Anti-discrimination policies in higher education institutions: an interdisciplinary scoping review

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Abstract

Objective. Over the last decades, academic institutions have increasingly introduced initiatives aimed at reducing a wide range of discriminations (based on characteristics such as gender, race, class, disability, religion, sexual orientation, and so on) hindering studies or career advancement. However, little is known about their intended effects. This interdisciplinary scoping review seeks to map the literature on the evaluation of policies tackling discriminations in higher education institutions (HEIs). The review includes research evidence assessing implemented policies across every geographical location and across time.

Methods. Academic and non-academic databases (WorldCat, ProQuest, Cairn, GenPORT) and journals were searched, in French and in English, for studies conducting ex-post evaluation of anti-discrimination policies in higher education organizations between September and November 2021. Data collection, extraction and presentation followed the JBI's methodology for scoping review (Peters et al. 2017, 2020).

Results. Out of the 13111 sources reviewed, 18 literature reviews and 98 articles were selected for this review. The primary observation from the literature search is the paucity of evidence on a vast and heterogeneous ensemble of policy interventions whose implementation is on the rise. The evidence found in this scoping review is predominantly Western and primarily produced within the US. Studies tend to adopt small-scale approaches : they evaluate a single type of policy or intervention (e.g. a training course or a leadership programme) often implemented in one higher education institution or one department, and geared towards a single population category (students, academics, or non-academic staff). An exception to this are evaluations assessing gender equality policies as a whole and across institutions, the third category of policies most found in this review, after sexual violence education programs and mentoring. Findings highlight the implementation of a broad range of initiatives in HEIs. Overall, they mainly target research careers development and tackle gender issues (gender accounts for half of the evidence), both at the individual (e.g. mentoring, networking) and organizational level (e.g. quotas, work-life balance policies). Moreover, the results of this study reveal large variations in the evaluations methods, with multiple outcomes measures and theoretical frameworks, focusing predominantly on short-term effects at the individual level (beneficiaries).

Conclusion. The evidence found is relatively limited but the results indicate that this literature is expanding and geographically diversifying. Increasing attention is paid to evaluating what

[1] I am very grateful to Daniel Sabbagh, the coordinator of this scoping review, for his relevant advice all along this project and for his thorough proofreading. I also thank the members of the Scientific Committee, Anne Revillard, Pierre Deschamps, Christelle Hamel, Tana Bao, Christine Musselin, and Pierre-Olivier Weiss for their constructive feedback. This literature review is a complementary project to ACADISCRI: a mixed-method sociological survey that quantifies and analyses experiences of discriminations (all grounds covered) in higher education in France. Students, academic staff and non-academic staff are surveyed.

is now commonly referred to as "equality, diversity and inclusion policies" in higher education institutions (Moody & Aldercotte 2019). There is a strong need for further evaluations on interventions addressing grounds of discrimination other than gender and the problem of sexual violence. Moreover, the lack of intersectional approaches in both the interventions and the evaluations conducted is a major gap that should be addressed by policy-makers and researchers to better understand the linkages between the issues at stake and to implement sustainable change. Another notable absence in the literature concerns non-academic staff. This review is also far from presenting the full extent of existing initiatives. Further research on other policies (e.g. gender mainstreaming actions, disability policies), with a peculiar attention to the disciplinary field context, is needed. Furthermore, assessing policies' long-term impact, and particularly their effects on structural and cultural change, remains a key challenge and priority in this research field. The challenges of exploring this heterogeneous research are raised in this scoping review. The author recommends further investigation of grey literature (in particular institutional internal evaluation reports) and additional literature searches in other languages and with other search terms defining policies and discriminations, which may vary across national and institutional contexts.

Keywords: discriminations, policies, evaluation, higher education, research.

Introduction

Rationale

Widening access and participation to higher education has been on the agenda of higher education policy for decades across the world and is a widely studied research area (Crossan et al. 2004). The impact of policies has been well documented, highlighting both progress made and remaining challenges. A core challenge pertains to the fact that the diversification of the student body may fail to remedy the longstanding and deeply entrenched inequalities perceptible in academia and in the wider society (Shah et al. 2015). In order to investigate the challenge of widening participation, focusing on entry is not enough (Burke 2012). Many studies demonstrate how inequalities are restructured and perpetuated in higher education institutions despite widened access (Turner et al. 2008, Gutiérrez y Muhs 2012, Bondestam & Lundqvist 2018, Murgia & Poggio 2019, Brown 2021). This literature sheds light on the multiple discriminatory structures, norms and practices impeding studies, as well as career advancement. Many measures intended to tackle those challenges have been introduced over time, reflecting various legislative, institutional, and political approaches : from equal opportunities policies starting in the 1960s-1970s to affirmative action (including positive discrimination, such as quotas) and, since the 1990s mostly, structural approaches (e.g. through Gender Equality Plans in Europe, or the ADVANCE programme of the National Science Foundation in the US) (Weiner 1998, Booth & Bennett 2002, Castaño et al. 2010, 70). The wider context of those measures has changed from a predominant focus on individuals and a redistributive approach to inequality to greater attention to organizational structures and a recognitional justice perspective (Deem & Moorley 2006, Burke 2012). Those evolutions have translated into conceptual and terminological diversification in the policy-making realm. Similar to private workplaces, higher education institutions in several countries nowadays tackle what is referred to as “equality”, “diversity” and “inclusion” challenges (Moody & Aldercotte 2019). With the rise of the “entrepreneurial university” model over the last decades, higher education institutions (HEIs) have embraced equality and diversity management approaches to tackle deep-seated inequalities and entrenched discrimination (Langholz 2014).

However, from a research perspective, little is known of the impact of those policies aimed at reducing a wide range of discriminations (based on characteristics such as gender, race, class, disability, religion, sexual orientation and so on) hindering studies or career advancement. A growing number of studies and organizational reports have increased our knowledge on equality and diversity issues and interventions in academia (Cacace 2009, Moody & Aldercotte 2019, 20-25). Yet concrete and systematic evaluations of anti-discrimination policies’ outcomes and impacts are scarce. The similarities that can be drawn with other employment sectors are relevant and provide information on the potential impact of interventions. To that effect, the international review on “Equity, diversity and inclusion” (EDI) initiatives in higher education conducted by the British charity Advance HE – the most comprehensive review found on this topic – includes studies from comparable workplaces (Moody & Aldercotte 2019). Indeed, the production of evaluation studies on diversity and equality policies in the private sector has also increased considerably (Klingler Vidra 2019, Chilazi 2021) and a large breadth of studies and reviews look at the impact of single or several

interventions (Bieling et al. 2015, Alhejji et al. 2016, Celik et al. 2012). However, the specificities of higher education institutions as both a study and a work environment, where a vast variety of activities (teaching, research, administration) happen, must be considered. In that way, this scoping review distinguishes itself from the Advance HE review and other sectoral reviews on EDI challenges by focusing exclusively on higher education. Moreover, it solely focuses on ex-post evaluations of interventions, that is evaluations that assess outcomes and impact, as opposed to ex-ante and implementation evaluations (Löther & Maurer 2008, Wasmer & Woll 2011). Since no similar review has been done to our current knowledge, an exploratory approach to the topic is relevant. Therefore, "scoping review" as a methodology to map existing evidence on a broad topic is the most appropriate type of review to conduct (Munn et al. 2018). It is a relevant methodological tool to gather evidence from diverse disciplines and various study research designs.

The purpose of pursuing a scoping review on this topic is three-fold: (1) to examine the extent, range, and nature of research activity, (2) to synthesize and present research findings in some areas of study, and (3) to identify gaps in the existing literature (Arksey & O'Malley 2005).

Research questions / Objectives

The review was guided by two research questions based on the aims identified in the introduction:

1. What type of policies tackling discriminations are implemented in higher education institutions?
2. How are the evaluations of those implemented policies conducted within the research literature?

This scoping reviews seeks to provide an interdisciplinary overview of the existing studies assessing anti-discrimination policies in higher education and research institutions across the globe.

It is particularly relevant to summarize this body of knowledge since interventions combating a wide range of discriminations (based on gender, race, disability, sexual orientation, etc.) within HEIs are increasingly required by national and regional policies and legislation. In Europe, for instance, the key funding program for research and innovation, Horizon Europe, has made Gender Equality Plans[2] an eligibility criterion for all public bodies, higher education institutions, and research organisations from EU Member States and associated countries wishing to participate in the program starting 2021[3]. It would be useful to provide empirical evidence of existing interventions' models and effectiveness (or the lack thereof) for stakeholders as well as to help define areas of future research for academics. This review thus intends to give a clear picture of a complex and wide area of research (and policy-making) for both researchers and practitioners.

[2] A definition is provided in the section discussing gender equality policies.
[3] *A Union of Equality: Gender Equality Strategy 2020-2025*, COM/2020/152 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

Inclusion criteria

The target *population* sought for inclusion in this review are all individuals either studying and/or working in higher education and research institutions. They can be grouped into three main categories: students, academic staff (teaching and/or research), and non-academic staff (administrative). The students category is composed of both undergraduate and graduate students. Doctoral (PhD) candidates are considered working professionals, early career researchers, in this review, thus falling under the academic staff category.

The *concept* of the review, "policies combating discriminations", leads to multiple sub-concepts and categories for both policies and discriminations. Policies here refer to formal institutional initiatives, actions or projects that can be elaborated and deployed at different levels (regional, national, university, department). The range of types of interventions reviewed can be vast, from one-shot interventions (e.g. training sessions) to multi-scale programs. Policies included in this review must have their aims and tools well-described. As for discriminations, this review considers both legal and sociological definitional approaches, with the integration of an intersectional lens that looks at intertwined discriminations producing specific experiences of oppression (Crenshaw 1991). According to its most simple definition, discrimination refers to the unfair or prejudicial treatment of people and groups based on characteristics such as race, gender, age, sexual orientation, or others. The list of grounds for discrimination will differ depending on national legislative frameworks. In the literature search detailed below, various grounds for discrimination (identity characteristics or specific conditions, e.g. maternity) are taken into account. This review also considers what is usually distinguished in legal terms as "direct" discrimination — it occurs where one person is treated less favourably than another is or would be treated in a comparable situation — and "indirect" discrimination — an apparently neutral practice or policy which disadvantages a group of people who share a protected characteristic, and that is not strictly necessary to promote a legitimate or compelling goal. Using a sociological perspective of discrimination enables to go beyond a restrictive, individualistic, legal approach to discriminations. Instead, this review adopts a systemic approach that analyzes structural power relationships within the broad social context, which shape and perpetuate discriminatory norms and practices (Bereni & Chappe 2011). In that way, social class inequalities can be integrated into this review although "class" does not commonly fall under the legal scope of discrimination. This review also looks at sexual violence as a whole, beyond the single category of sexual harassment that constitutes a discrimination in various national contexts.

As for the *context*, every country and time period are under the scope of this review. Universities, schools, colleges, private or public institutions are all included in the broad "higher education institutions" category. Depending on the national or regional context, this category entails various classifications but overall this scoping review looks at institutions that provide post-secondary education and – but not always and to various degrees – are involved in research activities.

The *types of sources of evidence* sought for inclusion are empirically-based evaluation studies, whether produced in the academic realm or not (such as institutional reports and research from organizations). This review conceptualizes evaluation similarly as the Joint Committee on Standards for Educational Evaluation: an "evaluation is the systematic assessment of the worth or merit of an object" (Castaño et al. 2010, 11). As previously indicated, this scoping

review is interested in evaluation research assessing policy impact after interventions have been implemented (ex-post), since the focus is on policies that *have been put in place* in higher education. “Ex-post” evaluation differs from “ex-ante” evaluation, which forecasts potential impact *prior* to a policy design or implementation (Bozio 2004). A third approach of policy analysis in evaluation research that is worth mentioning is monitoring policies: the study of existing policies that look at the various stages of the policy process (agenda-setting, policy design, implementation), which informs about the development of a policy in a complex environment (Jacquot 2010). As will be detailed in the next part (“Methods”), both monitoring studies and ex-post evaluations were included in the first stage of evidence selection[4], for several reasons. First, it enabled a better understanding of the research activity on this topic. Second, a reference list search of studies on monitoring led to the identification of ex-post evaluation evidence. Moreover, this review also draws from the literature on monitoring policies to better understand and contextualize impact evaluations.

I. Methods

The objectives, inclusion criteria and methods for this scoping review were specified in advance and documented in a protocol developed in accordance with the JBI's scoping review methodology and its PRISMA-ScR checklist (Tricco et al. 2018). As part of the protocol from JBI methodology, the search strategy was designed in advance. However, it was also conducted iteratively, meaning that added searches were performed when thought necessary to answer the research question and grasp the topic adequately, as detailed below.

I.1. Search and selection strategy

A computerized systematic search process was conducted between September 2021 and November 2021 using scoping review techniques (Peters et al. 2020). There were two main stages in the search process. A first broad search approached the topic with all-encompassing keywords intended to reflect the most frequently used terminology for anti-discrimination policies: "equality”, “diversity”, "inclusion", and “discrimination”. Those terms were combined with two other categories of search terms, “policies” and “higher education”, using Boolean operators (see Figure 1 below). In order to remove the literature on widening access to higher education, “access” was an excluded keyword. Testing of different search strings was performed before and throughout the search process in order to remove irrelevant results and increase accuracy of the searches, which led to different search strings depending on the database or journal searched (see details in Appendix). WorldCat was the first general database searched, using English and French languages. Sources on GENport, a community sourced internet portal for sharing knowledge and inspiring collaborative action on gender and science, were also screened. In addition, a list of academic journals on specialized topics or domains deemed relevant were also searched through: higher education journals (e.g. *Higher Education Policy*), gender studies and political science journals (e.g. *Journal of Women, Politics and Policy*), gender studies and law (e.g. *Feminist Criminology*). Four journals in the field of economics were also added to the list as economic theories and models

[4] No ex-ante evaluation on the policies or interventions reviewed were found in the search.

have been particularly developed for conducting policy impact assessment (Wasmer & Woll 2011).

1. Initial search						
discriminat* OR equality OR diversity OR inclus*	AND	polic* OR intervention OR initiative OR project OR programme	AND	"higher education" OR academia OR universit*	NOT	access
2.1. Second search by grounds of discrimination						
LGBT* OR gay OR lesbian OR transgender OR transidentity OR bisexual OR queer OR race OR ethnic* OR disability OR disable* OR religion OR motherhood OR maternity OR men OR women OR age OR socio-economic OR "sexual orientation" OR gender OR "sexual harassment" OR "sexual violence" OR "sexual assault"	AND	polic* OR intervention OR initiative OR project OR action OR plan OR program OR evaluation OR impact	AND	"higher education" OR academia OR universit*	NOT	access
2.2. Second search by types of interventions						
training OR mentoring OR network* OR "work-life balance" OR "family-friendly" OR "career development" OR mainstreaming OR "gender budgeting" OR quotas OR monitoring OR "action plan"	AND	polic* OR intervention OR initiative OR project OR action OR plan OR program OR evaluation OR impact	AND	"higher education" OR academia OR universit*	NOT	access

Figure 1. Search strings

The initial search resulted in a total of 8 948 studies. Those sources were screened and sorted by reading titles. Despite the keywords, off-topic studies and studies on students' access to higher education were numerous, which accounted for the relatively high number of sources found (see full list of inclusion and exclusion criteria in Figure 2). At this stage there was no distinction made between evaluations: both monitoring (policy design and implementation) and impact (ex-post) evaluations were selected. Then, selected studies (n=87) were better reviewed by reading abstracts, as well as conclusions and text parts if necessary, and a references list search was conducted, using the same exclusion criteria as before but keeping only evaluations of policy effects (ex-post evaluations). The final dataset from this initial search contained 59 studies and 15 literature reviews[5].

[5] Four public data lists were created and accessible on Zotero (see the "References" section): (1) policy impact evaluation studies (2) monitoring evaluation studies (3) evaluation studies that could not be accessed, and (4) literature reviews.

Inclusion criteria	Exclusion criteria
● French and English languages ● Empirically-based study or review ● Evaluation of a policy, project or action aimed at, or helping in, tackling discriminations in higher education ● All geographical locations ● All years	● Studies on research financing institutions and R&I sector ● Studies on the experiences of discrimination ● Studies on students' access to higher education ● Descriptive literature, theoretical discussions, policy recommendations, opinions (no evaluation) ● Non-accessible studies

Figure 2. Inclusion and exclusion criteria

This initial search process was reviewed by the Scientific Committee[6] composed of researchers from various disciplines (economics, political science, sociology). Based on their feedback, it was decided to conduct a second search, a more detailed and specific one taking into consideration various grounds of discrimination and types of interventions (see Figure 1). Cairn and ProQuest databases were added, as well as evaluations journals. A total of 4 763 sources were found and screened using the previous inclusion and exclusion criteria (Figure 2) and removing the same studies already found in the initial search. Once again, all types of evaluation were considered (monitoring and ex-post), but only policy impact evaluation were selected ultimately. 33 new articles and books were added to the dataset, as well as 3 literature reviews articles. Then, a reference list search was conducted and a stronger review of the studies was performed with a more careful reading of some parts of the articles (methodology, conclusion). Moreover, when possible, references cited in the literature reviews articles were removed from the selected evidence list to avoid repetition.

