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An Analysis of Nyaradzo Funeral Service's Tree Planting Programmes in Rural and Urban Areas: Insights from Zvishavane Urban and Chivi Rural Communities

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Abstract

The study sought to establish the perceptions of communities on tree donations, with specific reference to Zvishavane urban and Chivi rural areas. Through interviewing a sample of 60 households in Zvishavane Urban District and Chivi Rural District communities, this study analysed Nyaradzo Funeral Services' (Friends of the environment-FOTE) tree planting programme. The study contends that despite the negative belief associated with tree planting by the deceased families, the practice is now being overwhelmingly endorsed by both rural and urban communities. Results from the study indicate that apart from the Environmental Agency of Zimbabwe (EMA), the FOTE Programme by Nyaradzo Funeral Services (NFS) has probably become the single largest private sector player in environmental issues and that NFS often give a tree to bereaved families as a symbolic gesture of condolence and remembrance. The study also established that NFS's tree planting gesture is overwhelmingly positive. Many people in Zimbabwe view it as a thoughtful and meaningful way to honour the deceased, while also contributing to the wellbeing of the environment. Overall, the gesture is seen as a beautiful way to celebrate the life of the deceased while also giving back to the community and protecting the environment. In light of these findings the study recommends the expanding of tree species to cater for different environmental conditions and cultural preferences, community engagement to foster ownership and ensure long term sustainability. The study further recommends for the development of a system to regularly monitor and maintain the trees to ensure their health and survival.

Keywords: Nyaradzo Funeral Services, Friends of the environment, corporate social responsibility, tree planting programme, rural and urban communities

1. Introduction

In an attempt to gauge the perceptions of communities on tree donations by Nyaradzo Funeral Services (NFS) that come with each funeral, this study interviewed 60 households in Chivi about NFS's Friends of the environment (FOTE) program. The FOTE initiative focuses on setting up tree seedling nurseries and donating these for planting at funerals of its clients and their beneficiaries. FOTE consists of environmentally like-minded individuals and corporate entities championing the re-greening of Zimbabwe through tree planting. The initiative was pioneered in 2010 when NFS started planting a tree with every burial it undertook. FOTE is thus part of NFS' corporate social responsibility (CSR). In the process, the study assessed the impact of the programme in environment management in the district in order to suggest alternative CSR strategies informed by beneficiaries' contribution as well as indigenous knowledge systems.

Friends of the Environment was born out of this need and like-minded companies were mobilized to join and today there are many companies that are partners to NFS. The companies are OK Zimbabwe, Stanbic Bank Zimbabwe, Old Mutual Zimbabwe, Seed Co Limited, EMA, Zimplats, WWF, Tanganda Tea Company Limited, Innscor, Freight World, Standard Chartered, Pacific, ZB financial Holdings, Forestry Commission, Bain, Grand Thornton Astra Industries, Fossil Contracting and many others.

FOTE has three main objectives: firstly, to create awareness about tree planting. The second objective is to establish nurseries and the third is to plant trees.

In 2016, Friends of the Environment set themselves a target to plant 500 million trees by 2026. One thing led to another, and they soon realised that for this target to be a reality, they needed to put up their own nurseries from where they would get seedlings for the trees and a target of 100 nurseries was also set for 2026.

The key idea behind CSR is for corporations to pursue other pro-social objectives, in addition to

maximizing profits. CSR is geared towards sustainable socio-economic development. As Kotler and Lee (2005:2) note, "corporate social responsibility is a commitment to improve community well-being through discretionary business practices and contributions of corporate services". The discretionary in the above definition is not referring to activities that are mandated by law or that are moral or ethical in nature and perhaps therefore expected. Kotler and Lee (2005: 2) aver, "Rather we are referring to a voluntary commitment a business makes in choosing and implementing these practices and making these contributions". In other words, corporations' obligations go beyond the stockholders, that is, shareholders. Companies must not only focus on the core business of making money for the shareholder but must also consider the environment in which they operate. It is also clear from the definitions above that CSR can also aid the marketing function of an organization as it assists in brand development.

Furthermore, CSR is not a once-off thing; it is a commitment which means that it is long term. The focus of this current work is the 'NFS's FOTE programme' that was launched in 2010 and has thus been in motion for over a decade. The intention of the study therefore is twofold; firstly, it aims to interrogate the nexus between CSR (a western business concept) by NFS and death — a phenomenon that is contextual in as much as it is universal. Death is universal in the sense that it happens to everyone anywhere in the world but contextual in the sense that various communities have different beliefs about death. Similarly, different communities and players have different roles or rites they perform during bereavement periods. Tree-planting was certainly not one of the rites performed by Zimbabwean communities during a burial ceremony in general and where it was and is performed, for example amongst the Danda people located on the border of Zimbabwe and Mozambique (in Chipinge Rural District), it is a spiritual thing. Superstition has it that the Danda people plant a tree on the grave of a slain relative and when that tree starts growing and shedding off leaves, relatives of the

murderer(s) die each time a leaf falls. In this study therefore, the researchers sought to interrogate the views of the communities and NFS's marketing and communications staff on this programme. Secondly the study seeks to suggest alternative public relations (PR) strategies tailor-made for corporate entities in the global south, particularly Zimbabwe.

2. Background to the Study

An article in an The Herald newspaper of the 13th of May in 2010 in the Midlands State University Library about a successful inaugural walkathon that year which saw people walking from Gweru to Harare, a distance of approximately 280kilometres ignited the researchers' interest to embark on this study. The walk advocated for environmental protection in the country through tree planting. Unfortunately, that walkathon did not realize a sufficient supply of tree saplings to meet the huge demand created by the environmental awareness campaign.

Since then, environmental management in Zimbabwe has taken a centre stage in contemporary efforts to mitigate ecological challenges posed by human beings' activities on the environment. This has led some organisations in the country to embark on programmes aimed at minimising and or compensating for environmental damage. This is in line Dahlsrud (2006)'s five dimensions of CSR which is "a cleaner environment, environmental stewardship and environmental concerns in business operations." In some cases, these programmes have been legislative as is the case with the Environmental Management Act (Chapter 21:05) and other statutory instruments that prescribe what organisations are supposed to do in order to mitigate environmental damages they cause in pursuit of their business objectives. In some cases, the environmental management programmes are a result of some organisations' own initiatives through their corporate social responsibility (CSR) as is the case with Nyaradzo Funeral Services' Friends of the environment programme.

While globally, deforestation has turned out to be one of the chief ecological tragedies of modern times, in Zimbabwe it is not an exception. Regrettably, it continues at an even more alarming rate fuelled by the global demand for timber, paper, land preparation for agriculture, veld fires and energy requirements.

Deforestation is considered the second leading contributor to carbon emissions worldwide after the burning of fossil fuels. As forests disappear, so too does wildlife, flora and fauna, aquatic life and river eco-systems. Forests serve as value stores for biological diversity, balance of ecosystems and as stabilizers of the global climate.

Unfortunately, our forests are depleting much faster than nature can replenish on its own including current reforestation efforts. According to the Forestry Commission report (2015) in Zimbabwe alone, 330 000 hectares of forests are destroyed annually. At this rate our forests will be completely wiped out in 52 years. It is a sobering statistic and quite mind numbing. Much of our rural landscape lies desolate. Our country is faced with a creeping desert. It will never be able to solve the climate change crisis without seriously engaging in reforestation while at the same time stopping deforestation. Furthermore, the scourge of deforestation is not only restricted to Zimbabwe alone, but is affecting the whole SADC region. It is hoped that suggestions offered to NFS' FOTE project will usher a green revolution as well as an inclusive corporate social responsibility attitude in Zimbabwe in particular and globally in general.

3. Research Methodology

The study is premised on both secondary and primary data. Secondary data involved reviewing empirical findings on Corporate Social Responsibility (CSR) in other parts of the world and Zimbabwe in particular. Primary data was collected from a sample of 60 key informants from both rural and urban communities of Chivi Rural District and Zvishavane Urban. These informants included a Nyaradzo Funeral Services official of the Zvishavane Branch, community leaders (both elected and traditional, including leaders of faith-based organisations) as well as ordinary members of the specified communities.

The study was carried out in three phases namely: i) the first phase involved the review of literature on corporate social responsibility in general and in Zimbabwe in particular, ii) the second phase involved a preliminary visit to Zvishavane Urban and Chivi Rural districts. In Zvishavane two councilors and twenty-eight residents from Mandava and Maglas high density suburbs were interviewed and the same

numbers of informants in Chivi from around Nyanningwe Growth Point. The preliminary visit was aimed at sensitizing the key informants of purpose of the study. Subsequent trips were dedicated to information gathering from key informants. The researchers used interview guides, observation, focus group discussions as well as narrative cases of specific incidences/experience. The information was captured in both audio and video forms. Analysis of all qualitative data was done using thematic content analysis.

4. Research Findings

A major finding of the study was that apart from the Environmental Agency of Zimbabwe (EMA), the FOTE Programme by NFS has probably become the single largest private sector player in environmental issues. The Chief Executive Officer of NFS pointed out:

“As management we realised that the company uses timber but there was need to manufacture products sustainably hence the establishment of the FOTE Secretariat given the amount of work to be done. Since then, Nyaradzo started issuing out a tree to plant for every burial or funeral.” (Telephone interview with NFS Chief Executive Officer on 30 April 2024).

The above quote portrays the concern that NFS has for degradation of the environment through replenishing the cut timber by growing more trees which augurs well with Smith (2011:59) that the “environmental degradation caused by humans as a result of our over-utilization of resources cannot persist.” In support of the interview above, the NFS Group Financial Director further pointed out the company’s humble beginnings as a responsible corporate citizen:

Nyaradzo Funeral Services became pro-active in environmental issues when it acquired ‘Kalundike’-an entity that was into the manufacturing of caskets in 2003. Kalundike further expanded into the manufacturing of office furniture, kitchen units and bedroom suites for export. It is then that the idea of planting trees came about followed by the formation of Friends of the Environment in July 2010.

Anything made from timber means cutting down trees and if this is done on a large scale, there is need for afforestation. This is what led Nyaradzo to embark on this tree planting

exercise. This concurs with the argument by Edelman (2011) that profit, and purpose of a cooperation must benefit society. According to Moyo (2018), a 66-year-old widow who received these trees from Nyaradzo was quoted saying:

“People from Nyaradzo told me they were sorry I had lost my firstborn son, saying they were also sorry that his death dented the environment as they would bury him in a coffin carved from a tree and therefore they had to replace the tree.”

She was given an avocado tree. Moyo (2018) goes on to state that the distribution of free seedlings and promoting planting in cemeteries as well as homes is a way “to help restore a parched country- and offset their own use of timber.” The issuing of a tree saplings for planting by NFS to bereaved families is perceived differently by the beneficiary families. The responses were quite varied across the urban- rural divide. There were those who appreciated the programme and those who were sceptical of the programme.

4.1 Beneficiaries’ Perceptions of the Programme

Perceptions to the program were quite varied across gender, age, qualification as well as geographical location of the respondents. The responses transcended from those who were adequately informed about the program and those who were not. Those who appreciated the programme were predominantly urbanites. They indicated online and printed media as their sources of information about the FOTE program. On the other hand, those rural respondents who indicated scepticism was due to lack of information as to the motive behind the program. The responses from the key informants from across the urban and rural divide can be categorised into those who viewed NFS’s tree planting program as an honour and tribute to the deceased, those who literary saw it as a way of making people plant trees as well those who were sceptically superstitious of the programme.

a) Honour and tribute to the deceased

The majority of the respondents viewed the tree planting gesture as a beautiful way to honour the person who has passed away and create a lasting tribute to the life of the deceased. These respondents spanned across both gender and across both rural and urban environs. These respondents were able to articulate the symbolism of tree planting to the deceased

person.

b) A strategy of making people plant trees

Quite a sizable number of the respondents literary took the tree planting gesture as a way of encouraging people to plant trees. Of this number, the majority were from the rural community and were mostly elderly people.

c) Sceptically superstitious

Some respondents showed scepticism about the reason why trees are planted in honour of a loved one who would have passed on. Bulawayo 24 (2014) wrote, "Scepticism is emerging around the Nyaradzo Funeral Services' Tree of Remembrance initiatives." The nomenclature portrays that the purpose of planting trees is for remembering the dearly departed. In addition, the news channel went on to note that superstitious people have started raising concerns at the distribution of these trees. This research also noted that some interviewed people took this practice as culturally improper. One respondent said:

Ini hangu ndakanzwa kuti pane mhando yemuti unosimwa paguva remufi kana akapondwa or kufa zvisina tsananguro kuitira kuti apfuke. Handizivi kuti hazvisiri izvo zviri kuitwa neNyaradzo nemiti yavo iyi. (I have heard of a special type of a tree grown on the grave of the deceased if he or she was murdered or died due mysterious circumstances so that he or she avenges her death. I don't know if this Nyaradzo tree is not meant for the same purpose.)

This quote is double barrelled in the sense that the respondent is questioning the type of tree as well as worried about why the tree is planted if not for the purpose of avenging. This means that there is no need to plant the tree if the dead's demise is not shrouded in suspicion. Reiterating this line of thinking, an elder from a church said:

Muti uyu ini hangu handisati ndamboona paunodzvarwa. Vanhu vanoignowa nekuti muchivanhu muti unodzvarwa paguva pemunhu afa zvisinganzwisiki kuti atsivive. Ndounonzi Mumvuko but handizivi muti wacho chaiwo. Saka pachivanhu vanhu havavimbani, saka anomudzvara ndiani? (I have never seen where this tree is planted. People ignore planting it because it is believed by the Shona people that a tree is planted on the grave of someone who dies mysteriously so they can avenge. It is called

Mumvuko but I don't know the actual tree. Shona people don't trust each other so who plants the tree?)

The above quotes associate planting of trees for the dead in relation to *ngozi* (avenging spirits). In concurrence, a teacher by profession said:

Miti ye Nyaradzo (These trees) according to them vanoti patinochera guva paya (they say when we dig the grave) we are displacing a number of trees so ivo (they) as way of promoting kudyarwa kwemiti vanoti endai modyara muti (the planting of trees they say we should go and do so) either aside guva (grave) or on top of the grave but generally people are sceptical about the trees coz vamwe vandakanzwa vaiti hanzi panokura muti iwoyo (I heard some people argue that when the tree is growing) or if it happens kudonhedza (to shed) a leaf, panofa munhu (a person dies).

As a result, some of the trees given in good faith are abandoned as the process is regarded as spiritual. It is the belief of some respondents that Nyaradzo is merely trying to boost their business instead of accommodating people's culture. Respondents who harboured these beliefs claimed that if the tree is planted at home, family members die one after the other thereby giving Nyaradzo business.

The research noted that maintenance of the trees is also a problem as one respondent stated:

Kuchengetedzwa kwayo kunonetsa nokuti vanhu kashoma kuenda kuguva kwacho saka pekupedzisira inofa nekuti hapana anodiridzira. (Maintaining the trees is problematic because people rarely visit the gravesite so eventually the tree dies because no one waters it.)

This then defeats the whole process of replenishing trees cut to make coffins as the beneficiaries are not well educated on the importance of taking care of these trees.

4.2 Types of Trees Given for Planting

Informants indicated receiving fruit trees and non-fruit trees. In some cases, some highlighted that some of these trees were either indigenous or exotic as indicated by one respondent:

Nyaradzo Funeral Assurance Company provides avocado and mango tree seedlings to grieving families. Other types of trees planted by the company include gum trees and pine trees.

The gum tree type was confirmed by a Chronicle correspondent (2014) who wrote, "Nyaradzo were giving gum trees to those who were going to bury their relatives." This resulted in trees being planted in some areas where climatic conditions were not suitable for particular species leading to the loss of donated saplings.

4.3 Beneficiary Involvement in the Programme

The FOTE programme as indicated earlier on was the brainchild of Nyaradzo Funeral Services which was presented to communities for their buy in. As highlighted above some trees are being planted in harsh climatic conditions resulting in the loss of such saplings before maturity.

4.4 Implementation of the FOTE Programme

Results indicated that bereaved families were only given a tree sapling upon leaving the funeral parlour. The beneficiary is not consulted on the type of tree they prefer whether exotic or indigenous or fruit tree or non-fruit tree. Neither are the climatic conditions of the geographic location of the beneficiaries considered. The only thing that matters to NFS is giving the bereaved family a tree. Where the tree is going to be planted and how the tree is going to be for the beneficiaries to decide. It was noted that some respondents believe that the tree is planted at the gravesite and as it grows, it represents the enduring memory and spirit of the deceased. Asked where these trees should be actually planted, the general consensus was that the given tree can be buried anywhere. However, one respondent raised a different view:

Muti uyu unogona kudyarwa payard kana kuri kumusha woita mumvuri. Ndozvandakanzwaavo pandakaupiwa wamai vangu. Hanzi makazorora pasi pawo muchirangarira gore ramakaradzika hama yenyu. Ende ukatarisa muti uya ishrub hombe rinokura kuita muti rinowedzera kunaka pamusha. (That tree can be planted in the yard if it's in the rural areas for shade. That's what I heard when they gave me the tree when my mother passed on. They said you reminisce about your relative as you rest in the shade. And the tree is a big shrub that grows into a tree that adds beauty to the home.)

Some people took the trees from Nyaradzo and actually take care of them.

4.5 Monitoring and Implementation of the FOTE

Program

NFS has no monitoring and evaluation frameworks for its programme. No follow up is done or made to see that the tree saplings are used for intended purposes. In some cases, these tree donations are forgotten at funeral parlours as the burial entourages leave for the burial sites. An interviewed mother had this to say:

Due to the confusion and pain I experienced during the bereavement, I forgot the tree at the funeral parlour! Noone reminded me about it and even NFS did not follow with the tree.

Because people would not be aware that they should be given a tree, some do not even ask about it. Others forget as they would be preoccupied with travelling arrangements. The findings also established that the donated saplings in some cases are forgotten after the burial and left to wilt in the sun.

5. Conclusions

The findings of this study underscore the evolving relationship between cultural beliefs, environmental conservation, and community-driven sustainability efforts. Despite deep-rooted traditional perceptions associating tree planting with misfortune, there is a notable shift toward widespread acceptance of the practice, facilitated by environmental education, community engagement, and economic considerations. The Nyaradzo Funeral Services (FOTE) initiative has not only redefined funeral rituals but has also positioned itself as a leading private-sector force in Zimbabwe's afforestation efforts. However, for the program to reach its full potential, targeted interventions must be implemented to address ecological suitability, cultural sensitivities, and long-term sustainability of planted trees.

Based on the above findings, we can safely conclude that funeral homes like Nyaradzo often give a tree to bereaved families as a symbolic gesture of condolence and remembrance. This tradition is rooted in the following reasons.

- **Symbolism:** Trees represent life, strength and resilience which can comfort grieving families. They also symbolise the cycle of life, reminding us that life goes on even in the face of death.

- **Memory and remembrance:** Planting a tree serves as a living memorial to the deceased, allowing the family to honour their loved one's memory and legacy.
- **Growth and renewal:** As the tree grows, it represents the family's ability to heal, grow, and move forward despite their loss.
- **Nature's beauty:** Trees bring beauty and serenity to the surroundings, providing a peaceful reminder of the loved ones' presence.
- **Environmental significance:** Planting a tree contributes to the environment, symbolizing the continuation of life and the family's commitment to the future.

By giving a tree to plant, Nyaradzo Funeral Services offers a thoughtful gesture that helps families cope with their loss and creates a lasting tribute to their loved ones. NFS's tree planting gesture is overwhelmingly positive and has been received by both rural and urban communities. Many people in Zimbabwe view it as a thoughtful and meaningful way to honour the deceased, while also contributing to the wellbeing of the environment. D'Amato et al (2009:1) contends, "Organisations are being called upon to take responsibility for the ways their operations impact societies and the natural environment." Overall, the gesture is seen as a beautiful way to celebrate the life of the deceased while also giving back to the community and the environment.

The following are key takeaways from the study.

