Unseen Work: Leveraging Generative AI for Invisible Academic Labour

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Abstract

This paper discusses the pressures faced by academics, particularly women and non-binary academics, due to the increasing demands of teaching, service, and administrative tasks, that leave them with insufficient time for research-related activities. It draws parallels between the invisible labour carried out by academics and parents, and suggests that models of mental workload from the field of family work could be applied to the academic sphere. The paper also explores the potential of Large Language Models (LLMs) to alleviate some of these burdens, particularly those of invisible labour. We conclude by proposing a research agenda to further investigate this topic.

CCS Concepts

• **Human-centered computing → HCI theory, concepts and models**.

Keywords

Invisible labour, Academic Workload, Gender Disparities, Large Language Models (LLMs), Generative AI

1 Introduction

To understand how Generative AI might be integrated into the academic research cycle, one must first consider the unique set of pressures experienced by those working in the field. Academics work increasingly long hours [34] which are becoming more skewed towards teaching- and service-related work, leaving less time for research activities [20]. Therefore, one potential use of Generative AI to support research is by easing the burden of teaching and service demands. Notably, many of these non-research forms of work, which are less visible and contribute minimally to career advancement, tend to be disproportionately completed by female academics e.g., [7]. In this position paper, we draw upon theories of mental load in the domain of parenting [32] to better understand the nature of the invisible labour completed by female and non-binary academics. We also argue that there is the potential to use Generative AI to support this hidden work, citing examples of these tools being used to field questions from student applicants and conduct administrative tasks. In doing so, we hope to encourage research into the current and future practices around LLM use for invisible academic work. We believe that using LLMs for this purpose could reduce workload pressures in academia and create a more equitable environment for the women and non-binary academics who disproportionately complete this type of work.

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2 Positionality Statement

Our research is driven by a belief that gender is largely a social construct, one that has a role in shaping and is shaped by technology. We acknowledge the potential limitations and biases introduced by our own experiences of work, family, oppression, and our academic focus.

3 Academic Work Pressures and Gendered Division of Labor

Academia is becoming increasingly target-driven and economically-oriented, leaving those within the profession under pressure to work longer hours and in an intensified fashion [34]. As hybrid working becomes more commonplace and boundaries between home- and work-life are increasingly eroded, these changes to the length and intensity of the working day have been further exacerbated [23, 33]. For some, these pressures represent a near-existential threat to the academic field, with the time and freedom for reflective thinking that is necessary for successful research and teaching being cannibalised in favour of other demands [17, 24, 45]. Indeed, academics report experiencing unmanageable workloads, working an average of two additional unpaid days per week [43]. Much of this increased workload can be attributed to increased responsibilities related to teaching and administration. In a traditional academic workload model, academics will spend 40% of their time on research, 40% on teaching and 20% on administration and service, this 40:40:20 ratio is a fallacy for most. Whilst this ratio is often used to set expectations of outputs, research suggests that teaching (40%) and administration and service (35%) dominate academics' time, with only one-quarter of their workload dedicated to research [20], leaving academics with no choice but to work long hours to meet expectations related to research.

The workload pressures experienced by academics are not evenly distributed across those working in the field. Namely, there is evidence to suggest that experiences of academic workloads and pressures differ along gendered lines, with women (and likely non-binary individuals) at a disadvantage. Notably, female academic staff members are asked to deliver more than their male counterparts. Compared to male academics, women receive more requests

for new pieces of work [27], greater demands from students [8] and supervise more students than men [22].

As well as the *amount* of academic work women are expected to complete relative to men, the *nature* of the work also differs between genders. For instance, female members of staff have strikingly different interactions with students. They are typically expected to provide more favours (e.g., marking the re-submission of an assignment to enable a student to earn a better grade) and friendship behaviours (e.g., discussing personal problems with students) [8]. Female academics are expected to perform these forms of additional support and accommodation more frequently than their male counterparts as they are perceived by students to be more caring and obliging [7]. Moreover, it is a well-established finding that academic service work (such as committee membership, mentoring and curriculum development) is more commonly completed by women than men [2, 13, 19, 27]. There are several reasons why this difference is thought to arise. For one, female academics are more likely to volunteer and be asked to volunteer, for tasks that have less impact on their promotion prospects; a category into which service work often falls [2]. Furthermore, female and male academics differ in how they frame service work. Where women typically conceptualise this work in terms of its community aspects, men tend to see it as a problem which interferes with their ability to conduct research [26]. As a consequence, males tend to avoid service work, whereas women are more willing to do this work without expecting a reward or for the potential of receiving a future reward [16].