[6] This first meeting took place in early October after the first search. A second meeting was organized at the beginning of the writing process in early December to review the selected articles and the charting table.

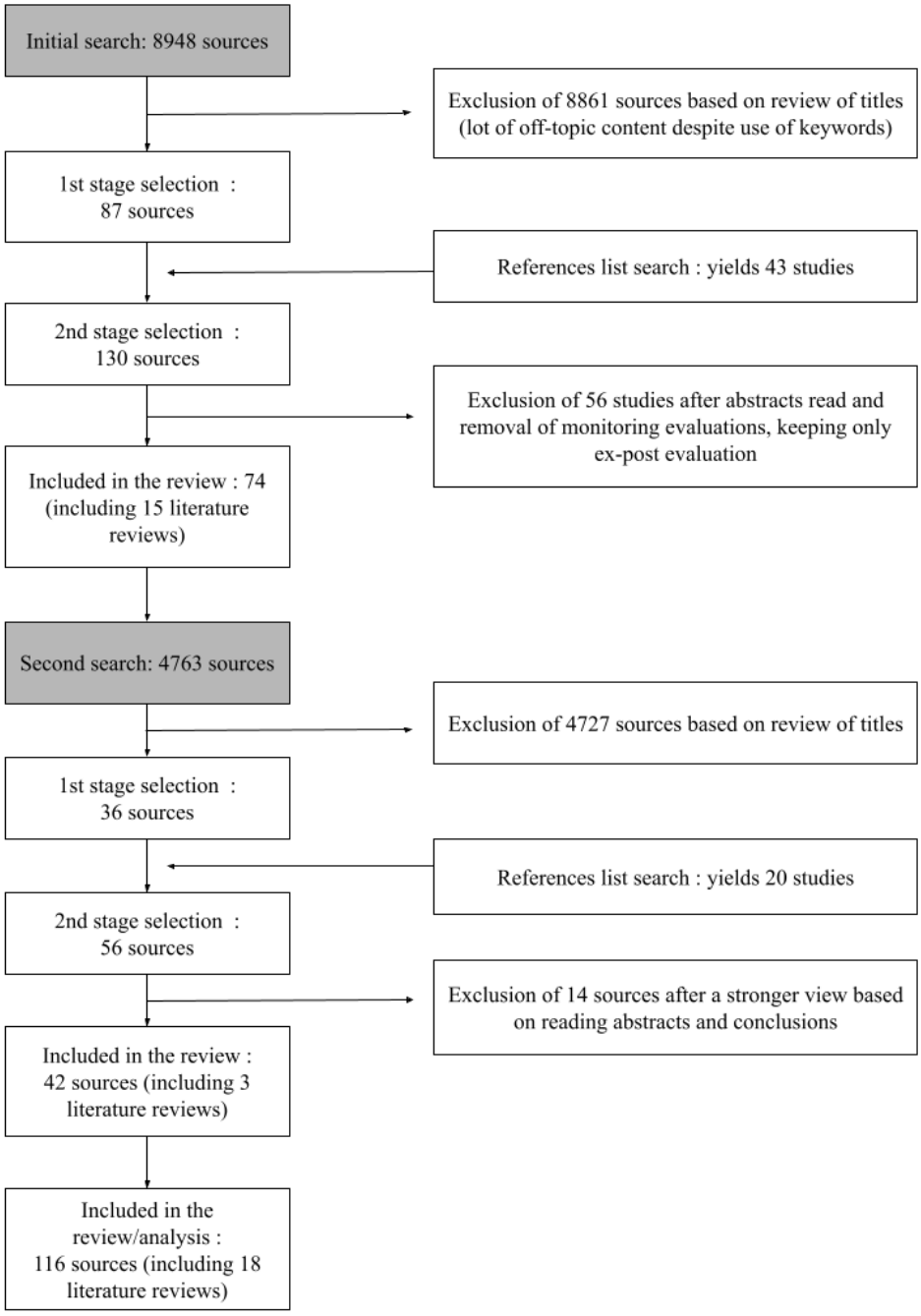


Figure 3. The sorting process

I.2. Data charting

The full texts of the studies selected (n=98 without the literature reviews) were read and data was extracted by using a charting table, following the JBI methodology for scoping review (Peters et al. 2017, 2020). The protocol included information on the data that could be extracted from the evidence sources, but it was revised and enriched to better answer the research questions and objectives of the scoping review. The final set of variables of the charting table used to analyze the selected references is the following:

Variable	Explanation
Time	Publication year
Geographical location	Country of origin (publication)
Discrimination	Grounds for discrimination / Identity characteristics
Author(s)	
Title	
Publication title	(if applicable) Journal/Book title
Disciplinary field	Main disciplines (sociology, economics, political science, etc.) are considered for the sake of easier categorization and better disciplinary mapping
Theoretical background	This variable is used to see if the research was anchored in an explicit theoretical framework
Population (target group)	Broad categorization revolves around students, academic and non-academic staff but more specific categories are found in the table, distinguishing, for instance, early-career researchers from senior researchers
Context (fields)	The context for policy intervention. Main disciplines (sociology, psychology, etc.) are used for categorization
Size of organization	Large/ Midsize/ Small. This variable has an implication for the type, scope, and impact of interventions (Lôther 2019, 8)
Aim/ Purpose of the study (research questions and objectives)	It answers the following question: what does the study aim to evaluate (criterion used)? It is linked to a subquestion: what does the policy intend to change?
Area of intervention	Two main categories are used: “Career” (and “Studies” for the students group) and “Culture & Climate”. Culture and climate refers to the institutional culture that varies between institutions and within institutions, depending for instance on the discipline investigated. Campus climate studies have emerged over the last decades to “highlight the ongoing gap between a rising participation of previously underrepresented minorities at many institutions of higher education and an institutional culture that puts minority groups at a disadvantage” (Langholz 2014, 213).
Types of intervention	Examples include mentoring, quotas, nudges, etc. For the description part, a broader categorization is used (for instance regrouping all intervention formats of family-friendly policies and training interventions)
Duration of intervention	It is not relevant for each intervention (and not always specified: we don't always know how the policy is funded and for how long). I used it to indicate the duration of interventions such as mentoring, training, and coaching.
Methodology	Quantitative, qualitative, or mixed methods. More details regarding the methodology are included in the charting table, in particular the presence of a control group.

Empirical data analysed	Includes data collection tools. Type and number of data.
Timing of data collection	When relevant, for primary data - in order to know if there is a pretest data collection and the timeframe for post-test collection.
Key findings	It indicates the changes observed post-intervention. It also enables an assessment of what type of outcomes or impacts are measured.

Figure 4. Data charting variables.

Another table was used to extract data from the literature reviews (n=18) using a slightly different set of variables : Publication Year/ Country of origin/ Type of discrimination/ Type of review/ Author/ Title/ Publication Title/ Disciplinary field/ Field (context)/ Population/ Type of intervention/ Aim & Purpose/ Methodology/ Empirical material analysed/ Methodology/ Key findings.

II. Results

II.1. Literature reviews

18 literature reviews were identified through the literature search, both peer-reviewed articles (n=15) and reports found in the grey literature (n=3), published between 2005 and 2021. **The geographical origin of those reviews is predominantly the English-speaking world**: the United States of America (n=9), the United Kingdom (n=6), Ireland (n=1), Australia (n=1), and one conducted by several researchers across Europe. **One third of those reviews (n=6) assess the effectiveness of education programs aimed at tackling sexual violence on campus among students in the US university setting** (meta-analysis and systematic reviews). Sexual violence prevention interventions are covered, and particularly "bystander" interventions (described later in the "Results" section), a popular approach in the US. **The other widely studied topic is the effectiveness of mentoring programs (n=5) for women academics**, including one for women of colour specifically. Three of the studies on mentoring programs address STEM fields and medicine. In fact, **one third (n=6) of the reviews investigate interventions deployed in either STEM disciplines or medicine**. Except for one review looking at interventions for the career's advancement of women in political science (Argyle & Mendelberg 2020), **all others are not discipline-specific**. Moreover, two cross-national reviews are of particular interest in the sense that they cover all types of interventions across all disciplines. The first one looks at gender equality in Europe, focusing on three areas of interventions: advancing science careers, science and management reform, gender dimension in research and higher education (Castaño et al. 2010). The second systematic review covers all types of discriminations reviewing "Equality, Inclusion and Diversity" (EDI) initiatives internationally in higher education institutions (Moody & Aldercotte 2019). Overall, literature reviews mostly focus on one type of intervention and/or on one ground of discrimination, and predominantly take place in the North American context.

Author(s)	Year	Country of origin	Type of review	Field (context)	Target group (population)	Type of discrimination (concept)	Type of intervention (concept)
Anderson & Whiston	2005	USA	Meta-analysis	n/a	Students	Sexual violence	Education programs
Tsui	2007	USA	Narrative	STEM	Students	Gender & Race/Ethnicity	Summer bridge / Mentoring / Research experience / Tutoring / Career counseling and awareness / Learning centre / Workshops and seminars / Academic advising / Financial support / Curriculum and instructional reform
Castaño et al.	2010	Europe	Meta-analysis	Multidisciplinary	Women academics	Gender	Career training & development / Qualification stipends, scholarships & positions / Networking and mentoring / Measures for WLB / Legislation / Equality officers, committees & observatories / Quotas / Targets, incentives & gender budgeting
Beech et al.	2013	USA	Systematic	Medicine	Early career researchers	Race/Ethnicity	Mentoring programs
Katz & Moore	2013	USA	Meta-analysis	n/a	Students (undergraduates)	Sexual Violence	Education programs (bystander)
Fenton et al.	2016	UK	Narrative	n/a	Students	Sexual Violence	Education programs (bystander)
Newlands	2016	USA	Systematic	n/a	Students	Sexual Violence	Education programs
Meschitti & Lawton Smith	2017	UK	Systematic	n/a	Women academics	Gender	Mentoring programs
Laver et al.	2018	Australia	Systematic	Medicine	Women academics	Gender	Mentoring programs / Education programs / Networking programs / Professional development programs
Jouriles et al.	2018	USA	Systematic & Meta-analysis	n/a	Students (undergraduate)	Sexual Violence	Education programs (bystander)

Author(s)	Year	Country of origin	Type of review	Field (context)	Target group (population)	Type of discrimination (concept)	Type of intervention (concept)
Moody & Aldercotte	2019	UK (International review)	Systematic	Multidisciplinary	Academic, non-academic staff, students	Intersectional approach	Multiple
Guyan & Douglas Oloyede	2019	UK	Systematic	Multidisciplinary	Academic, non-academic staff, students	Intersectional approach	Multiple
Argyle & Mendelberg	2020	USA	Systematic	Political Science	Women academics, students (graduate)	Gender	Mentoring and Networking programs / Diversity training / Gender-neutral clock stopping / Teaching and Service Expectations / Hiring process / Representation decision-making / Encouragement and resilience
Burkinshaw et al.	2020	UK	Systematic	Medicine	Women academics	Gender	Mentoring programs
Wolbring & Lillywhite	2021	UK	Scoping	n/a	Academic, non-academic staff, students	Disability	EDI initiatives
Lydon et al.	2021	Ireland	Systematic	Medicine	Women academics and professionals (clinical settings)	Gender	Multiple
Beck et al.	2021	USA	Meta-synthesis	STEM	Women academics	Gender	Mentoring programs
Wong et al.	2021	USA	Meta-analysis	n/a	Students	Sexual Violence	Education programs

Figure 5. Overview of included literature reviews.

II.2. General overview of the evidence

There are 90 peer-reviewed articles, two theses, three books or book chapters and three reports (grey literature) in this scoping review. Studies have been published between 1990 and 2021, with a vast majority of them (80%) from 2010 onwards. **Before 2010, the United States and Australia have been among the most active countries publishing research on this topic**. In fact, both countries, alongside the UK, have been conducting studies on the issue of equality policies within higher education since the 1980s (Bagilhole 2002). Systematic research on the effectiveness of certain policy measures (such as mentoring and sexual violence prevention education) has started earlier in English-speaking countries (Castaño et al. 2010), which accounts for their overrepresentation in the review. Indeed, **the US and the UK together represent 70% of the selected articles**. Castaño's review also found more literature on evaluation in English-speaking countries as compared to other European countries between 1989 and 2009 (2010, 22). Overall, in terms of geographical representation, **the evidence found is predominantly Western** (North American, European). Apart from differences in research and institutional activity on those issues, the language used in the search and the limited access often found for non-Western publications can also account for the low representation of non-Western, or non-English speaking Western, countries. Moreover, as mentioned in the introduction, **the concept of "discrimination" was not frequent in the studies**: it appears in only one title (Boring & Philippe 2021).

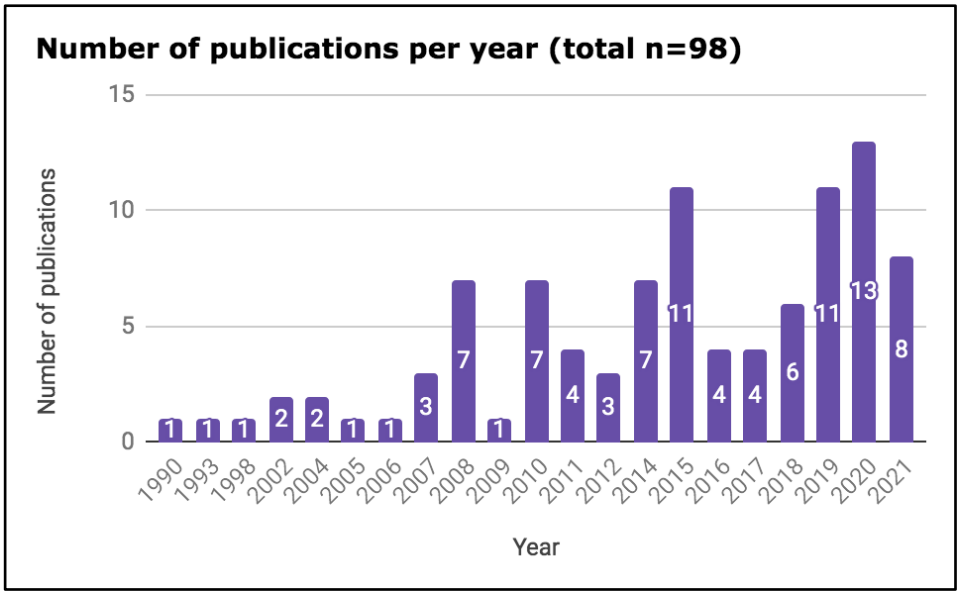


Figure 6. Number of publications per year

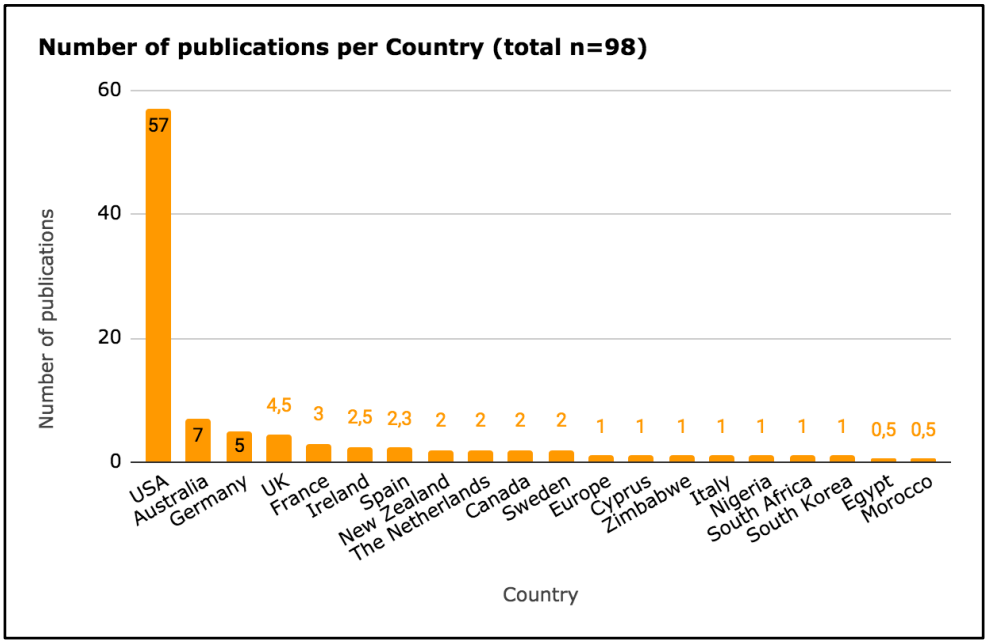


Figure 7. Number of publications per country

Almost **70% of the literature reviewed stem from the field of sociology and 21 studies are crossed with other fields, mainly psychology and political science**. Sociology as a field here encompasses a variety of theoretical approaches and sub-disciplines (gender studies, education studies, disability studies, communication studies etc.). **Economic approaches are also employed by some studies, especially for the assessment of mentoring programmes** (Blau et al. 2010, Li 2018, Ginther & Na 2021) **and family-friendly policies** (Manchester et al. 2010, Antecol et al. 2018, Juraqulova et al. 2019). Theories from psychology, and particularly from **psychosocial studies**, are used in the reviewed articles to evaluate the knowledge, attitudinal or behavorial changes of participants who followed multicultural (or "diversity") and sexual violence prevention training. The disciplinary anchoring can somewhat be difficult to determine since theoretical frameworks are not always present or explicitly mentioned (in 41% of the case).

