

The invisible weight of cognitive labor

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Abstract

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Cognitive labor is the mental work it takes to run a home. This type of labor, separate from physical tasks, is a form of domestic labor that often goes unnoticed — *it is often invisible*. This invisible mechanism that shapes our home life has historically been excluded from research on topics related to dimensions of household work. Because of this, it is difficult to generate a full, nuanced account of the domestic work that occurs in our everyday lives. This thesis uses design as a means to better visualize and make tangible this invisible facet of home labor.

The invisible weight of cognitive labor

Stephanie Tang Waldrop

Contents

9	Introduction
13	Background
17	Primary Research
25	Insights
29	Design Principles
31	Ideation
35	Design
43	Discussion
47	Bibliography

INTRODUCTION

My cultural background and life experience has played a large role in how I have come to view domestic work in the home. I was raised in a diverse suburb of Southern California, where the ethnic make-up in my neighborhood growing up was majority Mexican, Vietnamese, and Korean. A large portion of my friends and peers had foreign-born parents. I myself am a first-generation American, after my parents, who immigrated to the the United States as a result of the Cambodian genocide under the Khmer Rouge. It wasn't until I entered university, in a wealthy city on the California coast, studying in classrooms where I was the minority, that I knowingly felt the impacts and nuances of race and class. In my past, I worked as a personal assistant to the matriarch of a high-powered music executive, where the domestic help consisted not only of myself, the personal assistant, but also a nanny and a housemaid. Early in my career, I worked in Silicon Valley for a private wealth management firm where I assisted several male, Partner-level executives. For the past three years, I have been in the midst of graduate school and part-time work, all while living during the uncertainties of the COVID-19 pandemic with two children under the age of five. It has been, at times, overwhelming trying to juggle the intricacies and expectations around the everyday tasks of managing a home. *But these sentiments are not uncommon.*

These experiences have grounded my views on the under-appreciation of domestic work. I have witnessed and felt the amount of physical, cognitive, and emotional care it takes to keep families running smoothly and to keep a company's

operations humming along. *Who is going to remember to research and decide on a birthday gift for their mother or mother-in-law? Who makes a mental note and notices when items in the home are running low? Who is going to manage a calendar so everyone in a household or team has all the details at hand?*

This kind of work, called cognitive labor, is something that is difficult to quantify and only compounds as one enters different life phases. It often goes unnoticed — *it is often invisible* — and it is this subject matter that is the underlying basis of my thesis exploration.

This invisible force shapes our home life. However, I discovered through my research that this form of labor, while ubiquitous, has historically been excluded from research related to dimensions of household work. As such, it's difficult to generate a full, nuanced account of the domestic labor that occurs in our everyday lives. The individuals I talked to in my research were unaware that this aspect of labor could be defined. When I explained to them that this vocabulary and definition existed, the reactions were *visceral*.

So, I asked the overarching question: how might we make cognitive labor more visible and tangible for people in their homes? *How might I use my skills as a visual designer and researcher to engage the public with this social issue?*

Ultimately, I designed an interactive, visual narrative that embodies the research work I conducted over the past nine months. The content was drawn from the insights I gathered through my design research. It serves as a site of discovery and reflection of one's own cognitive load and can be utilized as a tool for couple's to engage in the topic of cognitive labor.

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BACKGROUND

What is cognitive labor?

Cognitive labor is the mental work that it takes to run a home. It can feel like a never-ending mental checklist. Colloquially, it is referred to as invisible labor or the mental load (Gross, 2020; Grose, 2021). *Cognitive labor is the thinking aspect of labor*, which consists of managing the thinking, planning, organizing and scheduling of household members and their plans (Dean et al., 2021, p. 1). This is separate and distinct from physical labor which consists of the physical aspect of completing household tasks. It is a gendered phenomenon and women continue to bear the majority of domestic housework, both cognitive and physical. Despite women's full-time employment, women still manage most of the household labor and the time spent on household work is the greatest among couples with children (Ciciolla, 2019, p. 1). Allison Daminger, PhD., defines cognitive labor as having four dimensions: 1. Anticipating needs, 2. Identifying options for fulfilling those needs, 3. Deciding among those identified options, 4. And monitoring those needs, making sure decisions are executed and addressed (Damingler, 2019, p. 609).

Here's an example:

Let's say you're planning a birthday party for a friend.
Let's break down the physical and cognitive labor.

