Social Role Transitions and Technology:
Societal Change and Coping in Online Communities

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Information)
in the University of Michigan
2020

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ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

ABSTRACT

Technological and societal changes unfold in relation to one another. Many events like becoming a parent, getting divorced, or getting a medical diagnosis dictate a change in one's social role. Social role transition can have negative consequences including stress, stigmatization, and disempowerment. Social interactions, especially communicating with allies and those facing similar conditions, can alleviate the psychological burden of these challenges.

The goal of this dissertation is to understand how people use technology to cope with social role change, and how the features of different online communities provide a range of ways to make sense of their social role transition, find support, and advocate for change.

In the first study (Chapter 3), I qualitatively analyze interviews with fathers and a sample of father blogs to show how fathers use do-it-yourself (DIY) language on blogs and in their online interactions as a means of redefining fatherhood. Fathers use the DIY concept to build their own father-centric online communities in order to manage some of the disadvantages associated with the lack of parenting online communities that cater to them. This new framing of fatherhood allows fathers to make sense of their new role as parents, and at the same time, to redefine the social norms around fatherhood.

In Chapter 4, I study how parents use social media sites at scale using natural language processing. The focus of the analysis is on Reddit, a social media site that allows users to comment under pseudonyms. I find that parents use pseudonymous social media sites to discuss topics that might otherwise be considered too sensitive to discuss on real-name social media sites such as Facebook (e.g., breastfeeding and sleep training). This study also outlines similarities and differences in discussion topics among mothers and father on Reddit (e.g., mothers discussing breastfeeding and fathers discussing divorce and custody).

Finally, in Chapter 5, I use computational and qualitative methods to study how anonymous accounts on Reddit (throwaway accounts) provide parents with varying levels of anonymity as they cope with social role changes by sharing potentially stigmatizing information (e.g., postpartum depression) or advocating for stigmatized identities (e.g., divorced fathers). Finally, based on my findings, I present design recommendations that could promote better social support on platforms beyond Reddit.

CHAPTER 1

Introduction

The social role one occupies (i.e., the "part one is assigned to play") is defined by societal norms [244]. Everyone experiences social role transition throughout their lifetime, as they transition from childhood to adolescence and adulthood, from being single to being in a relationship, or as they become a parent. For each of these transitions, there is a different set of expectations. While at times the transition can be a positive experience — e.g., getting a promotion at work — it can also induce anxiety and stress, a condition referred to as social role strain [243]. Social role strain is moderated by environmental factors such as social support networks [139]. In Chapter 2, I review literature on social role theory, focusing on role strain and moderators that alleviate it.

Throughout this dissertation, I focus my analysis on the transition to parenthood. This is an important transition for which social expectations have been changing over the past few decades. As more women enter the labor market, fewer women are assuming the traditional role of primary caregiver as evidenced by the decrease in the number of stay-at-home mothers [91]. At the same time, the number of families in which the father is the sole breadwinner has fallen since the 1960s. Today, most families are dual-earner families [169]. However, the breadwinner ideal is still strong. Gerson found that men in dual-earner families wanted to be the primary breadwinners [96]. Other research has shown that, even when women earn more money than their partners in heterosexual relationships, men still view their career as more important [271]. Since men have traditionally been seen as primary breadwinners (e.g., [252]), the breadwinner status is still an essential component of the masculine identity [270]. LaRossa [153] referred to this difference between normative standards and daily family needs as a normative lag. As fathers transition to this ambiguous social role, they experience role strain [218] as they fail to conform to traditional hegemonic masculinity [56]. Mothers also have to cope with social role strain related to the added responsibilities they take on when entering the labor market (e.g., [127]) or new domestic tasks related to social media and digital technologies, such as privacy stewardship for their

children online [148]. In Chapter 2, I review the history of parenting in the United States (see Section 2.2) as a backdrop to the normative changes around the concept.

The idea of parenthood is intertwined with normative expectations around gender. Judith Butler's concept of gender performativity suggests that identities are negotiated by being performed or enacted [46]. This performance can happen both online and offline. Social media sites, blogs, and other online digital content [225] give people control over "cultural productions," gender performativity being one. Given the centrality of online content in negotiating new gender norms, I study how men craft a new parenting identity in Chapter 3 by asking

> **RQ1: How do fathers use their online interactions to construct a new fatherhood?**

I used qualitative methods to analyze interviews with 22 fathers and a rhetorical analysis of 29 blogs to answer this research question. I find that fathers use do-it-yourself (DIY) projects to legitimize domestic work. By doing so, they provide for their families by other means while still maintaining a masculine identity. By sharing their DIY experiences on their blogs, fathers were crafting a new fatherhood identity — the DIY dad. Finding little support for fathers in online parenting communities like cafemom and BabyCenter, dads created their own father-centric online communities as a DIY project.

Given the importance of online social support for fathers, I study Reddit, a predominantly masculine space (23% of males between 18 and 49 years are Reddit users [69]), at scale using natural language processing in Chapter 4. Reddit provides a level of anonymity for its users as a pseudonymous social media site where parents do not need to use their real names, but can choose a pseudonym instead. I first ask,

> **RQ2: What topics do parents discuss when pseudonymous online?**

I find that parents discuss many topics central to caregiving [59] including food preparation, childcare, scheduling and logistics, cleaning, and finances, among others. I also find that parents discuss some of the more sensitive parenting topics, including breastfeeding, sleep training, and vaccinations.

Given that the dataset contained three different Reddit forums (subreddits), one father-centric, one mother-centric, and the third a neutral parenting forum, I also ask:

> **RQ3: In what ways, if any, do topics differ across mother-centric and father-centric parenting boards?**

I find that the father-centric forum provides a supportive and welcoming community for fathers to make sense of their social roles, while also providing fathers with a place to

engage in more lighthearted conversations about sports, movies, and dad jokes. Parents also discussed questions of import for fathers that might be sensitive and personal such as divorce and custody. Discussions on the mother-centric board were more inline with the traditional responsibilities of caretaking such as breastfeeding, introducing solid food to a child's diet, and vaccinations.

The findings in Chapter 4 show that parents do in fact use the subdued identity cues on pseudoynous social media sites such as Reddit to discuss sensitive parenting topics. However, some parenting topics may be more associated with stigma than others. Reddit users can also comment using throwaway accounts. Throwaway accounts are anonymous and distinct from the pseudonymous accounts that users may have on the site. They provide Reddit users with more anonymity [163]. In Chapter 5, I use features created in Chapter 4, namely parenting topics, as well as lexico-syntactic features, and proxies of the user's behavior on the site (e.g., average length of comments) to ask

> **RQ4: What are the predictors of parents posting to Reddit as throwaways?**

I find that topics such as abuse and therapy, family health, and pregnancy challenges, loss, and grief are all predictors of posting to Reddit as a throwaway user. Having identified topics that are predictive of one's use of more anonymous accounts on Reddit, I wanted to better understand the overarching themes in this discourse. I used qualitative and computational methods to ask

> **RQ5: What are the main themes discussed by throwaways?**

I find that parents use throwaway accounts to define and manage abuse and trauma, and to discuss postpartum depression, miscarriages, abortion, and LGBT youth. Given that these issues are associated with social stigma, I wanted to know

> **RQ6: How do the responses to throwaway comments differ from responses to other comments in the parenting context?**

I used propensity score matching to compare responses to throwaway comments and responses to pseudonymous comments. I find that throwaway accounts are more likely to receive a response, and they receive more responses, which are longer on average and provide more social support. Based on these findings, I propose design recommendations for social media sites that might help parents make use of varying levels of anonymity to discuss sensitive and stigmatizing topics.

This dissertation shows the ways technology, especially social media, can provide a mediating effect for social role transitions. It also provides design recommendations that could guide engineers, human-computer interaction professionals, designers, and technology companies when developing online communities that can better support parents and other social groups cope with their social role transitions.

CHAPTER 2

Literature Review

2.1 "All the world's a stage": Social Role Theory

In *The Presentation of the Self in Everyday Life*, Erving Goffman argues that, in social interactions, one "performs" a role or routine to an "audience" to fulfill a socially acceptable 'part.' [103, P.8-9] In essence, Goffman portrays one's performance in everyday social interactions much like the theatrical performance of an actor on the 'front stage.'

Each of us occupies a number of social roles. For example, one can be an employee, a manager, an aunt, and a sports enthusiast all at the same time. Social role theory stipulates that people follow societally constructed stereotypes. Sarbin [244] argues that social roles represent "the part one is assigned to play" in Goffman's [103] dramaturgical tradition. The three main concepts of the Social Roles theory are (1) social position, (2) role expectations, and (3) role enactment [3].

Social position defines the person's "location in the social system." For example, the social role of the parent is distinct from that of the uncle, aunt, or grandparent. Social positions are defined in relation to complementary social roles. For example, the role of the father is defined in relation to the mother in the family social unit [3, P.2].