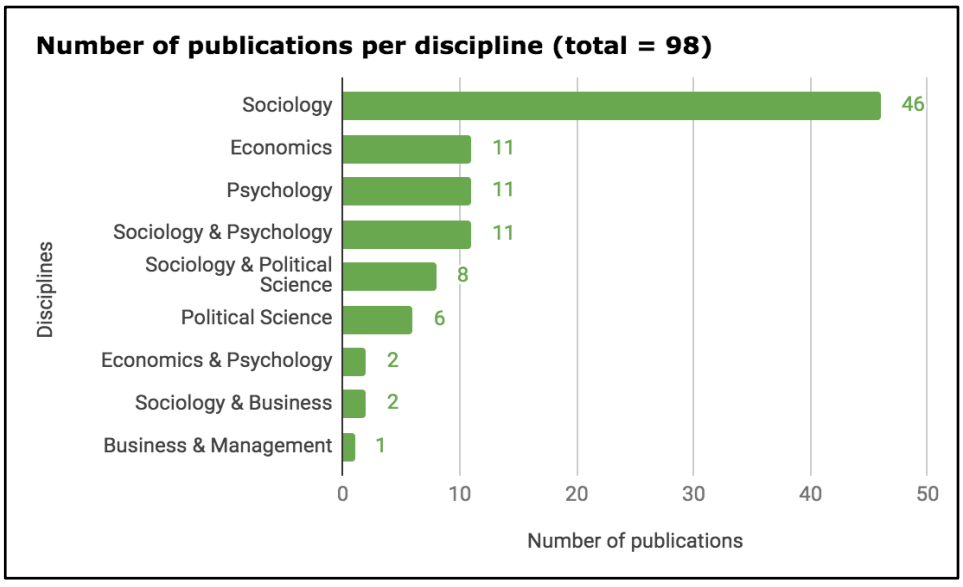


Figure 8. Number of publications per discipline

II.3. Population and Context

Regarding the population targeted by the evaluated policies, **academic staff (46%) — where women researchers are the main target — and students (33%) are the predominant categories**. **A strikingly low number of policies assessed were intended to benefit non-academic staff exclusively (n=5)**. Moreover, policies geared towards both non-academic and academic staff (n=8) are mostly leadership programmes focusing on senior management positions (Browning 2008, Harris & Leberman 2012, Zvobgo 2015, Barnard et al. 2021). A similarly low number of studies (n=8) takes into consideration all categories.

The context in which the interventions are deployed is not always specified in terms of type and size of the organizations (n=37). **Out of the 61 for which contextual data is available, 74% (n=45) are large higher education institutions, often universities**. One reason to find few small and non-university types of organizations is the lack of financial and human resources to design and implement interventions (Löther 2019). Finally, **policies are disciplinary-specific in only 33 studies, with four disciplinary domains targeted: social sciences (mainly economics), STEM, medicine & health, and education**. Other interventions are either multidisciplinary (26%) — such as training programmes run across the entire university, work-life balance policies, etc. — or the disciplinary field is not specified (in 40% of cases).

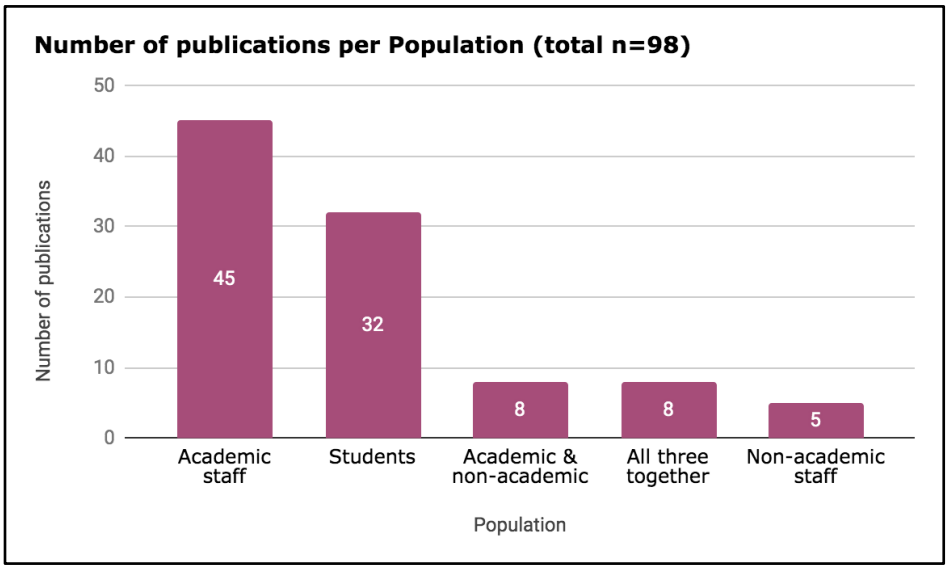


Figure 9. Number of publications per population

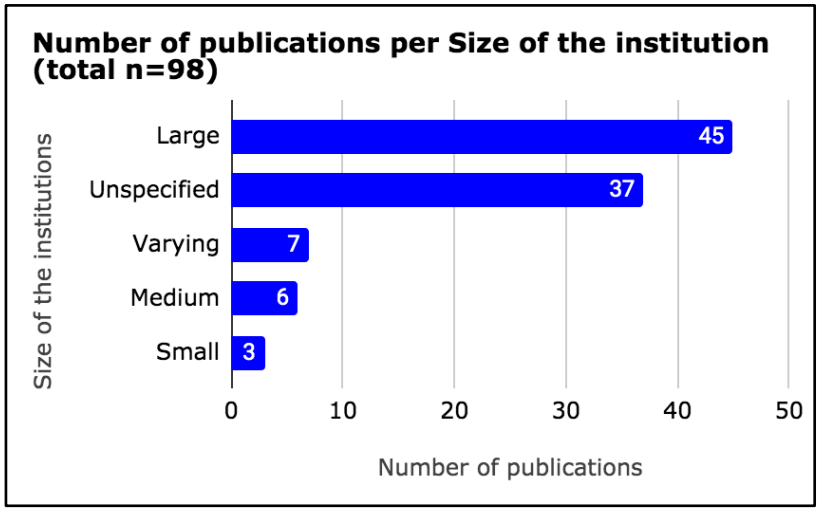


Figure 10. Number of publications per size of the institution

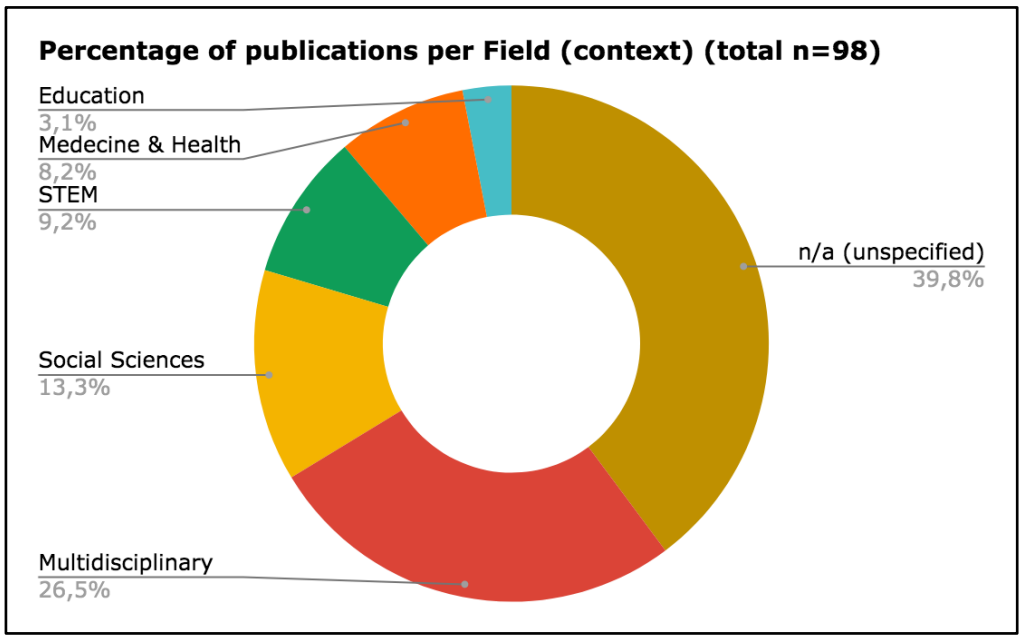


Figure 11. Percentage of publications per field

II.4. Methodological approaches

The type of methodology most used in this sample to evaluate interventions is quantitative (47% of the studies). Yet this sub-category is heterogeneous. Among the 45 studies using quantitative methods, 26 use correlational research designs: they analyze relationships between variables, without controlling for or manipulating those variables (for instance observing the relationship between tenure clock extension and attainment of tenure, such as Quinn (2010)'s study). The other quantitative studies (n=19) use experimental (randomized controlled trials) or quasi-experimental research methods (without randomization), investigating cause-effect relationships. **Many of the randomized controlled studies**, which are considered the most robust studies in the hierarchy of evidence-based research, **evaluate sexual violence prevention training and mentoring**

concentrating on the individual impact level (Schewe & O'Donohue 1993, Blau et al. 2010, Senn et al. 2015, Li 2018, Ginther & Na 2021). Then, **mixed-methods is the second research design most-used within the sample**: 31 studies use this approach, 6 of which have a control group. Qualitative research is the least used methodology, but still accounts for 20% of the sample. As mentioned before, **41 studies out of the total 98 are not anchored in a specified theoretical framework**. Even among the studies referring to theories to analyze their material, the theoretical background is not always well-defined. Due to the variety of topics covered and disciplinary contexts within the sample, a large variety of theories is found. Regarding the time of data collection for primary data, **at least 44 studies out of the 98 examine the short term (less than 1 year) impact of interventions**. Nine studies in the sample collected post-intervention data between 2 to 8 years later. The other 53 studies are either studies for which timing of data collection was not specified, or studies using secondary data.

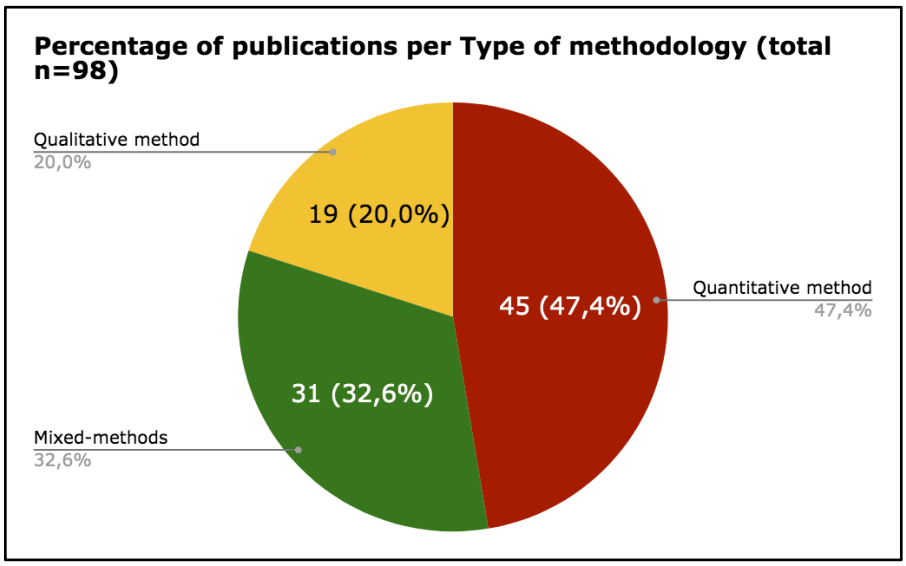


Figure 12. Percentage of publications per type of methodology

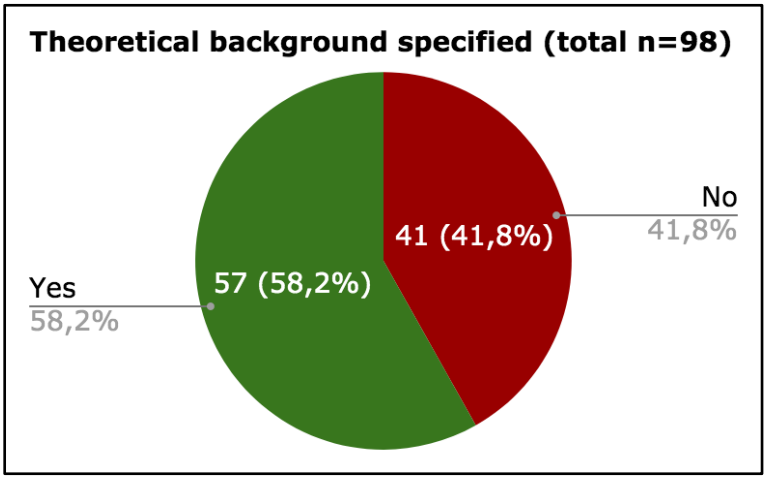


Figure 13. Theoretical background specified

II.5. Discriminations (concept)

Looking at the grounds of discriminations addressed by policies, **gender is by far the dominant topic, representing half of the reviewed literature**. This observation is similar to the international review on equity, diversity and inclusion initiatives in research and innovation conducted by the British charity Advance HE, according to which "over half of the interventions analysed were primarily related to promoting gender or sex equality" (Moody & Aldercotte 2019, 6). In second position, sexual violence is the other topic that predominates (16%) with mainly North American studies on sexual violence prevention programmes. The two other categories that weigh in the sample are race/ethnicity and the interlocking of gender with racial/ethnic identity. LGBTQIA* identities, disability, socio-economic status (class) receive considerably less attention. The three other intersectional approaches are: religion/age/race&ethnicity (Singh et al. 2008), sexual violence and LGBTQIA* (de Lemus et al. 2014), socio-economic and race/ethnicity (Pugatch & Schroeder 2021). **Few interventions in this sample look at more than two grounds of discrimination**: 13 studies look at two identity characteristics (race/ethnicity and gender), only one at three. The following paragraphs will provide greater details about each subcategory found in the reviewed studies.