Here's a list of the physical labor:

- Picking up the cake
- Putting a marker, such as a balloon, outside your residence to help signify a party
- Going to the store and purchasing the gift

Here's a list of the cognitive labor (broken down in its four dimensions):

1. Anticipating Needs

- The party is in two months. What are the steps we need to take to make sure everything is ready by their birthday?
- There are individuals who need to be at the party. Who are those individuals? Let's check with them first to make sure they can attend.
- How many people are going to be at the party? We need to find a venue that can fit everyone.
- What is the individual's taste? What kind of cake would they like? Let's check with them first.
- How long in advance do I need to order the cake?

2. Identifying Options

- Researching the venue.
- Researching the bakery to buy the cake from, taking into consideration the size for the number of people invited.
- What invite medium are we going to use? How formal is it — do we go digital or paper?
- Researching the party favors.

3. Decision Making

- Let's invite these people.
- Let's buy these party favors because they're within budget for this many people.
- Let's pick this venue because it's the most accessible for everyone on the invite list.

4. Monitoring Results

- Did everyone respond to the invite? We should check in with them in a couple days if they haven't responded.
- I need to call the event location to make sure the space is set up by a specific time.
- I asked this individual to pick up the cake. I'll text in the morning to make sure they're still planning on picking it up.

And the list continues.

Existing research on household labor centers on the physical aspect of domestic labor. However, as you see in the examples above, cognitive labor accounts for a majority of the work it takes to plan an event, but it is diffuse in character and difficult to measure because it occurs mostly in the mind. Given the lack of research in this space due to its seemingly unquantifiable nature, it is difficult to fully understand the dynamics of domestic work that actually exists within our households.

Daminger concludes that without raising awareness of this facet of labor, gender operates as an invisible mechanism that shapes home behavior patterns and thereby reinforces this household gender gap (2019). If cognitive labor remains invisible to people in their everyday lives, this collective, subconscious practice of gendered home labor will persist and these daily routines of patterned behavior will stay unchanged.

From this secondary research, I realized that the definition of cognitive labor was not explicitly defined and categorized until 2019 and most individuals were unaware of this technical term. I decided that I wanted to create a discourse and dialogue around this kind of invisible work and get individuals, and couples, to notice and value the cognitive labor in their own lives.

PRIMARY RESEARCH

Interviews

To try and better understand the cognitive labor dynamic in people's homes, I conducted thirteen formal interviews and engaged in countless informal conversations with friends and peers over the course of my research. I also recruited individuals through a survey which was distributed via Reddit on various parent-related groups.

I arranged one-hour interviews via Zoom with individual participants and asked questions about the topic of cognitive labor: if they were aware of what it entailed, what cognitive tasks they took on in their household, and how their household managed and distributed their cognitive labor. They were compensated \$30 for their time.

Inquiries into making cognitive labor explicit and concrete

While the interviews answered questions about whether or not the lived experiences of those dealing with cognitive labor was a commonality, I wanted to get more granular with the specific physical and cognitive tasks one engages in in the home. Currently, there is no existing research that attempts to capture explicit cognitive tasks.

Research Probe

In order to better understand and evaluate the labor patterns in the home, and to get a better sense of the amount of physical and cognitive labor completed each day, I prepared a task exercise for myself and another participant to complete. We

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each tracked our physical and home labor over the course of five days and then reflected on the exercise together following completion of the study.

The participant said that, through the study, she and her partner began to say “thank you” more frequently, as a gesture of acknowledgement that they were aware of the other person’s physical and cognitive load. It was through this experiment that I learned that just by making people aware of this form of labor who were unaware of it before, by making it visible and real simply through discussion, was in and of itself an accomplishment for making this topic more broadly understood.

The success of this research probe inspired the next exercise, which allowed me to expand on the probe and dive deeper with additional reflection questions.

Diary Study

I recruited for and conducted a week-long diary study with three participants that began with an introduction interview where I asked the participants about their home labor dynamic, their usage habits with their home assistant technologies, and how they use these technologies to help them complete their home labor tasks. The diary study was an iteration of my Research Probe, but in addition to tracking their physical and cognitive labor, I included a daily questionnaire that served as reflection questions on their domestic work for the day. Following the diary study, I conducted exit interviews with questions around notable occurrences and insights during the study. Each participant received \$30 for each interview for their time.

My research for this was submitted to the University of Washington’s Human Subjects Division and Institutional Review Board (IRB) and was approved for Category 2 – Exempt Status. The purpose of the IRB is to protect the safety, rights, and welfare of research participants and to ensure

institutional compliance with federal and state regulations and University policies.