Role expectations define what people ought to do when assuming a social role. They are constituted through societally constructed stereotypes. For example, while men are traditionally expected to be more agentic, women are expected to be more communal [72]. These perceptions are linked to normative views of gender roles, especially the boundary between the domestic (caregiving females) and the professional (working males). Bowker and Star [37] argue that social and cultural categories emerge in relation to specific historical processes. For example, men in the colonial era in the U.S. used to take part in domestic work such as mending leather clothing (e.g., shoes) and doing tasks that required

"brute force" such as grinding corn [58]. As the U.S. became increasingly industrialized, the work typically ascribed to men moved outside the home and into the city [216], while women took on more domestic responsibilities. This spurred the traditional breadwinning and domestic labor division in the family unit [58]. These historical changes are discussed in detail in Section 2.2.

Role enactment measures the alignment between role expectations and individual behavior. For example, does a male act as the role expectations suggest? Role ambiguity occurs when people cannot determine the normative expectations for their supposed roles [33]. When people face role ambiguity, they find it challenging to understand "what is desired [of them]" to fulfill the requirements of the social role [33]. Role ambiguity affects both role expectations, which become unclear, as well as role enactment, which is difficult to measure.

People transition between different social roles throughout their lifetimes. One might get a new job, become unemployed, get married, get divorced, or get diagnosed with a disease. Role transitions occur when people transition from one "set of expected" behaviors to another set. Becoming a mother, for example, is considered a role transition [97] and can be a cause for role strain [207]. Another way role transitions occur is when when one occupies the same social position while the expected social roles change [3]. For example, when a mother's child is diagnosed as a child with special needs, the mother is now expected to be an advocate for the child in addition to her role as a mother. A model for role transition, suggested by Allen and Vliert [3], is presented in Figure 2.1.

Sarbin uses the example of the first female coal miner in Appalachia to argue that, when coping with new a social role, people use rhetorical acts that signal their attempts to conform to the role [244]. By refusing to cry or otherwise remark on any injuries she might have sustained in the often dangerous mining sites, the female-miner was now "one of the guys." [267, P.64-70] Acting with nonchalance to physical toil and the danger of bodily harm was the rhetorical demonstration associated with the transition to the role of the coal miner [244].

2.1.1 Antecedent conditions

Antecedent conditions include many potential causes of role transitions. Chance events might be a reason for such role transitions. For example, winning the lottery, living in a disaster area, experiencing a serious accident, or being diagnosed with a disease. Other transitions are related to societal changes and state bureaucracy actions. For example, in
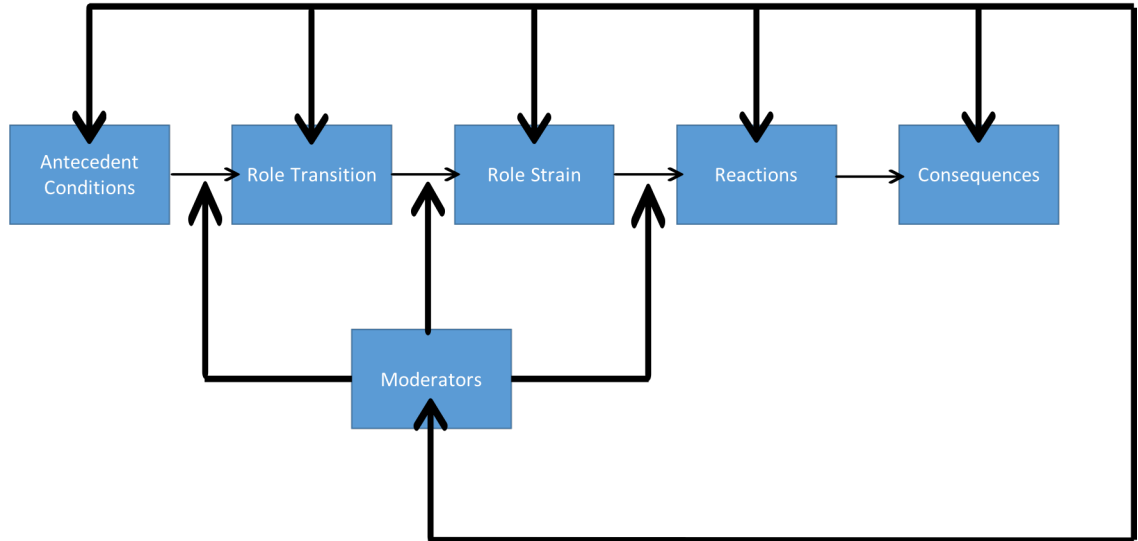
Figure 2.1: Model of Role Transition Process [3]

the event of war, the state might conscript civilians to serve as combatants.

While societal forces and chance might control antecedent conditions to social role change, the person going through the social role transition — the focal person — is not without agency to "supplement the process of role" change through their own "personality characteristics, capabilities, and preferences." [3, p.14]

2.1.2 Role transition

Role transition is the actual process in which one starts changing their behavior away from their original social role to match a new social role. People's expectations of the transition process itself is dependent on three main factors: "(1) the probability that the event will take place for a particular person; (2) the correlation of the event with chronological age; (3) the social distribution of the event, i.e., whether the event will occur for many people or just one or a few persons." [44, p.151-152] cited in [3]. For example, transitioning into the role of a parent for people who identify as being in a long term relationship (e.g., married) is, at 69%, higher than the expectation of being a single father — only at 2.5% of the population.[1]

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[1]https://www.census.gov/newsroom/press-releases/2016/cb16-192.html

2.1.3 Role strain

Role strain produces a sense of disequilibrium or disorder in the person undergoing role transition [244]. This might include cognitive and affective disturbances like discomfort, anxiety, and perplexity [3]. The strain one might feel as one goes through role change correlates with the importance of the social role to one's identity [24]. Blau [35] argues that in any "significant role change the integrity of the self is jeopardized to some degree."

Studying social role changes on the family level, Burr [44] argues that the degree of role strain one might encounter is related to the ambiguity of the new role expectations and "consensus responses from [relevant] others." If there is less consensus around the expectations of the new social role, then the focal person will have to manage more role strain. Therefore, the more clearly the new role is defined, the easier it will be for the focal person to transition to the new role.

2.1.3.1 Hegemonic masculinity and social role strain

Connel and Messerschmidt argue that hegemonic masculinity provides a normative path for "men to be men," that is, for men to know the role they have to play when enacting the social role of a man [56]. "Hegemonic masculinity asserts the 'naturalness' of male domination, based on solidarities between men as well as on the subordination of women" [136, P.201]. Brittan further notes that hegemonic masculinity "accepts without question the sexual division of labor, and it sanctions the political and dominant role of men in the public and private spheres" [41, P.4]. Socially acceptable hegemonic models of masculinity affect the way family members negotiate their interactions (e.g., [127]). Negotiating family interactions based on traditional views of hegemonic masculinity has negative repercussions for men as they might not have support to be more active parents [153]. Pleck argued that while women were oppressed by the female sex role, men were privileged and simultaneously dehumanized by the male sex role [217]. Cockburn concurs noting that men are tasked with being "the bearers of a gender identity that deforms and harms them as much as it damages women" [54, P.316-317]. Hegemonic masculinity assumes a division of labor where mothers are responsible for caretaking responsibilities. Even as there are more dual-earner families today than there are father-as-breadwinner families [171], men in dual-earner families still want to be the primary breadwinners [96], and when their partners had higher incomes, men still considered their career more important [271, 270].

Burr notes that "anticipatory socialization" helps ease the transition into new roles, especially in familial contexts [44]. For example, in the parenting context, mothers might have more anticipatory socialization in the parenting social role due to their participation

in experiences like babysitting and other forms of child-rearing (e.g., caring for younger siblings) [150, 151]. Fathers' transition to parental roles can be difficult due to the lack of role models to follow [44].

2.1.3.2 Can I influence my transition?

The amount of change that one believes he/she can make through one's personal behaviors is measured as the locus of control (LOC) [238]. External LOC signifies a belief that consequences are determined by external factors, while internal LOC is the belief that outcomes are determined through personal responses [144]. The internal/external LOC dimension represents one of three attribution dimensions [263] for any external event or stressor. Another dimension refers to the persistence of the condition over time. If it is considered a long term effect, then it is stable, otherwise, the stressor is considered unstable. Finally, one could explain a stressor as being limited, or more global. For example, "I am hopeless when it comes to cooking" is a global attribution about one's inability to cook, but "I am really bad at cooking Salmon. I almost always burn it" is a specific attribution. One might not be good at preparing this particular meal, but that does not mean that one cannot be a good cook otherwise.

I share a scenario in Figure 2.2 that is based on events described in [127] and the results of a broader study into the issues fathers discuss online (results published in [9, 10, 7]). In Table 2.1, I propose an example of attributions made by the stay-at-home father described in scenario 2.2. This example attribution table is adapted from examples presented in [211, 263].

If the attribution is at the intersection of the internal, specific, and stable dimensions (shaded light green in Table 2.1), this might affect one's self-efficacy (i.e., the perception of one's own ability or competence to achieve a task) [23]. For example, Tom's possible postpartum depression — not feeling a connection with the child is a factor — might cause him to have lower parental self-efficacy [161].