Much of the academic work completed disproportionately by women is defined by its hidden nature. For instance, service work, though typically both time-consuming and emotionally challenging, receives little recognition and offers limited opportunities for career advancement [7, 22]. In fact, this type of work have been termed as "non-promotable tasks" (NPTs) given their minimal impact on the career prospects of academics [1]. However, even within the domain of service work, men tend to take on more visible activities such as writing recommendation letters, leaving less visible alternatives like mentoring to female academics [14]. This leaves female academics with less time for more visible and well-recognised research-related activities than men [26]. Female academics' time for research work can also be impacted by hidden pressures from outside of the workplace, as they are frequently forced to sacrifice academic work in favour of childcare and household responsibilities [21, 47]. Thus, women in academia find themselves working harder on tasks, both inside and outside the workplace, that receive less recognition and as a consequence have fewer opportunities to engage in research-related activities.

The gendered division of the academic workload has significant consequences. Although promotions frameworks recognise the importance of teaching and service, the culture of universities typically places greater emphasis on producing publications and obtaining grant funding as a metric for success [46]. Academics are incentivised to publish research to share the results of their work and in return for promotions and pay rises [3]. Thus, any barriers to producing research experienced by female academics; are in effect a barrier to their career advancement. Indeed, there exists a "leaky pipeline" phenomenon whereby there is a progressive loss of female academics as they advance in their careers, leaving disproportionately few women in senior positions [12]. This phenomenon has been attributed to women having insufficient time to conduct research activities, which are key for promotion prospects, due to their service responsibilities [28]. Relatedly, women make fewer and smaller grant applications than their male equivalents [9]. Again, female academics report that being overburdened by service and teaching commitments is a barrier to making grant applications [10].

4 Parallels between the Invisible Labour of Academics & Parents

We propose that HCI researchers interested in understanding the invisible mental load of female and non-binary academics should turn to similar models in the domain of parenting. Work to understand the pressures faced by female academics in navigating their careers alongside their reproductive choices and domestic responsibilities has already begun to unpack how gendered expectations in the domestic sphere impact professional lives [4]. Much like women in academia, mothers are frequently responsible for family-related work which has limited recognition and visibility [6]. Often these tasks take the form of mental labour i.e., the cognitive activities that are required in managing a household [25, 42]. This concept differs from the notion of Family Information Management (FIM) a HCI research area concerned with managing and coordinating household-related information like bills, documents, schedules etc. This work however focuses on the visible labours of family administration rather than the mental and emotional hidden labours of family management [35].

Robertson and colleagues [32] identified six forms of mental labour undertaken by mothers: (a) planning and strategising, (b) monitoring and anticipating needs, (c) metaparenting, (d) learning and remembering (e) managerial thinking (e.g., delegating and instructing), and (f) self-regulation. Many of these forms of mental labour have direct parallels with the invisible work conducted by academics. For example, where parents are responsible for monitoring the needs of the children, mentors in academia (who are disproportionately female) need to do the same for their mentees. However, we also believe that these aspects of mothers' mental load may map onto hitherto unexplored elements of the invisible workload of female and non-binary academics. For example, consider the role of an academic serving as a curriculum lead. Clearly, this leadership position would require planning, strategising and managerial thinking. However, they may also have to engage in the equivalent of metaparenting, (the development of a philosophy guiding the decision-making of parents) in determining the manner in which they want to interact and work with various stakeholders e.g., lectures, administrative staff and students. Also, a curriculum lead would likely need to monitor and anticipate needs of others, such as students who require additional support with examinations. Thus, we suggest that applying models of mental workload from the field of family work to the academic sphere is a fruitful avenue in defining some of the issues that female and non-binary academics face.