Diary Study Screenshot.

TASK	Day 1 Wed 11/17/21		Day 2 Thur 11/18		Day 3 Fri 11/19		Day 4 Sat 11/20	
	You	Partner	You	Partner	You	Partner	You	Partner
Meal Plan (What are we having tonight?)	x	x						
Cook	x							
Meal Prep	x							
Take out trash	x	x						
Wash dishes		x		x		x		x
Put dishes away		x		x		x		x
Clean kitchen		x		x		x		x
Meal option decisions	x							
Prepare coffee-espreso machine	x		x	x				
Dim kitchen lights	x	x	x	x	x	x	x	x

Card sorting exercise

I created exercises to see how I might develop an experience that couples could engage in together. I used an existing product called Fair Play as a tool to explicitly lay out the home tasks completed by me and my partner (Rodsky, 2020). Each card in the deck includes a text and illustration of an associated household chore. I went through each card and sorted them by who is mostly responsible for completing or maintaining each domestic task.

Following the sorting process, I walked through it with my partner and we talked through our thoughts and feelings. Having the tasks explicitly laid out neutralized the

gain more considerable new-knowledge. The cognitive labor research also attracted more engagement and discussion, so with the time and resources I had, I ultimately chose to focus solely on cognitive labor.

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“Generally cognitive stuff feels harder for me. Whenever I have a day where I organize the rooms and dishes, like with physical labor, I can measure. Cognitively, when I tend to someone’s needs, it doesn’t feel like I got anything done.”

—Billie, 28, Stay-at-Home Parent + Gig Worker
Chattanooga, TN.

INSIGHTS

The following are key takeaways are driven from the research I conducted during the course of my thesis work:

Cognitive labor is difficult to measure + doesn’t feel tangible.

Overall, through conversations in my interviews and more informal conversations with friends and peers, I found that cognitive labor can go unnoticed even for the person doing the work — *the routines of remembering to turn the lights off at night, or making sure that the coffee timer is set for a certain time to brew* — those ingrained behaviors and routines is diffused and difficult to quantify.

The dynamic of home labor is often difficult to discuss

Discussions about cognitive labor in the home aren’t frictionless and a tension can often permeate around this topic. In one conversation and not an uncommon theme, a working mom discussed how when she approaches her family about the topic of home labor, the household members will get defensive about the amount of work they have completed, getting frustrated that it is never enough. One participant, in order to remove the “nagging” or implied tone of her requests, would text her husband instead of verbally sorting out daily chores with him because it didn’t carry any “baggage”. This led me to a design opportunity for creating an experience or service that is not antagonistic or pointed.

Giving cognitive load a name makes it concrete, understandable and real.

Not many people realize what cognitive labor is, even though everyone partakes in it every single day. I received visceral

reactions from people after I would speak about my concept and touch on the complexities of balancing work and home life.

One participant included her husband and son in the diary study and shared with them the concept of cognitive load. Luckily, it helped enable small behavior changes in her family.

Cognitive labor is not often intentionally decided amongst couples.

Labor is generally not intentionally divided. It's usually done in the moment of who is "naturally good" at a certain thing — and that person is expected to take it on from that point.

Unsurprised by the cognitive labor balance but surprised by the number of tasks that added up to a heavy cognitive load. Following the supplemental survey, most respondents were not surprised by the cognitive labor balance in their partnership. They were, however, surprised by the amount of individual tasks that resulted in high cognitive load.

Even if the domestic labor is unbalanced, individuals want to be seen and appreciated for their efforts in the home.

Even when individuals were aware of the imbalanced cognitive load with their partner, oftentimes, their feelings of resentment might be assuaged if the partner was cognizant and appreciative of their partner's effort in maintaining their division of labor.

Cognitive weight is the relative burden an individual might feel towards a given task.

The cognitive weight of financial planning for your children might be more of a burden than picking out the groceries for next week, for example. This was an insight that I believe warrants further exploration and measurement.

“Now that I realize that I was [doing cognitive labor], I can delegate the cognitive load and they are aware how things are done because cognitive load is defined. When they ask what's for dinner, they know [the work it takes].”

—Wendy, 56, Retired.
Tacoma, WA.

DESIGN PRINCIPLES

I outlined a set of design principles that guided my ideation and final design process.

