0185

Gerpott, Fabiola, and Ulrike Fasbender. 2020. “Intergenerational Learning in Age-diverse Meetings: A Social Comparison Perspective.” Chap. 20 in *Managing Meetings in Organizations*, edited by Meinecke, Annika L., Joseph A. Allen, and Nale Lehmann-Willenbrock, 185–206. Bingley: Emerald Publishing. doi: https://doi.org/10.1108/S1534-085620200000020009

Gornitzka, Aser, Peter Maassen, and Harry de Boer. 2017. “Change in University Governance Structures in Continental Europe.” *Higher Education Quarterly* 71 (3): 274–289. Doi: https://doi.org/10.1111/hequ.12127

Gutiérrez, Marta, and Daniel Hernández. 2013. “Las Relaciones Intergeneracionales en la Sociedad Actual: Un Imperativo Necesario.” *Educación Social. Revista de Intervención Socioeducativa* 55: 135–145.

Hahn, Joyce. 2011. “Managing Multiple Generations: Scenarios from the Workplace.” *Nursing Forum* 46 (3): 119–127. doi: https://doi.org/10.1111/j.1744-6198.2011.00223.x

Hirsch, Peter Buell. 2020. “Follow the Dancing Meme: Itergenerational Relations in the Workplace.” *Journal of Business Strategy* 41(3): 67–71. doi: https://doi.org/10.1108/JBS-02-2020-0034

Huang, Junming Alexander Gates, Roberta Sinatra, and Albert-Lastslo Barabási. 2020. "Historical Comparison of Gender Inequality in Scientific Careers Across Countries and Disciplines." *Proceedings of the National Academy of Sciences* 117 (9): 4609–4616. doi: https://doi.org/10.1073/pnas.1914221117

Jaffe, Klaus, Enrique Horst, Laura H. Gunn, Juan Diego Zambrano, and Germán Molina. 2020. "A Network Analysis of Research Productivity by Country, Discipline and Wealth." *PLOS ONE* 15 (5): e0232458. doi: https://doi.org/10.1371/journal.pone.0232458

Jones, Benjamin F. 2021. "The Rise of Research Teams: Benefits and Costs in Economics." *Journal of Economic Perspectives* 35 (2): 191–216. doi: https://doi.org/10.1257/jep.35.2.191

Kaye, Beverly, Devon Scheef, and Diane Thielfoldt. 2003. "Engaging the Generations." In *Human Resources in the 21st Century*, edited by Effrom, Marc, Robert Gandossy, and Marshall Goldsmith, 25–34. New York: Wiley.

Kazak, Ender and Soner Polat. 2018. "School Administrators' Instructional Leadership Behaviours, Intergenerational Atmosphere, and Intergenerational Learning in Schools." *Journal of Intergenerational Relationships* 16 (4): 441–462. doi: https://doi.org/10.1080/15350770.2018.1489330

King, Eden, Lisa Finkelstein, Thomas, Courtney, and Abby Corrington. 2019. "Generational Differences at Work are Small. Thinking They're Big Effects our Behavior." *Harvard Business Review* 1: 1–7

King, Scott, and Fred Bryant. 2017. "The Workplace Intergenerational Climate Scale (WICS): A Self-report Instrument Measuring Ageism in the Workplace." *Journal of Organizational Behavior* 38 (1): 124–151. doi: https://doi.org/10.1002/job.2118

Kleinhans, Kelly A., Kala Chakradhar, Susan Muller, and Paula Waddill. 2015. "Multigenerational Perceptions of the Academic Work Environment in Higher Education in the United States." *Higher Education* 70 (1): 89–103. doi: https://doi.org/10.1007/s10734-014-9825-y

Kuyken, Kerstin. 2012. "Knowledge Communities: Towards a Re-thinking of Intergenerational Knowledge Transfer." *VINE: The Journal of Information and Knowledge Management Systems* 42 (3-4): 365–381. doi: https://doi.org/10.1108/03055721211267495