5 LLMs and the Invisible Mental Labour of Academia

Given the pressures experienced by academics (both in a gendered and ungendered sense), it is little surprise that there has been interest in the use of Generative AI models to address workload issues [44]. For instance, researchers have explored the use of LLMs for a variety of academic work tasks, including idea generation [31], qualitative data analysis [5, 37] and peer review [15, 36]. In addition, guidelines have been developed to support academics with using Chat GPT for research, student engagement, administration and teaching and assessment [38–41]. Whilst reservations have been expressed about the impact of LLMs upon academia, e.g., [18, 30], the research being conducted in this space suggests that Generative AI has the potential to support academic work tasks.

Notably, the majority of studies into the use of Generative AI to support academic work focus on research- or teaching-related activities with highly visible outcomes. However, there has been comparatively little investigation into how Generative AI can support academics with their invisible labour. At first glance, one might attribute this to LLMs being suitable for tasks with concrete and tangible outputs, such as synthesising literature or analysing data. However, we would challenge this idea, pointing towards examples of innovative research which have explored the use of LLMs to support some of the less visible demands that tend to be met by female academics. For example, Park and Kulkarni [29] used an LLM tool to answer questions from graduate school applicants, essentially acting in lieu of the mentorship opportunities typically offered by academic staff. Furthermore, in domains outside of academia, the use of LLMs to automate administrative tasks is being explored. For instance, Gebreab and colleagues [11] developed a LLM designed to automatically complete administrative tasks in a healthcare context, namely the retrieval of medical records and health information. These examples demonstrate the ability of LLMs to support precisely the kind of low visibility work completed by female, and likely non-binary, academics which prevents them from engaging in research-related activities.

6 Limitations

In this paper, we discuss research related to the gendered division of academic work. The literature cited primarily treats gender as binary, comparing the experiences of men and women. Only a minority of studies in this area acknowledge the existence of non-binary academics [14, 19, 47]. However, to our knowledge, there are no papers that explicitly examine the experiences of academic workload for non-binary persons and further work is required to investigate the experiences of these academics.

7 Research Agenda

We believe that LLMs have the potential to have an indirect, but vital, impact on the conduct of research in academia. Namely, we suggest that using LLMs might ease the burden of academics' invisible labour, freeing up more time to focus on research-related activities. While invisible labour is performed by individuals of all genders, our research questions are designed to address the broader academic context. By improving the overall efficiency and reducing the burden of invisible labour for all academics, we can particularly benefit the female and non-binary individuals who are disproportionately affected. To this end, we propose a research agenda which seeks to answer the following questions:

(1) What is the nature of the invisible labour carried out by academics?
(2) What are the current practices of academics using LLMs to support their invisible labour?
(3) How might future tools based on LLMs be designed to support academics with their invisible labour?

These research questions address the broader academic context, given that invisible labour is performed by individuals of all genders. However, in addressing these questions, the gendered division of academic workload must be acknowledged. Researchers should seek to understand how invisible labour differs between academics of different genders and consider the specific perspectives of female and non-binary academics. Doing so will allow LLM-based tools to support academics' invisible workload to be tailored to the needs of those who disproportionately complete this work.

We have started a program of research that aims to answer these questions. However, we call on other researchers with an interest in the use of LLMs to support academic labour to respond to this call to action and address these issues too. Not only does investigating this topic have the potential to identify means by which academics can spend more time on research but also contributes to making academia a more equitable field by alleviating the burdens of invisible labour that are disproportionately completed by women. Crucially, we by no means advocate the use of LLMs as a "sticking plaster" for the wider issues that disadvantage female and non-binary individuals in academia, which must be addressed with long-term, systematic change. However, we do think that LLMs can play a role in the immediate present to mitigate against some of the disadvantages experienced by female and non-binary academics.

8 Conclusion

Academics are increasingly expected to complete teaching, service and administrative tasks leaving them insufficient time for research-related activities. This invisible academic labour is disproportionately carried out by women, and likely non-binary individuals, which limits their opportunities for career advancement. However, the advent of Large Language Models (LLMs) presents promising opportunities to alleviate these burdens. While the exploration of LLMs to support invisible academic labour is still in its nascent stages, we believe that the potential benefits they offer in terms of time and workload management are substantial. Thus, we propose a research agenda for addressing this topic, with the hope that this can make academia a more productive and equitable field of work.

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