Accessible — so a broad public can engage in this topic as widely as possible

Digestible — because explaining this topic can take some time and involves some nuance, I want the expression to be clear, concise, and easy to understand

Useful — because I want to create the vocabulary and space for people to learn and engage in the topic of cognitive labor

Didactic — because I want people to understand that this is a common problem that is widely ignored and often difficult to broach with their partner

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to be highly curated. As a means of access, this dialogue tool could be using a number of other found objects in the home.

Final Design Direction

Through my ideating, many of the ideas were centered around how couples might engage in the topic. I came to realize that through the process of my research, it might be difficult to get a partner to talk about the topic or recognize the validity of cognitive labor as a concept. Some couples partners who were uninterested in engaging in the topic or tried engaging without success or much tension. When you are able to engage with a partner, it takes time and a large amount of emotional effort to get to a good place, so trying to get someone to engage in an actual activity about it might be difficult. It was also important for me to create something that didn't entirely center around couples because I believe it is important for individuals to be aware of cognitive labor well before they enter in to a partnership with someone else. Therefore, it was important that this medium be accessible to a broad audience. This artifact living on the internet will be accessible and can serve as a starting point for people who are curious to learn more about cognitive load.

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DESIGN

Interactive, Visual Narrative Website

The final artifact I designed is an interactive, visual narrative, via a website, that includes five sections. Each section serves a different purpose and function and includes its own distinct interaction model.

The site can be found here: cognitivelabor.us

COGNITIVE LABOR, EXPLAINED SECTION.



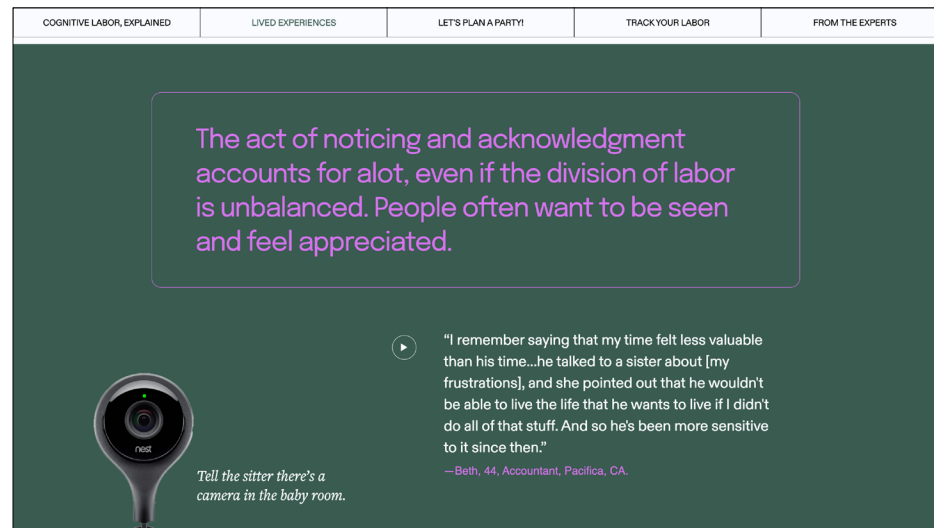
Section 1—Cognitive Labor, Explained

The landing page provides an overview for my project and explains the topic and purpose of the site. It provides a succinct description of main insights and encourages you to explore

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the remaining sections. Because cognitive labor is so diffuse—as a way to reinforce the idea, I provide examples of cognitive load through hover interactions over the overlaid imagery on the page. When you hover your mouse over an image, a ‘thought bubble’ of cognitive work fades. This engages the user in a fun interaction and through repetition and example, strengthens the understanding of cognitive labor. The imagery also appears in other sections as a unifying visual element.

LIVED EXPERIENCES SECTION.



Section 2—Lived Experiences

This second section focuses on the lived experiences of the individuals I interviewed. Rather than reading through text, audio excerpts from my interviews engage the audience differently on this page. Hearing it through the actual voice of the interviewee ascribes a different emotional response versus plain text. Insights gained from my interviews accompany each excerpt.

The following page includes a few example notes from the section:

“I remember saying that my time felt less valuable than his time and that was frustrating to me that I had to, you know, get new tires on the car and all of that sort of crap, in addition to just making sure our kids got everywhere they needed to be when they needed to be there. He talked to a sister about it, and she pointed out that he wouldn’t be able to live the life that he wants to live if I didn’t do all of that stuff. And yeah, so he’s been more sensitive to it since then.”

—Beth, 44, Accountant
Pacifica, CA..