If, on the other hand, the attribution is at the intersection of the external, global, and stable dimensions (light blue cell in Table 2.1), then the one would have the expectation that no action would change the outcome. In other words, if change is outside one's control, then what would be the point of trying? If one finds little connection between their actions and outcomes, this may lead to what Abramson et al. [2] termed "learned helplessness." When people face new environments where social roles need to change, they may no longer feel able to control their own outcomes, which might in turn lead them to feel disempowered [222].

Tom had a stable marketing job for over a decade in a major Northeastern city before becoming unemployed in 2009. His first daughter was born in early 2009, and the family was relying on his wife's income more than ever. While he was attempting to find a job, Tom started taking on caregiving responsibilities at home since his wife had gone back to work.

In addition to losing his income, Tom felt that, being unemployed, he does not have the same chances to socialize with other men. Before losing his job, he would spend time talking with colleagues about basketball games, his new sports regimen, or the latest Star Wars movie.

Tom also felt disconnected from his child. He felt anxious and a general sense of dread. Tom felt guilty and found it difficult to discuss the situation with his wife since he feels she is already burdened at work.

Tom's daughter was a picky eater. It was difficult to find snacks she would eat that also included some fruits and veggies. As she grew older, Tom found a new skill he had to learn — styling his daughter's hair.

When he left the house with his child, mothers and other strangers would make comments such as 'ohhhh...daddy is giving mommy a break' or 'daddy is babysitting.' In public spaces such as parks, cafés, and restaurants, he found it really difficult to socialize with other parents. Most parents in these public establishments were mothers. Another problem he started to notice is the lack of access to diaper changing stations in men's rooms

Figure 2.2: Scenario for a father making sense of his new identity as stay-at-home dad

Style	Internal	External
Stable		
Global	I just can't do anything right	Parenting has always been the mother's domain Mothers think fathers are not capable
Specific	I always have trouble connecting with my child	I didn't have a father figure growing up. That's why it's difficult for me to know what to do
Unstable		
Global	I've been more distracted since I lost my job	Economic pressures add to fathers' pressures. I'm supposed to bring home the bacon!
Specific	Maybe I just found a bad park. I should look for other parks for the baby	Maybe moms don't like talking to SAHDs*

Table 2.1: This table shows examples of how a stressor might be explained using the different dimensions of attribution theory. * Stay-at-home dads

2.1.4 Moderators

While the learned helplessness model assumes that the social role transition might result in a perceived loss of control, a competing model proposed by Zimmerman [287] suggests that learning skills and developing a sense of self-control allows individuals to engage in "learned hopefulness." The intensity of the role transition strain depends on a number of moderating effects [243, P.14]. Figure 2.1 shows that the moderating effects contribute to the model at three points that might affect the level of social role strain. In other words, the moderators can change the way antecedent conditions contribute to role strain. They can also mollify stressors throughout the transition process, or reduce negative effects of role strain on the reactions of social role change (discussed below).

Moderators consist of (1) individual, and (2) environmental variables. Among the most important individual moderators is LOC (see Section 2.1.3). After all, if one does not believe their actions will have any consequences, why would they attempt to alter their new social context? Another individual variable is perceived self-efficacy [23]. As one feels more competent, the impact of others' behaviors feels less pronounced [279]. Environmental variables include the structure of one's support social network. Johnson and Sarason [139] argue that social support — central to membership in voluntary organizations — is an important aspect in coping with life change. Such support allows people to better react to role transitions and to eventually arrive at better conclusions. However, not all sup-

port structures are equally supportive. Hirsch [126] argues that multidimensional networks are important to people coping with social role transitions. Richardson and Kagan [228], cited in Hirsch and Jolly [125], argue that new mothers transitioned to their parenting role better when they had support from less dense networks that "support[ed] the woman as a mother, wife, daughter, daughter-in-law;" that is, when new mothers were able to draw support from multiple dimensions of their networks as they transition to the new role of parenting. Wellman [282] suggests that while dense overlapping networks can provide one with a greater amount of support, they can also constrain one's role transition according to the norms held by the dense network [110]. Low-density, multidimensional networks provide one with a "variegated repertoire of ties," and people can "shop for" support from different parts of their network when transitioning to new roles [282]. Wilcox [284] offers an interesting example of the disadvantages that one might face when receiving support from densely knit kin networks. He studied the transition of women recently separated. Somewhat paradoxically, family members tended to be emotionally supportive, but at the same time, more judgmental, than non-family members in their networks. To be "more adaptive to the demands of a modern industrial society that is undergoing continuous social change and in which many [people] are likely to be highly mobile, both geographically and socially," [156] one should be able to access different resources from multiple dimensional networks.

2.1.4.1 From learned helplessness to psychological empowerment

Zimmerman argues that this sense of psychological empowerment [288] can be best attained by taking part in voluntary organizations. Zimmerman's psychological empowerment model features three components: (1) an intrapersonal component, (2) an interactional component, and (3) a behavioral component [288]. The intrapersonal component defines how "people think about themselves," which includes perceived self-efficacy [23]. For example, the father facing the hypothetical stressor in Table 2.1 might feel more competent if he becomes more comfortable changing diapers and preparing meals for his child. The interaction component includes one's awareness of social, political, and practical issues in their new social contexts. It also refers to how people can act on the choices and resources available to them. This component also includes the ability to use one's knowledge to achieve one's goals. Tom might try to find fathers to interact with by looking for SAHD meetings on meetup.com [10]. Similarly, a parent of a child with special needs might ask other parents about their experiences accessing resources for their children [8]. Finally, the behavioral component refers to "actions taken to directly influence" one's outcomes [287]. For example, instead of accepting that parenting is the mother's domain, Tom might at-

tempt to redefine fatherhood as a SAHD. Similarly, parents of children with special needs can advocate online for changes in social norms and policies that are related to their child's condition [8].

2.1.5   Reactions

Depending on the presence of one or more of the moderators discussed in Section 2.1.4, one might react to a transition in social roles in a number of different ways. One might react negatively to role strain by feeling angry, anxious, or depressed. Alternatively, one might be empowered to change the conditions causing role strain (e.g., by gaining new skills). These reactions can, in turn, alter the moderators themselves. For example, if changing one self-concept was not enough, one might engage in networking with others facing similar social role strains [3, P.14-15].

2.1.6   Consequences

The consequences represent the feedback from one's reactions to social role transition. If the reactions to the social role change are more positive, that might mean that the transition is progressing well. With the passage of time, negative consequences are more probable to decline. If such a change does not happen however and social strain persists, one would continue to experiences learned helplessness and disempowerment [3, P.15-16].

2.2   A brief history of parenting norms in the US

Fatherhood is a socially constructed concept shaped by public discourses and by the legal frameworks that are set up to organize the relationship between parents and children — for example, favoring mothers or fathers in custody decisions [68, 82, 113]. The consensus on what defines good fatherhood —from the spiritual leader of the family, to the stoic breadwinner, and lately to the engaged, sensitive father — has changed over time. The enactment of social roles such as "father" or "mother," for instance, unfolds in relation to socio-economic and geopolitical shifts (e.g., the women's rights movement or World War II) [57, 168]. In the following sections, I describe changes in fatherhood norms over four main epochs: the pre-industrial age, industrialization, the progressive era, the post-war era, and fatherhood from the 1970s onward. This is not an exhaustive review of the history of fatherhood, but rather is meant to show how the norms around fatherhood have changed in response to socio-economic developments.

Traditions are central to determining how fathers make sense of their roles [254, 149]. Even among members of a specific cultural group such as "White, North American, middle-class" fathers, employment differences may lead fathers to play different roles (e.g., "stay-at-home" versus "unemployed") [254].

2.2.1 Parenting in pre-industrial colonial America

In pre-industrial America, the father was "the primary custodian of children" [92, p.7] and the spiritual head of the family. As moral mentor, he would be responsible for the religious education of the children and for raising them in the Christian tradition [101, 113, 114, 154, 283]. Such "religious conceptions of fathers as moral leaders [are] still represented today by [groups such as] the Promise Keepers, a Christian men's organization" [92, p.7]. Since, in the pre-industrial era, the family was bound to the land, both mothers and fathers had domestic labor roles. While men took on domestic responsibilities, these were distinct from women's responsibilities. For example, while men carried wood, women made soap [58].

2.2.2 How parenting norms changed with industrialization

Industrialization put economic pressure on the family farm system, and that, in turn, changed the relationship between fathers and children [123]. As America became increasingly industrialized, men's labor moved outside the home and into factories and offices [154, 216]. This change marked the emergence of the "Standard North American Fatherhood" model as defined by LaRossa [154, p.27]. In this model, mothers were gradually being seen as the central figure in the child development process. Publications extolling the centrality and joy of motherhood began to appear in the US throughout the 19th century.

As the fathers' role shifted from the ever-present patriarch to the oft-absent wage earner, social and legal norms relating to the roles of fathers and mothers were also changing. While fathers had traditionally been awarded custody of the children in the event of a divorce, judges were increasingly awarding women custody of their children. This legal change was reportedly the new norm by the end of the 19th century [154, p.26-28]. As the 19th century came to a close, the role of father-as-breadwinner was firmly in place.