Kuyken, Kerstin, Mehran Ebrahimi, and Anne-Laure S'aives. 2018. "Towards a Taxonomy of Intergenerational Knowledge Transfer Practices: Insights from an International Comparison (Germany – Quebec)." *Learning Organization* 25 (2): 81–91. doi: https://doi.org/10.1108/TLO-02-2017-0023

Lavoie-Tremblay, Melanie, Maxime Paquet, Marie-Anik Duchesne, Anelise Santo, Ana Gavrancic, François Courcy, and Serge Gagnon. 2010. "Retaining Nurses and Other Hospital Workers: An Intergenerational Perspective of the Work Climate: Intergenerational Perspective and Work Climate." *Journal of Nursing Scholarship* 42 (4): 414–422. doi: https://doi.org/10.1111/j.1547-5069.2010.01370.x

Leon, Ramona-Diana. 2020 "Fostering Intergenerational Learning in the Hotel Industry: A Multiple Criteria Decision-making Model." *International Journal of Hospitality Management* 91(1): 1–11. doi: https://doi.org/10.1016/j.ijhm.2020.102685

Lucas, Lisa. 2009. "Research Management and Research Cultures: Power and Productivity." In *Academic research and researchers,* edited by Brew, Angela, and Lisa Lucas, 36–48. Maidenhead: McGraw-Hill International.

Lyons, Sean, and Lisa Kuron. 2014. “Generational Differences in the Workplace: A Review of the Evidence and Directions for Future Research.” *Journal of Organizational Behavior* 35 (S1): S139–S157. doi: https://doi.org/10.1002/job.1913

Miller, Rupert. 1981. *Simultaneous Statistical Inference*. New York: McGraw-Hill. doi: https://doi.org/10.1007/978-1-4613-8122-8

Ministerio de Universidades. 2022. *Estadística de personal de las universidades. Curso 2020–2021*. Gobierno de España: Madrid. Available at https://cutt.ly/2K8Gwni

Núñez, Jessica, Gabriela Míguez, and Jesús García. 2018. “Las Relaciones Intergeneracionales y los Procesos Educativos en la Familia.” Paper presented at the *Internacional Congres SIPS*, Palma de Mallorca, Universitat Illes Balears.

Obeng, Anthony, Yongyue Zhu, Samuel Azinga, and Prince Quansah. 2021. “Organisational Climate and Job Performance: Investigating the Mediating Role of Harmonious Work Passion and the Moderating Role of Leader–Member Exchange and Coaching.” *Sage Open* 11 (2): 1–35. doi: https://doi.org/10.1177/21582440211008456

Perkmann, Markus, Rossella Salandra, Valentina Tartari, Maureen McKelvey, and Alan Hughes. 2021. “Academic Engagement: A Review of the Literature 2011–19”. *Research Policy* 50 (1): 104114. doi: https://doi.org/10.1016/j.respol.2020.104114

Pinheiro, Romulo and Bjorn Stensaker. 2014. “Designing the Entrepreneurial University: The Interpretation of a Global Idea.” *Public Organization Review* 14 (4): 497–516. doi: https://doi.org/10.1007/s11115-013-0241-z

Polat, Soner and Ender Kazak. 2015. “Primary School Teachers’ Views on Intergenerational Learning.” *Educational Sciences: Theory & Practice* 15 (5): 1189–1203.

Portela, Antonio, Ana Torres, Juan-Antonio Salmerón, and Silvia Martínez. 2020. "Generational Diversity: Relevance for Professional Collaboration in Organisational and Educational Contexts". In *Generational diversity and intergenerational collaboration among teachers: perspectives and experience*, edited by Dorczak, Roman, and Antonio Portela. 137–152, Krakow: Uniwersytetu Jagiellonskiego.