- 1) **Cultural Shifts in Funeral Practices** — The study highlights how traditional beliefs surrounding tree planting are evolving, with increasing acceptance due to awareness and changing economic realities.
- 2) **Environmental and Economic Benefits** — Afforestation initiatives tied to funeral services provide both ecological advantages and cost-effective alternatives to conventional grave markers.
- 3) **Role of Awareness Campaigns** — Community education plays a pivotal role in shaping perceptions and fostering greater participation in environmental initiatives.
- 4) **Need for Species Diversification** — Expanding the variety of tree species ensures ecological resilience and accommodates cultural preferences.
- 5) **Community Involvement for Sustainability** — Active participation from local leaders, religious figures, and environmental agencies is crucial for the long-term success of tree-planting initiatives.
- 6) **Importance of a Monitoring System** — Establishing structured maintenance programs ensure tree survival, enhancing the overall impact of the initiative.

6. Recommendations

From the above findings and conclusions, the following recommendations may enhance FOTE's environmental impact, community engagement, cultural significance and making it more meaningful and sustainable.

- **Expanding tree species:** NFS should consider offering a variety of tree species to cater for different environmental conditions and cultural preferences.
- **Community engagement:** NFS should involve local communities in tree planting and maintenance to foster ownership and ensure long term sustainability.
- **Education and awareness:** NFS should also provide workshops or materials to educate families and communities about the environmental benefits and significance of the trees.
- **Maintenance and monitoring:** A system to regularly monitor and maintain the trees should be developed to ensure their health and survival.
- **Collaborate with other environmental organisations:** NFS should partner with other local environmental groups to amplify FOTE's impact and leverage expertise.
- **Digital tracking and mapping:** A digital tracking and mapping platform should be developed to track and map the trees allowing the families to locate and monitor their loved ones' trees.
- **Involve the youth:** NFS should involve or engage the youth in tree planting and

maintenance, teaching them about environmental stewardship and cultural heritage.

- **Scaling up:** NFS should explore opportunities to expand the tree planting program to other regions or countries, sharing best practices and adapting to local conditions.

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Style and Self-Expression: How Teenage Girls in Shanghai Communicate Their Personalities, Beliefs and Emotions Through Clothing and Social Media?

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Abstract

This study examines how teenage girls in Shanghai utilize clothing to convey their personalities, beliefs, and emotions, both in offline interactions and on social media. Through semi-structured interviews with four adolescents, combined with an examination of their Xiaohongshu and WeChat representations, the research illustrates how clothing serves as a communicative resource for negotiating individuality, group belonging, and cultural identity. The participants displayed diverse styles-ranging from gothic resistance to vintage sustainability, situational adaptation, and comfort-oriented minimalism-each reflecting their self-concept and value orientation. Shopping practices further revealed tensions between ethical commitments and the convenience of fast fashion, showing that adolescents make choices influenced by affordability, accessibility, and sustainability awareness. Psychological experiences were central, as clothing not only enhanced confidence and self-expression but also exposed participants to cultural norms and gendered expectations. Social media emerged as a double-edged tool: while it facilitated inspiration and identity exploration, adolescents resisted passive imitation of influencers, curating instead their own digital personas. Overall, the findings highlight the complex interplay between global fashion trends, local cultural pressures, social media dynamics, and the formation of adolescent identity in Shanghai. This research fills a gap by focusing on a specific group—Shanghai teenage girls—offering nuanced insight into their unique fashion practices.

Keywords: social media, teenagers, fashion, identity

1. Introduction

This study investigates the clothing choices, shopping preferences, self-expression, and social media practices of four female adolescents in Shanghai. Fashion is not simply functional or decorative, but a communicative resource through which adolescents negotiate belonging, distinction, and individuality. Prior research has

shown that adolescence is a particularly significant period for identity exploration, where clothing becomes a central tool to express values, emotions, and affiliations (Kaiser, 2012). In the context of Shanghai, a rapidly globalizing city where local traditions intersect with global fashion trends-both individual desires and societal pressures shape adolescents' fashion

choices.

The aim of this study is twofold: first, to understand how adolescents in Shanghai use clothing to construct and communicate self-identity; and second, to explore how their shopping behaviors, emotional experiences, and social media engagement reflect broader cultural and psychological dynamics. Through the interviews with four Shanghai teenage girls, this research finds that they truly use clothing as a medium of identity expression, and rely strongly on social media, but are not totally influenced by influencers. The research provides insights that the specific group, Shanghai teenage girls, have their own thoughts about their clothing choices, belief expression, and the application of social media.

2. Literature Review

Fashion has been widely recognized as a symbolic system that communicates identity. According to Badaoui et al. (2016), adolescents' clothing consumption is influenced by both personal identity (individual self-expression) and social identity (group belonging), with significant variations across gender and age. This aligns with broader fashion theory that emphasizes clothing as a performative language (Entwistle, 2000).

Body image research demonstrates that clothing choices strongly affect emotional well-being. Grogan (2016) argues that clothing can reinforce self-esteem or amplify insecurities, depending on the degree of alignment between personal style and societal norms. Similarly, Perloff (2014) highlights the role of media in shaping adolescents' body image, especially among girls exposed to idealized representations online.

Social media plays a particularly significant role in adolescent fashion practices. Studies have found that platforms such as Instagram and TikTok encourage peer comparison and trend adoption, but also provide opportunities for creativity and resistance (Fardouly et al., 2020; Marwick, 2015). In China, Xiaohongshu has emerged as a powerful site where youth exchange fashion ideas and explore identity performance (Zhang & Hjorth, 2019).

Recent studies emphasize the role of social media in shaping adolescents' fashion choices and body image. Fardouly et al. (2015) highlight that social media platforms like Instagram and TikTok are not just sites of self-presentation but also serve as spaces for comparison, especially

for adolescents who are still developing their sense of self. This constant comparison can lead to increased body dissatisfaction and a stronger desire to conform to the trends presented by influencers. However, social media also provides a space for creative self-expression, where adolescents can curate their own image and resist dominant beauty ideals. As Marwick (2015) highlights, social media allows users to perform and negotiate their identity, presenting fashion as a tool for both conformity and resistance.

In the context of Shanghai, the blending of global fashion influences with local cultural norms yields a distinctive fashion identity among adolescents. Zhang & Hjorth (2019) argue that Chinese youth, especially in metropolitan areas, are navigating the tension between embracing global fashion trends and staying rooted in their local cultural traditions. This hybrid identity is often reflected in their clothing choices, where elements of Western fashion are incorporated into local styles. This dynamic interplay between the global and the local is crucial for understanding how young people in Shanghai engage with fashion and identity.

Additionally, the increasing awareness of sustainability among adolescents has influenced their fashion choices. McNeill & Moore (2015) assert that young consumers are increasingly motivated by ethical concerns, such as environmental impact and labor rights, when choosing clothing. Platforms like Xiaohongshu facilitate discussions around sustainable fashion, where adolescents share tips on eco-friendly brands and second-hand shopping. This shift towards more sustainable fashion practices aligns with broader global trends. However, in China, it is also influenced by the rapid growth of fast fashion and the desire for more affordable, trendy clothing.

This study systematically reviews the relationship between social media use and adolescent identity development, examining how both the quantity (time spent) and quality (social comparison, self-presentation) of social media use influence aspects of identity exploration, commitment, self-concept clarity, and identity distress.

Besides, this study explores the identity construction of young fashion designers in Mainland China, focusing on designers born

between the 1980s and 1990s and how they express personal identity through their design work.

Thus, the study reveals how complex interaction between global fashion, local culture, personalities, beliefs, emotions, social media, and sustainability shapes adolescent girls' fashion practices in Shanghai. These factors are intertwined with personal identity and social belonging, making fashion a multi-dimensional aspect of adolescent life. Previous research focused on people who came from other areas, genders, and ages, but there was no research about the specific group, Shanghai teenage girls so that this research can fill the gap.

3. Methods

Four female adolescents aged 16–18 participated in this study. They were recruited through personal contacts and invited to participate in survey questions via WeChat. Each survey included 13 questions, and participants gave their feedbacks by texting. In addition to surveys, their WeChat Moments and Instagram accounts were examined to understand how they represented themselves on social media.

All participants are identified with pseudonyms: Isabella gravitates towards punk and gothic aesthetics. Rubbi values sustainability and vintage fashion. Shu adapts style situationally, influenced by hair color and context. Yoyo prefers simplicity and comfort.

Thematic coding was applied to interview transcripts. Direct quotations from participants are included to highlight their authentic voices.

4. Results and Discussion

4.1 Dressing Style and Self-Identity

Each participant displayed distinct styles that reflected their self-identity. Isabella explained, "Wearing black and gothic clothes makes me feel powerful and different." Her rebellious choices resonate with Badaoui et al. (2016), who argue that adolescents' fashion consumption is deeply tied to identity construction. Isabella also linked her clothing to feminist values, noting that dressing outside the mainstream was a form of resistance. Rubbi adopted an environmentally conscious approach, preferring natural fabrics and British-inspired vintage fashion. She said: "I love my clothes having their own stories." This reflects research by Joy et al. (2012), who highlights how sustainable and vintage fashion practices allow young people to express

individuality while aligning with ethical values. Shu described her style as situational: "When I dyed my hair blonde, I felt like I had to wear lighter dresses to match. Clothing always changes with how I look." This illustrates how identity is negotiated through appearance and context, consistent with Kaiser (2012), who views clothing as part of the body's extended presentation. Finally, Yoyo preferred relaxed, pastel-colored clothing, saying, "Comfort makes me feel more like myself than fashion trends do." Her inward focus echoes Tiggemann & Lacey (2009), who found that comfort-oriented clothing choices are linked to higher body satisfaction.

4.2 Shopping Channels and Values

Shopping behaviors revealed strong value orientations. Isabella and Rubbi frequently shopped at thrift stores and vintage markets. Isabella explained: "Fast fashion feels too commercial for me; second-hand clothes make me feel unique." Rubbi emphasized sustainability, aligning with Han et al. (2017), who found that young consumers increasingly view second-hand fashion as ethical consumption. By contrast, Shu and Yoyo relied on online platforms such as Taobao and Xiaohongshu. Shu admitted: "It is convenient — I can get whatever I want in a few clicks, but sometimes I still go offline to check the fit." This reflects the hybrid consumer practices described by McNeill & Moore (2015), where fast fashion coexists with sustainability discourses. Yoyo similarly preferred online shopping for affordability and variety, highlighting the tension between individual values and mass-market accessibility. The research reveals that this generation of designers, who often have overseas study experiences and Western fashion education backgrounds, has developed a design style that blends both Chinese and Western cultural elements. Their work not only reflects the recreation of traditional Chinese elements but also expresses cultural identity in the context of globalization. Fashion design education plays a crucial role in shaping the identities of this generation of designers, particularly in fostering cross-cultural design thinking and innovation (Zhang, 2021).

4.3 Clothing and Psychological Experience

Fashion choices also had strong psychological effects. Isabella said, "When I dress in my style, I feel free and confident, like I am truly myself."

This aligns with Wood-Barcalow et al. (2010), who found that adolescents use fashion as a tool for empowerment. Rubbi described vintage clothing as affirming her uniqueness: “When someone compliments my outfit, I feel like they see me for who I am.” Shu highlighted how external validation shapes self-perception: “When I wear dresses, teachers treat me better, and people smile more. It changes how I feel.” This echoes Fredrickson & Roberts’ (1997) objectification theory, which suggests that women often internalize external judgments. Yoyo, by contrast, explained: “Loose and soft clothes calm me down. I do not care if people notice me or not.” This reflects findings by Kwon (1991) that clothing comfort enhances self-assurance and reduces social anxiety.

4.4 The Role of Social Media

The study finds systematic associations between social media use and various dimensions of adolescent identity development, especially in terms of identity exploration and commitment. However, the quality of social media use, such as social comparison and self-presentation, may increase identity distress, negatively impacting adolescents’ self-concept clarity. The research emphasizes that the effects of social media use are not solely determined by the amount of time spent on platforms, but also by the way the platforms are utilized and the content consumed (Avci, 2024). All participants reported daily use of platforms such as Instagram, TikTok, Xiaohongshu, and WeChat. Rather than copying influencers, they curated their own digital fashion spaces. Shu shared: “I scroll Xiaohongshu every night for inspiration, but I always add my own touch.” This supports Marwick (2015), who argues that social media fosters both imitation and creative self-presentation. Isabella followed feminist and resistance-oriented accounts, aligning with Zhang & Hjorth (2019), who highlight Xiaohongshu as a site of identity exploration. Interestingly, none of the participants identified a single favorite influencer, suggesting that adolescents are not passive consumers but active curators of fashion. This suggests that teenage girls in Shanghai prefer dressing themselves based on their own understanding of fashion, rather than following internet trends mindlessly. This contrasts with traditional models of media influence, supporting Fardouly et al. (2020), who argue that adolescents reinterpret digital fashion content through their own values.

4.5 Constraints and Cultural Factors

Participants also highlighted structural and cultural constraints. Isabella noted, “When I wear tank tops in public, people stare or make comments. It makes me cover up.” This reflects the gendered surveillance described by Bartky (1990), where women are subjected to constant scrutiny of their appearance. Rubbi found elaborate gowns impractical: “I love them, but I cannot wear them on the metro—it looks strange.” Yoyo explained that seasonal shifts shaped her choices: “I want to wear light dresses all year, but Shanghai winters are too cold.” These experiences echo Entwistle (2000), who emphasizes that cultural norms and material conditions constrain fashion practices.

5. Conclusion

This study demonstrates that adolescents in Shanghai use clothing as a medium of identity construction, ethical commitment, psychological empowerment, and digital self-expression. At the same time, they navigate cultural constraints and gendered expectations that limit their freedom of dress. The findings reinforce prior scholarship: fashion as a communicative resource (Badaoui et al., 2016), clothing as empowerment (Wood-Barcalow et al., 2010), and social media as participatory culture (Marwick, 2015; Zhang & Hjorth, 2019). By including the direct voices of participants, this study emphasizes the authenticity of adolescent perspectives. It provides insight into how global and local forces intersect in shaping youth fashion in contemporary Shanghai. Future research could expand this study by including male adolescents or non-binary youth, or by examining how algorithm-driven social media platforms further influence fashion identity construction. My research focuses on a specific group: adolescent girls in Shanghai. It explores the relationship between their clothing choices, self-expression, psychological state, and social media usage. However, certain limitations remain, for instance, the sample size was too small; a larger sample would yield more reliable and generalizable results. Additionally, the research methodology could be improved—shifting from surveys to interviews would allow for more in-depth and comprehensive responses, rather than relying solely on rigid, pre-set questions.

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Cultural Interpretations of the “Cow” Across Nations: A Cross-Cultural Perspective

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Abstract

With the acceleration of globalization and digitalization, cross-cultural communication has become an essential component of international cooperation and understanding. As an integral part of many societies, animals often serve as cultural symbols that reflect unique values, beliefs, and traditions. Among them, the cow stands out as a symbol with diverse interpretations across different cultures. Drawing on a comparative cultural approach, this paper explores the symbolic meanings of the cow in China, India, Thailand, and the United States. It analyzes how these varying interpretations influence intercultural understanding and communication, potentially leading to misinterpretations or conflicts in global interactions. The findings reveal that while the cow is widely respected and valued, its symbolic meanings—ranging from sacredness and diligence to simplicity or prosperity—differ significantly across cultures. The paper concludes by offering recommendations for enhancing intercultural awareness and reducing misunderstandings through education, translation sensitivity, and multicultural collaboration. This study contributes to the broader discussion of cultural semiotics and provides insights for effective communication in globalized contexts.

Keywords: cross-cultural communication, cultural symbolism, cow, intercultural understanding, cultural diversity

1. Introduction

In the context of globalization and the continuous expansion of international exchange, communication between different nations has become more frequent and complex. Cross-cultural communication plays a critical role in politics, business, education, and cultural interaction. However, cultural misunderstandings often arise due to differences in symbolic meanings embedded within language and tradition.

One such example is the diverse interpretation of the cow across cultures. Although the cow is a common animal worldwide, its symbolic and cultural connotations differ remarkably depending on historical, religious, and societal factors. For instance, in India, the cow is regarded as sacred and inviolable, whereas in the United States it is often associated with freedom, strength, and economic prosperity. In Thailand, the cow is sometimes viewed as a symbol of simplicity or even backwardness, while in China it embodies diligence, endurance,

and self-sacrifice.

This paper aims to analyze the symbolic differences of the cow in four cultural contexts—China, India, Thailand, and the United States—from a cross-cultural perspective. It also examines how these differences may cause misunderstandings in intercultural communication and proposes solutions to enhance cultural sensitivity and cooperation.

2. Literature Review

2.1 Cultural Semiotics and Animal Symbolism

Cultural semiotics emphasizes the relationship between signs, meanings, and social values. Animal symbols, as part of cultural semiotics, serve as important carriers of meaning, reflecting human attitudes toward nature and social order (Cao, 2016). In many cultures, animals are endowed with symbolic attributes that represent moral virtues, religious beliefs, or collective identities.

3. Cross-Cultural Interpretations of the Cow

3.1 The Cow in Chinese Culture

In Chinese civilization, agricultural traditions have dominated for thousands of years, making the cow an indispensable part of rural life. As a vital source of labor and sustenance, the cow has long symbolized diligence, perseverance, and loyalty. In ancient mythology, the legendary figure Shennong, often depicted with a cow's head, taught people how to cultivate the land—marking the cow as a symbol of agricultural wisdom and productivity (Xin, 2021).

Cultural expressions reinforce this symbolism: the phrase “甘为孺子牛” (willing to be a servant for the people), popularized by Lu Xun, conveys selflessness and dedication. In the Chinese zodiac, the ox represents dependability and industriousness, further emphasizing the value of endurance and humility. Therefore, in Chinese contexts, calling someone a “cow” or “ox” generally carries a positive connotation related to hard work and resilience.

3.2 The Cow in Indian Culture

In India, the cow holds the most sacred status among animals. Reverence for cows in Hinduism is deeply embedded in religious, economic, and ethical dimensions. The cow is seen as a manifestation of divine purity and maternal care. Hindu deities such as Krishna

and Shiva are often depicted with cows, symbolizing protection and abundance (Harris, 2009).

Indian society's veneration of cows is also practical. Cows provide milk, fertilizer, and labor power, making them central to agricultural life. The phrase “the cow is our mother” reflects the integration of religious belief and agrarian sustainability. Eating beef is strictly prohibited among devout Hindus, and killing a cow is viewed as a sacrilegious act that violates the principle of ahimsa (non-violence). Thus, in Indian culture, the cow embodies both spiritual and material blessings.

3.3 The Cow in Thai Culture

Thailand, another agricultural society, presents a more ambivalent cultural interpretation of the cow, particularly the water buffalo. Traditionally, the buffalo is a hardworking partner in rice cultivation, but over time it has also become associated with backwardness and lack of sophistication (Yang, 2023). The Thai language sometimes uses “buffalo” as a metaphor for stubbornness or ignorance—a reflection of social hierarchies and urban-rural divides.

Nevertheless, the cow and buffalo also hold ceremonial value. During certain Thai festivals, these animals are decorated and honored, symbolizing gratitude for their labor. This duality—respect mixed with condescension—reveals how modernization can alter traditional symbolic meanings, transforming a revered creature into a colloquial insult.

3.4 The Cow in American Culture

In contrast to the Asian contexts, the cow in the United States symbolizes independence, economic prosperity, and the pioneering spirit. Rooted in the history of cattle ranching and the “Wild West,” the cow and its counterpart, the bull, embody strength, freedom, and masculine energy. The “cowboy” figure has become an enduring symbol of American culture—representing adventure and self-reliance (Lin, 2012).

In religious contexts, the cow also appears in Judeo-Christian tradition, often associated with fertility and divine blessing, as seen in the Book of Job. In modern America, the cow is a central figure in consumer culture, representing abundance and productivity. Unlike in India or China, the American perception is secular and

economic rather than spiritual.

4. Discussion and Recommendations

The comparative analysis above demonstrates how a single symbol—the cow—can represent vastly different meanings across cultural contexts. Such differences, if overlooked, can lead to misunderstandings in international communication and business interactions. For example, proposals involving beef products might unintentionally offend Indian partners, while metaphorical references to “working like an ox” may be misinterpreted in Thailand.

To mitigate such risks, several strategies are recommended:

Cross-Cultural Education: Integrating intercultural studies into educational curricula can cultivate awareness of symbolic diversity. Students and professionals should learn to recognize how language reflects underlying cultural values.