2.2.3 Parenting as science in the progressive era

Throughout the late 19th and early 20th century, the progressive movement advocated for significant social, political, and economic changes in the U.S. Many of the regulatory and

Mothercraft, now introduced into twenty-five states and several foreign countries, is a very recent development in public health education. It seeks to utilize the maternal instinct of young girls and build on it a knowledge of simple hygiene and sanitation. The child carries this instruction to the home and the standard of home health is raised.

Figure 2.3: Part of a speech about Mothercraft that draws on the importance of the topic for public health [64].

governing frameworks such as anti-trust laws and labor unions were introduced and expanded during that period. To solve the complex socioeconomic problems of the day, the progressive era introduced "a professionalism grounded in the natural and social sciences." [71]. Social science fields like sociology and economics were developed as professional fields in service of new institutions [65, 142].

"Mothercraft," which emphasized the centrality of motherhood to the identity of women [154, p.36-38], was among the social science fields that emerged at this time. Its founders argued that child-rearing should not only depend on mothers' instincts, but also on "methodical learning." In other words, motherhood would be professionalized.

Figure 2.3 shows an excerpt from a speech that May Dickinson of the Massachusetts Federation of Women's Club read at the Public Health Association's conference in 1920. Dickinson stressed the importance of introducing the scientific method to complement "maternal instinct[s] of young girls." [64] In her speech, Dickinson argued that the need for education in the field of child-rearing crossed class divides. Yet Dickinson seemed to limit the role of child-rearing to women. She noted that "the specific character of the instruction in Mothercraft, which is applicable to all girls in public and private schools... [is a] graded course...in girls' health and the care of babies."

Skills taught in these school lessons included preparing milk for children and checking its temperature (see Figure 2.4), bathing a child, and caring for a child throughout its first year. Mothers read the contents of parenting journals such as *Babyhood*, which included columns by doctors and other professionals. The magazine identified its missions in this way: "There is a science in bringing up children and this magazine is the voice of that science [17, p.52]." Mothers directed their parenting questions to similar magazines and parenting periodicals [17, p.35-52].

A side effect of the professionalization of motherhood was that it denied that biological

Figure 2.4: Teaching girls to check the temperature of milk during a Mothercraft class [64].

characteristics make mothers more suited to the central parenting role. In effect, Mothercraft showed that parents could be socialized into parenting. After all, if Mothercraft could be taught, why not teach it to fathers? This observation brought about the need to study the ways fathers are socialized into parenting in what was termed Fathercraft [154]. In order to maintain the centrality of motherhood to the identity of women, fathers were relegated to the role of helpers. A father would "complemen" the role of the mother as a parent by "co-operat[ing] with the mother" [154, p.37-38]. In other words, while motherhood would be at the center of a woman's identity, it would be secondary to a father's central role as bread-winner. Early polls in the 1930s showed that men were opposed to women entering the labor force ([78] cited in [220]). Even as this outspoken resistance waned, women were ex-pected to continue to fulfill domestic responsibilities even as they entered the professional labor market [127, 220]. The new "fun dad" of the early 20th century was a stoic distant figure who saw his children after work [92, p,8] [101, p.193]. This secondary fatherhood role focused on maintaining a relationship with children through rough and tumble play [92, 154]. It is important to note that this view of fatherhood was limited to middle-class white fathers who could serve as the sole breadwinner and still have the disposable income necessary to spend time with their families [92, p.9].

2.2.4 Parenting in the post-war era

LaRossa [154] argues that normative changes in the definition of parenthood are not linear. One example of such nonlinearity can be seen in labor changes after WWII and accompanying social developments. Although women had accessed the labor market throughout WWII by occupying traditionally masculine roles (e.g., working in manufacturing), that access fell precipitously as the war effort wound down [154]. Honey [133] argues that the propaganda used to articulate how women were contributing to the war effort was couched in the belief that a woman's role was at home and, primarily, as a mother. Women assuming traditionally masculine roles in the war years were portrayed as housewives fulfilling their patriotic duty. In fact, most of the women who had taken unionized, high-paying jobs in the defense industry were women who had already been employed before the Great Depression [133]. However, portraying women as housewives answering the call to serve their country allowed the jobs they took to continue to viewed as masculine roles that men would return to after WWII ended.

The 1950s and 1960s witnessed an unprecedented economic boom in the aftermath of WWII. These decades also saw the expansion of public works projects, the Serviceman's Readjustment Act (more commonly known as the GI bill), and an increase in the number of homeowners through government-supported mortgage programs [28, 197]. Along with economic growth after the war, these government projects provided a reliable welfare state and stable labor markets. The relative stability of the labor market led to the elevation of breadwinning as the central masculine value, what came to be known as the liberal breadwinning consensus of the New Deal coalition [192]. This "neo-Victorian" phenomenon is attributed to the "Fordist social arrangement of production, [relying on]...stable employment relations" [197] and a welfare economy [28]. Given these socioeconomic structures, most families could rely on the income from a sole breadwinner, usually the father. This socioeconomic organization, referred to as "breadwinner liberalism," was central to the maintenance of what was considered the ideal nuclear family [252]. At the same time, this political consensus was anathema to feminists of the day because it artificially guaranteed fathers' access to the labor market. Further, not all men enjoyed this advantage. There is a racial dimension discussed in detail in [252].

2.2.5 Parenting in the 1970s and beyond

The breadwinner liberalism consensus started shifting in the 1970s as the number of single-breadwinner families started to decline. Fordist Labor's decline gave way to a less stable labor system relying on contingent employment. At the same time, the welfare state was
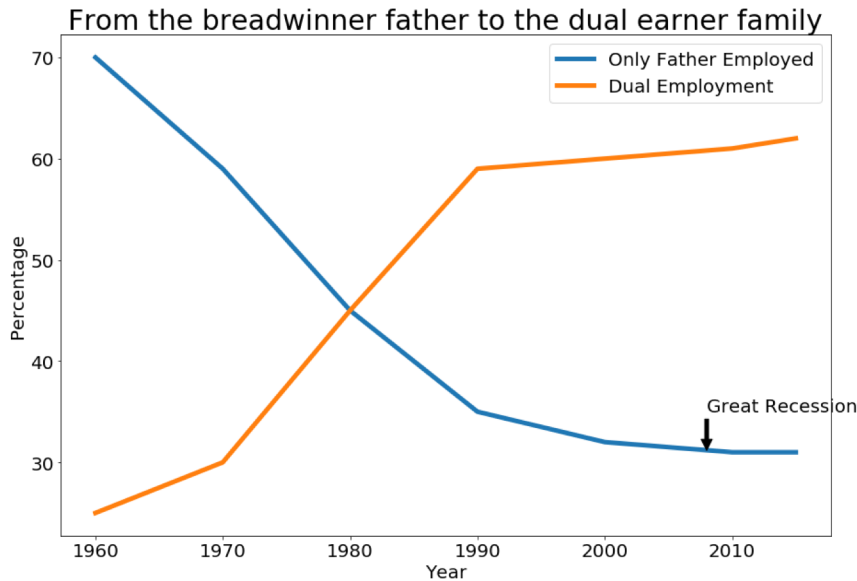
Figure 2.5: This graph shows the change in the labor market for families starting in the 1960s when the vast majority of families relied on a single earner, usually the father. The numbers reach parity in the 1980s. Today, the majority of families in the U.S. are dual-earner families. This graph uses data from a Pew dataset [171].

also in decline. These changes brought about what will be referred to as the post-Fordist age [28, 197, 220].

2.2.5.1 Dual-earner families become the norm

The neo-liberal view of economics advocated for a labor system that, while lacking the stability of the Fordist system, would provide laborers with the freedom to engage in taking risks and choosing to work on different projects and in different organizations. In order to do so, laborers have to continually build their skillsets and always be on the lookout for the next offer, the next opportunity [197]. Moving from one employment opportunity to the next is a hallmark of the post-industrial "new economy." [197] The lack of stable long-term employment central to Fordist labor changed the family structure by moving from reliance on one income — usually the father's — to reliance on the income of both parents.

As mothers entered the labor market at ever increasing numbers, fathers were expected to pick up the "slack" in domestic work. This shift in the male domestic role did not materialize. Evidence from both diary and survey studies [220] and interpretative ethnographic work [127] shows that mothers, in fact, have picked up a "second shift," continuing to manage their traditional domestic responsibilities alongside their formal labor. Pleck [220] notes that standards of domestic work (e.g., cleanliness) have dropped throughout periods

18

of higher labor involvement by women. Additionally, mothers have continued to take on more of the cognitive labor related to parenting, including organizing and planning food preparation, childcare, logistics and scheduling, house cleaning, finances, social relationships, shopping, home/car repair, and travel/leisure [59]. For example, mothers may take on a "third shift" by managing the family's online presentation [7].

By the 1980s, there were as many dual-earner families as single-earner families [171]. Today, the majority of families in the U.S. are dual-earner families [171], and fathers, while still trailing mothers, are doing more care work [170]. While fathers increase their participation in caretaking responsibilities, the norms around fatherhood have not caught up these changes thus creating what [153] terms a *normative gap*.