Powell, Byron, Kayne Mettert, Caitlin Dorsey, Bryan Weiner, Cameo Stanick, Rebeca Lengnick-Hall, and Cara Lewis. 2021. "Measures of Organisational Culture, Organisational Climate, and Implementation Climate in Behavioral Health: A Systematic Review." *Implementation Research and Practice* 2: 1–29. doi: https://doi.org/10.1177/26334895211018862

Romero-Tena, Rosalía, Víctor H. Perera, and Ángela Martín-Gutiérrez. 2020. "Factors that Influence the Decision of Spanish Faculty Members to Retire." *British Educational Research Journal* 46 (1): 58–74. doi: https://doi.org/10.1002/berj.3566

Rotolo, Danielle and Antonio Petruzzelli. 2012. "When does Centrality Matter? Scientific Productivity and the Moderating Role of Research Specialisation and Cross-community Ties." *Journal of Organizational Behavior* 34 (5): 648–670. doi: https://doi.org/10.1002/job.1822

Rouzet, Dorothée, Aida Caldera, Théodore Renault, and Oliver Roehn. 2019. "Fiscal Challenges and Inclusive Growth in Ageing Societies." *OECD Economic Policy Papers*, 27, OECD Publishing Paris. doi: https://doi.org/10.1787/c553d8d2-en

Scherer, Ronny, Sarah K. Howard, Jo Tondeur, and Fazilat Siddiq. 2021. "Profiling Teachers' Readiness for Online Teaching and Learning in Higher Education: Who's Ready?" *Computers In Human Behavior* 118: 106675. doi: https://doi.org/10.1016/j.chb.2020.106675

Schneider, Benjamin, Mark Ehrhart, and William Macey. 2013. “Organisational Climate and Culture.” *Annual Review of Psychology* 64 (1): 361–388. doi: https://doi.org/10.1146/annurev-psych-113011-143809

Sumbal, Muhammad Saleem, Eric Tsui, Eric See-to, and Andrew Barendrecht. 2017. “Knowledge Retention and Aging Workforce in the Oil and Gas Industry: A Multi Perspective Study.” *Journal of Knowledge Management* 21 (4): 907–924. doi: https://doi.org/10.1108/JKM-07-2016-0281

Talacchi, Sergio. 1960. “Organisation Size, Individual Attitudes and Behavior: An Empirical Study.” *Administrative Science Quarterly* 5 (3): 398–420. doi: https://doi.org/10.2307/2390663

Tomarken, Andrew and Ronald-C. Serlin. 1986. “Comparison of ANOVA Alternatives under Variance Heterogeneity and Specific Noncentrally Structures.” *Psychological Bulletin* 99: 90–99. doi: https://doi.org/10.1037/0033-2909.99.1.90

Toothaker, Larry. 1991. *Multiple Comparisons for Researchers*. Newbury Park (CA): Sage.

Truxillo, Donald M., David M. Cadiz, and Leslie B. Hammer. 2015. “Supporting the Aging Workforce: A Review and Recommendations for Workplace Intervention Research.” *Annual Review of Organizational Psychology and Organizational Behavior* 2 (1), 351–381. doi: https://doi.org/10.1146/annurev-orgpsych-032414-111435

United Nations. 2002. *Informe de la Segunda Asamblea Mundial sobre el Envejecimiento.* New York: United Nations. Available at https://cutt.ly/BK5strp

Waaijer, Cathelijn. 2015. “The Coming of Age of the Academic Career: Differentiation and Professionalisation of German Academic Positions from the 19th Century to the Present.” *Minerva* 53 (1): 43–67. Available at http://www.jstor.org/stable/43548972

Weston, Marta. 2001. “Coaching Generations in the Workplace.” Nursing Administration Quarterly 25 (2): 11–21. doi: https://doi.org/10.1097/00006216-200101000-00005

Wilkins, Stehen, Joe Hazzam, and Jonathan Lean Leanb. 2021. “Doctoral Publishing as Professional Development for an Academic Career in Higher Education.” *The International Journal of Management Education* 19 (1): 1–13. doi: https://doi.org/10.1016/j.ijme.2021.100459