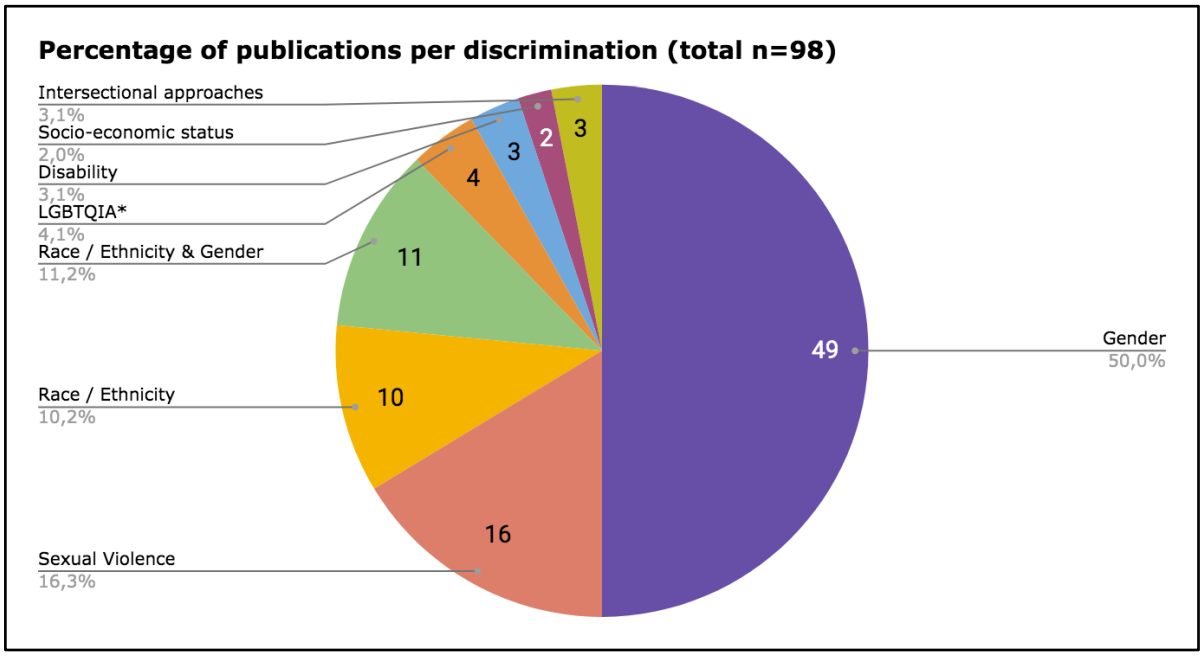


Figure 14. Percentage of publications per "discrimination"

Gender. Gender issues are approached through multiple entries that can be grouped into three broad topics: vertical segregation / horizontal segregation / gender biases. Two subtopics regarding **vertical segregation constitute a great share of the policies reviewed**; roughly half of the gender-specific literature in this sample. This first issue addressed is what is described as the **"leaky pipeline" phenomenon** where early career women researchers drop out on the way to permanent positions[7] (also called tenured positions) (Alper 1993). As

[7] Nonetheless, the "leaky pipeline" explanation is not enough to explain women drop-out and implies a linear and masculine vision of research careers. Several studies in fact emphasize the "gendered pipelines" at play and

Castaño et al.'s review also found, promoting women in science is the core issue of the field of career development (2010, 26). Second, the **glass-ceiling effect**, with the low representation of women in decision-making and leadership roles (whether academic or non-academic), such as rectors, deans, senior managers is another important concern tackled. Striebing et al., looking at gender equality policies in Research & Innovation, also indicate that "a high proportion of evaluations carried out focus on women's access to leadership positions" (2020, 5). The **gender profile of the professoriate and the gender profile of senior management remain key indicators of change** to assess impact of gender equality-related interventions (O'Connor & Irvine 2020, 8). **Horizontal segregation, the lack of women in certain disciplines**, is another topic in the articles. Studies in this review focus on male-dominated disciplines that are commonly addressed by gender and science research policies: STEM fields, medicine & health studies, and, to a lesser degree in the sample, economics. Finally, **unconscious gender biases, rooted in culturally ingrained gender stereotypes, are also targeted by policies in the studies reviewed** (Shields et al. 2011, Carnes et al. 2014, Cundiff et al. 2018, Boring & Philippe 2021). Overall, gender is apprehended in its **binary conception (men and women)** in theoretical and practical terms (surveys include only "men" and "women" categories).

Sexual violence. Interventions assessed in this sample target several forms of violence on the *continuum* of sexual violence, from sexist remarks or slurs to rape (Kelly 1987), either individually or simultaneously. **The majority (11 studies) are primarily focused on rape or sexual assault**. This is mostly research conducted in psychology on educational interventions geared towards students in US higher education institutions. A clear definition of "sexual violence', "sexual assault", "sexual abuse" and "rape" and what falls under the scope of each study is not always present. Terms are sometimes used interchangeably, e.g. "sexual assault" for "sexual aggression", such as in Gidycz et al. (2011)'s study.

As for **sexual harassment**, it is covered in only four studies which consider the student population (Pilgram & Keyton 2009, Diehl et al. 2014), staff population (Preusser et al. 2011), as well as the general population (in Thomas (2010)'s research that looks at the impact of sexual harassment policies in UK universities). Definitions of sexual harassment also vary across studies. One uses a broad definition "that includes unwanted, sexually connoted behavior that aims at or leads to reducing a target person to her or his gender, as well as behavior involving gender-based devaluation and violation of a target person's dignity" (Diehl et al. 2014, 489). The three others refer to their national legal frameworks that make sexual harassment a discrimination in the workplace, namely the Equal Employment Opportunity Commission in the US (Pilgram & Keyton 2009, Preusser et al. 2011) and the British 1975 Sex Discrimination Act (Thomas 2010). Finally, two studies look at interventions aimed at combating **sexism in academia**. One presents a workshop for students that tackles "everyday sexism" defined as "minor sexist incidents or microaggressions that occur in everyday interactions (...), such as gender-typed expectations, stereotypic comments, and language that excludes women" (Cundiff et al. 2014, 704). The other study that takes place in three Spanish-speaking countries (Argentina, Spain, and Salvador) defines sexism using the Ambivalent

take into account the systemic and organizational environment to explain the progressive "disappearance" of women (Dubois-Shaik et al. 2019; Backouche et al. 2009).

sexism theory which "integrates both negative (hostile sexism) and presumably positive (benevolent sexism) attitudes towards women" (de Lemus et al. 2104 ,6).

Race/ethnicity. With one exception, **all the relevant studies were conducted in the US**. The exception is Rawana et al. (2015)'s research that evaluates a peer mentorship program for Aboriginal university students in Canada. The US historical and legal context of affirmative and positive actions towards racial and ethnic minorities, as well as the right to gather data based on racial/ethnic characteristics (this is not the case for every country, such as France where a 1978 law prohibits the statistical collection data using racial and ethnic categories[8]), may account for a richer production of research. Therefore, studies in the review commonly use **the term "underrepresented racial and ethnic minorities" (URM)** to refer to the low representation of racial or ethnic groups in fields (especially used for STEM fields). According to the US National Science Foundation, this category comprises three racial or ethnic minority groups (African Americans, Hispanics or Latinos, and American Indians or Alaska Natives)[9]. 13 studies focus on URMs as a general category, three studies exclusively on African-Americans, one on American Indian and Alaska Natives, and the other four studies address race issues targeting all ethnic groups including white people. Indeed, three of those four studies evaluate multicultural or diversity training geared towards students regardless of racial identity, in particular discussing whiteness within predominantly White institutions (Byrnes & Kiger 1990, Parker et al. 1998, Smith et al. 2004). The other study is an assessment of the use and impact of tenure clock policies along the lines of gender and race/ethnicity (Quinn 2010). Overall, race and ethnicity issues in the evidence sample are approached mostly through **the challenges of "minority retention" in some disciplines (STEM, medicine)** (Flemming 2012). In this respect, individual-level intervention programs are assessed. The second approach, which mitigates **racist biases among students and staff population** through awareness-raising, especially for hiring processes, is less prevalent. Moreover, a relatively important share of studies take into consideration specific experiences of race/ethnicity intersecting with gender identity in the sample (n=11). Those studies investigate mainly mentoring initiatives for women of colour.

LGBTQIA+. Although the category used in this review is the acronym LGBTQIA+ (standing for Lesbian Gay Trans* Queer or Questionning Intersex Asexual and (+) for other orientations and identities), this is not a term found in the sample. Again, studies take place in an English-speaking context (Australia, New-Zealand, the US). **The five studies on the topic covered in this review all use different terminologies.** Only one study focuses on a precise type of discrimination, homophobia, combined with sexual violence (de Lemus et al. 2014), while the four others use broad categorizations: GLBTI, LGBTQ, Queer, "diverse sexuality and gender inclusivity". Those four studies evaluate the impact of "ally" network and "Safe Zone" programs (detailed in the "Interventions" part below) on heterosexual and cisgender students and academic/non-academic staff, looking at change in awareness and attitudes (Hayes 2005, Skene 2008, Gremillion & Powell 2019). Only Ballard et al. (2008) look at the effects of ally training and safe zone stickers on LGBT students. Therefore, **the experiences of LGBTQIA+ people with regards to programs aimed at reducing discriminations against them within academia are hardly taken into account in this sample**. Moreover, Advance HE's

[8] Loi n° 78-17 du 6 janvier 1978 relative à l'informatique, aux fichiers et aux libertés.
[9] US National Science Foundation definition of URM: https://ncses.nsf.gov/pubs/nsf19304/digest/introduction.

international review on EDI initiatives also found litte evidence (10 interventions) that considered sexual orientation (Aldercotte & Moody 2019, 16).

Disability. All three studies found focus on **"students with disabilities" as a general category**. One study explicitly refers to the social model of disability "viewing disability as the outcome of the interaction between health conditions (sensory, cognitive, physical and psychological impairment) and contextual factors" (Clouder et al. 2019, 1345). The other studies provide less precise definitional approaches. The articles evaluate interventions in Spain, Cyprus and Egypt & Morocco. Disability issues are approached in terms of **access and participation in higher education** (via assistive technology, financial support, counseling services) **through an individual lens** (Hadjikakou & Hartas 2008, Clouder et al. 2019), and in terms of **training on disability and inclusive education for faculty** (Moriña & Carbello 2017). In the UK context, the absence of literature on this topic is confirmed by Wolbright & Lillywhite (2021)'s scoping review on EDI engagement with disabled students, academic and non-academic staff in universities throughout the UK. They show a significant lack of academic engagement with EDI as it relates to disability issues. Again, Aldercotte & Moody (2019)'s review also includes few sources addressing disability (including mental health), solely 10 interventions (16).

Socio-economic status. This characteristic is also **scarce in the literature reviewed** (only three studies in the sample). Interventions covered are different in each study but the goals are similar: to **retain students from lower socioeconomic backgrounds in university**. One study uses peer assisted study to transfer skills to students enrolled in health medicine and biomedicine, but the relevance of the metric used to define low-income students (postcode) is questioned (Tangalakis 2017). The other study considers students from lower economic backgrounds as students whose parents have not completed a four year degree, also simultaneously looking at URM and this time assessing a recent intervention — nudging (this will be detailed later) (Pugatch & Schroeder 2021). Finally, the last study draws from data provided by Higher Education Funding Council for England on educational performance of students from lower socio-economic backgrounds. This data reveals unequal progress across UK institutions over years. The study thus investigates successful institutional strategies (Yorke & Thomas 2010). Similar to the Advance HE's review, few evaluations on interventions related to socioeconomic backgrounds exist (Moody & Aldercotte 2019, 56). However, as Moody & Aldercotte point out, terminologies used in the search may limit the results (terms like "precarity" and "poverty" could be added). They also found that those issues are often discussed alongside a range of other identity characteristics.

II.6. Interventions (concept)

The majority of interventions (n=61) address issues pertaining to individual career advancement (recruitment, tenure attainment, work-life balance policies) and, to a lesser degree, individual completion of studies (such as student retention in specific disciplines). 29 studies assess an intervention that target an aspect of the institutional culture and climate (e.g. sexual violence prevention, gender-bias training). The other group of studies (n=8) investigate policies that engage in both areas of interventions (e.g. gender diversity policies, institutional transformation programs, education programs).

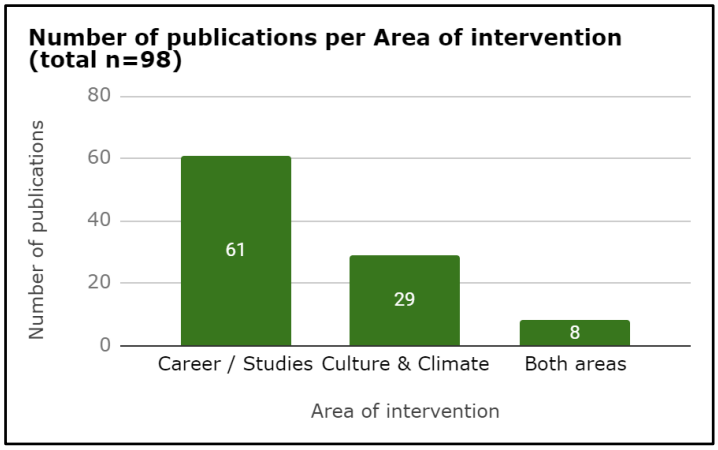
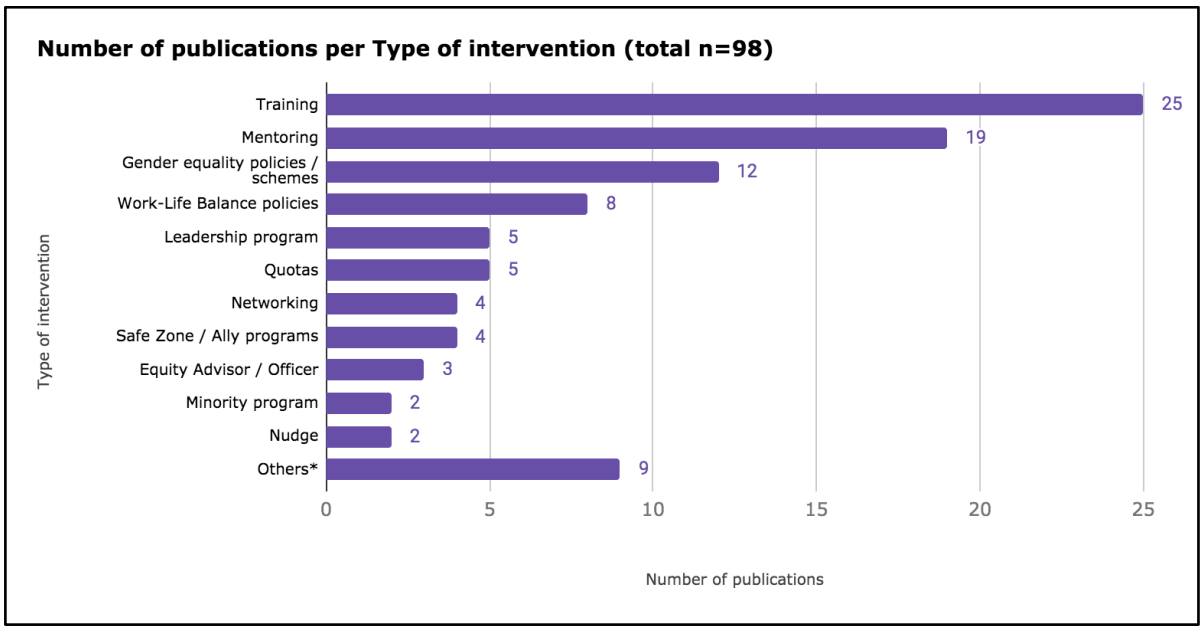


Figure 14. Number of publications per area of intervention

The main type of intervention evaluated in this sample is "training", accounting for 25% of the evidence. Training is understood here as a large category that encompasses any intervention that carries out a process of learning skills or knowledge. Sexual violence and gender bias are the main topics covered by training interventions in the sample (n=15). The stronger research interest in this topic is further confirmed by the large proportion of meta-analyses and systematic reviews (n=6) assessing the effectiveness of sexual violence education efforts in higher education found in the search. **Mentoring is the second most-evaluated intervention (n=19)** and is also the subject of literature reviews (n=4). **The evidence found for other types of interventions, compared with training and mentoring, is numerically limited**, as the chart below illustrates.



(*) education program, career development program, theatre-based sexual prevention, sexual violence campaign prevention, increased supply PhDs, assistive technology, hiring interventions (job description and special hire strategies).

Figure 15. Number of publications per type of interventions.

The following paragraphs will examine types of intervention where at least two studies have been found. Key findings are summarized for some evaluations in order to provide a greater understanding of the nature, aim(s) and effectiveness of those different types of policies. It will also include findings from the selected literature reviews.

II.7. Training

As mentioned above, various subtypes of interventions fall under the large-encompassing "training" category.

Sexual violence prevention training. **Almost all of the literature on this topic is produced within the US context**. The United States has deployed large-scale funding at national, gouvernmental, and local levels together with federal law that requires HEIs to implement sexual violence education and awareness programs (Fenton et al. 2016, 35). Those interventions have been implemented since the 1980s but their scientific evaluations have started to expand in the 2000s (Anderson & Wilson 2005, 375). The systematic review on sexual violence prevention on campuses undertook by Newlands (2016) identifies four main approaches to prevention that currently exist: prevention programs with men, risk-reduction programs with women, mixed-gender programs, and community-level programs (such as bystander-prevention or social-norms campaigns), with these approaches sometimes being combined. Overall, **several scales and surveys are used to measure various outcomes of the interventions at the individual level through self-report measurement** such as the

Sexual Experiences Survey, the Rape Empathy[10] Scale, the Rape Myth Acceptance[11], and the Likelihood of Sexual Abusing scale, among others.

Bystander interventions are widely used by US higher education institutions and are the topic of three literature reviews (Katz & Moore 2013, Fenton et al. 2016, Jouriles et al. 2018). Katz & Moore offer the following definition: "*Bystanders* are third party witnesses to the problem of sexual assault; they are neither perpetrators nor victims. Those third parties who intervene in response to risk for harm are *responsive bystanders*. The bystander education approach to sexual assault prevention encourages responsive bystander behaviors to "spread" responsibility for safety to members of the broader community" (1055). As a practical matter, "desirable bystander behavior includes preventing a friend from trying to get an intoxicated partner to have sex, confronting someone who made a sexually offensive joke, and interrupting a verbally abusive argument between a couple" (Jouriles et al. 2018). Reviewing 60 publications, Fenton et al. stress that many variables are used as outcome measures in evaluations of bystander interventions. Those variables are not always adequate to measure community-level changes in violence. Yet, **overall, the evidence demonstrates positive changes regarding behavioral** (e.g. taking responsibility, confidence to intervene, as steps to being an active bystander), **attitudinal and cognitive variables** (e.g. positive changes using the Rape Myths Acceptance Scale, Hostile and Benevolent Sexism Scale[12]) (2016, 52-53).