“I feel like it’s a really common thing that people get into arguments about, but I think they don’t say cognitive labor. They just kind of say, in other ways, like, it really bugs me that I had to do everything to prepare for this.”

—Amanda, 23, Product Designer
Federal Way, WA.

“I felt like he didn’t understand, sort of the layer of extra tasks that I was having to navigate and juggle just simply because I was a mom. And trying to figure that out for the first time, all of these invisible, sort of silent responsibilities that I was kind of doing behind the scenes. He didn’t he didn’t realize that and so what it actually culminated in was a bunch of arguments.”

—Nancy, 39, Design Consultant
Seattle, WA.

LET'S PLAN A PARTY SECTION.

COGNITIVE LABOR, EXPLAINED	LIVED EXPERIENCES	LET'S PLAN A PARTY!	TRACK YOUR LABOR	FROM THE EXPERTS
DRAG AND DROP EACH TASK TO THE CORRESPONDING WEEK				
<p><i>I have to generate the invite list.</i></p> <p><i>Researching which party favors buy.</i></p> <p><i>Researching which gift to buy.</i></p> <p><i>Adding invite to calendar.</i></p> <p><i>Deciding on party favors.</i></p> <p><i>There are friends we'll definitely want to be there. Let's check with them.</i></p> <p><i>Sending out the invite.</i></p> <p><i>If purchasing the cake, researching where to buy cake.</i></p>				
4 WEEKS 3 WEEKS 2 WEEKS 1 WEEK DAY OF				
<p><i>How many people can we invite?</i></p> <p><i>Who to invite.</i></p> <p><i>Deciding on invite medium.</i></p>	<p><i>We need to pick the best date for the party.</i></p> <p><i>Asking what kind of cakes the birthday person wants.</i></p> <p><i>Deciding which gift to buy.</i></p> <p><i>If purchasing the cake, ordering the cake in time.</i></p> <p><i>Generating the invite.</i></p>	<p><i>Deciding on cake size.</i></p> <p><i>Figuring out the budget for the gift.</i></p>	<p><i>If baking the cake, researching the kind of cake to bake.</i></p> <p><i>Figuring out the budget for the gift.</i></p>	<p><i>If purchasing the cake, picking up</i></p> 

Section 3—Let's Plan a Party!

This section allows the user an interactive medium to plan a party. It includes an interactive drag and drop function where users can plan a birthday party based on pre-written tasks or chores. I chose this particular exercise because birthday parties require advance planning. It certainly emerged as an example of heavy cognitive load.

This page allows for you to think about how long in advance you actually need to plan ahead and helps visualize the timeline through a simple bar chart interface.

TRACK YOUR LABOR SECTION.

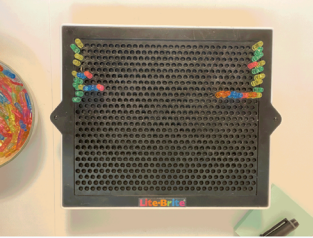
COGNITIVE LABOR, EXPLAINED	LIVED EXPERIENCES	LET'S PLAN A PARTY!	TRACK YOUR LABOR	FROM THE EXPERTS
		MYSELF	QUESTION	PARTNER
		<input checked="" type="radio"/>	Who is mostly responsible for meal planning?	<input type="radio"/>
		<input checked="" type="radio"/>	Who mostly generates the grocery list?	<input type="radio"/>
		<input type="radio"/>	Who mostly keeps a tab on items that are running low?	<input type="radio"/>
		<input type="radio"/>	Who mostly know what brands of foods to purchase?	<input checked="" type="radio"/>
		<input type="radio"/>	Who mostly purchases groceries?	<input checked="" type="radio"/>
		<input checked="" type="radio"/>	Who mostly cooks the meals?	<input checked="" type="radio"/>
		<input checked="" type="radio"/>	Who mostly preps the meals?	<input checked="" type="radio"/>
		<input checked="" type="radio"/>	Who mostly knows what foods are needed to make the meal?	<input type="radio"/>
		<input checked="" type="radio"/>	Who mostly mostly knows what ingredients exist in the	<input type="radio"/>

Section 4—Track Your Labor

This section was inspired by my survey and diary study where I realized how important it was for individuals to explicitly find out what their home labor tasks were in the home, as well as their partners.

On this page, if the user is part of a couple, they can better visualize the domestic labor balance in their partnership with this checkbox activity. This format was inspired by analogue test forms. One answers the questions by clicking on the corresponding buttons. If they are more responsible for a given task, then they click the left button. If the partner is more responsible, then they click the right button. If they both share the load equally, then they would click both. Corresponding colors are associated with each answer. In the end, they have a visual representation of the cognitive work that they engage in with their partner and it serves as a point of reflection with their partner and hopefully a conversation starter.