2.2.5.2 Legal changes around parenting

The 1970s also saw important legal changes relevant to the father's social role. One example of such legal changes is the landmark Weinberger v. Wiesenfeld Supreme Court decision which challenged the central tenet of liberal breadwinning, that fathers are the sole breadwinners in the family. The case was brought by Stephen Wiesenfeld, the widower of Paula Wiesenfeld in order to claim survivor benefits through social security [213].

Paula, as a school teacher, was a fully insured social security beneficiary, while her husband, who worked as a contractor, was not. After Paula died in childbirth, Stephen decided to be the primary caregiver of his child. When Stephen applied for survivor's benefits, he was denied on the basis of his gender. The government argued that men, being breadwinners, should not access resources originally intended for stay-at-home mothers. The supreme court "rejected the argument that the purpose [of survivor benefits] was to provide income to women who were not able to provide for themselves." The court argued instead that "the goal was to permit women to elect not to work and to devote themselves to the care of the children." [213, p.423] Building on this argument, the Supreme Court decided that the "gender-based distinction between widow and widower did not bear a rational relationship to the congressional objection of giving children the maximum opportunity to receive personal attention from a surviving parent." [213]

2.2.5.3 The number of stay-at-home dads doubles

One indication of the shift away from the father-as-breadwinner model is that the number of stay-at-home dads (SAHD) doubled between 1980 and 2010 [169]. In the wake of the Great Recession (2008-2012), labor gains have accrued more to women than to men, especially those men who have lost jobs in manual labor [171, 16]. Rochlen et al. [232] argue that

SAHDs have had "pragmatic" reasons for becoming stay-at-home parents, including being unemployed and having a partner with a better position in the job market. This change in social role, however, has been difficult for fathers to make sense of. SAHDs do not have access to the same social support structures available for mothers (e.g., mommy groups). Zimmerman argues that SAHDs do not "socialize with other stay-at-home parents." [289] This might be due to the relatively small number of SAHDS in comparison to the number of SAHMs.

In conclusion, parenting norms are in flux due to the socio-economic, social, legal, and political changes that have taken place since the 1970s. Mothers have had to take on a "second shift" at home as they have accessed the labor market [127]. The norms around fatherhood, be it in dual-earner households or SAHD households (a flip of the traditional father-as-breadwinner model), are not as well defined as the norms around the motherhood social role [155]. Role ambiguity is one of the drivers of role strain [3] as described in Section 2.1.3.

The normative standards around parenthood are socially constructed and vary in different socioeconomic and historical contexts. In Chapter 3, I analyze how fathers use their online presence to craft a new fatherhood identity. In Chapter 4, I use computational methods to study how parents use father-centric, mother-centric, and neutral parenting online communities. I build on this work in Chapter 5 to analyze how parents use anonymous accounts to discuss topics that they might find too difficult to talk about on real-name social media sites (e.g., Facebook) or when using pseudonymous accounts.

CHAPTER 3

How fathers frame parenting online

3.1 Introduction

Throughout the 1950s and 1960s, popular and mass media portrayed the father as the "authoritative but wise and caring breadwinner." [173] Prominent examples of such father archetypes include the protagonists of *Leave It to Beaver* and *Father Knows Best* [224, P.161-163]. Since there was a dearth of literature on the subject of fatherhood at the time, many viewers accepted the characters presented in these sitcoms as model fathers. This view of fatherhood was in line with the contemporary political consensus around breadwinning liberalism [252].

The "new man of the '90s" [122] who does carework and domestic work traditionally assumed by mothers started to take center stage in popular media as more mothers entered the labor market. Tim Allen, a famous stand-up comedian, starred in the sitcom *Home Improvement*, which explored "the negotiation of fatherhood in the 1990s in the context of the cultural changes since the 1950s." [122] Tim played a father who stars in a do-it-yourself (DIY) show [122] and is fascinated with power tools and home improvement projects. Tim involves his sons in "do-it-yourself task[s]" in order to instill them with his views of masculinity and shape their coming of age [122]. While Jill, Tim's wife, is a stay-at-home mother (SAHM) in the first season of the show, she goes on to hold a number of different professional positions later in the series, and she even earns a graduate degree in order to become a therapist. These changes force Tim to make sense of his own changing identity [122]. The story of *Home Improvement* mirrors in many ways shifts in gender norms and values that occurred during the 1990s and their relationship to social and economic processes in the U.S.

Masculine domesticity	Domestic masculinity
Taking a son on his first hunting trip	Cleaning the dishes after going hunting and cooking
Teaching a child how to change the family car's oil	Working on a craft project for a daughter's school.
Taking a child to a sports event	Taking a child to a playdate at which all other parents are SAHMs
Building a better diaper genie	Changing a diaper and then cleaning the diaper genie

Table 3.1: Some examples of masculine domesticity and domestic masculinity as defined by LaRossa [154]. While masculine domesticity allows fathers to do domestic work while still falling within traditional masculine norms, domestic masculinity resembles domestic labor traditionally associated with femininity.

3.2 Related Work

In this section, I will summarize earlier work in the areas of domestic labor, the use of social media by fathers, and the way sociomateriality is used as a lens for the analysis of online discourse and its contribution to gender performance online.

3.2.1 Domestic Labor and Gender

LaRossa argues that there are two kinds of domestic tasks in the home: masculine domesticity and domestic masculinity [122]. Masculine domesticity, is described as "doing domestic activities in a masculine way." For example, fathers taking their sons hunting so that they become more competitive and aggressive is categorized under masculine domesticity. Other examples include teaching children, especially sons, how to use tools. In contrast, domestic masculinity, refers to work that might be identified as feminine such as caretaking or housekeeping activities. LaRossa argues that such labor could "increase men's feelings of alienation and anomie" and contribute to a sense of disempowerment [154]. Examples might include cooking or changing diapers. Table 3.1 shows examples of masculine domesticity and domestic masculinity.

During the post-war era, suburban home ownership was on the rise as breadwinner liberalism took hold [155]. This is not to say that fathers did not maintain a domestic role throughout that period. Fathers traditionally engaged in what Bianchi et al. [32] referred to as *interactive parenting*. An example of interactive parenting is rough and tumble play and reading to the child. In contrast, *routine parenting* includes diapering, feeding, brushing teeth, and managing the child's medical care. Routine parents responsibilities have traditionally been assumed by mothers [32].

Fathers enacted masculine domesticity through maintenance/repair work at home including maintaining the house, mowing the lawn and fixing the family car(s) [95, 155]. DIY projects provided fathers with a chance to interact with their children, during which they could take on a childcare role while also participating in a traditionally masculine activity [95]. At the time, male domesticity was expressed through building and tinkering in the garage, shed, or attic. The term "do-it-yourself" (DIY), gained credence by the 1950s. Mainstream media outlets played a major role in proliferating ideals of self-reliance and entrepreneurial practice at home. In a 1952 article, *Business Week*, for instance, referred to the 1950s as "the age of do-it-yourself" [95]. By the 1960s, DIY as a form of masculine domesticity had become part of "suburban husbanding" [94]. Gelber [94] describes this period as a "neo-pre-industrial age," with men taking on responsibilities in the home that are decisively distinct from women's responsibilities, specifically working with "heavy tools" to fix and maintain the home.

The centrality of male workers in heavy industries throughout the 19th century created the origins of the association between heavy tools and men [108, 199]. Goldstein notes that advertisers pushed tools as "quintessential 'man gifts'" in the 1950s [107] which shaped and reinforced men's social roles during that period. Many of these writers were male as were a majority of their audiences, and their articles invoked memories of the father figure as a hands-on DIY maker [257]. Despite the evidence that women were taking part in the "muscle work," media and especially advertisements in the 1950s perpetuated the categorization of building and DIY making as masculine [107]. While mothers might initiate DIY projects and even buy the necessary materials, they were only considered helpers to their husbands who carried out the projects. This messaging gave rise to what came to be known as "honeydo" lists (i.e., wives' requests for their husbands to carry out DIY projects) [95]. However, despite public perceptions and media narratives of the time, many women were in fact engaged in what were conventionally understood as masculine tasks (e.g., welding) [107, 199] .

Today, DIY making, Lindtner shows, is often construed by advocates of the maker movement as a means of being a good parent because it offers the opportunity to train children in the kind of self-reliant, solution-oriented innovative thinking considered necessary to address contemporary educational, social, and economic challenges [168]. Broadly, DIY making is considered a site of individual empowerment by democratizing participation in technology production; the phrase "everybody can be a maker" commonly appears on the promotional banners of maker fairs and the walls of hackerspaces. Despite the rhetoric of inclusivity, contemporary DIY making and hacking is often an exclusive practice, male-dominated and reserved for the affluent [257]. A series of women guild, craft,

and hacker collectives have challenged and begun to counteract such tendencies. Indeed, Fox et al. [88], building on Gelber's work [95], show that DIY making is often understood as uniquely positioned to counteract gender normativity. The women they worked with in their research challenged dominant masculine framings of DIY by creating spaces for women to meet and hack on their own terms, constructing an "emerging DIY culture" [88]. In their study of the online movement "craftivism," Bratich and Brush [40] note that crafting "merges with cyberculture to produce... a new materiality," and a site to come to terms with shifting gender norms and values. For example, DIY is seen as a way to express self-worth amidst rising unemployment [109]. Faulkner [80] argues that men gain a "symbolic compensation for a felt lack of power in other aspects of their lives" through vicarious identification with the power of technologies they build. In this chapter, I study how DIY practices and gender identities interplay, and how they shape fathers' engagement in domestic and childcare activities in the home.