Extending the meta-analysis by Katz & Moore (2013), Jouriles et al. reviewed 24 publications published before 2017 (2018). The authors conclude that bystander programs can effectively change college students' attitudes, beliefs, and behavior. Those effects are mostly short term, as long-lasting change requires multiple interventions. Moreover, as Fenton et al. (2016) underline, **more robust evaluations would be needed to assess if bystander programmes are effective regarding their ultimate goal, that is reducing community-level *incidence* of violence**. For that purpose, the development of suitable quantitative measurements is needed (40), beyond self-reported measurements, the validity of which is limited by social desirability effects (Schewe & O'Donohue 1993, 8). Some studies also raise points of concern over this type of intervention. Newlands' critical review of sexual violence prevention on college campuses provides two reasons why bystander programmes may not be successful or may even have insidious consequences on women (2016). First, potential bystanders may find few opportunities to intervene, as 78% of sexual assaults occur within the context of a "hook-up", which often takes place in isolated or semi-private locations (7). Second, from a feminist perspective, "these interventions can be viewed as somewhat disempowering to women, since community-level interventions place decisions about a woman's sexuality outside of her control and into the control of bystanders." (ibid.). Despite those critiques, all studies encourage the use of a bystander approach, coupled with other interventions, to tackle sexual violence in higher education.

[10] A prevalent approach to sexual violence prevention is enhancing empathy with the victimes. Research has shown that empathy with the victims correlates negatively with sexual aggression (Diehl et al. 2014).

[11] It was developed to assess societal victim-blaming and victim-doubting attitudes. Rape myths are best described as "prejudicial, stereotyped, or false beliefs about rape, rape victims, and rapists" (Burt, 1980, 217).

[12] "Hostile sexism refers to negative attitudes toward individuals who violate traditional gender stereotypes. [...] In contrast, benevolent sexism includes protective paternalism (i.e., belief that men must protect women) and complementary gender differentiation (i.e., belief that women and men are different and complement one another)." (Leaper & Brown 2014).

The other literature reviews, that are not limited to bystander interventions, further confirm that sexual violence prevention training has potential to tackle sexual violence on campuses among students. They find that **longer interventions involving discussion of social norms** are more effective in altering both rape attitudes and rape-related attitudes (Anderson & White 2005). Wong et al.'s meta-analysis of dating violence prevention programmes concludes that findings suggest they are effective at increasing knowledge and attitudes toward dating violence (2021). However, **mixed-gender programmes appear less successful** (Newlands 2016, 7). Moreover, literature reviews highlight **the lack of evidence to show that programs overall are effective in reducing victimization and perpetration rates**.

Regarding success factors in the evidence, the importance of multiple sessions of training, as underlined by the systematic review of Anderson & White (2005), is also stressed by Christensen's study (2015). Indeed, **one-time interventions may result in backlash effects on the part of male students**. Rape culture and sexual violence are topics that need time to be absorbed and grasped, especially when facing resistances. An experimental research conducted by Schewe & O'Donohue evaluating two 45 minutes videos sexual prevention programs, one stressing victim empathy and the other aimed at challenging rape myths, show limited changes among high-risk students (who are screened with the Likelihood of Sexually Abusing scale) (1993). The authors encourage the exploration of intensive, long-term efforts to prevent individual men from raping. A same moderate impact of a 90 minutes bystander intervention on high-risk males is found by Elias-Lambert & M. Black (2016), further suggesting the need for longer interventions.

Other factors explaining low or high success are found in the evidence. Regarding the pedagogical training content, **learning of sexual harassment consequences from the victim's perspective** (enhancing empathy) has an impact on sexual harassment myths acceptance and rape myths acceptance, as demonstrated by Diehl et al. (2014)'s experimental study. As for program delivery, Katz & Moore (2013)'s meta-analysis provides **initial support for in-person bystander education training**. In this scoping review's evidence, Pilgram & Keyton investigate instructional strategies of sexual harassment prevention among students (n=323) using a pretest posttest design (right after and 3 weeks follow-up), comparing online, face-to-face and pamphlet reading strategies (2009). They found that students in the face-to-face sessions identified more nonverbal sexual harassment cues correctly than those in the other instructional strategies, encouraging the use of face-to-face component in sexual harassment training. Another study by Preusser et al. (2010) encourages the continuous use of in-person training as it proves effective in increasing learning, but also incites experiment with computer-based training as an alternative learning method, which also shows increased learning.

Learning techniques may also influence the program's outcomes. Cundiff et al. show the **effectiveness of experiential learning** in workshops about sexism (engaging the participants rather than just presenting information) to raise awareness about everyday sexism and to increase behavioral intentions to seek and discuss information about gender inequity (2014). Subsequent Cundiff et al. 's study on the same intervention (WAGES) assessed behavioral outcomes this time (2018). Members of the treatment group detected more subtle gender bias and were subsequently more likely to report concerns about bias after completion of brief, low-cost intervention on subtle gender bias in academia. Moreover, **targeting students living**

in the same communities (e.g. dormitories, fraternities) appear a more effective way to foster long-standing change than in social environments where ties are weaker (e.g. classrooms), according to Gidycz (2011).

Furthermore, similar to Cundiff et al's study mentioned above, there are evaluations of **training seeking to subvert subtle sexism in academia**, throughout faculty careers. An experimental study with a large sample-size of 2290 faculty members showed the individual positive impact of gender-bias habit reduction intervention (a 2.5 hour workshop). The program was **successful in promoting gender equity behaviors among faculty as well as improving department climate** (measured through another survey), up to a 3 months follow-up (Carnes et al. 2014). Another randomized controlled study demonstrated the positive impact on knowledge and retention of a workshop on unconscious gendered biases and stereotypes (Shields et al. 2011). However, post-intervention surveys are conducted at 7 and 11 days, which **leaves uncertain long-term training impact**. The positive impact of reduction of benevolent and hostile sexism with training among students within universities in Argentina, Spain and Salvador has also been demonstrated (de Lemus et al. 2014).

Diversity training. It entails several types of training activities. **In our sample, the most frequent type of diversity training found is awareness-training**, which "focuses on increasing individuals' sensitivity to diversity issues such as cultural differences and common cultural biases by presenting them with information about a particular social category or group" (Singh Badhesha et al. 2008, 88).

Four studies investigate training on **race issues**. Training practices and approaches are multiple and have evolved over time. The earliest study in the sample is from 1990 and centers on role-playing intervention or "prejudice-reduction simulation" (Byrnes & Kiger 1990). Though it may present some positive outcomes for participants (subjects reported that the experience was meaningful for them), the stress induced from the role-playing potentially outweighs those outcomes. Moreover, ethical concerns have been raised in the literature (Williams & Gilles 1992) regarding this type of training, especially since the long-term behavioral change in the Byrnes & Kiger's study could not be measured. This type of intervention has not re-emerged in the search.

Another approach found in the sample is to **increase racial consciousness among White people** through what is referred to as "multicultural" training. Multicultural training is found to enhance awareness in participants of themselves as racial beings, a key component of multicultural training, in a study evaluating a one course multifaceted training among graduate students enrolled in counseling education studies in a North American university (Parker et al. 1998). A quasi-experimental research conducted in 2007 with another group of graduate students in counseling education showed a **decrease in implicit racial prejudice and an increase in cultural self-awareness** after completion of a weekly 3 hours multicultural training course over 15 weeks (Castillo et al. 2007). However, **long-term behavioral change**, especially the future professional counseling practices of White students towards URM, **is yet to be assessed**.

Furthermore, training intervention may have a low, moderate impact if institutions do not perform a type of **need assessment to determine problem areas prior to conducting training**. This is the conclusion drawn from the controlled experimental study led by Singh

Badhesha et al. on the effect of a diversity training video (5min) on specific and general attitudes of students towards diversity regarding two areas: age and religion (Sikhism) (2008). They found marginally significant change in knowledge, and no change in attitudes, regarding older individuals after participants watched a training video on older students. Indeed, participants already possessed knowledge about older people and the student population was already diverse in terms of age. If participants already have a great deal of knowledge or positive attitudes about a certain social group, other types of training, such as skill-based, can be more appropriate, the authors suggest (Singh Badhesha et al. 2008, 102-103).

Overall, **those studies on diversity training evaluate short-term effects on individual knowledge, attitudes and behaviors relying on self-reported data**. Long-term changes and impact on institutions remain unknown.

The other diversity issue covered by training interventions in this sample is **sexual orientation and gender identity**. Those training take place within so-called "ally" or "safe zone" programs described below.

II.8. Safe Zone and Ally programs

They combine **network and training approaches** to create a more diverse and inclusive culture within higher education institutions by promoting greater visibility and awareness of LGBTQIA+ staff and students and their issues. **Safe Zone and Ally programs have been implemented on North American campuses since the 1990s and are now found in Australian and Kiwi universities** (Skene 2008). The "ally" concept stems from social justice work. In the US context, it is defined as someone "who is a member of the 'dominant' or 'majority' group who works to end oppression in his or her personal and professional life through support of, and as an advocate with and for, the oppressed group" (Washington and Evans, 1991)" (Ballard et al. 2008, 5). However, in Australia, members of the LGBTQIA+ community can also be "allies". Their presence in the Australian ALLY network project evaluated in the sample proved to be beneficial during training sessions to foster discussions with potential allies (Skene 2008, 5). As for their missions, allies participate in training programs, publicly identify as an ally, provide a safe space to talk or answer questions from LGBTQIA+ students and staff. They can also be involved in equity policies and act as active advocates of LGBTQIA+ issues. Safe Zone programs are essentially similar to Ally networks. Those programs often use a sticker with a recognizable symbol to identify individuals who are LGBTQ allies (Ballard et al. 2008, 6).

Although those initiatives have been deployed in several English-speaking institutions, **there is a clear gap in the literature evaluating their effects**, especially in tertiary education context (Gremillion & Powell 2019, 137). Using surveys (n=63) and focus groups with trainees, Skene's report on the Australian grassroots initiative, the ALLY network, reveals that "50% of the Allies surveyed mov[ed] from a positive but essentially passive position to a positive and active advocacy position, joining the 27% that already considered themselves to be active advocates" (Skene 2008, v). In Ballard et al. 's study, there is a description of several studies conducted during the 2000s that assess ally and safe zone programs in US universities (2008). **Findings show that those types of initiatives have a positive effect on faculty and staff who take the ally training**. Indeed, they get a better understanding of LGBTQ

questions. **At the same time, it is reported that LGBTQ students perceive them as accepting but do not feel safer around safe zone stickers**. The authors indicate that **those programs cannot advance the campus climate beyond mere tolerance without administrative support and additional resources**.

The only evidence using a pre-post test research design to evaluate this type of diversity training centers on a 1-day ally workshop on diverse sexuality and gender (DSG) inclusivity issues geared towards students, academics, and non-academic staff in a Kiwi university (Gremillion & Powell 2019). Adopting a mixed-methods approach, the research shows the workshop's effectiveness in raising awareness around the impact of heteronormativity and gender normativity and bringing positive changes in participants' confidence to promote DSG inclusivity. Storytelling and personal sharing were identified as powerful ways to educate about DSG issues, in combination with skilled facilitators.

II.9. Mentoring

Similar to training, **mentoring has no unique definition in the literature**. It covers a wide range of practices and activities. It is described as **the most widespread and popular measure to tackle gender inequalities within academia** in the literature (Castaño et al. 2010, Kalpazidou & Cacace 2017). **It may also be the case for racial and ethnic discriminations**: this review includes one literature review (Beech et al. 2013) and seven studies on mentoring for URM, mainly for academics women of color (e.g. Nickels & Kowalski-Braun 2012, Tran 2014, Carter-Sowell 2019). Once again, **the literature stems mainly from North America** where mentoring programs have been developed to address specific academic experiences of discriminations and inequalities faced by women and underrepresented minorities. In contrast, European research has been less significant and systematic (Castaño et al. 2010, 35).

There is no agreement on the definition of mentoring and no standardized approach to mentoring in the literature. In their systematic review of mentoring for women academics, Meschitti & Lawton Smith define mentoring as "a process to enhance the career trajectory of women in academia [which] involves a relation beyond supervision, line management and probationary processes" (2017, 167). Burkinshaw et al. consider mentoring in their systematic review as "an intervention that entailed promoting and supporting a relationship between a mentor (also sometimes described as coach or sponsor) defined as a more senior/experienced person and a mentee (sometimes called a protégé) defined as a more junior/inexperienced colleague" (Burkinshaw 2020, 1). A common distinction found in the literature is the **difference between an informal and a formal structure of mentoring**. Informal mentoring programs are described as a more organic mentor-mentee relationship where challenges associated with a particular identity are explored (Palmer & Jones 2019, 3). On the contrary, formal mentoring involves less voluntary-based interactions and more planned activities (meetings, training) where mentors are often assigned (ibid). However, the **blurred character of the boundaries** between different types of mentoring is often underlined in the literature, as **sometimes structured formal mentoring programs can lead to informal long-lasting mentoring relationships**. Moreover, mentoring relationships can be multiple and numerous throughout one's career. A portfolio of mentors has been critical and effective for women leaders of color interviewed in Tran's study (2014).

Overall, literature reviews indicate that **mentoring research is characterized by few methodological approaches, weak research designs, lack of theoretical framework, and low development of outcome-measures, as well as very few longitudinal studies observing objective career outcomes** (Meschitti & Lawton Smith 2017, Burkinshaw et al. 2020). Since they often differ in their content, structure and focus, **comparative studies on mentoring interventions are complicated to run**. This can lead some countries, such as Germany, to establish national standards for mentoring schemes (Leicht-Scholten 2008).

Three of the literature reviews found on mentoring are **discipline-specific**. A systematic review of mentoring programmes for URM in academic medical centers found that in general participants reported being satisfied with the various mentoring programs (Beech et al. 2013). Programs reported early successes regarding faculty retention and productivity (mainly measured through grant applications and manuscripts measures). However, the authors also stress the lack of outcome-driven assessments of mentoring programmes. Thus, they indicate that "the relationship between participation in these programs and subsequent success is not strong", although **mentoring in academic medicine is perceived as an important component of success** (545). A more recent review of mentoring programs for women academics in medicine confirms the variety of mentoring programs (Burkinshaw et al. 2020). The authors showed that mentoring is popular with many who receive it. However, they found no robust evidence of effectiveness in reducing gender inequalities regarding formal institutional mentoring schemes. Evaluating a wide range of policies aimed at improving women's advancement **in political science and related fields,** Argyle and Mendelberg's systematic review finds that **women's mentoring and networking workshops are the most promising of the fully tested interventions** (2020).

Other evidence in the sample confirms **positive changes in subjective (confidence, self-efficacy, satisfaction) and objective (grant opportunities, publications, promotion) outcomes of mentoring** (Meschwitti & Lawton 2017, Blau et al. 2010, Risner et al. 2020, Ginther & Na 2021). Same gender mentoring also appears to be more effective, ensuring stronger, long-lasting relationships (Palmer & Jones 2019, Moody & Aldercotte 2019, Castaño et al. 2010). However, **the long-term impact on mentees and institutions is yet to be assessed**, something also found in the 2019 UK and international reviews conducted by the Advance HE team (Guyan & Douglas Oloyede 2019, 33; Moody & Aldercotte 2019, 34-35). Castaño's review on gender equality policies further highlights the **lack of structural focus on mentoring programs, which can perpetuate a rationale of "making women adjust" to male-dominated scientific culture** (2010, 31).

In fact, a recent meta-synthesis of mentoring programs for women academics in medicine that applies a critical feminist lens suggests that moving from traditional "fixing the women" model of mentoring schemes to **feminist structural models may bring about better long lasting changes** (Lydon et al. 2021). Leenders et al. (2020) provide an example of a mentoring program that has the potential for participants to become change agents and foster transformational change (rather than making women adapt to masculinist ideals of academic careers). Using a mixed-methods research design they analyzed five specific conditions that enable transformational change: cross-mentoring, questioning what is taken for granted, repeating participation and individual stories, facilitating peer support networks and addressing and equipping all participants as change agents. In other words, **those mentoring**

programs lead to increased politicization of both mentors and mentees regarding gender inequalities and gendered institutions. They also emphasize the role of peer support network (care and solidarity network) for participants to become change agents.