Zaidi, Asghar, Katrin Gasior, and Robert Manchin. 2012. “Population Aging and Intergenerational Solidarity: International Policy Frameworks and European Public Opinion.” *Journal of Intergenerational Relationships* 10 (3): 214–227. doi: https://doi.org/10.1080/15350770.2012.697845

Zemke, Ron, Claire Raines, and Bob Filipczak. 2000. *Generations at Work: Managing the Clash of Veterans, Boomers, Xers, and Nexters in your Workplace.* New York: American Management Association. Available at https://cutt.ly/QLwb4HL

Table 1. Demographic characteristics of the participants (N=2003)

Age	m=47.09 (SD=12.14)
Gender	
Male	52.4%
Female	46.5%
Non-binary	0.3%
NA	0.6%
Others	0.2%
Generations	
Baby Boomers (born between 1948 and 1966)	37.4%
Generation X (born between 1967 and 1982)	31.7%
Millennials (born between 1983 and 1998)	23.7%
Generation Z (born after 1999)	7.2%
Position	
Adjunct lecturer	11.6%
Pre-doc researcher	12.9%
Post-doc researcher	5.5%
Assistant lecturer	17.5%
Reader	35.9%
Professor	15.9%
Emeritus lecturer	0.7%
Knowledge field	
Arts and Humanities	18.2%
Science and Bioscience	19.8%

Health Science	16.1%
Social Sciences and Law	31.6%
Engineering and Architecture	14.3%
University size	
Small (<25,000 students)	17.8%
Medium (25–40,000 students)	35.7%
Large (>40,000 students)	46.5%

Table 2. Mean and standard deviation of the main characteristics of the intergenerational climate of university researchers

		m	SD
LGS	Co-workers outside my generation are not interested in making friends outside their generation. *	5.32	1.90
	Co-workers outside my generation complain more than co-workers my age do. *	5.04	2.01
	Co-workers outside my generation usually converse about things that do not interest me. *	5.96	1.53
	Co-workers outside my generation tend to work differently from co-workers my age. *	3.84	1.88
	Overall subscale Values	5.06	1.24
PIA	I feel comfortable when co-workers outside my generation try to make conversation with me.	6.24	1.33
	I like to interact with my colleagues from other generations.	6.31	1.22
	My co-workers outside my generation are interesting and unique individuals.	5.74	1.43
	People work best when they work with others their age. *	5.57	1.73
	Overall subscale Values	5.95	1.02
WGI	I believe my work environment is healthy for people of all ages.	5.23	1.91
	Workers of all ages are respected in my workplace.	5.47	1.85
	I can communicate effectively with workers of different generations.	6.06	1.29

	Working with co-workers of different ages enhances the quality of my work life.	6.16	1.35
	Overall subscale Values	5.73	1.23
WIR	My co-workers make older workers feel like they should retire. *	5.83	1.74
	I feel pressure from younger workers to step down. *	6.54	1.26
	I feel pressure from older workers to step down. *	6.39	1.46
	In my workplace, qualified younger workers tend to be overlooked for promotions. *	5.31	2.02
	Overall subscale Values	6.06	1.07
IC	How often do you have conversations with co-workers outside your generation?	5.76	1.48
	How often do you have conversations relating to topics other than work with co-workers outside your generation?	4.55	1.83
	How often do you converse with co-workers outside your generation about your personal lives?	3.89	1.86
	How often do you eat meals with co-workers outside your generation during the workday?	3.38	2.09
	Overall subscale Values	4.39	1.44

* For items indicated with an asterisk, the Likert scale was inverted to facilitate interpretation.

Table 3. Intergenerational climate in university research settings.

Comparison of means by WICS subscales.