3.2.2 Fathers in Online Interactions

Early work on fathers' online presence shows that fathers in Sweden blogged about their experiences throughout the pregnancy period in order to make sense of what they saw as an emotional roller coaster [20]. Using an online forum, new Swedish fathers discussed their concerns and apprehensions about parenting while supporting each other in this new role [77]. Single fathers in Sweden, a group that faced the added complication of not having a normative parenting relationship, used fatherhood blogs to make sense of this new identity and discuss the challenges they faced as they transitioned to this new role [138]. Specifically, fathers wanted access to experiential information from other fathers. How did they navigate the world with this new identity? For example, Swedish fathers in Eriksson et al.'s study [77] often discussed how they were being left out of healthcare parental support services that targeted mothers. Fathers found support by sharing their struggles and experiences of a constantly evolving fatherhood identity [138]. First-time fathers reported an improvement in self-satisfaction when taking part in online communities for fathers [134] that allow them to engage in self-discovery of their identities. However, there is a dearth of online spaces that are available for fathers to engage in such self-discovery [9, 262].

Fathers tend to see their social media networks as more diverse than those of mothers. They were especially aware of their professional ties online. The salience of their breadwinning role as fathers in the family was made clear as they noted the potential negative effects on their professional lives that might arise from sharing and/or oversharing content about their children on social media [7]. Fathers use social media in order to access

information about parenting and to get social support from fathers who are more experienced (veteran fathers) [9]. Men have less of a chance to do any of the activities associated with caretaking (e.g., diaper changing) as they grow up. Women, on the other hand, tend to have multiple chances to engage in such activities by baby-sitting and taking care of younger relatives. Therefore, when fathers engage in parenting their children, they at times find themselves less qualified than their wives. Fathers find it easier to ask such questions of other fathers, especially veteran fathers, since they would not have as much judgment towards questions that might seem trivial to women. Dads also joined fathers' Facebook groups where they found support from other parents. Fathers shared problems they faced in their marriages and got support and feedback from other men, usually older fathers [9].

Sunderland argues that even as parenting magazines have changed some of the terms they use (e.g., shifting from "motherhood" to "parenting"), these publications are still not addressing fathers or their challenges [265]. Similarly, fathers have noted that much of the online ecology for parents is "pink," intimating that it is more suitable for women than men [9]. Stay-at-home dads (SAHDs) are especially interested in creating online communities, usually Facebook groups or Meetups, that are exclusively for SAHDs [10]. SAHDs face unique challenges [67, 231, 165] as fathers since they do not have access to the same social networks available to mothers. For example, it is difficult for SAHDs to find support in mother groups [127, 10, 165]. Exclusive online groups provide fathers with a chance to share common experiences and offer support to one another. This social support allows SAHDs to better cope with their social role change as they become parents. It also provides them with legitimacy as they attempt to portray themselves as involved fathers who are providing for their families by other means [10, 165].

3.2.3 Sociomateriality and gender performativity

The lens of sociomateriality, as developed in Science, Technology, and Society (STS), takes as its starting point the notion that social and material worlds are co-constituent, produced and enacted through one another [202]. Van House [277], drawing on Judith Butler's concept of performativity, explores how identities in the digital age are negotiated and enacted (i.e., performed) across a variety of sites, offline and online, and through both material and discursive means. Sociomateriality provides a potent theoretical lens for studying how shifts in gender norms, economic change, and social processes unfold in relation to one another by focusing on the ways in which cultural meanings, social values, and norms are produced through material production (including digital content such as blogs) [27, 45]. I use a sociomaterial analytical lens to analyze how broader societal shifts and value sys-

tems (including the DIY identity) unfold through the exploration of a specific case study. This approach provides an account of "specific material reconfigurings" [26] that in turn "constitute the world [250]."

Given that gender performativity can be enacted in online discourse and that norms around fatherhood are in flux, in this Chapter, I ask:

> **RQ1: How do fathers use their online interactions to construct a new fatherhood?**

3.3 Methods

I draw from two datasets in this chapter. The first is an interview study with fathers, and the second is a visual and content analysis of DIY father blogs.

3.3.1 Interview Study

As part of a broad research project studying fathers and online behavior, I interviewed fathers (n=86) who had at least one child under the age of 18 to learn about their online identities and fatherhood. The interviews were conducted between April 2013 and May 2015. I asked fathers what online sites they used, who they interacted with, and how they used the sites. I focused on the context of fatherhood and how fathers might find information and support online. I did not introduce the language of "DIY" in the interviews. The participants used terms such as "DIY," "projects," and "building" to describe work they did at home. After the first pass through the interviews, I found common themes relating to DIY work at home. I conducted a second pass to analyze how fathers discussed DIY projects on social media.

For the analysis presented in this chapter, I selected 22 of the 86 interviews in which fathers focused on their experiences with DIY (see Table 3.2). I selected this sub-sample to conduct a close analysis of their DIY practices. Most participants were married (n=18), while three identified as either divorced or separated. All had at least 1 child below the age of 18, with an average of 2.2 children across participants.

3.3.2 Visual and Rhetorical Analysis of Blogs

During the interviews, a number of fathers told me about their public fatherhood blogs. I expanded the sample using outlinks located in the personal blogs mentioned by participants. I also conducted searches on Google using sets of salient terms from the interview data,

such as "DIY," "Dad," "Daddy," "Blog," "Crafts," "Lunchbox," etc. The 29 blogs I selected for analysis represent a broad but not comprehensive sample of father DIY blogs.

I began the blog analysis by studying the content of the blogs, using an ethnographic study variation [124] of blog content analysis as introduced by Nardi et al. [196] and Schiano et al. [245]. I carefully read the "About Me" section, if it existed, to understand fathers' depictions of themselves and their families online. I read the very first blog post in each blog to determine fathers' motivations for blogging. I also read most of the recent content (within the last year) especially as it related to DIY. Depending on the blog design, I also read the most popular posts and some relevant older posts. All but three blogs were single author blogs; the remaining three were collective blogs that were co-authored by multiple fathers. I analyzed the written content, identifying themes and topics that emerged within and across blogs, in order to understand what fathers share online and how they express their roles and identities in these online spaces. I also analyzed visual artifacts on the blogs, including banners and pictures attached to posts, to investigate imagery related to fatherhood, masculinity, and DIY. I paired these data with the interview data to better understand these fathers' motivations for participating in and producing DIY blog culture.

Of the 22 interviewed fathers, thirteen identified as SAHDs. Of the SAHDs, some also held part-time jobs (n=5). Seventeen of participants' partners worked full time. Out of a total of 29 blogs, 13 bloggers described themselves as stay-at-home fathers. It may be the case that fathers who stay at home are more likely to blog about their experiences at home and doing child care work.

Throughout this chapter, interview participants are referred to using a participant number (e.g., FXX) while blog content is quoted without a participant number. When discussing bloggers in text, the title of the blog is used. Prior work suggests that parents, including fathers, place great importance on their children's privacy online [9, 7]. All blog content in this analysis is publicly available; however, I chose not to reproduce photos of children or identifying information about children from blogs in order to protect their privacy.

3.4 Results

In this section, I will summarize the topics emerging from the qualitative analysis of interviews with fathers and the visual/rhetorical analysis of the blogs. First, I describe how fathers are crafting a new identity through their blogging. Next, I describe how fathers interacted with their children as they crafted this new fatherhood identity. Finally, I describe how fathers, finding few parenting communities designed for them, created new father-centric online communities.

	Marital Status	Degree	Employment	Partner Degree	Partner Employment
F1	Married	CO	FT	CO	SAHM
F2	Married	HS	PT/SAHD	PhD	FT
F3	Married	HS	FT	HS	SAHM Homeschool
F4	Married	HS	FT	HS	PT
F5	Divorced (resident)	MA	FT	MA	FT
F6	Separated	CO	FT	CO	FT
F7	Married	GED	FT	MSW	FT
F8	Married	PhD	FT	M.Ed	FT
F9	Divorced (primary custody)	MA	FT	NA	NA
F10	Divorced (split custody)	CO	FT	Cert	FT
F11	Married	GS	PT/SAHD	GS	FT
F12	Married	GS	PT/SAHD	GS	FT
F13	Married	GS	PT/SAHD	CO	FT
F14	Married	SC	SAHD	GS	FT
F15	Married	CO	LW/SAHD	GS	FT
F16	Married	CO	PT/SAHD	GS	FT
F17	Married	CO	SAHD	MD	FT
F18	Married	GS	PT/SAHD	GS	FT
F19	Married	GS	FT/SAHD	MD	FT
F20	Married	CO	SAHD	GS	FT
F21	Married	CO	SAHD	MD	FT
F22	Married	GS	SAHD	MBA	FT

Table 3.2: Interview participant demographics. SAH[D/M]: Stay-at-home-[dad/mom]; HS: High School; SC: Some College; GS: Graduate Degree; CO: four-year college; MD: Medical Degree; LW: Looking for work; PT: Part-Time Work; FT: Full-Time Work.