Student "peer mentoring" is another topic in the literature, often between upper-year students and lower-year students (Good & Halpin 2002, Rawana et al. 2015, Li 2018). Those peer-mentoring programs can complement traditional modes of learning. They put emphasis on **collective and alternative ways of learning and combine mentoring, network and teaching components**. Tangalakis et al. provide an assessment of a peer-learning program aimed at students from low socio-economic backgrounds to "improve student learning outcomes, academic progression, social support for new students and student retention" (2017, 36). The program evaluated by Tangalakis et al. (2017) on health medicine and bio-medicine first year students show that at the end of the semester where the training happened (1h per week / 10 weeks), participants improved their final grade in their respective subject and there was a reduction in failure rate. In addition, students who attended the program improved their confidence and believed the sessions provided them with important skills. This program also provided the students with an opportunity to create new networks and feel better integrated; thus, the benefits went beyond academic skills.

II.10. Networking

Networking is another type of intervention widely used by HEIs (Kalpazidou & Cacace 2017), **although research on it is much more limited than on mentoring**. It is rarely assessed as a sole intervention (only two studies in the sample) and is often found combined with mentoring activities (Leicht-Scholten 2008, Blau et al. 2010, Nickels & Kowalski-Braun 2012). Network interventions in the selected studies **seek both individual and collective empowerment of individuals**. Those individuals either share identity characteristics, such as race and gender in the sample (Agosto et al. 2016, O'Meara & Stromquist 2015), or evolve in common disciplinary fields (forestry in Crandall et al. 2020, political science in Macoun & Miller 2014). **Positive changes are reported on academic aspects (increased knowledge and academic skills), career aspects (gain strategies, better career's agency) and psychological aspects (sense of support, shared personal validation)**. The development of **an aware critical mass (here, mainly women) may challenge gendered organizational practices but is perceived as limited in promoting sustainable structural changes**, as emphasized by several studies (Castaño et al. 2010, O'Meara & Stromquist 2015). In their international review, Moody & Aldercotte also found few impact evaluations of networks within organizations, despite an increasing number of wide networks (2019, 34). In Europe, for instance, several communities of practice and capacity-building projects funded by European research funds have emerged over the last decades. Those projects bring numerous stakeholders within the research ecosystem, from national and regional policy-makers to academics and staff in research producing and research funding organizations. They mainly focus on gender equality interventions, such as ACT (2018-2021)[13], GE ACADEMY (2019-

[13] https://www.act-on-gender.eu/ : It promotes Communities of Practice to advance knowledge, collaborative learning and institutional change on gender equality in the European Research Area

2021)[14], GENDER-NET Plus (2017-2022)[15], but more and more take on an intersectional approach to gender by expanding the scope of policies addressed (such as the ongoing European COST[16] research network "Making Young Researchers' Voices Heard for Gender Equality").

II.11. Gender equality policies / schemes

As gender is a widely addressed topic on the political agenda of academic institutions, there are **more studies that look at those policies in a holistic manner**. Approaches to tackle gender inequalities have shifted over time, moving from an individual, "fixing the women", approach to a structural and cultural perspective (Bencivenga & Crew 2021). Current policies at the national and local levels, such as Gender Equality Plans[17] in the European Union, now aim "to transform the very systems and structures that continually reproduce [these] inequalities" (Castaño et al. 2010, 70). Those policies or programmes include a wide range of interventions (funding incentives, training, work-life balance policies, counseling, etc.) that are deployed at different levels (individual/team, structural/organizational) (Kalpazidou Schmidt et al. 2017, 21-23). Some of those national schemes, such the US ADVANCE programme of the National Science Foundation[18] (founded in 2001), the UK Athena SWAN Charter[19] (established in 2005) now also established in Australia, Canada and the US, and gender equality policies of some other countries are evaluated in the studies included in this review. Using either **(predominantly correlational) quantitative or mixed-methods research design**, studies in the evidence evaluate the **impact of policies or schemes over periods of time ranging from 5 years to 16 years**. The **outcomes measures used include: the share of women in the professoriate (at several grades), the share of women in senior management, wages differentials, and, women publication and citation rates**.

Positive changes are observed in several national contexts. In Germany, two major gender equality programmes (the "Women Professorship Programme" and the "Pact for Research and

[14] https://ge-academy.eu/ : It aimed at developing and implementing a high-quality capacity-building programme on gender equality in research, innovation and higher education (with training sessions, summer schools…)
[15] https://gender-net-plus.eu/ : It aims to strengthen transnational collaborations between research program owners and managers, and provide support to the promotion of gender equality through institutional change. Furthermore, it seeks to promote the integration of sex and gender analysis into research.
[16] European Cooperation in Science and Technology.
[17] Gender Equality Plans enable institutional change relating to HR management, funding, decision-making and research programmes by: (1) Conducting impact assessment / audits of procedures and practices to identify gender bias (2) Implementing innovative strategies to correct any bias and (3) setting targets and monitoring progress via indicators. (from the European Commission Communication on 'A Reinforced European Research Area Partnership for Excellence and Growth' (COM(2012) 392 final)).
[18] The programme provides grants to colleges and universities to help them identify the institutional policies, practices, and cultures that need to change in order to reduce barriers to the inclusion of women in the STEM fields that are in the National Science Foundation portfolio (Mcquillan & Hernandez 2021).
[19] "Initially in the UK it focused on gender equality in the career-progression of women in science, technology, engineering, mathematics and medicine (STEMM), and was subsequently extended to include all disciplines as well as professional, technical and support staff. Awards are given at institutional and departmental level and in bronze, silver and gold. The approach involves the development of a gender equality plan, based on quantitative and qualitative data collection, self-assessment, data-informed decision making, planning and monitoring by a self-assessment team, under a chairperson, potentially at senior management level. Applying for an award thus requires comprehensive critical self-assessment, combined with an evidence-based reflection on the results, and the identification of time-bound targets/goals to address any issues highlighted. It aims to provide a tailored approach to organizational structural and cultural change" (O'Connor & Irvine 2020, 5).

Innovation") implemented as early as 2006 have contributed to **higher shares of women professors and improved female publication patterns and citation rates** (Löther 2019, Bührer et al. 2020). One of the studies assessed effects of the German "Women Professorship Programme" on 95% of academic staff and students at all German higher education institutions between 2007 and 2015 (Löther 2019). Adopting a rigorous quasi-experimental research design, the author used the higher education institutions not participating in the programmes as a control group. In the Netherlands, a mixed-methods investigation of gender equality policies at 14 universities show that **the larger the number of gender equality policy measures, the larger the reduction of the glass ceiling** in the university over the period 2000-2007 (Timmers et al. 2014). In 2008, the Directorate-General for Research and Innovation (European Commission) issued a report aimed at benchmarking policy measures for gender equality in science in the European Community Member States, associated countries and Western Balkans. The report centers on national policies exclusively, based on the presence or absence of policies and not on their quality, effectiveness, or impact. Due to a lack of relevant data (e.g. the year of implementation of a policy/ measure, or the number of years during which it has been in place), causality links are difficult to establish. Yet the presence of certain measures is positively correlated with the proportion of women at professorial grades. Moreover, it has been observed that these measures are often implemented in pairs or groups (e.g. mentoring schemes combined with funding for women in science). This may **suggest that combined measures may be more effective at bringing about organizational and cultural changes than isolated interventions**.

Despite some positive results, other studies emphasize overall **slow progress and moderate impact of national frameworks and programmes** (Winchester & Browning 2015), as is the case for the ADVANCE institutional transformation project in the US that takes an intersectional approach (Mcquillan & Hernandez 2021). Looking at longitudinal data (2000-2020) of both faculty women's representation and race/ethnicity composition in STEM disciplines, the authors show modest impact on the representation of women in STEM disciplines after a 5 years ADVANCE project in their university. Moreover, "the proportion of white women and Asian women and men increased and became closer to representation, but in general the share of faculty of color overall remained well below their share of the workforce" (2021, 321). The introduction of the Athena SWAN Charter has also led to moderate impact on faculty women representation, especially at the professorial level. Gamage and Sevilla causally evaluated with a fixed-effect model the effects of this unique positive action intervention in the UK using high-quality administrative panel data, with information on the entire population of academics in the UK (2019). They look at wages and employment trajectories of female faculty. They find that the gender wage gap closes after Athena SWAN accreditation. However, female faculty at the non-professorial level are *not* more likely to be promoted to professor after accreditation, or to move to an Athena SWAN accredited university. Another study revealed that Athena SWAN members showed greater and faster growth in female managerial leader representations between 2012/2013 and 2016/2017, but the rates of growth are way lower for full-time senior academics without managerial duties (Xiao et al. 2020).

Gender equality policies may even have nil impact, as demonstrated in two studies, one from Zimbabwe (Zvobgo 2015) and the other from Nigeria (Muoghalu & Eboiyehi 2018). They both investigate the effects of a gender equality (or "equity") policy in a university.

Policies have not translated in any changes that were targeted, especially the increase of women representation among students, academics and decision-making roles. The explanation for the lack of success lies in the non-implementation of the policy. The authors identify several constraints: a lack of funding, patriarchal beliefs (gendered norms and organizations) and practices, male resistance, and a lack of monitoring and evaluation. In fact, **the implementation gap** is the main explanation provided by studies that investigate the lack of impact, or failure, of gender equality policies (Timmers et al. 2014, Castaño et al. 2010). In this respect, looking at the implementation process highlights factors of success (see for instance Palmen & Schmidt 2019, Holzinger & Schiffbänker 2012) and **resistances to change** (see Powell et al. 2018, Lombardo & Bustelo 2021, Bagilhole 2002, Jordão et al. 2020).

The expected structural changes are yet to be seen and evaluated. Furthermore, **the development of indicators of structural and cultural change is needed to properly assess and benchmark progress**, as O'Connor and Irvine underline in their evaluation of multi-state interventions in Ireland (2020). Overall, more research is needed to clearly understand the linkages between gender equality policy interventions and outcomes/impacts within the higher education and research area (Buhrer et al. 2020, 1460, McKinnon 2020).

II.12. Work-life balance policies

Also called **family-friendly policies**, they do not target specific underrepresented groups but have an indirect impact by addressing workplace culture and institutional barriers that discriminate against academic and non-academic staff. **In this review, faculty women are the only target population considered when looking at work-life balance policies**. Out of the eight studies found, three studies from the US exclusively focus on **"stop the clock" policy**, also called "tenure clock extension" policy (Manchester et al. 2010, Quinn 2010, Antecol et al. 2018). Those policies allow tenure-track faculty members to delay their tenure review (usually one year) if they experience events that may hinder their research productivity. They have been used for more than forty years in the US and their scope has evolved over time. Their initial goal was to enable female faculty members to stop the tenure clock after childbirth and adoption, taking into account the reduced research productivity associated with maternity. Stop the clock policies are mostly now offered to all genders and can be obtained for various family and non-family reasons.

Four other studies look simultaneously at several interventions aimed at balancing work and career, mostly **leave policies, on-site childcare, and dual-career hiring policies**. The eighth study investigates a dual-career hiring policy in a North American university (Rice et al. 2007).

Studies in this review present **different conclusions regarding policies' impact on women faculty careers**. Juraqulova et al. sought to determine whether work-family policies (on-campus childcare, dual-career hiring policies) are a statistically significant factor in predicting the particular rank of an individual, the share of women at each academic rank, and the promotional status of assistant and associate professors (2019). The authors used data on tenure-track and tenured full-time faculty from 125 doctoral-granting economic departments in the US in 2012 and in 2018. They show that for the female subsample analysis, the only factors that had a statistically significant impact on predicting academic rank were the

experience and average annual publications effects. **None of the work-family policies had a significant impact on predicting academic rank**. As for the percentage representation of women across ranks, work-life policies differ in impact, having almost no impact at the full professor level. **Dual career policies have a positive effect on female representation at the assistant and associate levels but are not statistically significant at the full professor level**.

Other studies in this review seem to indicate **negative effects on gender equality related-outcomes associated with the use of work-life balance policies**. Using hierarchical multilevel analysis, Feeney et al. investigate the relationships between university-level family-friendly policies and individual level productivity among academic scientists in the US STEM research field (2014). They show that family-friendly in "many cases **further the traditional unbalanced work roles** of these two groups—with men focusing more on research and **women carrying more of the teaching burden**" (2014, 761). Manchester et al. analyze the relationship between faculty members' use of Stop the Clock (STC) policies and career rewards, looking at promotion and pay (2010). Their findings also highlight an unintended negative effect, here on the gender pay gap. Indeed, they find a significant, persistent **wage penalty** associated with STC use for family reasons. Their study reveals that women are more likely than men to use STC for family reasons, and are thus the most impacted by what appears to be bias into salary allocations associated with the use of STC. As the authors point out, high wage penalties associated with taking time off in high-skill occupations is documented in other sectors as well (Goldin & Katz 2011).

Moreover, another study analyzing institutional datasets of the top 50 economics departments in the US indicated an additional negative impact on gender equality after the adoption of gender-neutral clock stopping policies. The authors show that "once established, gender-neutral clock stopping policies decrease female tenure rates at the policy university by 19 percentage points while increasing male tenure rates by 17 percentage points" (Antecol et al. 2018, 2439). This is so because **gender-neutral tenure clock stopping policies do not grasp and account for the gender-specific productivity losses associated with having children**. This study, as the others previously mentioned, show that those policies alone are not sufficient to tackle structural and institutional gender inequalities. As Li & Peguero further show in their evaluation of family-friendly policies used by women academics in STEM, **they provide limited assistance**. Women still face barriers in promotion to higher ranks (Li & Peguero 2015). Furthermore, work-life balance policies may even reinforce, rather than subvert, traditional unbalanced work roles and the private-public dichotomy. Studies suggest the need for additional investigations, focused on the implementation and design processes. In particular, more research is needed to address the work-life interface in academia from a critical standpoint, considering the gender mechanisms at stake (Rosa 2021). In this respect, some studies looking at the implementation of work-life balance policies in HEIs that were found through the literature search emphasize the **role of organizational culture hindering the use of such policies**, which in turn may limit effects on gender equality outcomes (Shauman et al. 2018, Canizzo et al. 2019).

Within the literature reviews, studies point out that work-life balance policies have demonstrated good levels of uptake by HEIs. Nevertheless, there are **few concrete evaluations of their effectiveness and long-term impacts are unclear** (Moody & Aldercotte 2019, 32; Guyan & Douglas Oloyede 2019, 31; Castaño et al. 2010, 39).

II.13. Leadership programs

Five studies in this review assess the effectiveness of "leadership programs" or "leadership development programs" for women. Each program presented varies in its content but in general they contain **seminars/workshops and networking opportunities**. Some also include mentoring and role models interventions. They also **differ in their duration: between 1 week and a year-long**. The goal of those programs is **to boost the representation of women in leadership positions, whether academic or administrative**. Selected studies in this review look at leadership programs for either, or both, faculty members and non-academic employees. Despite the small evidence, **strong methodological approaches and longitudinal analysis are observed for several studies**.

Positive changes are found on both subjective and objective individual outcomes. Using several indicators and a large body of data, Morahan et al. examine a 1-year leadership program for women faculty in health centers in the US (2010). Results show enhanced leadership skills and knowledge, better access to leadership positions compared to comparison groups, and a positive reception of the program by school deans. Moreover, in countries such as Australia and New-Zealand, where those initiatives have been implemented as early as the 1980s, evaluations of leadership programs provide positive evidence over time of the program's effectiveness (if well implemented) on both **increased confidence of women faculty and increased retention and promotion** (Browning 2008, Harris & Leberman 2012). In Peterson's study investigating Swedish women rectors who attended a women-only leadership program, the women positively assessed their experience, which contributed to **changing the leadership ideal based on hegemonic masculinity** (2019). Similar positive results are found in the UK review on EDI initiatives about leadership programs: gain in self-confidence, better involvement in leadership activities, improved management skills, and a higher likelihood to seek and gain promotion (Guyan & Douglas Oloyede 2019, 33).

Despite those promising results, **the potential of leadership programs to enact organizational change is yet to be evaluated**. This is the conclusion of the robust evaluation of a women-only leadership program deployed in the UK and Ireland. Adopting a mixed-methods approach, with a control group and a longitudinal analysis of a large pool of participants (n=1094), the authors show moderate results. Despite positive impact on women regarding the diversification of the leadership definition, gains in self-confidence, and new opportunities sought, women's agency was found to be limited on the ground by institutional practices (Barnard et al. 2021). The women interviewed talk about **challenges in translating programmed-informed practices in the workplace into concrete effective action due to gendered resistant institutional contexts** (10-11). The authors recommend that "more emphasis should be placed on effective-collective translation of individual-focused leadership development programmes in HE institutions" (12).