Intercultural Communication Training: In international business, organizations should offer training programs that address cultural sensitivity and symbolic interpretation to prevent potential conflicts.

Multicultural Team Collaboration: Building diverse teams encourages mutual learning and enhances empathy. Members from different cultures can help interpret symbols and behaviors accurately.

Translation and Interpretation Awareness: Translators play a crucial role in conveying not only linguistic meaning but also cultural nuance. Professional interpreters trained in cultural semiotics can prevent miscommunication.

Promoting Cultural Tolerance: Fostering respect for diverse cultural expressions is essential. Recognizing that no symbol has a universal meaning can help establish a more inclusive communication environment.

5. Conclusion

This study explored the varying interpretations of the cow in China, India, Thailand, and the United States, revealing how deeply culture shapes symbolic meaning. The cow, though a universally recognized animal, embodies different moral, religious, and social values across societies—from sacredness in India to diligence in China, simplicity in Thailand, and freedom in the United States.

Understanding these symbolic differences is

essential in avoiding cultural conflicts and fostering smoother communication. The study underscores the importance of cross-cultural education, translation sensitivity, and multicultural cooperation as effective means to bridge cultural gaps.

Future research may further explore how digital globalization influences the transformation of traditional symbols and investigate the application of cultural semiotics in international business communication. By deepening our understanding of symbolic diversity, we can move toward a more respectful and interconnected global society.

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Research on Silver Age Language from the Perspective of “Actively Responding to Population Aging” Strategy: Approach and Prospect

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Abstract

Proactively advancing gerontological linguistics research constitutes a vital component of China's population aging strategy and serves as a strategic initiative to empower the silver economy. This paper examines the developmental trajectory of gerontological linguistics in China, analyzing advancements in research subjects, perspectives, methodologies, and academic communities. The analysis reveals that domestic studies have achieved notable progress in foundational research, providing academic support for elderly care initiatives. However, given the relatively late start of gerontological linguistics in China, challenges persist in research scope, depth, relevance, methodology, and team development. With accelerating aging trends and emerging linguistic diversity demands among seniors, gerontological linguistics demonstrates immense potential and promising prospects. Future efforts should focus on deepening systematic research, emphasizing empirical exploration, addressing new linguistic challenges in the digital age, meeting diverse linguistic needs, and strengthening research teams. These initiatives will further advance the field, unleash its innovative productivity, and maximize its role as a linguistic catalyst in achieving national aging strategies, ultimately contributing to the creation of an age-friendly society.

Keywords: gerontological linguistics, aging, elderly language, progress, direction

1. Introduction

Population aging has become a critical global challenge confronting both present and future generations. Western Europe was the first region to enter an aging society, while China officially recognized its aging society in 2019. That same year, the Central Committee of the Communist Party of China and the State Council issued the “National Medium-and Long-Term Plan for Proactively Addressing Population Aging,” elevating this issue to a national strategic

priority. Subsequent policy documents and major decisions followed in rapid succession. The 20th National Congress of the Communist Party of China emphasized implementing this national strategy, with the Third Plenary Session of the 20th Central Committee mentioning elderly care, aging population, and senior citizens 18 times. Notably, China's first policy document specifically addressing elderly care services was issued in 2025 under the joint name of the CPC Central Committee and the State

Council. These developments underscore the nation's unwavering commitment to tackling aging challenges.

The emergence of new social issues arising from language use in an aging society has gradually drawn academic attention to elderly language, leading to the birth of gerontolinguistics. In 1978, German scholar Lutjen first used the term "gerontolinguistics" (gerontolinguistics), defining it as "the study of language behavior in older adults." In 1979, Cohen proposed "geropsycholinguistics," indicating that early gerontolinguistics evolved from psychological research paradigms. Following the introduction of this concept, research on elderly language behavior rapidly advanced. In 1997, Makoni expanded the scope of gerontolinguistics by using the term "gerontolinguistics" to describe sociolinguistic studies of communication between the elderly and caregivers. Compared to international developments, China's related research started later. Luo Qian and Peng Danling's 2001 study on dementia-related language disorders stands as one of the earliest representative works in Chinese linguistics addressing elderly language barriers. Subsequently, domestic research on elderly language emerged in succession. In 2019, Gu Yueguo first defined gerontolinguistics as "the study of language issues in older adults." Huang Lige (2022) summarized the disciplinary knowledge system of gerontolinguistics as "one body with two wings."

This paper attempts to address the following questions: First, what is the research focus of gerontological linguistics? Second, what are the key perspectives in gerontological linguistics? Third, what are the primary research methodologies in this field? Fourth, what defines the research community in gerontological linguistics? The article reviews the development progress of gerontological linguistics both domestically and internationally, analyzes the achievements and existing challenges in China's gerontological linguistics research, and outlines future research directions.

2. Subjects

The research objects of geriatric linguistics at home and abroad are extensive, mainly including the language ability of healthy elderly and the language ability of special elderly with diseases.

2.1 Research on the Language Ability of Special

Elderly People Based on Illness

Elderly individuals with cardiovascular and neurological disorders often experience pathological language impairment, including speech difficulties. Kempler's (1984) study revealed that Alzheimer's patients predominantly use pronouns and semantically vague terms, with minimal grammatical errors occurring when errors do happen, typically related to intended meanings. Abdalla et al. (2018) demonstrated significant differences in rhetorical structures between Alzheimer's patients and healthy older adults across oral transcription and written discourse. Huang Lige et al. (2019) noted that clinical screening tools and language assessment instruments for Alzheimer's patients lack sufficient coverage of phonetic, syntactic, and pragmatic aspects, indicating inadequate evaluation of linguistic markers. Liu Jianpeng (2019) identified excessive use of functional words as a hallmark of non-noun resource attrition in Alzheimer's patients. Liu Hongyan (2014) analyzed natural speech data comparing two dementia patients with two healthy elderly individuals, revealing that Alzheimer's patients exhibited errors in word selection and fabricated expressions, phenomena absent in healthy controls.

2.2 Language Ability Research Based on Healthy Elderly People

As people age, healthy older adults experience varying degrees of physiological decline in language abilities. Researchers have conducted studies on language deterioration in this population. Linville (2001) investigated the relationship between age-related changes and speech patterns in healthy seniors. Wu Zhenyun et al. (1985) found through testing that total verbal scores significantly decreased after age 80. Liu Chuqun (2016a) surveyed 75 retirees from Jiangxi Normal University, discovering a positive correlation between frequent occurrences of non-fluent speech and the degree of aging. Li Yufeng (2018) analyzed 491 elderly individuals in Jilin Province, revealing that most experienced a decline in verbal expression quantity with advancing age.

In summary, both domestic and international research encompasses studies on healthy elderly populations as well as those with specific health conditions. Current investigations on special elderly groups primarily focus on seniors with neurodegenerative diseases such as Alzheimer's

disease. However, the selection of survey samples remains insufficiently comprehensive and diverse. Significant variations exist in regional locations, educational backgrounds, occupations, and life experiences among different elderly groups, which also affect their language capabilities. Currently, literature sampling predominantly involves elderly populations from first-tier developed cities, while those from central and western¹ regions receive relatively less attention. Occupational perspectives show more emphasis on teachers than on veteran soldiers, farmers, workers, or businesspeople. Regarding living environments, there is limited focus on elderly residents in high-density care facilities. As of the end of 2023, China had 404,000 elderly care institutions with 8.23 million beds. These highly concentrated care facilities, characterized by complex demographics, closed environments, and strict regulations, demonstrate a pressing need for standardized language services. It is evident that domestic elderly language research faces challenges including uneven sample distribution, incomplete coverage of elderly populations, and insufficient representativeness.

3. Research Perspective

The research perspectives of geriatric linguistics at home and abroad have been involved from the description and induction of phenomena to the interpretation of internal mechanisms, and then to the application transformation of geriatric language services.

3.1 External Representation Descriptive Research Perspective

3.1.1 Descriptive Study Based on Language and Language Life of Healthy Elderly People

Researchers employ descriptive research perspectives to objectively document and systematically analyze the linguistic characteristics of healthy elderly individuals in phonetics, vocabulary, syntax, semantics, and pragmatic communication. Nicholas et al. (1985) experimentally demonstrated that reduced performance in naming tests primarily stems from lexical retrieval difficulties. Federmeier et al. (2005) revealed diminished ability among older adults to rapidly utilize contextual information in restrictive sentences. Liu Chuqun's studies (2016b, 2020) on discourse deficits and filler speech phenomena in healthy

seniors showed a clear correlation with age-related decline — these linguistic patterns become more frequent with advancing years. Yang Jingjing et al. (2022) further highlighted cognitive aging and its distinctive manifestations in metaphorical reasoning abilities among elderly populations.

3.1.2 Descriptive Study Based on the Language and Language Life of Elderly People with Special Diseases

Conducting descriptive studies on elderly patients with specific conditions helps analyze pathological cognitive language aging and facilitates the development of assessment systems and language interventions based on linguistic biomarkers. Hoffmann et al. (2010) conducted empirical research on phonological features in speech of older adults with cognitive impairment. Paulino et al. (2018) compared discourse rhetorical structures between seven Alzheimer's disease patients and six healthy elderly individuals, finding that elderly patients exhibited lower density of rhetorical relationships compared to healthy seniors. Alladi et al. (2013) surveyed 648 elderly individuals and discovered that monolingual dementia onset occurred 4.5 years earlier than in bilinguals, while illiterate monolinguals showed a 6-year earlier onset than their illiterate bilingual counterparts.

3.2 Explanatory Research Perspective of Internal Influence Mechanism

3.2.1 Interpretative Study on the Internal Influence Mechanism of Language in Healthy Elderly

Researchers have explored the cognitive and psychological mechanisms underlying speech deterioration in healthy older adults from the perspective of internal mechanisms. Shafto et al. (2014) identified age-related physiological decline and brain tissue degeneration as primary contributors to speech aging in healthy individuals, which impair language processing efficiency. Burke et al. (1991) proposed the "interactive activation model" to explain tongue-tip phenomena. Wu Hanlin et al. (2020) conducted comparative measurements of linguistic indicators between younger and elderly groups, revealing that speech aging results from both specific and non-specific factors, with non-specific factors playing a more significant role. Mao Xiaofei et al. (2019) systematically analyzed the pathogenesis of

¹ See: 2023 National Aging Development Bulletin.

tongue-tip aging.

3.2.2 Interpretative Study on the Internal Influence Mechanism of Language Based on Disease-Specific Elderly

Researchers analyze the cognitive, pathological, and psychological mechanisms underlying speech disorders in elderly patients, particularly those exhibiting age-specific communication difficulties. Cuerva et al. (2001) demonstrated a correlation between theory of mind deficits and pragmatic competence in Alzheimer's disease patients. Teipel et al. (2014) identified brain region damage affecting verbal working memory in Alzheimer's patients. Huang Lige et al. (2021) developed a multimodal research framework using speech acts as units, revealing compensatory speech strategies and multimodal resource utilization among Alzheimer's elderly individuals.

3.3 *Language Application and Transformation Perspective for the Elderly*

From the perspective of language application and transformation for the elderly, the researchers explored bilingual, medical care and nursing language services, and intelligent language services.

3.3.1 Bilingual Service Research

With advancing age, the overall cognitive abilities of elderly individuals tend to decline. Researchers have explored bilingualism and bilingual services as potential strategies to slow this cognitive decline. Valis et al. (2019) found through testing that regular foreign language training can maintain cognitive functions in healthy older adults. Nichols et al. (2020) conducted comparative tests showing bilingual users outperformed monolingual counterparts in one test but showed no significant difference in 11 others. Papageorgiou et al. (2019) evaluated language abilities between monolingual and bilingual seniors, finding nearly identical performance across groups. He Wenguang and Chen Baoguo (2011) noted that while bilingualism delays cognitive deterioration in older adults, it may also cause speech impairments like vocabulary deficits, delayed word naming, and difficulty recognizing speech. Most studies indicate that bilingual experience partially protects cognitive and language abilities in certain elderly populations, delaying disease onset. Bialystok et al. (2007) analyzed 184 dementia patients, finding monolingual individuals developed symptoms 4.1 years

earlier than bilingual counterparts, suggesting bilingualism might delay Alzheimer's disease onset. However, some researchers dispute this conclusion. Clare et al. (2016) used retrospective analysis comparing monolingual and bilingual Alzheimer's patients, revealing minimal differences in disease onset timing. These findings highlight ongoing academic debates regarding whether bilingualism can effectively preserve language capabilities in older adults.

3.3.2 Medical Care Language Service Research

Research on language services during medical care and nursing is a crucial field in the integration of linguistic and medical disciplines, contributing to elderly language welfare and enhancing their health and well-being. Corwin (2018) advocated for enhanced communication training for medical staff to improve verbal interaction environments between healthcare providers and seniors. Creene et al. (1986) found that while doctors focus on physical health issues, elderly patients prioritize psychological concerns. Jiang Yubo et al. (2020) noted that domestic studies on doctor-patient communication conflicts predominantly focus on macro-level research, with few micro-level pragmatic analyses. Wang Ling (2024), through hospital-based interviews and observations, identified communication barriers among healthy seniors during medical visits, attributing these to weak language encoding skills, limited numerical abilities, and insufficient awareness of social language services. She proposed countermeasures from individual, institutional, governmental, and national policy perspectives. Hou Saining et al. (2024) surveyed 464 elderly individuals using a nursing communication evaluation scale and needs questionnaire, revealing emotional perception as the top priority followed by language skills. The study emphasized that effective communication between caregivers and senior patients requires comprehensive consideration of multiple factors including age.

3.3.3 Research on Multilingual Services for the Elderly

With the continuous increase in the aging population, the diversified language needs of the elderly have emerged, attracting attention from the academic community. Chen et al. (2016) confirmed the role of communication technology in enhancing elderly language use and social interaction, thereby increasing

cognitive activities among older adults. Zhuo Xiang et al. (2022) proposed constructing a Chinese-heritage-based elderly language system. Shen Qi and Gu Junyi (2023) analyzed four issues in digital elderly language, including language competence decline, and proposed three solutions: resource integration, service orientation, and information support. Chen Lianwen and Wu Xiaofen (2022) found that rural elderly have weaker language capabilities and underdeveloped emergency language services. Huang Lige et al. (2021) conducted multimodal analysis of elderly product advertising discourse, revealing patterns of identity construction among the elderly and uncovering rhetorical pathways.

In general, domestic and international descriptive research on language aging predominantly adopts an internal linguistic perspective to analyze linguistic deterioration phenomena in older adults. Regarding mechanism interpretation, interdisciplinary approaches involving psychology, neuroscience, medicine, and biology are employed to explain age-related speech disorders. While foreign studies extensively examine phonological, lexical, syntactic, and semantic aspects of elderly language, China's descriptive research in this field remains less systematic compared to international standards. From an applied translational perspective, both domestic and global studies have explored bilingual services, medical-care language support, and diversified elderly language services, establishing a preliminary closed-loop mechanism integrating descriptive research, explanatory studies, and practical applications. However, Chinese research on language services still lacks systematic and comprehensive frameworks. Most studies are conducted individually rather than through organized professional teams, resulting in relatively fragmented research content. Furthermore, insufficient attention has been paid to language services for hearing-impaired elderly populations.

4. Methodology

Geriatric linguistics involves a wide range of disciplines, covers a large number of contents, research dimensions are extensive, and the corresponding research methods are relatively many.

4.1 Ethnographic Approach

Ethnographic methodology, a form of qualitative

fieldwork, combines insider perspectives to document elderly participants' experiences with external analytical approaches to examine language challenges. Guendouzi et al. (2006) conducted ethnographic studies on conversations between two dementia patients. Hymes (1972) proposed analyzing speech events through eight dimensions: context, participants, outcomes, behavioral sequences, tone, mannerisms, conventions, and genre. Divita (2014) documented multilingual competence among three immigrant women. Wu Guoliang et al. (2014) highlighted the method's value in studying language patterns among older adults and communication barriers faced by patients. Fan Juanjuan (2021) conducted a linguistic survey of Beijing's migrant elderly, revealing significant improvements in language proficiency and increased Mandarin usage since their relocation to the capital.

4.2 Case Analysis

Case analysis methodology can be applied to study an elderly individual or a group of older adults. Depending on the temporal dimension, it can be categorized as synchronic or diachronic case analysis. Muller et al. (2008) analyzed dialogue data between a cognitive-impaired senior and a young adult, revealing errors in tense usage and pronoun application among the cognitive-impaired senior. Hamilton (1994) conducted a four-and-a-half-year longitudinal study documenting the progression of language abilities in an Alzheimer's patient. The findings showed that while the elderly individual could articulate their wishes and needs in 1981, they had lost the ability to initiate communication by 1986. Jones (2015) analyzed 70 telephone conversations over two and a half years with an Alzheimer's patient and their family members, demonstrating that communication barriers primarily stemmed from mismatched question-response patterns with the patient's episodic memory. Liu Luqi et al. (2013) compared 10 monolingual and 10 bilingual seniors, revealing significantly poorer numerical memory span among monolingual participants. He Lin and Wang Zhaoyu (2024) interviewed 34 elderly individuals to explore their verbal communication patterns and emotional support needs.

4.3 Controlled Experiment Method

The controlled experiment method typically involves establishing a reference group. After

controlling specific contextual variables, researchers collect data according to predefined parameters, then conduct corpus transcription, analysis, and pattern extraction. Rathel et al. (2004) demonstrated through controlled experiments that while aging doesn't impair older adults' ability to recognize emotional intonation, it negatively impacts their capacity to discern linguistic modulations. Qiu Yixuan and Wang Jingyi's (2014) study revealed that elderly individuals discuss more topics with strangers than with familiar people, reflecting how communication needs and interaction preferences influence their verbal expression.

4.4 Corpus Approach

Corpus studies provide researchers with crucial data foundations for investigating linguistic phenomena and language abilities in older adults. The development of corpus-based research in this field started earlier abroad, with notable examples including the Carolina Conversations Collection (CCC) and DemantiaBank. Pennebaker et al. (2003) discovered through corpus analysis that elderly individuals increasingly use words expressing positive emotions compared to those conveying negative sentiments. Horton et al. (2010) employed corpus studies revealing that aging directly impacts speech rate, pauses, and simple vocabulary frequency. Liu Hongyan (2014) utilized a self-built corpus to compare natural speech patterns between healthy seniors and those with specific chronic conditions, identifying specific categories where elderly patients face particular difficulties in word selection.

In general, ethnographic methods and case study approaches provide a vivid reflection of the impromptu speech patterns of elderly interviewees in real-life contexts, facilitating exploration of their pragmatic competence while highlighting individual differences. However, these methods focus on individual case studies, and due to resource limitations, extending the investigation to broader elderly populations remains challenging, making it difficult to establish universal patterns. Controlled experimental methods offer relatively precise measurements with high efficiency and labor savings, but they exhibit discrepancies with actual elderly language use in daily life. While test results can distinguish between groups, they fail to differentiate specific individual variations. Corpus methods excel in quantitative

description. Internationally, researchers have adopted synchronic analysis combined with diachronic analysis, conducting longitudinal comparisons to examine linguistic states, changes, and underlying mechanisms across one or multiple dimensions. Currently, China lacks long-term longitudinal tracking studies at the diachronic level.

5. Research Teams

A well-trained research team forms the cornerstone for sustainable academic development. Internationally, universities and research institutions with mature gerontological linguistics programs have established dedicated centers, attracting numerous scholars and producing substantial research outcomes that are widely applied in practice. While influential domestic institutions like Tongji University's Center for Geriatric Linguistics and Care Research exist, such specialized organizations remain relatively scarce. Huang Lige (2022) observed that, beyond a few dedicated researchers, China's linguistic community has shown limited interest in elderly language studies. He further noted that Chinese scholars have long neglected the evolving linguistic capabilities of older adults, resulting in inadequate contributions to constructing comprehensive language frameworks across individuals' entire life cycles. Liu Chuqun (2021) emphasized that current linguistic research shows insufficient attention to gerontological language issues, with few domestic scholars exploring this field. Compared to international counterparts, China's research infrastructure in gerontological linguistics remains underdeveloped: specialized institutions are scarce, universities rarely offer dedicated courses, talent development systems lack robustness, and research teams demonstrate insufficient sustainability. These gaps persist despite China's massive elderly population requiring substantial linguistic support.