	LGS m (sd)	PIA m (sd)	WGI m (sd)	WIR m (sd)	IC m (sd)
Generations					
Baby Boomers	5.13 (1.25)	6.11 (0.94)	5.82 (1.19)	6.06 (1.13)	4.47 (1.33)
Generation X	5.17 (1.19)	6.02 (0.98)	5.80 (1.17)	6.09 (1.02)	4.53 (1.44)
Millennials	4.87 (1.27	5.78 (1.05)	5.57 (1.29)	6.01 (1.09)	4.26 (1.52)
Generation Z	4.84 (1.56)	5.45 (1.23)	5.52 (1.40)	6.06 (0.82)	3.86 (1.53)
Difference in means	F= 7.737[e]	W=19.313[e]	W=5.549[d]	W=0.505	W=9.721[e]
Gender					
Male	5.10 (1.23)	5.94 (1.01)	5.74 (1.23)	6.08 (1.03)	4.33 (1.39)
Female	5.03 (1.24)	5.97 (1.04)	5.74 (1.22)	6.03 (1.11)	4.45 (1.49)
Non-binary	4.36 (1.41)	6.39 (0.48)	5.57 (1.32)	6.46 (0.40)	4.82 (1.63)
Difference in means	F= 1.305	F= 0.671	F= 0.841	F= 1.153	F= 1.740
Position					
Adjunct Lecture	4.88 (1.28)	5.88 (1.03)	5.68 (1.23)	5.95 (1.04)	4.13 (1.48)
Pre-doc Researcher	4.81 (1.18)	5.55 (1.13)	5.47 (1.38)	6.02 (0.97)	3.87 (1.52)
Post-doc Researcher	4.88 (1.18)	5.77 (0.94)	5.57 (1.26)	5.96 (0.89)	4.55 (1.43)
Assistant Lecture	5.04 (1.23)	5.91 (1.09)	5.67 (1.22)	6.02 (1.13)	4.43 (1.49)
Associate Professor	5.23 (1.24)	6.09 (0.93)	5.82 (1.16)	6.08 (1.08)	4.51 (1.39)
Professor	5.15 (1.20)	6.16 (0.97)	5.92 (1.20)	6.18 (1.07)	4.67 (1.26)
Emeritus Lecture	4.34 (1.36)	5.96 (0.87)	5.73 (1.25)	5.56 (1.50)	3.95 (1.17)
Difference in means	F= 6.004[e]	W=11.013[e]	W=3.969	F=1.743	W=10.095[e]
University size					
Small	5.11 (1.15)	6.03 (0.90)	5.82 (1.04)	6.06 (1.01)	4.42 (1.38)
Medium	5.00 (1.27)	5.91 (1.04)	5.64 (1.29)	6.02 (1.11)	4.27 (1.47)
Large	5.09 (1.24)	5.97 (1.05)	5.77 (1.24)	6.08 (1.06)	4.48 (1.43)
Difference in means	F=1.455	F=1.889	W=3.608[b]	F=0.625	F=4.489[c]
Field of knowledge					
Arts and Humanities	5.06 (1.32)	5.96 (1.00)	5.62 (1.30)	6.06 (1.09)	4.11 (1.49)
Science and Bioscience	5.06 (1.18)	5.90 (1.09)	5.80 (1.27)	6.02 (1.05)	4.47 (1.35)
Health Science	5.10 (1.16)	6.01 (0.93)	5.91 (1.07)	6.08 (1.08)	4.61 (1.43)
Social Sciences and Law	5.04 (1.24)	5.96 (1.02)	5.63 (1.25)	6.04 (1.07)	4.33 (1.45)

Engineering and Architecture	5.06 (1.27)	5.96 (1.06)	5.81 (1.15)	6.11 (1.04)	4.55 (1.42)
Difference in means	W=0.119	F=0.519	W=4.593[d]	F=0.347	F=6.861[e]

[a] p< 0.1; [b] p< 0.05; [c] p< 0.01; [d] p<0.001; and [e] p=0.000