II.14. Quotas

Quotas are another **positive action measure found in science for gender equity purposes mainly** (five studies in this review). Unlike mentoring or networking, quotas seem to be **the least widespread intervention** according to Kalpazidou & Cacace's assessment of gender equality programs (n=125) across the world (2017). Compared to government or business

sectors, the use of quotas is less common in academia and a **more controversial policy tool, perceived as undermining a merit system** (Wallon et al. 2015). In the evidence found in this scoping review, quotas have been introduced in three areas: (1) full professorship level and below recruitment; (2) leadership and senior management positions; (3) composition of evaluation committees.

Moderate and unclear effects of quotas are found in South Korea on female faculty representation (Park 2020). Using panel data from several institutional sources ranging from 2001 to 2017, Park examines the impact of the policy intervention in the form of quotas that occured in 2003 across academic disciplines and ranks. Findings show that gender quotas have a positive effect on female faculty representation at all levels of tenured and tenure-track professorship, but not for leadership and higher administrative positions such as Dean, Provost, and President. Moreover, "gender quotas turn out to be only marginally significant in the area that women are severely underrepresented", such as STEM or medicine (2020, 7). There is thus mixed evidence as to whether quotas are effective in closing the gap across and within academic disciplines. It also underlines that **introducing quotas solely at entry-level faculty may not be sufficient to improve gender equality at higher levels of the academic hierarchy**. An experimental research examining at which levels of the career ladder quotas should be introduced supports this observation. Running an experiment with students (n=384), Maggian et al. conclude that "compared with no intervention, a gender quota introduced at the initial stage is ineffective in encouraging women to compete for the top, while quotas introduced in the final stage of competition or in both stages increase women's willingness to compete for the top, without distorting the performance of the winners" (2020, 2).

Other studies tend to show a **lack of success of quotas, even negative outcomes**. A mixed-methods study in this review assesses the impact of the Spanish Science and Technology Act (2011) that requires gender balanced composition in management and representation bodies on the two evaluation agencies responsible for evaluating the research merits of Spanish academics (González et al. 2020). Although senior faculty women's representation has improved over the years, the authors found no correlation between the gender-balanced committees and women's career progression. In France, Deschamps examined the causal effect of a French national reform in 2015 stating that academic hiring committees in the public sector would have to be made up of at least 40% of members of each gender (2018). The results show a **backlash following the implementation of the reform where the ranking of women and their probability of being hired worsened**. The study reveals that the reform's negative outcome is mostly found in committees controlled by men, suggesting that men's reaction triggered the result. Even if quotas are implemented, **masculine values and gender stereotypes remain in decision-making and organisational practices in academia, impeding women's career progression**. Problems of resistances when implementing quotas are issues emphasized in the international review on EDI initiatives (Moody & Aldercotte 2019, 33). Besides, quotas and equal representation policies can have unintended consequences on women. The latter may find themselves with increased workload impacting their research work, as the Peterson's study indicates: "the absolute requirement for women to be equally represented in administrative and managerial fora, when applied in an environment in which there are few women, serves simply to increase the workload on women disproportionately" (2015, 61-62). **Systematic exploration of the concrete, long-term impact of quotas is still lacking in the literature in general** (Castaño et al. 2010, 50).

II.15. Equity Adviser / Officer

In the few studies found (n=3), the presence of an **equity adviser or officer is evaluated as an intervention approach to ensure fair hiring practices**. They have been introduced more and more over the last decades as a consequence of the low impact of bias training and short-term workshops to mitigate entrenched mental schemas (Cahn et al. 2021). Indeed, ensuring fair hiring practices is often solved with implicit bias training for search committees. However, this intervention is found to be somewhat unsuccessful if not coupled with bureaucratic accountability, as shown by the well-cited Kavel et al.'s study in the private sector (2006). Therefore, some institutions have introduced equity advisors (Stepan-Norris & Kerrissey 2016) or chief diversity officers (Bradley et al. 2018). Often, they are senior faculty members close to the executive level that intervene throughout the search process, from the job advertisement to the candidate selection, and even beyond to ensure retention. In that way, those advisors or officers are held accountable for equity outcomes.

The faculty hiring process is specific and particularly vulnerable to gender and race (or other) bias. Equity Advisors at the University of California's campuses ensured institutional accountability throughout the process with required forms: the Equity Advisor can review, sometimes modify, and sign search plans and job advertisements for all departments, for instance (Stepan-Norris & Kerrissey 2016). In this case, Equity Advisors' authority and access to top management play a significant role in ensuring fair practices. Stepan-Norris and Kerrissey show that **the implementation of the Equity Advisor is correlated with higher percentages of women faculty** (even when controlling for demographic issues, and founding eras). However, since the program is runned across all disciplines, the rise in women recruitment may come from women-dominated disciplines, potentially reinforcing gender segregation. In this respect, more research is needed.

Moreover, the effects on diversity hiring may not be perceived after the hiring of an executive level diversity officer at the faculty or administration hiring level, as Bradley et al. demonstrate (2018). It may partly be explained by the lack of authority of the Chief Diversity Officer on hiring decisions to trigger change. **The lack of decision-making power and resources appears to be an important factor in the literature accounting for the low impact of equality officers and regulatory bodies** (Castaño et al. 2010, 46).

Additional evidence (n=2) is gathered by Moody & Aldercotte's international review, in part through a call for evidence. Findings suggest that the implementation of regulatory bodies that both oversee and advise on EDI initiatives can improve awareness and female representation (2019, 36). Nonetheless, **overall the paucity of research on those initiatives is stressed in the literature**.

II.16. Minority programs

Minority program is a **type of intervention investigated by two US studies** in the evidence. Those programs offer different activities: training, mentoring, workshops, etc. Both seek **to counter the risk of attrition for minority students and faculty members in specific disciplines where their share of representation has been historically low**: engineering (Good et al. 2002) and medicine (Buchwald & Dick 2011). Such programs stem from a

historical political legacy of positive actions towards racial and ethnic minorities in the US with the aim of broadening their participation and ensuring their success in higher education (Holloman et al. 2021). Using mixed-methods design, both studies underline positive outcomes associated with participation in the programs. Good et al. found a significant impact on decisions concerning retention within the College of Engineering for freshman pre-engineering students enrolled in the program. However, there was no improvement of grades after program completion. As for early career researchers in the Buchwald and Dick's study, a heavier involvement in collaboration on manuscrits and grants was observed.

Evaluation research on minority retention programs seems to be considerably wider for the US context than the evidence found (see limitations of the study below). Analyzing evaluations of minority retention programs, Flemming indicates in her book that many interventions at white institutions have been successful over the last decades in enhancing minority students retention and grades (2012). However, the author also underlines the critiques from various researchers and practitioners towards those programs seen as **upholding a "fix the individuals" approach rather than dismantling systemic racism within academia** (2012, 8). Institutional reforms investing in students and staff's education should be complementary, they stress.

II.17. Nudges

Two studies in this review present a **relatively new type of intervention in higher education policy**: nudging (Li 2018, Pugatch & Schroeder 2021). However, none of the studies provide a clear definition of nudging. Stemming from behavioral economics, a nudge can be defined as "any attempt at **influencing people's judgment, choice or behaviour in a predictable way** which works by making use of [people's] boundaries, biases, routines and habits as integral parts of such attempts" (Hansen 2016, 4). Both studies are randomized controlled experiments evaluating the effects of nudges on the gender gap (Li 2018) and socio-economic and racial diversity (Pugatch & Schroeder 2021) in Economics. The first study finds that a combination of information, nudges (women with a grade at or above the median of the grade distribution received an encouraging message that explicitly acknowledged their success in the class and urged them to consider majoring in economics), and mentoring **increased the probability of majoring in Economics for female students whose grades were above the median** (Li 2018). The second experiment found that basic information about the Economics major combined with an emphasis on the rewarding careers or financial returns associated with the major (a single email) **increased the probability that low socio-economic background and underrepresented minority students went on to major in Economics by five percentage points** (Pugatch & Schroeder 2021). The attractive element of nudging is undeniably its **low-cost implementation**. However, despite positive results, the authors stress that **nudging alone is not sufficient to increase representation** — it needs to be combined with other interventions.

III. Discussion

This scoping review explored the international literature on ex-post evaluations of policies intended to fight discriminations in higher education institutions. The review has first and foremost confirmed how complex and loosely structured this area of research is, despite the growing use in practice of all-encompassing concepts such as "equality, diversity and inclusion" (EDI) with which interventions may be designed. The primary observation from the literature search is the **paucity of evidence on a vast ensemble of policy interventions whose implementation is on the rise**. Very few interventions are evaluated once they are carried out, due to the implementation gap or a lack of monitoring and internal evaluations, therefore a lack of data (Timmers et al. 2010, Langholz 2014, Buhrer et al. 2020). A revealing example of this observation is the quasi-absence of the topic in evaluation journals searched through in this review.

Nevertheless, **this area of research has started to flourish since the 2010s and is increasingly geographically diverse**, with more research coming from European countries. The evidence found in this scoping review is nonetheless mostly Western and primarily produced within English-speaking countries. The United States in particular has a longer history of equality and diversity policy development in higher education and represents almost 60% of the sample. **Studies tend to adopt small-scale approaches**: **they evaluate a single type of policy or intervention** (e.g. a training course or a mentoring programme) **often implemented in one higher education institution or one department, and geared towards a single population category**. An exception to this are evaluations assessing gender equality policies as a whole and across institutions. It is also interesting to note that **only one third of the interventions in our sample targets a specific disciplinary environment**, predominantly male-dominated and white (STEM, Economics, Medicine). The other interventions, when indicated, take place in multidisciplinary contexts.

There is a large variety of policies in this review, yet some topics receive considerably greater attention. Consistent with other reviews mentioned in this work, **more policies are developed and implemented for the development of research careers and address gender issues**. Overall, a large proportion of interventions (roughly half of the evidence) address gender inequalities and discriminations. The main goal of gender equality related measures are **to foster women academics' career**, **either seeking to equip them with new knowledge, skills or networks** (e.g mentoring, leadership programs, networking) **or to create equal opportunities by intervening on the organizational level** (e.g. work-life balance policies, quotas). Mentoring initiatives in particular are a high-researched topic in this review, as well as one of the most implemented policy measures in many countries. Training is the other most-found type of intervention in this scoping review. This is largely explained by the important share of evaluations assessing the effects of sexual violence edcuational programs among students in US higher education institutions. **Sexual violence prevention, in particular bystander interventions, is the only subject in the evidence that is the object of rigourous and multiple systematic evaluations** that have started to be conducted prior to 2005 (Anderson & White 2005). Apart from sexual violence and gender inequalities, **race and ethnicity issues receive some degree of attention, especially women of color in academic careers**. However, all the evidence found takes place in the **context of the US**. Furthermore,

little research investigates interventions focused on LGBTQIA+, disability and socio-economic challenges in this review. As for the other types of interventions presented, several of them have emerged from very specific national contexts and are rarely found transferred in other settings (at least in the evidence gathered): this is the case for Safe Zone programs (Australia, New Zealand, and the US), minority programs (the US) and bystander interventions (the US).

The results have also shown a relative **diversity of approaches and theoretical perspectives** (from political science, psychology, economics) on those research topics, although the field of sociology (including several subfields such as gender studies, education studies) predominates. **Changes are evaluated differently and wide variations are observed regarding the assessment of interventions**. Methodologies used vary greatly. Although quantitative methods are the most-used, this category concentrates a large proportion of studies evaluating sexual violence training and mentoring programs at the individual level. Mixed-methods and qualitative approaches still represent respectively 33% and 20% of the evidence. Despite the variety in the methods, there are common features that are worth emphasizing as they shed light on the challenges of evaluation on this topic. First, the vast majority of studies are project-driven and investigate intervention(s) at the university or departmental level. **Most of them assess policy *outcomes* of a single intervention**, namely its achievements and its effects on the participants or the target population, often in the short-term. They also use a small number of indicators (e.g. the share of women at professorship level). **Fewer evaluate policy *impacts***: longer-term and unintended social effects (Lother & Maurer 2008). The latter require the development of adequate indicators and theoretical frameworks to measure institutional and cultural changes.

III.1. Challenges of assessing impact

Large-scale evaluations that analyze structural changes are more difficult to conduct, as they usually require more financial resources and methodological complexity (Striebing et al. 2020). Causal-effect relationships are more challenging to assess at a larger, longer-term, scale. It is indeed difficult to attribute change in women and minorities's representation in science, or in other indicators relating to social justice issues in science, “to specific policies and not to other factors in the social environment or to the evolution of society in general” (EC 2008, 14). Moreover, **randomized controlled experiments, the gold standard for measuring causality** (by measuring the counterfactual – what would have happened without the intervention), **are difficult to use in educational research** for practical or ethical reasons (Steiner et al. 2009). One of the main reasons is the unequal allocation of resources generated by random assignment and the potential backlash from students and staff it can create. They are also limited in time and space (Bozzio 2004). Indeed, randomized controlled trials found in this review mainly concern sexual violence training, one-shot intervention, looking at short-term individual outcomes via self-report measurements in a particular institution (Mujal et al. 2021). For those reasons, **other approaches have been developed in evaluation research that go beyond and re-think causal analysis** (Gates & Dyson 2016). In evaluation research on our topic of interest, **theoretical work on general evaluation framework to assess impact is relatively new**. Some of the studies in this review have addressed the methodological challenges of an evaluation research that looks at institutional and culture changes and that provide some examples of alternative methods of evaluation (Lother 2019,

O'Connor & Irvine 2020, Barnard et al. 2020, Mcquillan & Hernandez 2021). **Efforts have been initiated for gender equality policies in Europe**, (Kalpazidou Schmidt & Cacace 2017, Buhrer et al. 2019, Kalpazidou Schmidt & Graversen 2020, Kalpazidou Schmidt & Ovseiko 2020), mainly with the work produced by **EFFORTI**[20] (Evaluation Framework for Promoting Gender Equality in Research and Innovation), a project funded by the European Commission (Palmén et al. 2019). The impact evaluation framework suggested by the project is theory-based, drawing from theory of change models, and "focuses on the following questions: (i) in which way and (ii) under which conditions a programme intervention contributes to the intended and unintended effects" (Palmén et al. 2019, 158). This impact assessment model thus seeks **to understand how complex environments influence the *design* and *implementation* of measures, which in turn influence *impact***. In that way, it bridges the gap between compartmentalized evaluation approaches (ex-ante, monitoring, ex-post) in order to provide a comprehensive and effective assessment of gender equality programs. This is a promising evaluation framework for future research and comparative studies on the impact of gender equality policies in higher education and research.

IV. Gaps identified in the literature

This scoping review reveals significant gaps in the existing literature. Consistent with other reviews on equality and diversity interventions (Moody & Aldercotte 2019, Guyan & Douglas Oloyede 2019), the first identified gap is the **lack of evaluation on interventions addressing identity characteristics other than gender and the issue of sexual violence**. This review has already pointed out the scarce existing literature on race/ethnicity (especially outside the US), disability, sexual orientation / gender identity, and socio-economic status. However, other grounds for discriminations are completely overlooked in this review: religious beliefs, age, language, civil status, pregnancy, and also political beliefs and trade union membership. Moreover, **intersectionality as an analytical tool and framework is rarely used** to understand the complexity of intertwined social categories and systems (Crenshaw 1991, Collins & Bilge 2016).

Although sexual violence is a relatively well addressed issue in the existing literature, **there are limited evaluations on interventions tackling sexual violence among non-academic and academic staff**. Nevertheless, those efforts exist and have been implemented in many countries (Fajmonová et al. 2021, Bondestam & Lundqvist 2020). Research is needed to evaluate the impact of sexual violence policies on staff, particularly early career researchers who are in positions that are more precarious and are often embedded in vulnerable, unbalanced power relationships (e.g. PhD candidates and their thesis supervisors). Moreover, the majority of evaluations concentrate on prevention measures and educational programs (risk-reduction, awareness-raising, self-defense). Less is known of other types of measures to address sexual violence in university settings (e.g. sexual violence units, complaints procedures, policy).

As previously mentioned, the **literature from non-Western countries is small** in this review. Apart from the limitations of this study and the lack of design and implementation of policies, an explanation can be found in the varying national and regional evaluation cultures (Buehrer

[20] https://efforti.eu/

et al. 2020). Moreover, there is a **clear lack of comparative studies** between institutions and between countries, explained in the literature by the difficulty of comparing specific institutional and regional/national contexts (Le Feuvre 2009, Laoire et al. 2021), by the language barrier (Castaño et al. 2010), and, in the case of Europe, by the lack of harmonisation among European Union projects when promoting structural change through Gender Equality Plans (GEPs). Indeed, each project offers a specific way to create a GEP, which hinders the possibility of evaluating and using GEP data at the EU level and even at the national level (Bencivenga & Drew, 2021). A related observation is the l**ack of attention to policy transferability challenges and potential** of evidence-based interventions. A notable exception is a bystander intervention introduced in the UK, Fenton & Mott (2018), and Yount et al.'s study where they conducted a formative qualitative research to adapt an US sexual violence education program in Vietnam, using a specific methodology (2020).