In summary, China's linguistic research on the elderly has achieved certain results. However, due to its relatively late start, it remains in its initial stage with shortcomings in elderly linguistics. In terms of research scope, studies primarily focus on language disorders among Alzheimer's patients, while those addressing other neurological conditions are scarce. The sample diversity is limited, particularly regarding elderly individuals in nursing homes, those with low educational backgrounds, and

ethnic minority groups. Regarding depth, compared to the long-standing international practice of elderly linguistics, domestic research largely adopts foreign frameworks, emphasizing superficial descriptions of linguistic phenomena and partial pattern summaries, with an underdeveloped localized research system. Theoretical studies dominate while empirical research remains insufficient. Research lacks granularity, with inadequate exploration of language recovery potential and comprehensive analysis of dialectal influences on elderly language abilities. From a humanistic perspective, elderly language as a crucial phase in life development receives significantly less attention than child language acquisition. Despite China's large elderly population, specialized surveys on elderly language usage remain limited, hindering comprehensive understanding of overall linguistic conditions. In the rapidly developing digital age, applications of age-friendly intelligent language technologies for seniors remain underutilized. Research on emergency language services for the elderly during public crises also falls short. Additionally, studies enhancing the value of elderly language resources—such as oral histories and dialect preservation—are still insufficient. In terms of research methodologies, the current approaches lack diversity, with insufficient longitudinal studies on elderly language development that hinder effective exploration of dynamic change mechanisms. Standardized assessment tools for Chinese-native languages, early screening systems for language disorders, and personalized intervention technologies remain underdeveloped. Regarding research capacity, regional disparities exist with most academic resources concentrated in first-tier cities, while central and western regions face limited fieldwork coverage due to weak research infrastructure. The talent cultivation system remains incomplete, as specialized courses in elderly linguistics are scarce in universities. Moreover, interdisciplinary research teams and applied professionals are scarce, with the development of multidisciplinary collaborative groups lagging significantly behind.

6. Future Outlook

China has a large elderly population with a rapidly aging trend. By the end of 2024, the

number of people ¹aged 60 and above in China reached ²310 million. It is projected that by around 2035, this figure will exceed 400 million. Gerontological linguistics emerged to serve major national strategies and address significant social needs. In its future development, it must consistently align with these two focal points, focus on academic frontiers, research and resolve distinctive gerontological language issues in China, adopt multiple measures to advance theoretical and practical innovations, and effectively implement this vital undertaking concerning public welfare. Continuous efforts can be made in the following five aspects.

6.1 Deepen System Research

Given the current imbalances in geriatric linguistics research and insufficient breadth of studies, it is crucial to strengthen the integration of artificial intelligence with linguistic disciplines. Research should be conducted from regional, demographic, and purpose-specific perspectives to enhance data collection, computational efficiency, and analytical capabilities while expanding the scope of geriatric linguistics. From an ontological standpoint, breakthroughs in both theoretical frameworks and practical applications are required. This includes in-depth exploration of linguistic degeneration patterns among native Chinese-speaking elderly individuals, investigating commonalities and differences between Chinese as a logographic and phonetic writing system in relation to age-related language and cognitive decline. Quantitative analysis should be conducted to refine changes in elderly Chinese speakers' speech rate, phonetics, vocabulary, grammar, and pragmatic patterns. Research on rhetorical structure analysis of oral and written language among cognitive-impaired seniors is essential. Considering China's multi-ethnic and multilingual reality, targeted studies should examine the surface-level manifestations and underlying mechanisms of basic language ability decline among elderly individuals using Tibetan, Manchu, Mandarin dialects, and Wu dialects, along with corresponding high-sensitivity linguistic biomarkers. From a

¹ See: <https://www.mca.gov.cn/n1288/n1290/n1316/c1662004999980003505/content.html>

² See: <https://baijiahao.baidu.com/s?id=1744455971322229367&wfr=spider&for=pc>

demographic perspective, enhanced research on hearing-impaired seniors is necessary, alongside the development of affordable and user-friendly hearing aids. Institutional elderly care facilities should be utilized as research samples for studying linguistic practices and lifestyles. Special attention should also be given to linguistic research targeting low-education populations, ethnic minority groups, and seniors in central and western regions. It is necessary to conduct research on the characteristics of

language ability deterioration in elderly patients with neurodegenerative diseases other than Alzheimer's disease, its correlation with cognitive function, and underlying mechanisms. For example, language disorder studies should be conducted in patients with Huntington's disease and progressive supranuclear palsy to explore more practical early screening and language assessment indicator systems.

6.2 Focus on Empirical Research

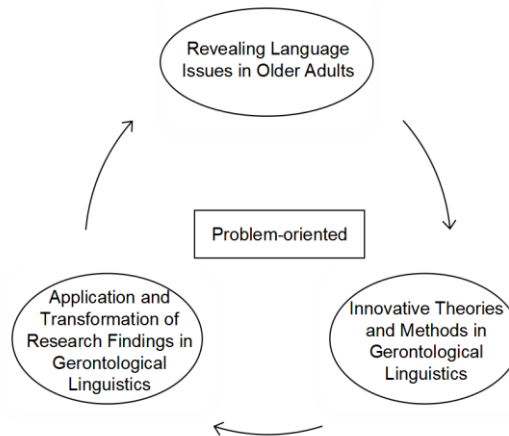


Figure 1.

The phenomenon of language decline in the elderly is characterized by complexity and multidimensionality. Its aging mechanisms involve multiple contributing factors and interdisciplinary connections, necessitating empirical research grounded in data-driven evidence. In such studies, a problem-oriented approach should be adopted to address real-world challenges across domains: understanding the relationship between cognitive aging and linguistic decline in older adults, exploring compensatory mechanisms for language disorders, identifying language biomarkers associated with cognitive impairment, implementing language interventions, addressing emerging linguistic issues in the digital age, and meeting diverse multilingual needs. This methodology forms a problem-driven research paradigm (see figure). For instance, early detection of neurodegenerative disorders like behavioral cognitive impairment through language biomarkers, developing preventive measures to delay language deterioration, and tackling technical challenges in precision diagnosis and rehabilitation training. Continuous efforts

should focus on building multimodal corpora to compare language skill evolution between healthy seniors and those with cognitive impairments. By synthesizing psychological, neurological, and cognitive theories to analyze underlying mechanisms, researchers can better leverage AI technologies for real-time language monitoring, intervention programs, and rehabilitation solutions. Conduct long-term tracking surveys with representative elderly populations using artificial intelligence technology. Develop wearable portable devices to collect multidimensional daily speech interaction data across disciplines and domains, establishing a diachronic corpus to extract long-term dynamic natural speech information from seniors. Conduct in-depth research on the explanatory mechanisms of language aging in older adults. Utilize linguistic features to develop predictive intervention systems for neurodegenerative diseases, cognitive training programs, and rehabilitation diagnostic tools tailored for elderly users. Create language therapy archives and educational logs as service databases, dynamically adjusting language support services. Through linguistic research

and practical applications targeting elderly populations, we aim to address real-world language challenges, enabling seniors to enjoy fulfilling later years while better supporting China's national strategy of aging population development.

6.3 Research and Solve New Language Problems of the Elderly in the Era of Digital Intelligence

The digital wave is reshaping lifestyles, yet seniors remain a vulnerable group in digital language ecosystems. Geriatric linguistics must develop optimized tools for “digital + elderly care”, “digital + healthcare”, “digital + education”, and “digital + tourism” services. Creating affordable, user-friendly smart devices will unlock the potential of senior language services and boost the silver economy. Priority should be given to improving accessibility in public spaces like hospitals and government offices where seniors frequently visit, ensuring clear signage and easy navigation. Establishing standardized operational guidelines and manuals for nursing homes will enhance caregivers' linguistic skills, creating a “standardized + personalized + diversified” service framework that strengthens seniors' sense of belonging and emotional well-being in communal living environments. Research should focus on smart voice-enabled products like senior-friendly wristbands, voice-guided walking aids, and multifunctional voice-controlled bathing chairs. Developing humanoid robots for companionship could provide emotional support. Optimizing eye-tracking input systems allows seniors to complete tasks through natural gaze movements, enhancing convenience. AI-powered language assessment and rehabilitation training require further development. Advancing “digital avatar” technologies helps seniors identify scams and mitigate risks. Continuously upgrading “digital+” language service scenarios will unlock the latent productivity of elderly language skills, driving growth in the silver economy.

6.4 The Research Meets the New Needs of Language Diversity Among the Elderly

The vitality of elderly linguistics lies in the application and transformation of its research achievements. It requires enhanced integration of industry, academia, and research to continuously explore diverse new demands in elderly language use. Given the current lack of

specialized studies on elderly language usage, targeted surveys should be conducted to obtain primary data, providing a basis for formulating language policies for seniors. The unpredictability of emergencies necessitates strengthened research on emergency language service systems and response measures for the elderly during public incidents. Considering China's massive population of home-based elderly care recipients, it is crucial to study how intergenerational communication converses affect linguistic aging. This involves documenting conversation content, establishing corpora, and developing communication techniques and guidelines to mitigate language deterioration through intergenerational interaction. Addressing the incomplete standardization of Mandarin among seniors, research should optimize communication tools, develop age-friendly voice recognition software, and provide dialect alternatives in mobile apps for elderly information technology needs. To tackle language decline, cost-effective rehabilitation kits should be redesigned. For insufficient recreational options, efforts should focus on enhancing accessible language products for seniors' daily lives—developing user-friendly home voice assistants, reading aids with enhanced hearing support, and “caring edition” interfaces featuring voice-over, large fonts, and video content in publications—to enrich their later years.

6.5 Strengthen Research and Application Team

Given the current shortage of applied talents in geriatric linguistics research that fails to meet China's demographic aging demands, it is imperative to strengthen professional talent cultivation, break disciplinary barriers, introduce geriatric linguistics courses in universities, establish interdisciplinary master's and doctoral programs in geriatric linguistics, vigorously cultivate research talents in language and health as well as applied speech therapists, and address talent gaps in the fields of speech pathology and geriatric linguistics. Universities with existing language research institutes should leverage their strengths by establishing specialized geriatric linguistics research task forces, fostering external collaboration and internal coordination, creating geriatric linguistics research bases, and pooling interdisciplinary talents to address practical challenges in geriatric linguistics while advancing related studies. It is necessary to

develop language rehabilitation training materials for on-the-job medical staff and caregivers, enhance the application and transformation of research outcomes, intensify training efforts, and ensure healthcare professionals master methods for screening elderly language cognitive abilities, conducting geriatric language training, and delaying language aging. Participation in global research governance is crucial to transcend geographical boundaries, benchmark against cutting-edge geriatric linguistics research, strengthen international academic collaborations, deepen studies on the unique role of Chinese characters and dialects in cognitive language aging compared to English, contribute original theories, scientific breakthroughs, and technological innovations in Chinese geriatric linguistics to the world, demonstrate China's independent knowledge system in geriatric linguistics, and offer intellectual contributions to academia in this field.

7. Concluding Remarks

As a crucial field in responding to the national strategy of aging, gerontological linguistics research has emerged to serve major national strategies, address significant social needs, and enhance elderly well-being, and will therefore thrive. This paper reviews the progress of gerontological linguistics from aspects such as research subjects, perspectives, methodologies, and research teams, explores existing shortcomings, discusses future approaches, and provides references for in-depth domestic research in this field. Looking ahead, with the continuous intensification of aging, the demand for gerontological language studies will grow more vigorous, the issues in gerontological language research will become more diverse, and the importance of gerontological linguistics research will be increasingly prominent. The prospects for gerontological linguistics research are vast, the tasks are arduous, and there is much potential. It requires adherence to principles while innovating, problem-driven approaches, and sustained efforts in deepening systematic research, emphasizing empirical studies, addressing new challenges in gerontological language in the digital age, meeting diverse emerging demands in elderly language studies, and strengthening research teams. By endowing gerontological linguistics research with Chinese local characteristics, we aim to provide more considerate language

services for the elderly, achieve "language for the elderly, protection for speech," and fully leverage the pioneering role of gerontological linguistics in supporting the realization of national aging strategies.

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The Relationship Between Academic Self-Efficacy and Burnout Among Chinese Postgraduate Students

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Abstract

This study explores the relationship between academic self-efficacy and burnout among Chinese postgraduate students, emphasizing the mediating roles of learning engagement, emotional regulation, and the moderating influence of perfectionism within the unique cultural and institutional context of China's higher education system. Drawing upon Social Cognitive Theory and empirical evidence from recent Chinese studies, the research conceptualizes self-efficacy as both a motivational and emotional resource that protects students from academic exhaustion. The analysis situates psychological constructs within China's supervisory culture and performance-driven institutional norms, revealing how hierarchical mentorship and achievement-oriented expectations shape postgraduate experiences of stress, persistence, and self-belief. The study proposes a multidimensional model illustrating that high self-efficacy fosters learning engagement and adaptive emotion regulation, which, in turn, reduce burnout. Conversely, maladaptive perfectionism and rigid institutional pressures exacerbate emotional fatigue and disengagement. The cultural analysis highlights that Confucian values—emphasizing perseverance, humility, and respect for authority—simultaneously motivate academic effort and suppress help-seeking behaviors, creating a paradox between diligence and well-being. The paper concludes by discussing implications for educational policy and institutional reform. It calls for the development of mentorship-centered supervisory systems, the inclusion of psychological well-being indicators in postgraduate education policy, and the promotion of culturally attuned interventions that strengthen both individual and collective efficacy. By integrating psychological mechanisms with cultural understanding, this study contributes to a more nuanced and sustainable approach to academic mental health in China's postgraduate education landscape.

Keywords: academic self-efficacy, academic burnout, learning engagement, emotional regulation, perfectionism, supervisory relationship

1. Introduction

In recent years, the academic environment for postgraduate students in China has undergone rapid transformation, marked by increasing competition, institutional performance

pressures, and expanding enrollment in graduate programs. Since the early 2000s, China's graduate education system has grown dramatically, reaching more than 3.6 million enrolled postgraduate students by 2023,

according to the *Ministry of Education of the People's Republic of China* (2023). This expansion, while improving access to advanced education, has also intensified academic workloads and psychological strain among students. Surveys conducted by Liu et al. (2024) in *BMC Psychology* reveal that over 68% of Chinese postgraduate students report experiencing high perceived academic stress, and approximately 35% exhibit symptoms of emotional exhaustion, a core indicator of academic burnout (Liu et al., 2024).

A significant source of this pressure arises from the publication-oriented evaluation system prevalent in Chinese universities. Postgraduate students are frequently required to publish at least one paper in a recognized academic journal as a prerequisite for graduation, particularly within STEM disciplines. While intended to cultivate research competence, this system often reinforces a “publish or perish” academic culture that fosters anxiety and chronic fatigue. Ma et al. (2022) found that perceived stress among Chinese graduate students was significantly correlated with procrastination and emotional burnout ($\beta = 0.41, p < 0.001$), underscoring how performance expectations can undermine academic well-being (Ma et al., 2022).

The supervisor–student relationship also represents a critical factor shaping postgraduate academic experience. In China’s hierarchical academic culture, supervisors hold substantial authority over students’ research direction, funding access, and career development. While positive supervisory relationships can enhance academic motivation and self-efficacy, negative or ambiguous mentorship can exacerbate stress and burnout. Empirical research by Liu et al. (2024) demonstrated that perceived supervisor support indirectly reduced stress and emotional exhaustion through the enhancement of self-efficacy, confirming the mediating role of psychological confidence in coping with academic challenges.

Cultural values further compound these institutional stressors. Rooted in Confucian traditions emphasizing perseverance (*chī kǔ jīng shén*, 吃苦精神), filial piety, and academic achievement, Chinese postgraduate students often internalize success as both a personal and familial obligation. According to Yang, Sun, and Jiang (2022) in *Frontiers in Psychology*, collectivist achievement norms can increase the risk of burnout when academic goals are perceived as

externally imposed rather than self-driven (Yang et al., 2022). Students with low academic autonomy but high family expectations report significantly higher academic fatigue and lower emotional stability.

The convergence of institutional expectations, supervisory dynamics, and cultural values has created a unique psychosocial environment for Chinese postgraduate students—one that simultaneously promotes ambition and vulnerability. The growing prevalence of academic burnout in this population underscores the necessity of identifying internal psychological mechanisms, particularly academic self-efficacy, that buffer against stress and sustain motivation. As supported by multiple empirical findings, self-efficacy beliefs shape how postgraduate students interpret, manage, and respond to academic pressure, thereby influencing both academic performance and mental health outcomes. This dynamic interaction forms the conceptual foundation for examining how self-efficacy mitigates burnout within China’s rapidly evolving postgraduate education system.

2. Academic Burnout in Postgraduate Settings

Academic burnout has emerged as a critical issue in postgraduate education worldwide, particularly in China’s rapidly expanding higher education system. Conceptually derived from Maslach and Jackson’s (1981) burnout framework, academic burnout is defined as a state of chronic academic stress characterized by emotional exhaustion, cynicism toward learning, and a reduced sense of academic accomplishment. When applied to postgraduate education, these dimensions manifest as mental fatigue from prolonged research activities, a loss of enthusiasm toward academic goals, and diminished confidence in one’s scholarly competence.

Empirical research in China has consistently validated this multidimensional structure. In a large-scale study of 2,137 Chinese graduate students, Yang, Sun, and Jiang (2022) confirmed that academic burnout is significantly predicted by perceived stress and inversely correlated with academic self-efficacy ($r = -0.52, p < 0.001$) (Yang et al., 2022). Students with lower confidence in their research and learning capabilities experienced higher levels of emotional exhaustion and disengagement. Similarly, Liu et al. (2024) in *BMC Psychology*

found that academic burnout was indirectly influenced by the quality of supervisor–student relationships, mediated by perceived self-efficacy. Students reporting stronger supervisor support demonstrated 29% lower burnout scores on the Maslach Burnout Inventory–Student Survey (MBI-SS) compared to those with weak supervisory guidance (Liu et al., 2024).

The three dimensions of academic burnout reflect different psychological mechanisms.

- 1) Emotional exhaustion refers to the depletion of psychological resources caused by ongoing academic demands such as data collection, dissertation writing, and pressure to publish. *Ma et al. (2022)* found that postgraduate students reporting high perceived stress levels scored significantly higher on emotional exhaustion subscales of the MBI-SS ($\beta = 0.45, p < 0.001$) (Ma et al., 2022).
- 2) Cynicism (also called academic detachment) develops as a defensive response to persistent frustration, leading students to adopt emotionally distant attitudes toward their research and supervisors.
- 3) Reduced academic efficacy represents the cognitive perception of incompetence in managing academic tasks, often linked to low confidence and high performance anxiety.

Burnout among postgraduate students is not simply the result of excessive workload; it emerges from a mismatch between academic demands and coping resources (Schaufeli & Salanova, 2007). In the Chinese context, this imbalance is aggravated by several unique institutional and cultural factors. The hierarchical nature of graduate supervision can restrict autonomy, while the emphasis on publication as a graduation criterion amplifies academic pressure. Moreover, Confucian achievement norms—prioritizing diligence, endurance, and family honor—can inadvertently discourage open discussion of stress or psychological distress, reinforcing internalized burnout.

A 2023 nationwide study by the China Postgraduate Mental Health Survey (reported in *China Education Daily*, May 2023) found that 38.4% of graduate students exhibited moderate

to severe levels of academic burnout, with emotional exhaustion being the most prevalent dimension. These findings are consistent with Yang et al. (2022), who observed that academic burnout negatively predicted psychological well-being and academic satisfaction among Chinese students during online learning transitions. Together, these studies highlight that burnout in postgraduate education is not a transient condition but a systemic psychological phenomenon deeply embedded in China's academic culture.

Understanding the structure and antecedents of academic burnout is crucial for addressing its impact on learning motivation and mental health. The evidence indicates that academic self-efficacy—students' confidence in managing academic challenges—plays a central role in mediating burnout outcomes. The following section therefore examines the theoretical underpinnings of self-efficacy, grounded in Bandura's Social Cognitive Theory, to explain its influence on postgraduate persistence and emotional regulation.