FROM THE EXPERTS SECTION.

COGNITIVE LABOR, EXPLAINED	LIVED EXPERIENCES	LET'S PLAN A PARTY!	TRACK YOUR LABOR	FROM THE EXPERTS
				 <p>This exercise is meant to be casual, low stakes and low intensity. It is meant to be an informal conversation starter around the topic of cognitive labor.</p> <p>In my case, I used a Lite-Brite (!) and set it in the busiest part of my house, my kitchen. Each individual has one side or section and sort pegs by color. — Yellow denoted Cognitive Labor and Green denoted Physical Labor.</p> <p>3. Each time a task is completed and you remember the exercise, add a peg to the board. If the task feels especially cumbersome or difficult, add additional pegs next to the initial peg to denote the cognitive weight.</p> <p>4. Set a note pad or paper and pen next to the system so you can jot down notes for each task, if you wish to.</p> <p>5. When you and your partner are together, take some time to reflect and discuss some of the cognitive tasks you completed during the day.</p> <p>What was an easy task that you accomplished? What was a more difficult task to accomplish? What cognitive tasks did you note that were easy for you? Why? What cognitive tasks did you note that were difficult for you? Why? Were any tasks difficult to define? Why?</p> <p>Don't have a Lite Brite? No problem! Some alternatives options below.</p> <p>Battleship</p> <ul style="list-style-type: none">— Use the game board, pegs, and ships in the same configuration as the Lite Brite— Other household items like Legos would also

Section 5—From the Experts

The last section serves as a resource page on the topic of cognitive labor. It includes excerpts from my interview with Allison Daminger. I also reference the dialogue tool from my research as a way to engage your partner in this topic and suggest common, alternative home objects you can use as your dialogue tool. Lastly, pertinent papers, books and products are referenced at the end that I found helped advance my knowledge in this space.

Installation at The Henry Gallery

My installation of my exhibit at the Henry Art Gallery in Seattle, Washington, titled, The invisible weight of cognitive labor, also served as an important artifact for my research work. The installation is meant to be an introduction to the topic of cognitive labor and serve as a place for reflection and discussion for visitors of the gallery. The staged home setting is meant to reflect a familiar portrait of home life. The cognitive list is often invisible and in your head, so I wanted to express that visually.

I did so using transparency sheets with printed typographic thoughts via an inkjet printer. These individual sheets were cut and tied together on strands using delicate fishing wire, creating a visualization and volume of thoughts. Thirteen individual strands were hung from the ceiling and appeared as if they were floating in the gallery space. Surrounded by a desk, bench, and couch, visitors were encouraged to sit on the furniture and reflect on their division of home labor. A series of three framed posters explained the concept of cognitive labor.

Completed installation at The Henry Art Gallery.



DISCUSSION

Reflections

My research validated some of the assumptions that I had about cognitive labor—that often women completed more of the household labor. However, research concludes that it is more nuanced and that couples share in the decision-making process, but women take on more of the anticipating and identifying option dimensions of cognitive load (Daminger, 2019). There were also a couple responses I received from couples in their 20's with no children where there seemed to be active engagement in the space of domestic labor and division of roles, so that was encouraging to see.

Every family dynamic with regard to cognitive labor is nuanced and dependent on their values and circumstances—there are variables that can make it better or worse, like having or not having family close to lessen your load, the stress level of a person's job, one's own beliefs on roles in the house, one individual might not be working, or one might be caretaking another family member, which adds an entirely different level of cognitive and emotional care. Overall, however, it is important when people feel seen and understood and that the work they do in the home is appreciated and acknowledged.

Intersections

The current research landscape in sociology is academic. Often as well in human-computer interaction research, academic research is published in journals or conferences. This hinders the work from trickling into circles outside of those in its own field, so I inquire as to how we can make topics of interest more compelling through visual design, storytelling,

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and narrative. By designing my visual, interactive narrative, I was able to visualize and disseminate my research to a broad audience through clear, succinct narratives, imagery, color and typography.

Current + Future Plans

My goals for this artifact is its wide dissemination. This has been sent to Allison Daminger's network as well as my personal network. I aim to send this along to other pertinent blogs and publications. I would also like to create a social media handle for my work as a means for extended distribution and engagement.

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