Regarding the population targeted in higher education, not everyone is equally considered. **A notable absence in the existing literature concerns non-academic staff**. The peculiarities of their careers are considerably less addressed by the policies reviewed than those of faculty, especially women faculty. Furthermore, studies focused on administrative staff are more preoccupied with top-level administrative staff (e.g. leadership development programs) than with **staff at the bottom of the ladder** (O'Connor & White 2021, 10). Yet the latter occupy more precarious positions and experience insecure working conditions (e.g. part-time employment, short-contract). Moreover, women and underrepresented minorities most often occupy those jobs (Charles & Grusky 2004). Policies geared towards high-level careers tend to uphold an "elitist" vision of equality, in a similar fashion than private workplaces (Pochic 2018). Efforts solely targeting leadership levels (Winchester & Browning 2015, Vassallo et al. 2021) "may actually perpetuate the hierarchy of social class", as Moody & Aldercotte rightly point out (2019, 41).

Students constitute a fair share of the target population in the existing literature but they are overrepresented on the topic of sexual violence. Less research has been found that investigates interventions aimed at enhancing campus climate for students as well as conditions of studying beyond North American contexts. Another absence worth noting has to do with **international or exchange students** that visit institutions, who constitute a great share of the student population and may face several specific barriers and discriminations (Krahé et al. 2005, Poyrazli & Lopez 2007).

Although academics, and especially women academics, are an important population found in the selected evidence, some gaps can be identified. First, the emphasis of interventions is predominantly on research activities, **less on teaching-related activities**. Moreover, **there is still a lack of account of disciplinary differences**. Discipline-specific career paths, advancement and obstacles are not sufficiently addressed in the evaluation research literature, although they have been shown to be crucial for policy effectiveness and relevance (Tangalakis et al. 2017, Leicht-Scholten 2008, Castaño et al. 2010, 31). Moreover, the existing literature tends to uphold a linear vision of career advancement. **Little is known about returning and re-entry schemes**, with the exception of two studies found in the UK review on EDI initiatives (Guyan & Douglas Oloyede 2019, 32-33) and returners programs, both presenting promising results. This is a new intervention within the higher education and

research environment that needs further investigation. **Mobility**, especially for early career researchers, is another topic of research careers that is absent in the literature.

If we take on a spatial perspective, all interventions evaluated are deployed in the perimeter of the university. **There is no evaluation looking at off-campus environments**, such as off-campus student activities (events, fraternities, sororities) and accommodations or internships (e.g. medical interns).

It is quite evident from this review that **some types of interventions are under-evaluated compared to others**. This is the case for work-life balance policies, leadership development programs, equity advisor/officer, quotas and networking, which were reviewed earlier. However, a multitude of other interventions that are implemented in higher education institutions are missing from the existing literature on evaluation, such as: dissemination of information or raising awareness material, diversity-sensitive practices, targeting funding practices, gender budgeting, mainstreaming actions, counseling (Kalpazidou Schmidt & Cacace 2017). Similar to Castaño et al.'s review on gender equity policies, this scoping review found **very few studies evaluating the impact of New Public Management strategies that take into account gender** into steering instruments (gender budgeting, quality control, audits, incentive systems / incentive-based allocation of funds) (2010, 51-55). There is also **a clear gap regarding evaluations assessing several interventions**, even more so for a wide range of discriminations.

Finally, an interesting gap to consider is **the lack of knowledge and/or indication of mobilized resources (financial, personal, facilities) to implement interventions**. Some studies underline the cost effectiveness of the interventions assessed but do not provide specificities. In addition, human resources mobilized are not always specified in terms of profils (expertise used) or number of people. Nevertheless, social actors in charge of implementing interventions are highly influential on policy effectiveness and success (Stepan-Norris & Kerrissey 2016, 229; Sagaria 2007; Stockard & Lewis 2013). Regarding gender equality interventions, more often women (that have some degree of gender inequities awareness or even self-identify as feminist) put in (free) work to implement initiatives, accounting for a policy effective implementation and sometimes success (Laver et al. 2018, Tzanakou & Pearce 2019).

V. Limitations of the study

The present findings should be understood in the context of the limitations of this review. Although the choice of search terms was purposely broad and identified using background literature, it is possible that the ability to collect data from a larger scope of research fields and traditions could have been limited. This is due to the author's anterior relation with the field of gender studies and political science on issues of equality and diversity which limits the familiarity with relevant terms and concepts used in other fields, such as psychology and economics. Moreover, **the terms for defining discriminations and policies may vary across national contexts** and thus sources may have been missed. As was mentioned before, the languages used (English and French) in the search may considerably limit the pool of evidence found, accounting for the predominance of North American and European sources. It should be noted that only three French studies (published in English) are included in this scoping

review. More sources were found in France but focused on monitoring evaluation (policy design and implementation) (Bui-Xan 2011, Segon et al. 2017, Vaillancourt 2017, Favre & Tain 2018, Mour & Sehili 2022). No ex-post evaluations were found in other francophone countries, which can be explained both by a lack of such studies or inadequate search terms.

Some types of intervention may also have been overlooked due to no previous knowledge of their use, and despite background literature, and thus not included in the searches. This is the case for stipends and scholarships that are mentioned in Castaño et al's review (2010, 33-35). In fact, it seems possible that further rounds of search literature could lead to **unexplored research areas with which the author became aware through the reading of evidence**, after the two-steps literature search. For example, there seems to be several studies focusing on evaluating faculty and teachers' training on disability issues that are referred to as "universal design for learning" training (Moriña & Carballo 2017). The choices of terms could thus potentially be expanded.

Furthermore, since evaluations seem to be mostly project-driven and internally conducted by institutions, a larger proportion of grey literature is searchable. However, **the databases used in this scoping review may limit the breadth of grey literature reviewed**. It would also be necessary to go through institutional websites to find reports or documents, or through networks of practitioners and stakeholders (such as the national Standing Committee of Equality and Diversity Officers in France[21]).

Conclusion

This scoping review was interested in systematically investigating existing literature that evaluate implemented anti-discrimination policies in higher education institutions. The evidence found is relatively low but the results indicate that this literature is expanding. Increasing attention is paid to evaluating what is now commonly referred to as "equality, diversity and inclusion policies" in higher education institutions (Moody & Aldercotte 2019). This review provides interesting insights into the types of interventions assessed and the nature of evaluations conducted, with implications for further research. A large proportion of interventions address gender issues, mainly focusing on women academics. Gender-based discriminations and inequalities are tackled with multiple policy measures and approaches that range from individual-level interventions (e.g. mentoring, networking) to organizational-level policies (e.g. quotas, work-life balance policies). Within the context of North America, many studies evaluating prevention interventions aimed at reducing sexual violence, bystander training in particular, have been produced over the last decades. Students are the sole beneficiaries of those interventions, leaving unknown what types of measures are put in place for academic and non-academic staff and their potential effectiveness. The literature discussing the impact of measures combating racial and ethnic discriminations and inequalities is centered on the United States' higher education challenges. Individual-level policy (mentoring) is the predominant solution provided to answer the challenge of "minority retention". A small amount of evidence has been found for policy measures targeting other grounds of discrimination – LGBTQIA+, disability and socio-economic status, in this review. The results have also pointed out the lack of intersectional approaches in both the interventions

[21] https://www.cped-egalite.fr/. Conférence Permanente des chargé.e.s de mission Egalité et Diversité.

and the evaluations conducted – a major gap that should be addressed by policy-makers and researchers as to better understand the linkages between the issues at stake and to implement sustainable change.

Despite diversity in the measures found, this review is far from representing the full extent of existing measures. Additional investigation on other well-adopted policies is needed (e.g. disability policies, gender mainstreaming policies). Using a scoping review approach has also shed light on the methodological variations within and across disciplinary fields to evaluate change. Nevertheless, systematic research is absent for most interventions in the evidence. Research on sexual violence prevention training may be considered exception to the rule, although those studies only focus on short-term outcomes and effects on beneficiaries. In fact, assessing policies' long-term impact, and particularly their effects on structural and cultural change, remains a key challenge and priority in this research field. In addition to the development of adequate methods and theoretical frameworks for policy impact evaluation, peculiar attention must be given to institutional and disciplinary contexts – and beyond male-dominated disciplines that have received the most attention (STEM, Medicine). It would also be interesting to investigate how various interventions and strategies implemented may interact when addressing inequalities and discriminations in higher education institutions. Finally, a more extensive review could further explore and dissect each topic within this heterogeneous research field, by examining grey literature in depth (on organizational websites or gathering information from relevant stakeholders) as well as by including non-English publications.

Appendix

-INITIAL SEARCH-

Databases :

- *WorldCat* (eng) : ti:(discriminat* OR equality OR diversity OR inclus*) AND (polic* OR intervention OR initiative OR project OR programme) AND ("higher education" OR academia OR universit*) NOT kw:access = (filter : books and articles) 3042 results
- *Worldcat* (fr) : ti:discriminat* AND université NOT accès = 206 results
- *GenPORT* (community sourced internet portal for sharing knowledge and inspiring collaborative action on gender and science) = 1433 sources

Journals :

- *Journal of Women and Gender in Higher Education* : [[All: discriminat*] OR [All: equality] OR [All: diversity] OR [All: inclus*]] AND [[All: polic*] OR [All: intervention] OR [All: initiative] OR [All: project]] AND [[All: "higher education"] OR [All: academia] OR [All: universit*]] = 214 results
- *Gender, Work and Organization* : academia OR university OR higher education = 378 results
- *Journal of Women, Politics and Policy* : academia OR higher education OR university = 568 results
- *Politics and Gender* : academia OR university OR higher education = 220 results
- *Equal opportunities International* : academia OR university OR higher education = 545 results
- *Higher Education* : (discriminat* OR equality OR diversity OR inclus*) AND (polic* OR intervention OR initiative OR project OR program) NOT access = 579 results
- *Assessment and Evaluation in Higher Education* : title:discrimination OR equality OR inclusion OR diversity = 17 results
- *Higher Education Policy* : title:discrimination OR equality OR inclusion OR diversity = 663 results
- *American Economic Review* : "Education and Research Institutions" classification = 298 results
- *Econometrica, Econometric Society* : academia OR university OR higher education = 12 results
- *Journal of Economic Literature* : "Education and Research Institutions" classification = 34 results
- *The Quarterly Journal of Economics* : abstract:academia OR university OR higher education = 31 results
- *International Organization* : "higher education" OR "university" OR "academia" : 366 results
- *Feminist Criminology* : "higher education" OR "university" OR "academia" : 342 results

-SECOND SEARCH-

Databases (ProQuest and Cairn added) :

- *Worldcat* : ti:(LGBT* OR gay OR lesbian OR transgender OR transidentity OR bisexual OR queer OR race OR ethnic* OR disability OR disable* OR religion OR motherhood OR maternity OR men OR women OR age OR socio-economic OR “sexual orientation” OR gender OR “sexual harassment” OR “sexual violence” OR “sexual assault”) AND ti:(polic*

OR intervention OR initiative OR project OR action OR plan OR program OR evaluation OR impact) AND ti:("higher education" OR academia OR universit*) NOT kw:access Y:1995-2021 ang_fr books-articles = 3033 results (more than 50 selected)

- *Worldcat* : ti:(LGBT* OU gay OU lesbienne OU transgenre OU transidentité OU bisexuel* OU queer OU race OU racisme OU OU ethni* OU handicap OU religion OU maternité OU hommes OU femmes OU âge OU socio-économique OU "orientation sexuelle" OU genre OU "harcèlement sexuel" OU "violence sexuelle" OU sexisme) ET ti:(politique OU intervention OU initiative OU projet OU action OU plan OU programme OU évaluation OU effet OU impact) ET ti:("enseignement supérieur" OU académi* OU université) NOT accès = 253 results (none selected)
- *Worldcat* : ti:(training OR mentoring OR network* OR "work-life balance" OR "family-friendly" OR "career development" OR mainstreaming OR "gender budgeting" OR quotas OR monitoring OR "action plan") AND ti:("higher education" OR academia OR universit*) AND ti:(equality OR diversity OR inclus* OR LGBT* OR gay OR lesbian OR transgender OR transidentity OR bisexual OR queer OR race OR ethnic* OR disability OR disable* OR religion OR motherhood OR maternity OR men OR women OR age OR socio-economic OR “sexual orientation” OR gender OR “sexual harassment” OR “sexual violence” OR “sexual assault”) NOT kw:access = 1010 results (40 selected)
- *ProQuest* : TI(training OR mentoring OR network* OR "work-life balance" OR "family-friendly" OR "career development" OR mainstreaming OR "gender budgeting" OR quotas OR monitoring OR "action plan") AND TI("higher education" OR academia OR universit*) AND TI(equality OR diversity OR inclus* OR LGBT* OR gay OR lesbian OR transgender OR transidentity OR bisexual OR queer OR race OR ethnic* OR disability OR disable* OR religion OR motherhood OR maternity OR men OR women OR age OR socio-economic OR “sexual orientation” OR gender OR “sexual harassment” OR “sexual violence” OR “sexual assault”) NOT access = 101 results (5 selected)
- *ProQuest* : TI(formation OU mentorat OU réseau OU famille OU “vie privée et travail” OU "développement professionnel” OU “budget sensible au genre” OU quotas OU “plan d’action”) ET TI(LGBT* OU gay OU lesbienne OU transgenre OU transidentité OU bisexuel* OU queer OU race OU racisme OU ethni* OU handicap OU religion OU maternité OU hommes OU femmes OU âge OU socio-économique OU "orientation sexuelle" OU genre OU "harcèlement sexuel" OU "violence sexuelle" OU sexisme) ET TI("enseignement supérieur" OU académi* OU université) : 0 result
- *ProQuest* : (discriminat* OR equality OR diversity OR inclus*) AND (polic* OR intervention OR initiative OR project OR programme) AND ("higher education" OR academia OR universit*) NOT kw:access : 1 586 834 results : the first 300 most relevant were reviewed (7 sélectionnés)
- *ProQuest* : TI(discriminat* OR equality OR diversity OR inclus*) AND TI(polic* OR intervention OR initiative OR project OR programme) AND TI("higher education" OR academia OR universit*) AND (evaluation OR impact OR assess) NOT access : 59 results (? selected)
- *ProQuest* : TI(discriminat* OR égalité OR diversité OR inclus*) AND TI(politique OR intervention OR initiative OR projet OR programme OR plan OR action) AND TI("enseignement supérieur" OR académi* OR universit*) AND (évaluation OR impact) NOT accès : 35 results (none selected)
- *ProQuest* : TI(race OR ethnic* OR disability OR LGBT* OR gender OR socio-economic OR class OR gay OR lesbian OR queer OR bi OR transgender OR transidentity) AND TI(polic* OR intervention OR initiative OR project OR program) AND TI("higher education" OR academi* OR universit*) NOT access : 48 results (1 selected)

- *Cairn* : (“enseignement supérieur OU université) ET (femmes OU genre) : 165 results (1 selected)
- *Cairn* : (“enseignement supérieur” OU université) ET (âge OU religion OU racisme OU handicap OU ethni* OU LGBT OU maternité): 239 results (3 selected)

Journals :

- *IDEAS/Repec* : (discriminat* OR equality OR diversity OR inclus*) AND (polic* OR intervention OR initiative OR project OR programme) AND ("higher education" OR academia OR universit*) : 103 results (5 sélectionnés)
- *Evaluation* (journal) : with keyword “higher education” : 317 results (none selected)
- *Canadian Journal of Program Evaluation*: With keywords : higher education, university, equality, race, gender, LGBT, disability, class, inclusion, diversity (in french as well) : 170 results (none selected)
- *American Journal of Evaluation* : (“Higher education” OR university) AND (equality OR gender OR women OR race OR class OR disability OR LGBT OR diversity) : 76 results (none selected)
- *Journal of Multidisciplinary Evaluation* : with keywords “higher education” OR “university” : 293 results (none selected)
- *Evaluation Review* : (“Higher education” OR university) AND (equality OR gender OR women OR race OR class OR disability OR LGBT OR diversity) : 106 results (none selected)
- *New Direction for Evaluation* : Keywords (“higher education” OR “university”) AND (“equality” OR diversity OR gender) : 122 results (none selected)
- *African Evaluation Journal* : Keywords “higher education” OR “university” : 109 results (non selected)
- *Evaluation Journal of Australasia* : (“Higher education” OR university) AND (equality OR gender OR women OR race OR class OR disability OR LGBT OR diversity) : 241 results (1 selected)
- *Comparative Education Review* : (discriminat* OR equality OR diversity OR inclus*) AND (polic* OR intervention OR initiative OR project OR programme) AND ("higher education" OR academia OR universit*) : 1269 results (none selected)

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A public list on Zotero that contains the literature reviews, selected evidence, monitoring evaluation studies, as well as removed evidence to which access could not be obtained, has been made available to the following link :

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