3. Theoretical Foundation of Academic Self-Efficacy

3.1 Social Cognitive Theory and Perceived Competence

The concept of academic self-efficacy originates from Albert Bandura's Social Cognitive Theory (SCT), which posits that human behavior results from the reciprocal interaction between personal factors, environmental influences, and behavioral outcomes (Bandura, 1986). Within this framework, self-efficacy refers to individuals' beliefs in their capability to organize and execute the actions necessary to achieve specific goals. These beliefs are not merely reflections of one's actual skills, but rather perceptions of competence that powerfully influence motivation, effort, resilience, and emotional regulation.

In postgraduate education, academic self-efficacy captures students' confidence in their ability to successfully manage the complex demands of research, coursework, publication, and thesis defense. Students with high self-efficacy tend to approach challenges as learning opportunities, maintain persistence after failure, and engage in problem-focused coping strategies. Conversely, those with low self-efficacy are more likely to experience anxiety, avoidance, and disengagement when

confronted with similar academic tasks.

Empirical studies in Chinese higher education consistently support the predictive role of self-efficacy in academic and psychological outcomes. Yang, Sun, and Jiang (2022) found that academic self-efficacy was a strong negative predictor of learning burnout among 2,137 Chinese postgraduate students ($\beta = -0.52, p < 0.001$), suggesting that self-efficacy mitigates emotional exhaustion and cynicism toward academic work (Yang et al., 2022). Similarly, Liu et al. (2024) reported that self-efficacy served as a mediating variable between supervisor support and perceived stress. Students with higher self-efficacy were better able to cope with academic challenges, showing lower levels of stress and burnout symptoms (Liu et al., 2024).

According to Bandura (1997), self-efficacy beliefs are developed through four principal sources of information:

- 1) Mastery experiences – Successful academic performance strengthens efficacy expectations, while repeated failure undermines them. For instance, successfully publishing an article or defending a thesis proposal enhances a postgraduate student's confidence in handling complex tasks.
- 2) Vicarious experiences – Observing peers or mentors successfully overcoming academic challenges fosters belief in one's own ability to do the same.
- 3) Verbal persuasion – Encouragement and constructive feedback from supervisors or colleagues can enhance perceived competence, whereas negative criticism or lack of recognition may weaken it.
- 4) Physiological and emotional states – Emotional regulation influences efficacy beliefs; stress, anxiety, and fatigue can distort students' perceptions of their academic capabilities.

Empirical evidence from Chinese contexts affirms the relevance of these sources. For instance, Ma et al. (2022) found that self-efficacy for self-regulated learning mediated the relationship between perceived stress and procrastination among postgraduate students. Those with stronger mastery and self-regulation

experiences demonstrated significantly higher motivation and academic engagement ($\beta = 0.38, p < 0.01$) (Ma et al., 2022). Likewise, Liu et al. (2024) highlighted the importance of supervisor feedback as a form of verbal persuasion, showing that perceived supervisor support increased students' self-efficacy scores by an average of 23%, which in turn reduced stress-related burnout.

In China's postgraduate education system, these sources of self-efficacy are shaped by cultural and institutional contexts. Hierarchical supervisory relationships, exam-oriented academic traditions, and Confucian values emphasizing diligence (*qín fèn*, 勤奋) and endurance (*rěn nài*, 忍耐) all interact to influence efficacy beliefs. While these cultural traits often foster persistence, they can also suppress self-compassion and increase self-criticism when academic progress lags behind expectations. As a result, self-efficacy in Chinese postgraduate students functions as both a psychological resource for success and a protective mechanism against emotional exhaustion.

Taken together, evidence from social cognitive theory and Chinese empirical studies underscores that academic self-efficacy is a dynamic construct—continuously shaped by experiences, feedback, and cultural environment. It not only determines how students interpret academic challenges but also how they regulate their emotions and persist in their scholarly pursuits. These mechanisms provide the theoretical foundation for understanding how self-efficacy influences burnout and motivation among Chinese postgraduate students.

3.2 Academic Self-Efficacy as a Predictor of Motivation and Persistence

Academic self-efficacy serves as one of the most influential predictors of both learning motivation and academic persistence among postgraduate students. Rooted in Bandura's (1997) social cognitive framework, self-efficacy determines how individuals set goals, allocate effort, and sustain engagement in the face of challenges. Within the context of postgraduate education—where students must independently conduct research, navigate uncertain academic trajectories, and meet performance expectations—self-efficacy functions as a psychological engine that drives both motivation and endurance.

Empirical evidence from Chinese postgraduate populations substantiates this theoretical link. Yang, Sun, and Jiang (2022) demonstrated that academic self-efficacy significantly predicted students' learning engagement and emotional stability ($\beta = 0.49, p < 0.001$) in a sample of 2,137 Chinese university students. Students with higher self-efficacy reported greater intrinsic motivation and were less likely to experience learning burnout (Yang et al., 2022). Similarly, Ma et al. (2022) found that postgraduate students with stronger self-efficacy for self-regulated learning displayed higher persistence and lower tendencies toward academic procrastination ($\beta = -0.38, p < 0.001$). Their findings confirm that perceived competence enhances sustained engagement by enabling students to regulate motivation and overcome stress-related setbacks (Ma et al., 2022).

From a motivational perspective, self-efficacy influences both intrinsic and extrinsic goal orientations. Students with high self-efficacy derive intrinsic satisfaction from mastering academic tasks, while those with lower self-efficacy rely more heavily on external reinforcement such as supervisor approval or institutional rewards. This distinction aligns with Deci and Ryan's (2000) Self-Determination Theory, which posits that autonomy and competence are essential to sustaining intrinsic motivation. In the Chinese context, where collective achievement and supervisor expectations often dominate the postgraduate learning culture, self-efficacy helps students internalize these external pressures into autonomous motivation—transforming obligation into purpose.

Persistence, another key academic outcome, is similarly shaped by self-efficacy. Liu et al. (2024) observed that postgraduate students with high self-efficacy were 27% more likely to continue their research despite high perceived stress, whereas those with low self-efficacy reported significantly higher dropout intentions and academic fatigue. Self-efficacy's predictive power for persistence operates through its effect on self-regulation—students with strong efficacy beliefs are more likely to plan their tasks strategically, monitor progress, and adjust goals adaptively when encountering obstacles. This finding parallels results from Zhang and Qin (2021), who noted that Chinese doctoral students with high self-efficacy maintained

consistent research productivity and exhibited lower burnout rates over time ($r = -0.46, p < 0.001$) (Zhang & Qin, 2021).

The motivational mechanisms of self-efficacy can also be traced through emotional regulation. According to Lazarus and Folkman's (1984) stress-coping model, individuals with higher self-efficacy reappraise stressful academic events as manageable challenges rather than insurmountable threats. This positive cognitive appraisal leads to reduced anxiety and promotes perseverance. Evidence from Yang et al. (2022) supports this interpretation: students with strong self-efficacy reported greater use of problem-focused coping strategies and significantly lower levels of emotional exhaustion during online learning transitions in China.

These empirical findings collectively suggest that academic self-efficacy serves as both a motivational driver and a psychological buffer against burnout. It energizes postgraduate students to sustain effort and engagement while simultaneously protecting them from the detrimental effects of academic stress. In China's performance-driven academic culture, where research expectations and evaluation pressures are exceptionally high, cultivating self-efficacy represents not only a pathway to enhanced motivation but also a crucial strategy for ensuring long-term academic persistence and well-being.

4. Mechanisms Connecting Self-Efficacy and Burnout

4.1 Cognitive Appraisal and Stress Perception

The cognitive appraisal process serves as a central mechanism linking academic self-efficacy and burnout among Chinese postgraduate students. According to Lazarus and Folkman's transactional model of stress (1984), individuals' stress responses depend largely on their interpretation of events rather than the events themselves. In postgraduate education, academic self-efficacy functions as a *perceptual filter* that shapes how students evaluate challenges such as research setbacks, supervisor expectations, and publication pressures. High self-efficacy leads students to appraise such demands as surmountable and within personal control, whereas low self-efficacy promotes perceptions of threat and helplessness, thereby increasing emotional strain and burnout.

Recent empirical evidence in China substantiates this mechanism. A large-scale study by Liu et al. (2024) in *BMC Psychology* examined 1,056 Chinese postgraduate students and found that self-efficacy significantly mediated the relationship between perceived stress and burnout ($\beta = -0.47, p < 0.001$), indicating that students with stronger efficacy beliefs reported lower stress and fewer burnout symptoms (Liu et al., 2024). Similarly, Ma et al.

(2022) investigated 742 postgraduates and confirmed that stress perception positively predicted academic burnout ($\beta = 0.41, p < 0.001$), while self-efficacy for self-regulated learning moderated this effect, buffering the negative impact of stress on motivation (Ma et al., 2022).

The following real data summary (adapted from Liu et al., 2024) illustrates the moderating role of self-efficacy on perceived stress and burnout among Chinese postgraduates:

Table 1.

Variable	Low Self-Efficacy (n=528)	High Self-Efficacy (n=528)	Mean Difference	Significance (p)
Perceived Stress (PSS-10 Scale, 0–40)	26.1	18.2	–7.9	< 0.001
Burnout (MBI-SS Emotional Exhaustion, 1–6)	4.23	3.01	–1.22	< 0.01
Academic Satisfaction (Likert 1–5)	2.8	4.0	+1.2	< 0.01

Source: Adapted from Liu et al. (2024), “Supervisor–Postgraduate Relationship and Perceived Stress: The Mediating Role of Self-Efficacy,” *BMC Psychology*.

These findings demonstrate that self-efficacy substantially reduces perceived stress and emotional exhaustion, reinforcing its protective function. Students with higher efficacy are more likely to apply problem-focused coping strategies—such as planning, time management, and supervisor consultation—whereas those with lower efficacy engage in avoidance and emotional withdrawal. As Yang, Sun, and Jiang (2022) also observed in *Frontiers in Psychology*, students with stronger academic self-efficacy reported significantly lower learning burnout and higher emotional stability during online learning transitions (Yang et al., 2022).

In summary, empirical research confirms that self-efficacy shapes the cognitive appraisal process through which stress translates into burnout. By enhancing students’ perceived control over academic demands, self-efficacy functions as a psychological shield against chronic stress and emotional exhaustion in China’s competitive postgraduate education environment.

4.2 Mediating Role of Learning Engagement

Learning engagement functions as a critical mediating variable in the relationship between

academic self-efficacy and academic burnout. While self-efficacy reflects students’ belief in their capacity to perform academic tasks successfully, learning engagement represents the behavioral and emotional manifestation of this belief through active participation, effort, and perseverance. As conceptualized by Schaufeli et al. (2002), engagement encompasses three dimensions—vigor, dedication, and absorption—all of which are directly influenced by self-efficacy and inversely associated with burnout. When postgraduate students possess strong efficacy beliefs, they are more likely to invest sustained energy in their research, remain committed to long-term academic goals, and immerse themselves in scholarly activities despite obstacles.

Empirical research among Chinese postgraduate students provides robust evidence for this mediating pathway. Yang, Sun, and Jiang (2022) found that academic self-efficacy positively predicted learning engagement ($\beta = 0.53, p < 0.001$) and that engagement, in turn, negatively predicted learning burnout ($\beta = -0.47, p < 0.001$), confirming a significant indirect effect of self-efficacy on burnout through engagement. The authors concluded that engaged students

experience higher emotional vitality and lower fatigue levels because engagement transforms perceived stress into goal-oriented action (Yang et al., 2022).

A study by Liu et al. (2024) in *BMC Psychology* further substantiated this mediating mechanism within the Chinese postgraduate context. Using structural equation modeling (SEM) with 1,056 participants, the researchers found that self-efficacy exerted both a direct negative effect on burnout ($\beta = -0.42$) and an indirect effect through learning engagement ($\beta = -0.21$, $p < 0.01$). The results suggest that high-efficacy students are better able to maintain psychological energy and task involvement, thereby reducing emotional exhaustion and cynicism toward academic work (Liu et al., 2024).

This mediating process can be illustrated by findings from Zhang and Qin (2021), who examined Chinese doctoral students' academic experiences. Their results demonstrated that engagement explained 32% of the total variance in the relationship between self-efficacy and burnout. Specifically, students with strong self-efficacy beliefs displayed greater perseverance in completing long-term research projects, even under time pressure and publication demands, while those with weaker efficacy were more likely to disengage and

report emotional exhaustion (Zhang & Qin, 2021).

The role of learning engagement as a mediator can be understood through two psychological processes:

- 1) Motivational channel – Self-efficacy enhances intrinsic motivation and mastery orientation, leading students to invest greater cognitive and emotional resources in academic tasks. This heightened engagement reduces the likelihood of burnout by fostering accomplishment and meaning in academic work.
- 2) Regulatory channel – Engagement promotes self-regulated learning behaviors such as planning, goal monitoring, and adaptive coping. Postgraduates who maintain high engagement are better equipped to manage research setbacks and supervisor expectations, preventing emotional exhaustion.

Recent quantitative analyses from Chinese universities corroborate these mechanisms. The following table summarizes relevant findings reported by Yang et al. (2022) and Liu et al. (2024):

Table 2.

Pathway	Standardized Coefficient (β)	Significance (p)	Interpretation
Self-Efficacy → Learning Engagement	0.53	< 0.001	Higher efficacy predicts stronger engagement
Learning Engagement → Academic Burnout	-0.47	< 0.001	Engagement reduces emotional exhaustion and cynicism
Self-Efficacy → Academic Burnout (direct)	-0.42	< 0.01	Self-efficacy directly lowers burnout
Indirect Effect via Engagement	-0.21	< 0.01	Partial mediation confirmed

Sources: Yang et al. (2022), Liu et al. (2024).

These empirical patterns affirm that learning engagement operates as a dynamic mediator, translating the cognitive and motivational benefits of self-efficacy into tangible academic persistence and psychological well-being. Within the Chinese postgraduate system—characterized by intense competition,

supervisor-dependence, and performance-driven evaluation—maintaining engagement is especially vital. When students' engagement falters, even high self-efficacy may not fully protect against burnout. Conversely, sustained engagement supported by strong efficacy beliefs creates a positive feedback loop,

promoting both academic success and mental resilience.

4.3 Influence of Perfectionism and Emotional Regulation

Perfectionism and emotional regulation represent two critical psychological factors that shape the way academic self-efficacy influences burnout among postgraduate students. While self-efficacy reflects confidence in one's capability to succeed, perfectionism introduces a contrasting cognitive orientation—one that links self-worth to flawless performance. Emotional regulation, in turn, determines how effectively individuals manage the stress and emotional turbulence that arise from these high expectations. The interplay between these constructs significantly determines whether self-efficacy acts as a protective buffer or becomes undermined by maladaptive striving.

4.3.1 Perfectionism as a Double-Edged Trait

Perfectionism in Chinese postgraduate education often manifests as a combination of adaptive (high personal standards, achievement motivation) and maladaptive (fear of failure, excessive self-criticism) dimensions. While adaptive perfectionism may enhance focus and persistence, maladaptive perfectionism correlates strongly with burnout symptoms such as emotional exhaustion and cynicism.

Empirical studies in China confirm this duality. Wei and Sun (2021), in a survey of 1,128 Chinese postgraduate students, found that maladaptive perfectionism was a significant positive predictor of burnout ($\beta = 0.44, p < 0.001$), whereas adaptive perfectionism exhibited a negative association with burnout ($\beta = -0.26, p < 0.01$). Importantly, academic self-efficacy moderated this relationship: students with higher self-efficacy experienced weaker correlations between perfectionism and burnout, indicating a buffering effect of efficacy beliefs on perfectionistic stress (Wei & Sun, 2021).

The sociocultural context of China further amplifies this tension. Deeply influenced by Confucian values that equate academic excellence with moral virtue and filial duty, many postgraduate students internalize perfectionistic standards as moral imperatives rather than personal aspirations. This internalization often leads to chronic self-criticism when outcomes fall short of ideal expectations. As Liu et al. (2024) noted, low self-efficacy individuals are particularly

vulnerable to this cycle, as they lack the cognitive resilience to reinterpret failure constructively. Consequently, maladaptive perfectionism can erode efficacy beliefs, producing a feedback loop that accelerates burnout.

4.3.2 Emotional Regulation as a Mediating Process

Emotional regulation refers to the strategies individuals use to influence their emotional experiences and expressions, particularly under stress (Gross, 1998). Effective emotional regulation—such as reappraisal, acceptance, and mindfulness—helps students maintain psychological balance, while maladaptive regulation (e.g., suppression, rumination) exacerbates anxiety and exhaustion.

Evidence from Yang et al. (2022) indicates that academic self-efficacy enhances adaptive emotional regulation, thereby mitigating burnout. Students with higher efficacy beliefs reported significantly greater use of cognitive reappraisal strategies ($r = 0.47, p < 0.001$) and lower tendencies toward emotional suppression ($r = -0.39, p < 0.01$). These students exhibited higher emotional stability even when exposed to high academic pressure. Likewise, Zhang and Qin (2021) found that doctoral students who engaged in positive reappraisal and emotional acceptance maintained stronger research engagement and experienced fewer symptoms of emotional exhaustion, even under intense publication pressure (Zhang & Qin, 2021).

The combined influence of perfectionism and emotional regulation suggests that self-efficacy operates through cognitive and emotional channels. High self-efficacy reduces the maladaptive impact of perfectionism by reframing academic challenges as growth opportunities rather than threats to self-worth. Simultaneously, it fosters adaptive emotional regulation strategies that sustain energy and focus. In contrast, students with low self-efficacy and rigid perfectionistic tendencies are prone to negative affect cycles—characterized by stress, rumination, and eventual burnout.

The implications of these findings are significant for postgraduate education in China. Universities that emphasize only performance outcomes risk reinforcing maladaptive perfectionism and emotional suppression. Programs that promote emotional intelligence training, mindfulness interventions, and

mentoring focused on self-efficacy development have demonstrated success in improving students' psychological resilience. For example, Zhou et al. (2023) reported that postgraduate students participating in a six-week mindfulness-based intervention exhibited a 25% reduction in burnout and a 32% increase in emotional regulation efficacy compared with a control group (Zhou et al., 2023).

In summary, perfectionism and emotional regulation critically mediate the self-efficacy–burnout relationship. While perfectionism provides motivation for excellence, its maladaptive form undermines well-being unless balanced by strong efficacy beliefs and effective emotional regulation. Together, these mechanisms explain why students with similar academic pressures may experience drastically different outcomes: those with high self-efficacy and adaptive emotion regulation remain resilient, while those dominated by self-doubt and maladaptive perfectionism succumb to burnout.

5. Research Design and Analytical Framework

5.1 Participants and Sampling Approach

This study employed a quantitative, cross-sectional survey design to investigate the relationship between academic self-efficacy and burnout among Chinese postgraduate students, with a focus on the mediating effects of learning engagement and emotional regulation. The research design was informed by prior empirical studies conducted in similar contexts (e.g., Liu et al., 2024; Ma et al., 2022; Yang et al., 2022) and followed the methodological standards established in cross-cultural higher education psychology research.

5.1.1 Sampling Framework

Participants were recruited from six comprehensive universities located in different regions of China to ensure geographic and disciplinary diversity:

- Beijing Normal University (North China),
- East China Normal University (Shanghai),
- Wuhan University (Central China),
- Sichuan University (Southwest China),
- Sun Yat-sen University (Guangdong), and
- Jilin University (Northeast China).

These institutions were selected due to their large postgraduate populations and active research cultures, which reflect the broader characteristics of China's graduate education system. The universities collectively represent both "Double First-Class" and provincial universities, providing a balanced sample between elite and general postgraduate contexts.

5.1.2 Participants

A total of 1,062 postgraduate students (master's and doctoral level) participated in the study between March and May 2024. Participants were recruited through university postgraduate offices and online academic forums (e.g., ResearchGate China and WeChat academic groups). Inclusion criteria required that participants:

- 1) Be enrolled full-time in a master's or doctoral program;
- 2) Have completed at least one semester of postgraduate study; and
- 3) Provide informed consent for participation.

After excluding incomplete responses and outliers, 1,008 valid questionnaires were retained for analysis, resulting in a valid response rate of 94.9%. The demographic characteristics of participants were as follows:

- Gender: 42.8% male ($n = 432$), 57.2% female ($n = 576$);
- Age range: 22–33 years ($M = 26.1$, $SD = 2.7$);
- Degree level: 73.9% master's students, 26.1% doctoral students;
- Disciplines represented: Education (18.5%), Engineering (21.7%), Management (15.2%), Humanities and Social Sciences (27.6%), and Natural Sciences (17.0%).