3.4.1 Crafting a DIY identity

Dad bloggers posted about three major topics: (1) self-sufficiency and home-improvement, (2) arts and crafts, and (3) healthy and enjoyable food. Some bloggers viewed work done fixing the house or otherwise creating value through saving money as a DIY project. Others viewed any project that allowed them to interact with their children to produce something (be it arts and crafts or a home-repair project) as a DIY project. Bloggers saw cooking healthy meals for their family as a DIY activity in its own right. In the following sections, I will describe what motivated fathers to blog about their lives, what led them to start blogging, and how they chose the kinds of DIY projects they shared with others.

3.4.1.1 Blogging "to change the face of fatherhood"

F6 had lost two marketing jobs by the end of 2008 and found himself in a situation that was very different from his prior life, which he characterized as "ha[ving] a job that was great and paid well....making plenty of money." In addition to unemployment, F6 was facing an impending divorce and estrangement from his son. He attempted to grow his technical skills through software coding, and as part of this effort, he co-founded an online dad blogger community. He described designing and implementing the online community as a "dream venture, at the time not knowing how successful it was going to be."

> "I was collecting unemployment...I was actually starting to code [a dad online community]...It's also been the most rewarding and the best...work I've ever done in my life in terms of its impact and what I think it can achieve philanthropically in the world... It's absolutely made me a better, more involved parent and wanting to share my success as a parent...and my failures too." **F6**

F1, a comedian and entrepreneur, was a father to two children. F1 shared parenting responsibilities with his wife. One of his children became ill at a young age, and he blogged about his child's condition, in addition to cooking tips and general parenting tips. He injected humor into his blogs. One of the many things he produced included, for instance, a YouTube tutorial video about swaddling a child using a game show motif. The video portrayed the father as competent and capable, engaging in an everyday task (baby swaddling) with ease. Noticing the scarcity of dedicated websites and digital space for fathers, F1 eventually decided to co-found a community blog with F6.

> "We feel like we're kind of changing the face of fatherhood because I feel like today's dads are more proud and happy. It used to be the case where dads were

Figure 3.1: Blog Banner for Dadcentric

working full time and didn't spend as much time with their kids. Now, it's like you see a lot of stay-at-home dads. There's a lot of situations where both parents work. So, the dads are just as hands on these days in many situations as possibly the moms are." **F1**

This view echoes that of the creators of another community blog for dads called Dad-Centric. The blog banner of "Dadcentric: Join the Movement" (see Figure 3.1) depicts a beer and a baby bottle crossed over each other, a play on the aesthetics of communist revolutions.

The revolutionary tone of the visuals is reflected in the tone of the writing and con-tributions by its bloggers, who express strong commitment to altering normative views of fathers as sole breadwinners. What they propose as the alternative is the father as an engaged, active, and creative figure. As the blog states on its front page

> DadCentric is a junta of smart, edgy, and talented writer-dads, at the forefront of a revolution whose purpose is to overthrow the outdated notions of Father-hood.

These dad bloggers wanted to change what they considered to be an out-of-date norma-tive view of the father as uninvolved breadwinner into an involved and caring parent. Some viewed their online activities as a socially and economically transformative process; others saw blogging as part of a process of learning how to be a good father. For example, F3 grew up in what he referred to as a "broken home" and blogged about fatherhood as part of his efforts to become a better father. F3 noted that he was "not making any money [blogging about fatherhood], but just doing it as a labor of love." Another dad blogger, DadIsLearn-ing, echoed the importance of discussing parenting issues. In his first blog post, he wrote that "life is about learning and one of the best ways to learn is through sharing experiences, thoughts and observations."

For these fathers, the learning process was not only about DIY work, but also about crafting their own identities as fathers. Whether their efforts were explicitly aimed at social and economic transformation, as in the case of DadCentric, or were a more pragmatic

Figure 3.2: Blog Banner for Crafty Dad Blog

endeavor oriented toward developing their skills sets (or both), for participants the outcome was, as F1 put it, "changing the face of fatherhood."

3.4.1.2   Producing the "Crafty Dad"

Most of the blogs I analyzed (21 out of 29) stated their involvement and identification with DIY on the front page or "About Me" pages. For example, DIYDad described his day job in management at an architecture company. He elaborated on his lifelong love for "building things...as I was growing up, I was lucky enough to have someone take me under their wing and teach me...about building and maintaining a house." One of the two co-authors at dadand similarly explained that "he loves being a designer, but his true loves are his daughter...technology, science, gadgets, nerdy crap." One of the contributors to the blog defined its contents as a "mashup of all things dad- and dude-related: DIY, repairs, cars, gadgets, cooking." Other fathers described broad skill-sets in their depictions of themselves. For example, the homesteaddad blogger identified himself on his blog as "an NRA certified instructor" who can "also sew, knit, and even cook, albeit not too well."

The concept of a DIY dad was also produced and reified through the visual design of the blogs themselves. For example, Crafty Dad used a banner showing a wooden background with a short statement on the foreground, characterizing him both as a father and as a maker (see Figure 3.2). Through this banner design, he highlights his view of crafting as a particular approach to fatherhood.

Another blog, Dadbloguk, featured a graphic (see Figure 3.3), in which a cartoon figure resembling the blog author holds a baby bottle in his left hand and a wrench in his right hand, with one arm crossed over the other. This image is reminiscent of common DIY maker imagery circulating online and in periodicals such as *Make Magazine* and *Handman magazine*, in which both men and women pose with tools in their crossed hands.

Blogging, across these sites, was in part, as F21 put it, about "mak[ing] sense" of what it means to be a "good" father and parent, which in the examples above was mostly about "craftiness," creativity, and a hands-on engagement with children and life more broadly. In addition to discussing crafts and DIY work, a subset of blogs also focused on exploring

Figure 3.3: The figure on the left shows the blog banner for Dadbloguk. The figure on the right shows a cover for *Handman* magazine. Both images feature similar power poses.

what it meant to be a SAHD. For example, F21 explained his role as SAHD to his elderly neighbors by saying that "I do the same things as a stay-at-home mom. I'm just not a woman."

While F21 blogged about his experiences fixing an old house, he also talked about the unique issues that he faced as a stay-at-home father, especially around interacting with people who did not understand this choice. Other fathers also indicated that such DIY "projects" at home provided a way for them to interact with their children while at the same time engaging in DIY work. For example, F11 described how he worked on remodeling their home bathroom with his son and said he took pictures of his son "painting the first coat" for the remodel. Introducing his blog, Daddydoodledo shared in his first post that he was "rediscovering how to be a full time daddy again" and becoming "the man of the house doing and fixing everything inside and outside our humble abode." F17 similarly left his job and then started blogging about DIY projects that allowed his family to be more self-sufficient. F2, who was a musician with flexible working hours, started blogging when "the kids were babies" and he was spending a lot of time at home with them while his wife worked full time. He blogged about his parenting, his musical work, songs he wrote for his children, and his DIY projects. For F2, blogging alleviated isolation by connecting him with like-minded fathers.

3.4.1.3 Self-Sufficiency and Crafts

A number of dad bloggers shared money-saving tips and approaches for self-sufficiency. For example, when F17 became a stay-at-home dad, he began blogging about cost-cutting tips and self-sufficiency strategies, such as farming on a small scale to provide for his family. F17 used his blog to document the projects he was attempting:

"To me it's almost like a diary, 'Hey, I did this project on this day.' If I wanted to go back and look, I can search the blog and find out what I did this time last year and things of that nature." **F17**

F14 and F7 both blogged about arts projects they worked on with their children. F13 worked on craft projects with his son, which he posted to Etsy, a peer-to-peer craft community. F13 blogged about making these crafts with his 3-year-old and posted pictures of them working together on social media. F22, a teacher by training, also worked on arts and crafts projects with his children. He emphasized both cost-saving benefits and ways in which these projects enhanced his parenting.

For example, F22 crafted The Hammer of Thor with his children from recycled materials when they asked for the toy. He later posted step-by-step instructions on his blog describing how to craft the hammer. Dadlabs blogged about craft projects he worked on with his son. In the first of these blog posts, he defended posting about crafts on a dad blog: "I love to craft. Yes, I have a penis. Unbelievable, right? I know I'm venturing into territory generally reserved for MomBloggers, but Dad's Craft Lab will be another semi-regular segment here at DadLabs." He then linked his love for crafts to his childhood experiences, explaining that his mother was a "seamstress...and crafter" and that his father worked in a cardboard factory and provided much of the material he had used for crafting as a child.