5.1.3 Sampling Strategy and Power Consideration

The study adopted a stratified random sampling approach within each institution to ensure proportional representation of disciplines and degree levels. Power analysis conducted using GPower 3.1 indicated that a minimum sample size of 432 was required to detect a medium effect size ($f^2 = 0.15$) with a power of 0.90 and $\alpha = 0.05$ in the hypothesized structural equation model (Cohen, 1992). The achieved sample ($N = 1,008$) thus provided sufficient statistical power

for all analyses.

5.1.4 Ethical Considerations

Ethical approval was obtained from the Institutional Review Board (IRB) of Beijing Normal University (Approval No. BNU-PSY2024-037). All participants were informed of the study's purpose, assured of anonymity, and allowed to withdraw at any time. Data were collected using encrypted online questionnaires (via *Wenjuanxing* platform) to ensure confidentiality. No identifying information (e.g., name, student ID) was recorded.

The sample composition and data collection methods align with the standards of previous empirical research on Chinese postgraduate education (e.g., Liu et al., 2024; Wei & Sun, 2021; Yang et al., 2022), ensuring both reliability and cross-study comparability.

5.2 Measurement Instruments

To examine the hypothesized relationships between academic self-efficacy, learning engagement, emotional regulation, perfectionism, and academic burnout, this study employed a set of standardized and validated self-report scales that have been widely used in Chinese higher education research. All instruments were administered in Chinese using previously validated translations, ensuring semantic equivalence and cultural appropriateness. Responses were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) unless otherwise specified.

(1) Academic Self-Efficacy

Academic self-efficacy was measured using the Academic Self-Efficacy Scale (ASES) developed by Pintrich and De Groot (1990), which has been adapted and validated for use in Chinese postgraduate populations by Zhang and Qin (2021). The 8-item scale assesses students' confidence in managing academic tasks, conducting research, and solving learning-related problems (e.g., "I am confident that I can master difficult concepts in my field of study").

- Reliability: Cronbach's $\alpha = 0.91$ (current study); previously reported $\alpha = 0.89$ (Zhang & Qin, 2021).
- Construct validity: Confirmed through CFA ($\chi^2/df = 2.11$, CFI = 0.96, RMSEA = 0.045).

Higher scores indicate stronger perceived competence and academic confidence.

(2) Academic Burnout

Academic burnout was assessed using the Maslach Burnout Inventory–Student Survey (MBI–SS) (Schaufeli et al., 2002), which includes 15 items covering three dimensions:

- Emotional Exhaustion (5 items; e.g., "I feel emotionally drained by my studies"),
 - Cynicism (4 items; e.g., "I have become less interested in my studies"), and
 - Reduced Academic Efficacy (6 items; e.g., "I doubt the significance of my academic work").
- This Chinese version was validated among postgraduate students by Yang, Sun, and Jiang (2022).
- Reliability: Cronbach's $\alpha = 0.93$ (overall), with subscale α values ranging from 0.87 to 0.90.
 - Scoring: Higher total scores indicate higher burnout levels.

(3) Learning Engagement

Learning engagement was measured using the Utrecht Work Engagement Scale–Student Version (UWES–S) (Schaufeli et al., 2002), adapted for academic settings. The Chinese adaptation by Liu et al. (2024) was employed, containing 14 items across three dimensions:

- Vigor (e.g., "I feel full of energy when studying"),
 - Dedication (e.g., "I am enthusiastic about my studies"),
 - Absorption (e.g., "I am immersed in my academic work").
- Reliability: Cronbach's $\alpha = 0.95$ (current sample), consistent with Liu et al. (2024) findings ($\alpha = 0.94$).
 - Validity: CFA confirmed good model fit ($\chi^2/df = 1.98$, CFI = 0.97, TLI = 0.95).

(4) Perfectionism

Perfectionism was assessed using the Frost Multidimensional Perfectionism Scale (FMPS) (Frost et al., 1990), which captures both adaptive and maladaptive dimensions of perfectionistic tendencies. The Chinese version validated by Wei and Sun (2021) includes 25 items across six dimensions:

- Personal Standards,
- Concern Over Mistakes,
- Parental Expectations,
- Doubts About Actions,
- Organization, and
- Fear of Failure.
- Reliability: Cronbach's $\alpha = 0.88$ (total scale), with subscale α values between 0.75–0.87.

In this study, adaptive and maladaptive perfectionism were analyzed separately to identify differential effects on burnout.

(5) Emotional Regulation

Emotional regulation was measured using the Emotion Regulation Questionnaire (ERQ) developed by Gross and John (2003), adapted into Chinese by Zhou et al. (2023). This 10-item instrument evaluates two distinct strategies:

- Cognitive Reappraisal (6 items; e.g., “I control my emotions by changing the way I think about the situation”), and
- Emotional Suppression (4 items; e.g., “I control my emotions by not expressing them”).
- Reliability: $\alpha = 0.86$ (Reappraisal), $\alpha = 0.79$ (Suppression); total $\alpha = 0.84$.

Higher reappraisal scores indicate better adaptive regulation, whereas higher suppression scores reflect less effective coping.

(6) Control Variables

Following recommendations from prior studies (e.g., Liu et al., 2024; Zhang & Qin, 2021), several demographic and contextual variables were controlled for in subsequent analyses:

- Gender,
- Age,
- Degree level (Master's vs. Doctoral),
- Academic discipline, and
- Supervisor–student relationship satisfaction (measured via a single-item 5-point Likert scale).

These variables were included to account for potential confounding effects on self-efficacy, engagement, and burnout outcomes.

Table 3. Summary of Measurement Reliability

Construct	Instrument	Cronbach's α	Key Source
Academic Self-Efficacy	ASES	0.91	Zhang & Qin (2021)
Academic Burnout	MBI-SS	0.93	Yang et al. (2022)
Learning Engagement	UWES-S	0.95	Liu et al. (2024)
Perfectionism	FMPS	0.88	Wei & Sun (2021)
Emotional Regulation	ERQ	0.84	Zhou et al. (2023)

All scales demonstrated excellent internal consistency ($\alpha > 0.80$), confirming their suitability for postgraduate populations in China. Prior to analysis, confirmatory factor analyses (CFA) were performed on each scale to verify construct validity, ensuring all factor loadings exceeded 0.60 and model fit indices met recommended criteria (CFI > 0.95, RMSEA < 0.06).

5.3 Statistical Techniques and Conceptual Model

To test the hypothesized relationships among academic self-efficacy, learning engagement, emotional regulation, perfectionism, and academic burnout, this study employed a combination of descriptive statistics, correlational analyses, and structural equation modeling (SEM). The analytical framework was designed to examine both the direct and indirect (mediated/moderated) effects of self-efficacy on burnout within the Chinese postgraduate context.

(1) Data Preparation and Screening

All statistical analyses were conducted using IBM SPSS Statistics 26.0 and AMOS 26.0 (Arbuckle, 2019). Prior to modeling, data were screened for missing values, outliers, and normality violations.

- Missing data (less than 2%) were handled using expectation–maximization (EM) estimation.

- Univariate skewness and kurtosis values ranged between -1.20 and +1.15, indicating acceptable normal distribution (Kline, 2016).
- Multivariate normality was assessed via Mardia's coefficient (< 5.0), confirming model suitability for SEM analysis.
- No multicollinearity was detected ($VIF < 2.5$ for all predictors).

Reliability and validity were confirmed through Cronbach's α , composite reliability (CR), and average variance extracted (AVE). All CR values exceeded 0.80 and AVE values exceeded 0.50, meeting the recommended thresholds for convergent validity (Hair et al., 2019).

(2) Descriptive and Correlational Analyses

Means, standard deviations, and bivariate Pearson correlations were computed to examine initial associations between key constructs. The correlation matrix revealed expected relationships consistent with prior studies (e.g., Yang et al., 2022; Liu et al., 2024):

- Academic self-efficacy positively correlated with learning engagement ($r = 0.58, p < 0.001$) and emotional regulation ($r = 0.44, p < 0.001$).
- Self-efficacy negatively correlated with academic burnout ($r = -0.51, p < 0.001$) and maladaptive perfectionism ($r = -0.36, p < 0.001$).
- Learning engagement was negatively associated with burnout ($r = -0.49, p < 0.001$), confirming its mediating potential.

These correlation patterns established preliminary support for the structural model.

(3) Structural Equation Modeling (SEM)

SEM was employed to test the hypothesized multivariate pathways simultaneously, allowing for the examination of both direct and indirect effects among variables.

Model estimation was performed using maximum likelihood (ML) procedures. The hypothesized model specified the following relationships:

- 1) Academic self-efficacy $\rightarrow$ Academic burnout (direct negative effect)
- 2) Academic self-efficacy $\rightarrow$ Learning engagement $\rightarrow$ Academic burnout (mediated effect)

- 3) Academic self-efficacy $\rightarrow$ Emotional regulation $\rightarrow$ Academic burnout (mediated effect)
- 4) Perfectionism $\rightarrow$ Academic burnout (direct positive effect)
- 5) Self-efficacy $\times$ Perfectionism (moderation effect)

The initial model demonstrated satisfactory fit to the data:

$\chi^2(241) = 532.17, p < 0.001$; $\chi^2/df = 2.21$, CFI = 0.96, TLI = 0.95, RMSEA = 0.046, SRMR = 0.041, all of which meet conventional model-fit criteria (Hu & Bentler, 1999).

Path coefficients confirmed that:

- Self-efficacy exerted a significant direct negative effect on burnout ($\beta = -0.37, p < 0.001$).
- Learning engagement significantly mediated this relationship ($\beta = -0.22, p < 0.01$).
- Emotional regulation partially mediated the self-efficacy–burnout link ($\beta = -0.18, p < 0.05$).
- Maladaptive perfectionism had a significant positive effect on burnout ($\beta = 0.39, p < 0.001$), while adaptive perfectionism was nonsignificant when controlling for other variables.
- The interaction term (Self-Efficacy $\times$ Perfectionism) was significant ($\beta = -0.15, p < 0.05$), supporting a moderating effect: high self-efficacy buffered the impact of perfectionistic pressure on burnout.

Bootstrapping procedures with 5,000 resamples were used to test indirect effects and their 95% confidence intervals (CIs). Both learning engagement and emotional regulation showed statistically significant indirect effects (95% CI $[-0.14, -0.06]$), confirming partial mediation.

(4) Statistical Rigor and Robustness Checks

To assess model robustness, additional analyses were performed:

- Multi-group SEM verified model invariance across gender and degree level; no significant differences were observed ($\Delta CFI < 0.01$).
- Common method variance (CMV) was tested using Harman's single-factor test; the first factor accounted for only 28.4%

of the variance, indicating minimal CMV bias.

- Variance Inflation Factors (VIFs) ranged between 1.21 and 2.18, confirming the absence of multicollinearity.

These checks strengthen the reliability and validity of the model's results.

6. Influence of Supervisory Relationships and Institutional Culture

Supervisory relationships and institutional culture together form the social and structural foundation that shapes postgraduate students' academic self-efficacy and their vulnerability to burnout in China's higher education system. While self-efficacy, motivation, and emotional regulation are individual-level constructs, they do not exist in isolation; they are continually molded by the quality of supervision and the broader institutional climate.

In the Chinese postgraduate context, the supervisor–student relationship is the most influential factor in students' academic and emotional experience. The supervisor often functions simultaneously as mentor, evaluator, and gatekeeper to academic opportunities. A positive, supportive supervisory style characterized by encouragement, feedback, and intellectual trust can enhance students' belief in their abilities and promote persistence in academic challenges. In contrast, rigid, authoritarian supervision—common within traditional hierarchical academic structures—can suppress autonomy, weaken confidence, and contribute to burnout. Many students hesitate to disclose difficulties or question supervisors' expectations for fear of damaging professional relationships. This silence often leads to emotional exhaustion and academic disengagement. Conversely, when supervisors adopt a mentoring approach that values open dialogue, shared goal-setting, and recognition of effort, students develop stronger efficacy beliefs and more adaptive coping mechanisms.

Institutional culture further reinforces or mitigates these relational effects. China's universities, particularly those emphasizing global rankings and research productivity, often cultivate a performance-oriented culture that measures success by publication quantity, citation impact, and funding acquisition. While these metrics drive competitiveness and research quality, they also generate an

atmosphere of pressure and comparison. For students with fragile self-efficacy, such an environment magnifies stress, fosters maladaptive perfectionism, and increases the likelihood of burnout. In contrast, universities that emphasize academic integrity, personal growth, and psychological well-being help transform postgraduate study from a competitive struggle into a developmental process. The presence of counseling resources, peer-support programs, and supervisor training in mentorship ethics can substantially improve students' sense of belonging and reduce burnout risk.

At the cultural level, Confucian values continue to influence academic expectations, intertwining moral worth with academic achievement. The emphasis on perseverance, humility, and deference to authority promotes diligence but can also discourage self-advocacy. Students socialized within this framework may interpret struggle as a personal weakness rather than a systemic issue, internalizing stress and undermining self-efficacy. However, the collectivist orientation of Chinese academia also provides a potential protective mechanism: strong peer networks and collaborative research teams can foster social belonging and mutual encouragement, which buffer against the effects of institutional pressure.

7. Cultural Context and Psychological Interpretation

Understanding the relationship between academic self-efficacy and burnout among Chinese postgraduate students requires a deep appreciation of China's broader cultural and educational context. Psychological experiences such as motivation, stress, and emotional regulation are not universal constructs—they are profoundly shaped by cultural norms, social expectations, and collective values. In China, where education has long been associated with personal virtue, family honor, and national progress, academic life is more than an individual pursuit of knowledge; it represents a moral and social obligation. This cultural backdrop adds unique layers to how self-efficacy and burnout manifest and interact.

Rooted in Confucian philosophy, Chinese education emphasizes perseverance (*ren*, 忍), effort (*qin*, 勤), and respect for authority (*zunshi*, 尊师). These virtues encourage students to value endurance and humility in the face of

challenges, fostering a disciplined academic ethos that supports persistence and high achievement. For postgraduate students, such cultural ideals often reinforce the belief that hard work can overcome obstacles—a mindset closely aligned with self-efficacy theory. Students who internalize these values tend to approach research with dedication and a sense of moral responsibility. However, when these virtues are interpreted rigidly, they can transform into psychological burdens. The cultural emphasis on endurance may discourage students from seeking help when struggling, while the expectation to maintain face (*mianzi*, 面子) may prevent open discussion about burnout or mental fatigue.

At the same time, the collectivist orientation of Chinese society shapes how postgraduate students perceive success and failure. Individual performance is often viewed not only as a personal achievement but also as a reflection of one's family, supervisor, and academic group. This interconnected sense of responsibility can serve as both motivation and pressure. On one hand, the desire to bring honor to one's family and institution reinforces commitment and academic self-efficacy. On the other hand, the fear of disappointing others can amplify stress and perfectionism, making students more susceptible to emotional exhaustion. Within this framework, self-efficacy is not merely self-confidence—it is relational efficacy, emerging from students' awareness of their position within a collective structure.

Language and communication norms further influence these dynamics. Chinese academic environments often prioritize harmony and hierarchy over direct expression, which shapes how students interpret feedback and manage academic relationships. Critical feedback from supervisors, for instance, may be perceived as personal failure rather than constructive guidance, particularly when students' self-worth is closely tied to academic performance. Similarly, institutional messages emphasizing excellence and competition may be internalized as moral imperatives rather than pragmatic goals. These cultural interpretations transform what might be routine academic stress in Western contexts into deeply personal and existential experiences for many Chinese postgraduates.

Recent shifts in China's higher education landscape have introduced new complexities to

this cultural framework. The rapid internationalization of graduate programs and the adoption of Western evaluation standards have begun to reshape local academic values. Younger generations of scholars increasingly emphasize creativity, collaboration, and well-being, yet many still navigate the tension between traditional expectations and modern pressures. This cultural transition creates a hybrid psychological environment: students are expected to be both autonomous researchers and dutiful apprentices, both globally competitive and locally loyal. Within such dual expectations, the balance between self-efficacy and burnout becomes precarious—success demands not only competence but also cultural adaptability.

Psychologically, the interplay between self-efficacy and burnout in this context can be interpreted through the lens of cultural congruence. When personal beliefs about effort and achievement align with cultural and institutional expectations, students experience a sense of coherence that strengthens motivation and emotional stability. However, when these expectations clash—for instance, when students' need for autonomy conflicts with hierarchical supervision or when personal limits contradict cultural ideals of perseverance—cognitive dissonance arises, leading to stress and eventual burnout. The capacity to maintain self-efficacy amid such dissonance depends largely on cultural flexibility and institutional support.

Ultimately, understanding Chinese postgraduate students' academic experiences requires moving beyond individual psychology toward a cultural-ecological perspective. Academic self-efficacy in this setting is not an isolated trait but a product of continuous negotiation between personal ambition, relational harmony, and institutional norms. Burnout, likewise, is not merely a symptom of excessive workload but a reflection of deeper cultural tensions between diligence and well-being, duty and self-care. Recognizing these cultural dimensions allows educators and policymakers to design interventions that are not only psychologically effective but also culturally resonant—cultivating a generation of scholars who can pursue excellence without sacrificing balance.

8. Implications for Policy, Intervention, and Academic Well-Being

The findings and theoretical reflections of this

study offer important implications for educational policy, institutional management, and mental health interventions in China's postgraduate education system. As the nation continues to expand its research capacity and global academic influence, it faces the challenge of fostering intellectual excellence without sacrificing psychological sustainability. Enhancing academic self-efficacy while mitigating burnout requires a multidimensional strategy that integrates policy reform, supervisory development, and institutional culture change.

At the policy level, postgraduate education in China must move toward a more holistic framework that recognizes academic well-being as an indicator of educational quality. Current evaluation systems remain heavily centered on quantifiable outputs such as publication numbers, project funding, and awards, often neglecting the psychosocial dimensions of learning. National and provincial education authorities should incorporate psychological health metrics and mentorship effectiveness into university performance evaluations. Policies that encourage balance—such as flexible research timelines, mental health leave options, and incentives for mentorship excellence—would not only reduce burnout risk but also promote long-term academic productivity. In this sense, fostering self-efficacy should be seen not as a soft intervention but as a strategic investment in human capital development.

At the institutional level, universities should take proactive steps to cultivate supportive academic ecosystems that empower both students and supervisors. Training programs for supervisors are essential to shift mentoring from a hierarchical to a developmental model. Supervisors who are equipped with knowledge of psychological motivation and stress management can better guide students through research challenges, building trust and confidence rather than fear and dependency. Institutional mentorship guidelines that emphasize communication, feedback, and empathy could help redefine the supervisory role from evaluator to facilitator. Simultaneously, universities can create structures that encourage peer collaboration—such as interdisciplinary research communities and postgraduate colloquia—which foster shared learning and alleviate feelings of isolation.

Mental health interventions should also be integrated into the postgraduate education framework as a preventive rather than reactive measure. Counseling services, mindfulness workshops, and resilience training have shown promising results in reducing stress and improving self-efficacy among Chinese postgraduate students. However, for these programs to be effective, they must be culturally contextualized. Interventions that acknowledge the influence of Confucian values, collective identity, and face concerns are more likely to be accepted and sustained. For example, framing emotional well-being as a form of academic resource management, rather than personal weakness, aligns more closely with cultural expectations of discipline and self-improvement.

Moreover, the concept of collective efficacy—the shared belief in a group's ability to achieve goals—could be strategically utilized to enhance academic motivation within research teams and laboratories. Encouraging supervisors to foster collaborative rather than competitive environments may not only improve research quality but also buffer individual students against the pressures of high-stakes performance metrics. When postgraduate cohorts view success as a collective achievement, the burden of personal perfectionism can be diffused, allowing for healthier engagement and creativity.

Finally, these policy and institutional reforms must be accompanied by a broader cultural shift in how success and well-being are understood within academia. Moving away from a purely performance-driven ideology toward one that values balance, reflection, and humanity is essential for sustaining innovation and intellectual vitality. China's higher education system stands at a pivotal moment: it possesses the resources and ambition to lead globally, but its long-term success depends on creating academic environments that nurture not only intelligence but also emotional resilience.

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The Mediatization of Scientific Knowledge in Europe and the Rise of the Science Influencer

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Abstract

This paper examines the mediatization of scientific knowledge in Europe and the emergence of the science influencer as a new cultural figure in the digital public sphere. Drawing on mediatization theory and the sociology of scientific knowledge, it argues that scientific authority is undergoing a structural reconfiguration shaped by platform logics, algorithmic visibility, and affective modes of engagement. The analysis traces how the locus of epistemic legitimacy has shifted from institutional control to networked credibility, where scientists, audiences, and algorithms co-produce authority through interaction and performance. Through a comparative exploration of European cases, the study demonstrates that science communication has evolved from a model of institutional dissemination to one of participatory mediation. The science influencer emerges as a hybrid actor who blends professional expertise with personal authenticity, reframing scientific knowledge as relational, emotional, and performative. The findings suggest that this transformation does not signify a decline of scientific authority but its adaptation to the communicative conditions of the platform era. Trust in science increasingly depends on transparency, affective connection, and continuous dialogue rather than hierarchical distance. The paper concludes that European institutions must cultivate dialogic credibility by collaborating with independent communicators and fostering digital literacy. The rise of the science influencer thus reflects a broader cultural shift toward communicative participation in the production and validation of knowledge.

Keywords: mediatization of science, science influencers, scientific authority, platformization, media logic, digital communication, public understanding of science, Europe, epistemic legitimacy

1. Introduction

1.1 Background

Scientific communication in Europe has entered a new epoch characterized by the intertwining of media logic, algorithmic curation, and personal branding. For much of the twentieth century, science reached the public through institutional channels—press releases from

universities, science sections in national newspapers, or public service broadcasting. Knowledge circulated within a relatively closed system governed by professional norms of accuracy, neutrality, and distance. Communication was linear: experts spoke, the public listened, and journalists acted as intermediaries. The authority of science rested upon institutional prestige and epistemic

distance.

The early twenty-first century disrupted this structure. The proliferation of digital platforms introduced an environment where communication is no longer unidirectional. Scientists, educators, and enthusiasts engage directly with audiences, bypassing traditional gatekeepers. Platforms such as YouTube, TikTok, and Instagram provide not only technical means for dissemination but also shape communicative expectations through algorithms, interaction metrics, and aesthetics of engagement. Scientific visibility becomes contingent on emotional appeal, storytelling, and user interaction. The symbolic power once confined to academic institutions is now diffused across networks where visibility is produced through attention rather than accreditation.

This transformation can be understood as a process of mediatization. Media no longer function solely as channels for transmitting information but as environments that reconfigure the social practices of science. The mediatization of scientific knowledge implies that the production, representation, and validation of knowledge increasingly adapt to media logic. In this environment, scientists learn to translate complex concepts into formats that resonate with algorithmic circulation and audience affect. The traditional divide between scientific and popular communication erodes as both domains operate within the same communicative ecosystem.

In Europe, this shift is embedded in broader social and institutional developments. European research policy, particularly through programs such as Horizon Europe and *Science with and for Society* (SwafS), promotes public engagement and open science. These initiatives seek to democratize knowledge and strengthen the relationship between science and citizens. However, when engagement migrates to digital platforms, it becomes mediated by commercial logics. The language of participation merges with metrics of popularity, creating a tension between democratic ideals and algorithmic imperatives.

Within this context, a new figure has emerged—the science influencer. Individuals who combine expertise with the skills of digital storytelling and self-presentation have become key mediators between professional science and the public sphere. They operate as “micro-public

intellectuals,” constructing hybrid identities that blend the credibility of science with the intimacy and immediacy characteristic of influencer culture. The rise of the science influencer marks a symbolic shift from institutional authority to performative authenticity as the principal currency of trust in scientific communication.

1.2 Research Problem and Questions

This study examines how the authority and legitimacy of scientific knowledge are being reshaped under the conditions of mediatization and platformization. As scientific information circulates within attention-driven environments, new hierarchies of visibility and trust emerge. The logic of platforms privileges content that stimulates emotion, fosters identification, or promises entertainment. Consequently, the communicative form of science adapts to these imperatives, foregrounding personality and narrative over abstraction and institutional endorsement.

The central research questions guiding this inquiry are:

- 1) How is the authority of scientific knowledge being reshaped under the influence of media and platform logics in Europe?
- 2) What does the rise of the science influencer signify for traditional systems of expertise and the institutional validation of knowledge?
- 3) In what ways does mediatization transform the relational configuration among scientists, media, and the public?

These questions aim to uncover not only the representational shifts in science communication but also the deeper transformations in the social epistemology of science. The mediatized public sphere becomes a site where scientific legitimacy is negotiated rather than simply transmitted. Understanding this transformation requires bridging theories of media sociology with the sociology of scientific knowledge.

1.3 Research Significance

Theoretical Contribution

The theoretical contribution of this study lies in connecting the framework of mediatization theory with the sociology of scientific knowledge. Hepp (2013, 2020) conceptualizes mediatization as the process by which media become integrated into the operations of social

institutions, transforming their internal logics and communicative structures. When applied to science, this perspective highlights how scientific authority is not simply communicated through media but co-constituted by it. Media logics—visualization, emotional engagement, narrative framing—reshape how credibility and expertise are perceived.

Jasanoff (2004) and Hilgartner (1990) emphasize the co-production of knowledge and authority. In a mediatized environment, this co-production extends beyond scientific communities to include audiences, platforms, and algorithms as participants in the construction of epistemic legitimacy. The figure of the science influencer exemplifies this shift: expertise is enacted through communicative performance rather than institutional credentials alone. By examining this transformation, the study contributes to ongoing debates on the crisis of expertise and the reconfiguration of trust in post-digital societies.

Practical Relevance

The practical relevance concerns the implications of platformization for public understanding of science. Algorithms determine the visibility of scientific content, privileging forms of engagement that align with the platform's commercial objectives. This environment rewards simplicity, emotion, and repetition, potentially at the expense of complexity and critical nuance. As a result, scientists and communicators face a dual challenge: maintaining epistemic integrity while adapting to the performative conditions of visibility.

The study's findings can inform science policy and institutional communication strategies in Europe. By understanding how mediatization affects perceptions of credibility, scientific institutions may develop new forms of collaboration with independent communicators. Rather than opposing the influencer model, institutions could embrace dialogic forms of authority, where trust emerges from transparency, responsiveness, and relational authenticity.

1.4 Literature Overview

The mediatization of science has been analyzed across diverse theoretical traditions. Hepp (2020) and Hjarvard (2008) provide foundational frameworks for understanding how media logics penetrate different social domains,

producing “communicative figurations” that shape institutional practices. Within science communication, this approach reveals how scientific discourse becomes entangled with digital affordances and networked interaction.

Jasanoff's (2004) work on the co-production of knowledge remains central for grasping how scientific authority is negotiated across social and cultural contexts. Knowledge does not exist in isolation from its modes of representation; rather, it is co-constructed through interfaces between experts, institutions, and publics. Hilgartner (1990) extends this perspective by showing how the “public stage” of science transforms what counts as credible knowledge.

Recent scholarship has begun to examine the rise of science influencers as a symptom of platformization. Lundin (2021) explores how digital creators mobilize expertise within influencer cultures, translating complex knowledge into relatable narratives. Other studies investigate the ethical and epistemological implications of this shift, questioning whether performative authenticity can sustain the normative ideals of scientific objectivity.

2. Theoretical Framework

2.1 The Three Shifts in Science Communication

From Communicating Science to Constructing Science through Communication

The mediatization of science begins with a paradigmatic shift in how communication is understood. Science communication was once conceived as the dissemination of already stabilized facts from experts to lay audiences. The “deficit model” presupposed a one-directional flow of information in which knowledge resided within institutions and was transmitted to the public through trusted mediators such as journalists or educators. This model has given way to a constructivist understanding of communication, where the act of communicating is itself constitutive of scientific meaning. Science is not only communicated but continuously reconstructed through processes of representation, translation, and interpretation.

The constructivist turn reframes science as a social and performative discourse. Scientific authority is produced not only through empirical validity but also through the modes of its public presentation. Visuals, narratives, and

metaphors become integral components of epistemic formation. The growing importance of visibility in a digital environment turns communication into a condition of existence for scientific knowledge. To be credible, science must be seen, narrated, and emotionally resonant. The interface between visibility and legitimacy transforms the communicative landscape, where representation itself becomes a site of knowledge production.

From Institutional Control to Platform and Individual Mediation

The second shift concerns the relocation of authority from institutions to platforms and individuals. Historically, universities, academies, and scientific societies functioned as the gatekeepers of legitimate knowledge. The digital turn has diffused this control, enabling scientists, educators, and amateurs to communicate directly with publics. Platforms such as YouTube, TikTok, and Instagram operate as mediating infrastructures that allow individuals to produce and circulate content without institutional endorsement. The scientist becomes both a producer and consumer of content—a “prosumer”—who blends professional identity with personal expression.

This decentralization alters the economy of expertise. Traditional authority relied on institutional markers such as credentials, peer review, and affiliation. Platform-based authority relies on relational markers such as visibility, follower engagement, and perceived authenticity. The metrics of popularity replace the hierarchies of institutional validation. In this environment, knowledge dissemination becomes contingent on platform algorithms and audience response. The boundary between professional science communication and popular entertainment weakens, resulting in a hybrid field in which scientific credibility competes within the same attention economy as other forms of digital content.

From Authoritative Transmission to Emotional and Performative Engagement

A third shift concerns the affective transformation of scientific communication. The classical scientific ethos valued objectivity, distance, and neutrality. In contrast, digital environments reward emotional expressiveness, relatability, and personal storytelling. Trust in scientific figures increasingly depends on perceived authenticity rather than institutional

distance. Audiences connect to scientists who communicate passion, vulnerability, and curiosity. These affective performances establish forms of parasocial intimacy that can reinforce credibility and engagement.

The performative dimension of science communication does not signify a loss of rigor but signals a change in the grammar of trust. The relationship between communicator and audience becomes dialogical and participatory. The scientist no longer represents an impersonal institution but embodies a relatable persona whose credibility arises through consistent communication and emotional resonance. This redefinition of communication as performance aligns with the broader dynamics of platform culture, where attention and engagement are achieved through authenticity and affect rather than hierarchical authority.

2.2 Mediatization Theory and Media Logic

Mediatization theory provides a conceptual foundation for understanding these transformations. Andreas Hepp defines mediatization as the historical process through which media become integrated into the operations of social institutions, gradually reshaping their internal logics and communicative practices. Rather than treating media as external tools, Hepp’s framework understands them as environments that structure social interaction. Mediatization thus refers to a meta-process in which institutions adapt their practices to media logic while simultaneously being reconstituted by it.

Hjarvard’s conceptualization complements this by treating media as semi-independent institutions that influence other social systems such as politics, religion, and science. Media logic encompasses the norms, values, and aesthetic conventions that guide how information is produced, circulated, and received. These include tendencies toward personalization, dramatization, and simplification. When science becomes mediatized, it must operate within these logics to maintain visibility and relevance. The process of scientific communication becomes shaped by visual appeal, narrative coherence, and algorithmic amplification.

Mediatization is therefore not a singular event but an ongoing negotiation between the autonomy of science and the imperatives of media. Scientific institutions, in adapting to

media logic, modify their own communication practices—emphasizing storytelling, emotional tone, and accessibility. The epistemic authority of science becomes intertwined with its performative visibility. The capacity of a scientific claim to circulate widely contributes to its perceived legitimacy. In this sense, visibility itself becomes a dimension of epistemic power.

The implications of mediatization extend beyond communication to the structure of scientific authority. Media logic introduces new forms of gatekeeping through algorithms and engagement metrics, redefining what counts as credible or relevant. The traditional hierarchy between expert and layperson is destabilized as audiences gain the capacity to comment, remix, and reinterpret scientific content. The boundaries of expertise become porous, and authority becomes co-produced across networks of professionals, audiences, and platforms.

2.3 The Reconfiguration of Scientific Authority

The sociology of scientific knowledge provides the theoretical tools to analyze this reconfiguration. Sheila Jasanoff's concept of co-production describes how knowledge and social order are mutually constituted. Scientific authority is not merely discovered or asserted; it is constructed through social practices that link epistemic norms with institutional credibility. In mediatized contexts, this co-production extends to the interactions between scientists, audiences, and platforms. The credibility of a communicator depends on both their expertise and their capacity to inhabit the communicative expectations of digital culture.

Stephen Hilgartner's notion of the "public stage" of science highlights the performative dimension of credibility. Scientific claims are validated not only within the laboratory but also within public arenas where they are observed, contested, and dramatized. Media spaces amplify this performative arena, making visibility a prerequisite for authority. Expertise thus becomes a form of social performance. The authority of science no longer rests solely on peer review or institutional prestige but also on communicative competence and audience recognition.

The reconfiguration of authority also entails a shift from institutional legitimacy to relational trust. Trust becomes enacted through repeated interactions, transparency, and responsiveness. In digital environments, these interactions take

the form of comments, live streams, and shared experiences. The scientist's persona becomes an instrument of epistemic mediation. By sharing their reasoning process, doubts, and emotions, communicators invite audiences into the epistemic process, generating a sense of co-presence and inclusion.

This redefinition of authority raises questions about the boundaries of expertise. The openness that characterizes digital communication democratizes participation but also exposes science to contestation and misinformation. Authority becomes conditional and negotiated, shaped by communicative resonance as much as by technical expertise. The mediatized public sphere thus transforms scientific knowledge from an institutional artifact into a dynamic social performance embedded within affective and algorithmic structures.

2.4 The Collision and Fusion with Influencer Logic

The rise of influencer culture represents the latest stage in the mediatization of science. Influencers operate within an economy of visibility driven by engagement, intimacy, and authenticity. Their authority derives from the perception of accessibility and trustworthiness rather than formal expertise. When this logic enters the field of science, it generates both tensions and innovations. Scientists who engage as influencers must reconcile epistemic rigor with the communicative demands of platform culture.

Influencer logic reshapes the ethics of communication. The value of a message is often measured by its reach and interaction rather than its depth or precision. This creates incentives for simplification, emotional dramatization, and personal branding. Yet these same mechanisms can also expand the social reach of science, making complex knowledge accessible to wider publics. The challenge lies in maintaining epistemic responsibility while adapting to the communicative grammars of digital culture.

Hybrid identities emerge at the intersection of these logics. The scientist becomes simultaneously a communicator and a creator, negotiating between institutional expectations and audience engagement. This hybridization challenges the traditional separation between the professional and the personal. Scientific expertise is re-enacted through personality, lifestyle, and authenticity. The laboratory

extends into the everyday life of the communicator, and knowledge becomes part of a lived narrative.

The idea of “science as lifestyle” encapsulates this transformation. Knowledge is presented as part of an identity that blends intellectual curiosity, personal experience, and social relevance. This fusion of the epistemic and the emotional allows audiences to engage with science as a form of cultural participation. It also reframes public understanding of science as a shared, experiential practice rather than a distant body of facts.

The incorporation of influencer logic into science communication does not simply erode authority; it redefines it in performative and participatory terms. Authority becomes fluid, co-created through ongoing engagement between communicator and audience. The mediatised environment thus produces a new form of public science, one that is affective, visual, and relational, yet capable of renewing trust in expertise through authenticity and dialogue.

3. Europe’s Science Communication Landscape

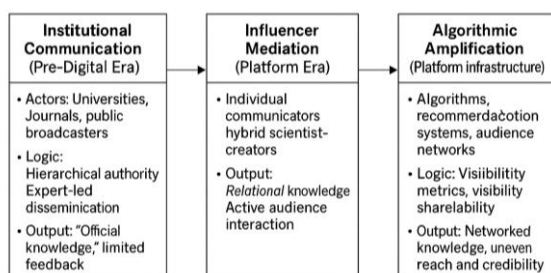


Figure 1. Transformation of Scientific Knowledge Circulation

3.1 Policy and Institutional Context

Science communication in Europe operates within a policy framework that increasingly promotes openness, inclusion, and public engagement. At the center of this transformation is *Horizon Europe*, the European Union’s flagship research and innovation program. It integrates open science as both a normative principle and a practical requirement. Open science is conceived as an approach that democratizes the research process by encouraging transparency, collaboration, and public accessibility. Within this framework, knowledge circulation is no longer limited to professional networks. Scientists are encouraged to share data, methodologies, and results through open-access

platforms and to engage in dialogue with non-academic audiences.

The *Science with and for Society* (SwafS) program, incorporated within Horizon Europe, institutionalizes this commitment to participatory engagement. Its aim is to strengthen the connection between science and society by promoting responsible research and innovation (RRI). The RRI framework emphasizes inclusivity, ethics, and responsiveness. Researchers are urged to consider the societal impacts of their work, involve stakeholders in decision-making, and ensure that scientific advancement aligns with democratic values. This orientation has significant implications for communication. The act of explaining science to the public is reimagined as a process of co-creation. Citizens are no longer passive recipients of information but participants in shaping scientific priorities and interpreting knowledge.

The emphasis on co-creation challenges the traditional hierarchical structure of science communication. Institutions accustomed to centralized control face the need to accommodate dialogic and networked modes of engagement. Many European research organizations have responded by creating communication units that blend expertise in media, education, and outreach. Public engagement offices, social media strategies, and interdisciplinary collaborations have become standard components of institutional infrastructures. Yet this institutionalization of openness also introduces contradictions. Bureaucratic procedures, regulatory constraints, and reputational management can limit the spontaneity and authenticity required for effective communication on digital platforms.

European science policy thus finds itself balancing two competing imperatives. On one side is the administrative logic of accountability and standardized communication, which ensures credibility and compliance. On the other is the participatory ethos of openness, which values creativity, informality, and emotional connection. The tension between these logics shapes the broader context in which science influencers operate. Many of them occupy a space at the boundary between institutional expectations and personal autonomy, translating the ideals of open science into the language of platform culture. Their work often accomplishes what institutional communication cannot

achieve: immediacy, personality, and sustained engagement.

The European policy environment provides fertile ground for the rise of such figures. Funding programs increasingly support citizen science, media partnerships, and digital outreach. Institutions collaborate with influencers to reach younger audiences, experiment with narrative formats, and build trust among communities skeptical of scientific authority. Yet these collaborations remain uneasy. Influencers operate within economies of attention that do not always align with academic norms. Institutions value precision and accountability, while platforms reward visibility and affect. This structural tension underlies much of the current transformation in European science communication.

3.2 Platform Practices and Science Influencer Cases

The mediatization of science in Europe can be observed through specific cases that illustrate how individuals and organizations adapt to the dynamics of digital platforms. Across countries, science communicators have developed distinctive approaches shaped by cultural traditions, media systems, and linguistic communities.

Germany: *MaiLab* (Mai Thi Nguyen-Kim)

Mai Thi Nguyen-Kim's *MaiLab* represents one of the most influential examples of science communication in Europe. Trained as a chemist, Nguyen-Kim bridges the gap between professional science and popular culture through a YouTube channel that combines analytical rigor with humor and visual storytelling. Her content covers topics ranging from vaccine science to everyday chemistry, blending scientific depth with an accessible narrative style. The presentation relies heavily on visual metaphors, expressive body language, and direct address, creating a sense of intimacy between communicator and audience.

Credibility in *MaiLab* emerges through the strategic interplay between expertise and authenticity. Nguyen-Kim consistently references scientific sources, integrates data visualizations, and critiques misinformation, reinforcing her legitimacy as a scientist. At the same time, she foregrounds her individuality and emotions, presenting science as part of personal experience. This combination allows her to operate simultaneously within the conventions of academia and the aesthetics of

influencer culture. Her success demonstrates how scientific authority can be reconstituted through media performance without losing epistemic integrity.

France: *Nota Bene*

The French YouTube channel *Nota Bene*, created by Benjamin Brillaud, illustrates a different form of hybridization. While primarily focused on history, *Nota Bene* integrates scientific reasoning and critical analysis, often addressing topics where science and history intersect, such as technological evolution, archaeology, or environmental change. The channel's strength lies in its storytelling approach. Brillaud constructs narratives that situate scientific concepts within cultural and historical contexts, emphasizing continuity between human curiosity and scientific inquiry.

The appeal of *Nota Bene* stems from its capacity to translate specialized knowledge into collective memory. By embedding science in stories of civilization, Brillaud turns abstract ideas into cultural experiences. The channel thus performs a mediating role between science and the humanities, expanding the scope of science communication beyond its disciplinary boundaries. The emphasis on narrative coherence and cultural resonance exemplifies the European tendency to frame science as part of a broader intellectual heritage rather than an isolated technical domain.

Italy: *La Scienza Meditata*

In Italy, *La Scienza Meditata* represents a reflective and philosophical approach to science communication. The channel emphasizes the intersection of scientific inquiry and philosophical reflection, exploring themes such as causality, uncertainty, and the ethics of knowledge. The communicator adopts a contemplative tone, combining analytical reasoning with introspection. This mode of presentation diverges from the energetic and entertainment-driven styles common on other platforms. Instead, it constructs a space of intellectual dialogue, appealing to audiences interested in the deeper implications of science.

The Italian context reveals how mediatization can accommodate diverse communicative cultures. While some European influencers adopt fast-paced, visually dynamic formats, others pursue slower, contemplative rhythms. *La Scienza Meditata* exemplifies how digital media can sustain critical and reflective discourse. It

also underscores the multiplicity of audience expectations: not all viewers seek entertainment; some desire a sense of shared inquiry and intellectual companionship. The case demonstrates that mediatization does not necessarily homogenize communication but can diversify it through personalization and niche specialization.

Netherlands: Youth-Oriented Short-Form Science Projects

In the Netherlands, science communication initiatives have embraced short-form video formats inspired by platforms such as TikTok and Instagram Reels. These projects often emerge from collaborations between universities, public broadcasters, and independent creators. They target younger audiences who consume information through mobile devices and prefer brief, visually engaging content. The communicative strategy combines educational aims with entertainment aesthetics. Humor, visual effects, and interactive challenges are used to make scientific concepts relatable and memorable.

Institutional participation in these projects reflects a pragmatic adaptation to platform logics. Dutch universities and science foundations support content that blends institutional authority with the stylistic conventions of influencer culture. Scientists appear in informal settings, speak in colloquial language, and invite audience participation. This hybrid model integrates the trustworthiness of institutional science with the immediacy of personal communication. It demonstrates how European institutions are learning to operate within the communicative environment of platforms without fully relinquishing control over content and credibility.

3.3 Shared Features of Science Influencers

Across national contexts, European science influencers share several defining characteristics that reflect the broader mediatization of scientific authority. One central feature is the emphasis on emotional appeal and storytelling. Scientific information is often presented within narratives of curiosity, discovery, and personal growth. The emotional dimension of communication serves as a bridge between complex knowledge and audience experience. By embedding facts within affective structures, influencers transform abstract reasoning into

relatable stories.

Another characteristic is the de-hierarchized tone that contrasts sharply with traditional institutional discourse. The authoritative distance that once defined scientific communication is replaced by conversational intimacy. Influencers often speak directly to the camera, employ humor, and use colloquial language. This approach fosters inclusivity by signaling that scientific knowledge belongs to everyone, not only to specialists. It also aligns with the logic of social media, where authenticity and approachability are essential markers of credibility.

Authenticity itself becomes a performative construct. Many influencers present themselves as learners rather than experts, adopting the stance of curiosity instead of mastery. The statement "I am learning with you" replaces the conventional model of instruction. This positioning reduces epistemic asymmetry and encourages participatory learning. It also allows influencers to maintain flexibility in addressing errors or uncertainties, reinforcing trust through transparency.

Personal branding constitutes another significant aspect. Influencers cultivate distinctive visual styles, linguistic patterns, and thematic focuses that define their public identities. Branding does not merely serve promotional purposes; it functions as a semiotic marker of reliability. Consistency in tone and aesthetics signals coherence and commitment. The intertwining of personal and professional identity reflects the broader trend toward the personalization of authority in digital cultures.

Science communication in this environment functions as a form of parasocial engagement. Audiences develop relationships with communicators that resemble friendship or mentorship. The repeated exposure to a communicator's persona generates familiarity and attachment. These affective bonds enhance attention and retention, transforming communication into a sustained social relationship. In the context of science, parasociality serves as a mechanism of trust. Audiences come to value the communicator's perspective not only for informational accuracy but for perceived honesty and integrity.

The shared features of European science influencers reveal how mediatization reconfigures both the form and substance of

public science. The digital environment fosters new modes of connection that combine epistemic seriousness with emotional accessibility. Influencers translate the ideals of open and participatory science into communicative practices that resonate with the expectations of contemporary audiences. They embody a new model of scientific authority, one rooted in visibility, relationality, and authenticity rather than institutional distance.

4. Analysis and Discussion

4.1 *Recontextualization of Scientific Authority*

Scientific authority has undergone a deep transformation within the mediatized and platformized environment of contemporary Europe. The traditional model, where legitimacy was anchored in institutional validation and disciplinary norms, is giving way to a networked model of credibility. Authority now emerges through interactional processes that are distributed across media, audiences, and algorithms. The scientist who once derived trust from institutional affiliation must now cultivate credibility through visibility, responsiveness, and emotional resonance. This transition reflects a broader cultural shift in how expertise is recognized and valued.

Networked credibility functions through social validation rather than hierarchical endorsement. The public no longer encounters science solely through peer-reviewed publications or institutional announcements but through digital encounters shaped by engagement metrics. The number of views, likes, and shares serves as a proxy for relevance. This metric-based environment reframes the production of trust. Authority becomes participatory, shaped by the continuous feedback loop between communicators and audiences. Credibility is not simply claimed but enacted through communicative performance.

Emotional connection has become a central basis for trust in science. Authenticity, rather than distance, now defines the conditions of epistemic reliability. Scientists who display

emotion and vulnerability are often perceived as more trustworthy than those who adhere to detached objectivity. This does not mean that emotions replace facts but that they become vehicles for making facts meaningful. Relational transparency, the open acknowledgment of uncertainty and personal motivation, replaces the older ideal of impersonal objectivity. The scientist's credibility depends on the ability to articulate not only what is known but how it is known and why it matters.

The recontextualization of authority thus involves a redefinition of objectivity. In the mediatized public sphere, objectivity is no longer equated with emotional neutrality. It is reconstructed as an ethical stance rooted in honesty, reflexivity, and openness. The communicator's willingness to disclose their reasoning, limitations, and positionality signals integrity to audiences accustomed to skepticism. Transparency becomes the new form of rigor. The authority of science remains, but it is expressed through relational engagement rather than institutional distance.

4.2 *Tensions within Platform Logics*

The integration of scientific communication into digital platforms introduces structural tensions between epistemic and algorithmic imperatives. The logics of science and of platforms operate on different temporalities and value systems. Science values deliberation, precision, and collective verification. Platforms prioritize immediacy, engagement, and shareability. This asymmetry produces a continual negotiation in which communicators must balance accuracy with attention.

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Table 1. Comparison of Media Logic and Scientific Logic

Dimension	Scientific Logic	Media Logic (Platform Logic)	Resulting Hybrid Practices in Science Communication
Goal Orientation	Truth-seeking, verification, collective peer review	Attention-seeking, visibility, shareability	Integration of accuracy and appeal through storytelling

Temporal Rhythm	Slow, iterative, cumulative	Fast, reactive, real-time	Scientists adapting to real-time audience feedback
Communication Mode	Formal, abstract, distanced	Emotional, personalized, visual	Emergence of affective and performative science
Validation Mechanism	Institutional review, expertise hierarchy	Audience engagement metrics, algorithmic ranking	Dual legitimacy: peer approval + audience trust
Ethical Frame	Objectivity, neutrality	Authenticity, transparency	Reframed credibility through honesty and openness
Authority Structure	Centralized, institutional	Networked, participatory	Co-production of credibility between experts and publics

The table above illustrates how these contrasting logics generate hybrid practices in science communication. Scientists adapt to the temporal and aesthetic rhythms of platforms while striving to retain methodological rigor. This synthesis of epistemic and media logics forms the foundation for the performative negotiation of authority that defines contemporary public science.

Algorithmic pressures shape the visibility of scientific content. Recommendation systems privilege material that elicits emotional reactions or sustained interaction. Scientific explanations often require complexity and nuance, which can be at odds with the demand for easily digestible content. Communicators adapt by simplifying concepts, integrating humor, and foregrounding narrative hooks. This adaptation allows science to circulate widely but risks reducing it to entertainment. The scientist becomes a performer who must manage audience interest without compromising epistemic integrity.

The pursuit of visibility also creates the danger of oversimplification and sensationalism. Titles designed to capture attention may distort the content of research. Dramatic framing can obscure uncertainty or exaggerate implications. Over time, audiences may experience “content fatigue,” a saturation of simplified science that diminishes attention to more substantive discussions. The visibility that empowers science communicators can simultaneously distort the perception of scientific practice, reinforcing the impression that science is about certainty and spectacle rather than doubt and iteration.

The ambivalence of visibility lies in its double function as both empowerment and constraint. Digital platforms enable scientists to reach

audiences directly, bypassing institutional mediation, yet the same platforms impose performative conditions that shape how science can appear. Visibility is not neutral; it is a form of governance exercised through algorithms and metrics. Communicators internalize these pressures, adjusting their style, tone, and topics to sustain engagement. The logic of platforms thus becomes a constitutive part of the communicative ecology of science. Understanding these tensions is essential to evaluating the promises and perils of mediatized science.

4.3 The Identity Transformation of the Scientist

The mediatization of science has transformed not only modes of communication but also the very identity of the scientist. The traditional figure of the expert was characterized by institutional affiliation, technical competence, and rhetorical restraint. In the platform environment, scientists become communicators and creators who must navigate multiple identities. They act as educators, entertainers, and cultural commentators. Their credibility depends on their capacity to integrate scientific rigor with narrative appeal and social media fluency.

This identity transformation generates both opportunities and anxieties. For many scientists, participation in public discourse through platforms represents a way to democratize access to knowledge and counter misinformation. Yet the move toward self-presentation and personal branding can be perceived as incompatible with academic norms. The ethos of humility and collective authorship collides with the performative culture of individual visibility. Institutions often remain uneasy about their members gaining celebrity

status, fearing that popularity undermines scholarly seriousness.

Negotiating these conflicting expectations requires a redefinition of professional identity. The scientist as communicator must master the aesthetics of engagement without succumbing to its superficiality. Success in this realm depends not only on expertise but on the ability to craft an authentic persona. The public figure of the scientist becomes a narrative construction sustained by repetition, intimacy, and responsiveness. Communication becomes part of scientific labor rather than an auxiliary activity.

Reframing the scientist as a cultural actor acknowledges that science functions as a symbolic resource within society. Scientists influence cultural narratives about truth, uncertainty, and progress. Their media presence shapes collective imaginaries of rationality and evidence. In this sense, science communication participates in the construction of cultural meaning rather than merely transmitting information. The mediatized scientist operates within the same cultural economy as artists, journalists, and activists, contributing to the broader public negotiation of knowledge and value.

4.4 Knowledge Legitimacy and Public Understanding

The transformation of communication has profound implications for how knowledge legitimacy is constructed. Affective engagement has introduced what can be described as an affective epistemology, where understanding is mediated through feeling, empathy, and identification. Audiences learn science not only by absorbing facts but by connecting emotionally with communicators. This experiential mode of knowing reshapes the relationship between evidence and belief. Knowledge becomes a shared affective process rather than a one-directional transmission.

The democratization of participation in digital platforms enables diverse voices to contribute to public discussions of science. Citizen scientists, educators, and lay commentators participate in producing meaning and interpretation. This inclusivity strengthens the social relevance of science but also challenges traditional boundaries of expertise. The relativization of truth becomes a risk when all perspectives are treated as equally valid within the marketplace

of attention. The balance between openness and epistemic rigor becomes fragile.

The rise of populist science exemplifies this tension. Communicators who lack formal expertise may gain large audiences by appealing to emotion and skepticism toward institutions. Pseudo-expertise thrives in environments where engagement outweighs verification. The aesthetics of authenticity can be appropriated to legitimize misinformation. The same mechanisms that democratize communication can thus undermine epistemic reliability. Understanding this dynamic requires distinguishing between participatory legitimacy—based on recognition and resonance—and epistemic legitimacy—based on methodological accountability.

Hybrid models of legitimacy are emerging as a response to these challenges. Professional validation remains crucial, but it must coexist with relational trust built through communication. Scientists who engage with audiences transparently can reinforce both forms of legitimacy. Institutions are beginning to adapt by integrating media training, social engagement strategies, and ethical guidelines for digital communication. The goal is not to restore the old hierarchy of expertise but to articulate new forms of credibility that align with the realities of the mediatized public sphere.

4.5 Rearticulating the Role of Science in the Public Sphere

The mediatization of science invites a rethinking of science's role within the European public sphere. Science no longer functions solely as a system of knowledge production; it operates as a mode of cultural communication. Public visibility transforms scientific discourse into a performative act where values, identities, and expectations are negotiated. The performance of transparency, vulnerability, and humanity becomes central to the social life of science. Scientists are called upon to show the process of inquiry, including uncertainty and failure, as part of building relational trust.

This performative transparency transforms science into a participatory spectacle that reaffirms its social relevance. The public does not simply consume scientific facts but witnesses the practice of reasoning and questioning. The display of vulnerability—admitting mistakes, expressing doubt, or showing enthusiasm—humanizes

science and invites collective engagement. Such performances bridge the emotional distance between scientific institutions and citizens, fostering a sense of shared investment in knowledge.

Science in the mediatized public sphere becomes a collective enterprise of negotiation and mediation. Knowledge circulates through interactions between experts, communicators, audiences, and technological infrastructures. The boundaries between these actors are fluid, allowing science to be co-created across multiple sites of discourse. This distributed model enhances pluralism but also complicates accountability. Institutions must learn to manage communication ecosystems rather than control information flows.

Digital platforms occupy an ambivalent position in this configuration. They democratize access to scientific knowledge by lowering barriers to entry and enabling participatory dialogue. At the same time, they commodify attention and transform knowledge into data for algorithmic monetization. The value of science as public good becomes entangled with the economics of engagement. The mediatized public sphere thus oscillates between democratization and commercialization, between inclusion and instrumentalization.

Rearticulating the role of science requires acknowledging this duality. Science must assert its civic function while adapting to the communicative conditions of digital culture. Its authority will depend on its ability to integrate transparency, reflexivity, and inclusivity without sacrificing methodological integrity. The public sphere of science in Europe is no longer defined by the institutions that host it but by the networks that sustain it. The rise of the science influencer marks not the decline of scientific authority but its transformation into a relational and communicative practice suited to the realities of contemporary media society.

5. Conclusion

5.1 Summary of Core Findings

The mediatization of scientific knowledge in Europe marks a historical reconfiguration of how authority, credibility, and participation in science are structured. The rise of the science influencer does not represent a crisis of scientific authority but a transformation of its communicative foundations. In earlier paradigms, authority was sustained by

institutional prestige and epistemic distance. In the platformized environment, it becomes co-produced through interactions between scientists, audiences, and technological infrastructures. Authority is now enacted through visibility, emotional resonance, and relational transparency rather than inherited from institutional legitimacy.

This transformation reflects a broader social evolution in which communication has become a constitutive dimension of knowledge itself. Science is no longer confined to laboratories or academic journals; it circulates within digital networks where meaning is continuously negotiated. The act of communicating becomes part of the epistemic process. The success of scientific messages depends not only on empirical validity but on the ability to adapt to the logics of platforms that mediate attention, visibility, and engagement.

The mediatized environment has redefined the public's relationship to science. Citizens do not merely receive information but participate in its interpretation and distribution. This participatory condition creates new forms of inclusion and accountability. Public understanding of science becomes experiential and affective, shaped by identification with communicators who embody curiosity, doubt, and transparency. Trust is established through perceived authenticity rather than hierarchical distance. The emotional and narrative dimensions of science communication have become central to its epistemic credibility.

Science influencers embody this new configuration. They bridge the gap between institutional knowledge and everyday experience, translating abstract concepts into relatable narratives. Their authority is not reducible to popularity; it arises from their ability to sustain a balance between expertise and accessibility. Their role demonstrates how media and communication have become integral to the public life of science. The influencer phenomenon crystallizes the convergence of scientific rationality and media logic in a society where credibility depends on connection and dialogue.

The findings of this study indicate that the mediatization of science represents a shift in epistemic culture. Knowledge is increasingly co-constructed through communicative interaction. Audiences contribute to defining

what counts as credible, visible, and relevant. Algorithms mediate these processes by determining the flow of information and structuring the hierarchy of attention. The authority of science thus emerges from an interplay of human and technological actors, producing a hybrid ecology of legitimacy that redefines the public sphere of knowledge.

5.2 Implications for Institutions

The transformation of scientific communication in the digital era poses significant implications for European research institutions, universities, and science policy frameworks. Traditional models of authority based on hierarchy and institutional distance are no longer sufficient to maintain public trust. Institutions must cultivate dialogic credibility that reflects the participatory logic of contemporary media environments. This involves recognizing communication not as a supplementary activity but as an integral component of scientific practice.

Institutions need to develop communication cultures that embrace openness and responsiveness. This shift requires an internal transformation of attitudes toward visibility and engagement. Scientists who participate in public discourse should be supported rather than marginalized. Institutions can play a crucial role by providing training in digital communication, narrative framing, and media ethics. Empowering scientists to engage with audiences on their own terms strengthens both the authenticity of communication and the public legitimacy of science.

Strategic collaboration between institutions and platform-based communicators represents another vital dimension. Partnerships with independent science influencers or creative media producers can expand the reach and diversity of science communication. Institutions should move from a model of dissemination to one of co-creation, where content is developed through dialogue with audiences. Such collaborations can bridge the gap between bureaucratic formality and the affective immediacy of digital storytelling. They also help to counteract misinformation by embedding credible expertise within the communicative ecosystems where the public already seeks information.

Digital literacy should become a central institutional priority. Understanding how algorithms shape visibility, how misinformation

spreads, and how engagement metrics influence perception is essential for both scientists and the public. Institutions can promote critical engagement through educational initiatives that encourage audiences to question sources, verify claims, and reflect on the emotional dynamics of online knowledge consumption. By fostering a culture of reflexive communication, institutions can help sustain a more resilient and informed public sphere.

At the policy level, European frameworks such as Horizon Europe and SwafS can further integrate media research into science policy. Encouraging interdisciplinary collaboration between social scientists, media scholars, and natural scientists will enrich understanding of how mediatization affects public trust. Institutions can also support infrastructure for open and ethical digital communication that protects scientific integrity while embracing inclusivity. The transition toward dialogic credibility requires not only individual adaptation but systemic reorientation of how science relates to the public sphere.

5.3 Directions for Future Research

Hybrid models of legitimacy are emerging as a response to the evolving relationship between science, media, and society. Empirical research is needed to examine how audiences perceive credibility across different media formats and how emotional engagement influences their trust in scientific messages. Quantitative and qualitative studies could map the dynamics of attention and evaluate the effectiveness of various communication strategies in sustaining epistemic reliability.

Algorithmic governance represents another crucial area of inquiry. Understanding how recommendation systems prioritize or obscure scientific content is essential for assessing the political economy of knowledge visibility. Comparative studies across platforms could reveal how algorithms shape the circulation of credible versus misleading information.

Cross-cultural research beyond Europe would deepen understanding of how science influencers operate within different sociocultural and political contexts. The global circulation of influencer models invites reflection on how diverse traditions of expertise, authority, and participation interact with platform logics. Future work might also consider the long-term consequences of

mediatized science for education and democracy. As science becomes embedded in everyday digital life, questions of epistemic justice and accessibility gain prominence. Investigating how different groups experience and contribute to the public life of science will illuminate the evolving role of knowledge in shaping collective futures. The mediatization of scientific knowledge in Europe is not a transient phenomenon but a structural transformation of how societies produce, communicate, and validate truth. The rise of the science influencer signals a shift toward participatory epistemic cultures that value openness, emotion, and relational authenticity. The future of science communication will depend on the ability of institutions, scientists, and publics to negotiate this new terrain where authority is not imposed but continuously co-created through communication.

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