3.4.1.4 Performing masculinity and entrepreneurial attitude

Some blogs focused specifically on the creation of "innovative" and "nourishing" food choices for their children. Lunchbox Dad, for instance, blogged exclusively about how to make food more enjoyable for his own and other children (see Figure 3.4).

Figure 3.4: Innovative Lunchbox Ideas from Lunchbox Dad

He started the blog in order to share the special lunches he was preparing for his daugh-
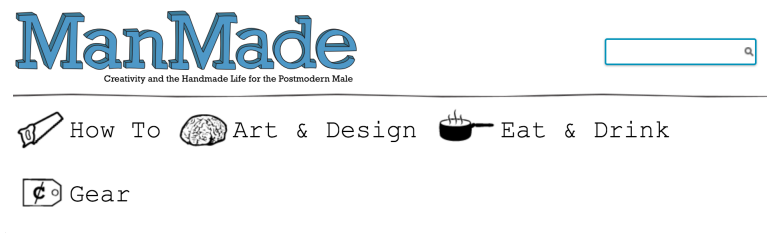
Figure 3.5: Blog Banner for ManMadeDIY Blog

ter in kindergarten. He wrote blog posts and created YouTube videos about creating lunch-boxes that were both interesting and "semi-healthy" or "hacks for picky eaters." On the "About Me" section of the blog, he noted that he wanted "to help you make lunch time fun, connect with your kids, and show you products that make...your life as a busy parent easier." F13, in addition to working on crafts and selling them on Etsy, also posted about cooking with his child as he was working on his culinary certification at a local school. Other fathers did not particularly like cooking, but viewed blogging as a mechanism for trying to engage with it. For example, F22 found that posting to his blog about cooking, the activity he emphasized enjoying least, pushed him to move beyond his comfort level and become more creative in his day-to-day cooking attempts.

In other cases, fathers' accounts of parenting focused on activities that might be interpreted as conventionally masculine. For instance, GeekDad shared movie reviews that focused on their suitability for children.

> I go to geekdad.com. It's talking about dungeons and dragons, and Legos...One of my favorite things about the website is that they give honest movie reviews. And they tell you, in their opinion...Will your kid like this movie? Will you like this movie? When is the best time to take a potty break? Should you pay extra to see it in 3D? And then what is in the movie that parents may have an issue with? **F3**

Another blog, Manmadediy (see Figure 3.5), whose author described himself as a "postmodern male" advancing "creativity and handmade life," provided how-to guides for other fathers on topics such as home improvements, arts and crafts, and "food innovations."

3.4.2 DIY Fatherhood

I now explore the ways in which children were featured in fathers' enactments of a DIY identity. Engaging children in DIY projects was understood as a form of education that

instilled "healthier" behaviors and "innovative" thinking such as cooking your own food instead of eating out, or building your own toy instead of purchasing a new one. Many of the blogs displayed images of fathers working with their children and textual accounts of the projects and the children's reactions.

These included accounts of cooking and craft projects, but also coding sessions and technological hacks fathers performed with their children. Often the bloggers engaged in the additional work of producing vivid digital accounts of activities they undertook with their children. F6, for instance, created and shared a number of online videos with his son:

> He [my son] is interested in cod[ing]. If you ask him what he wants to be when he grows up, he says he wants to be a coder. So I've been kind of sharing my passion for...my technical knowledge of code with [him]...and developed a show out of it, and my son loves the show...I toss on the record button and he is aware that he has an audience and wants to perform well for [them]. **F6**

The kind of DIY practice performed with children varied. Many of the men interviewed drew upon knowledge they had obtained in a prior job, while others focused on areas in which they were eager to improve their skills. F15, for instance, was laid off during the dot com bubble in 2001. He used a music-mixing site that enabled people to share and mix each other's tracks and shared his son's mixes online.

Other fathers described their efforts to actively avoid technology. F22 stressed that art projects would "get [children] involved in activities that are away from technology all the time: Doing things outside, getting creative, using their imagination." For example, one of the members of a online community for fathers shared content about simple craft projects that other dads could work on with their children without electronics. He wanted to share the experience of creating crowns with his daughters.

> One of [our] partners in [the online community for fathers]...[does] arts and crafts, and some of the art...he, every week, has a different art or craft project that he...crafts with [his daughters]. **F6**

F22 shared tips on using recyclable materials to produce toys children would enjoy, emphasizing the reuse of materials around the house.

> Kids always want that stuff, but you don't always have the money...so I'm just providing like a fun thing that you can do with your kids, and it's something that you could do with them that's cheap. You probably have these materials in your house, so it doesn't really cost you anything. You're recycling what

you already have to create something new with your kids...I call it like a toy treasure from trash. **F22**

Similarly, the blogger lunchboxdad wrote about meals parents could create along with their children. In one post, he noted that his daughter was interested in French culture, so he created a marshmallow Eiffel tower with her and posted it online (see Figure 3.4).

DadNCharge drew on ideas from Pinterest to work on projects with his children. One such idea was based on DIY kits created by another dad who "resorted to crafting to disengage his son from electronics." DadNCharge found these kits to be a great way to engage in "creative play" with his children. DadNCharge used the kits to collaborate with his son on creating art and traditional craft projects.

F16 blogged about the challenges of managing an architecture business from home, while taking care of his children. He decided to write about "the process of designing things with kids in mind, or with the input of kids." This joint identity of father and entrepreneur was shared by many participants. For example, TrepLifedad posted about how a "stay-at-home working parent...find[s] time to get work done and look after the kiddos." His entrepreneurial work as the founder of a new tech company appears on the blog alongside his parenting experiences (e.g., parenting anecdotes and recipes). He referred to dads who shared similar interests as "dadpreneurs" and linked to other entrepreneurial father sites such as StartupDadHQ.

3.4.3   Collective Identities

Many of the men we talked to either belonged to a group blog or provided links to other father blogs on their own sites. F3, a self-described "geek," routinely visited GeekDad, a "community blog made up of parents from all over the world, seeking to raise their kids in their own geeky image." Meanwhile, blogs such as Geekdad.com, for instance, cross-posted to other online media sites such as *Wired*. At the same time, media sources such as *Make Magazine* linked back to a number of father bloggers. In these father blogs, DIY content would be interspersed with sports news, technology reviews, and other "male-centric" media content.

DIY magazines like Make Magazine provided a platform for fathers who were working on DIY projects at home. *Make Magazine*[1] links to a number of dad bloggers. Some of these bloggers review other father bloggers' DIY projects and link back to those projects. For example, a *Make Magazine* blogger shared one of the projects produced by DIYDad both as an example of DIY and of a project that dads could do with their children. The

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[1] https://makezine.com/

Make Magazine article focuses not only on the technical lessons that can be learned from it, but also on the salience of the project for the father-child relationship. Celebrating dads as makers is a central trope in the magazine, hinting at the male-centric audience. Many DIY dad blogs also linked their content to *Wired Magazine* in order to connect fatherhood to technological and innovative thinking. For instance, Geekdad frequently featured technology products, including posts about new apps and products for parents.

Many fathers shared a sense that they themselves were agents of change in challenging traditional norms. F1, a co-founder of a dad online community, distinguished the community he co-founded from the social norms he saw proliferate through more mainstream social media like Facebook.

> I guess it's different than Facebook because it's a lot more niche. It's for dads and we also don't have the 20 billion dollar budget that Facebook has. So, those are your differences. But...a member can...find other dads, connect with other dads, share stories. **F1**

A co-founder of the site, F6, discussed the importance of creating this "entertainment hub...social network for fathers...to kind of come and share their voice and share their story with the world." F17, whose personal interests focused on cost-saving and home improvement, echoed the importance of sharing experiences and noted that in the dad "blogosphere, you find people that are like-minded and are kind of encouraging." He used this safe space to "bounc[e] ideas off of people," which allowed him to "get pointers before [getting] started."

The blogs documented here were central to shaping a sense of collective identity. This collective identity was built through cross-referencing and sharing interests related to not only to fatherhood, but also technology, geekdom, and making. This common ground was important for fathers who felt isolated and sought a community of trusted allies. This collective identity was in part performed through references made to categories like the DIY maker. The category of DIY maker, in other words, provided resources for dads to negotiate their own roles and situate and assert themselves in a changing climate of what counts as good fatherhood.

3.5   Discussion

In this section, I start by discussing how fathers are using their online presence, especially on DIY father blogs, to craft a new fatherhood. Next, I describe how fathers use their

skills to engage in entrepreneurship while still connecting this creative work to their parenting. Finally, I map how crafting new identities allows fathers to moderate the role strain associated with parenthood in the "new economy."

3.5.1 Crafting fatherhood and owning DIY

Much like members of feminist hackerspaces [237], the fathers in our study mostly did not seek to resist or disrupt conventional gender norms. Instead, they deployed DIY values and practices to legitimize their work and skills in areas commonly classified as women's work or domestic masculinity. For example, lunchboxdad portrayed his cooking as an innovative approach to food preparation and parenting (e.g., "parent hacks for picky eaters.") This finding is in line with previous work by Doucet [67], who noted that SAHDs legitimized their care work by emphasizing accomplishments like award-winning cakes. Others like DadLabs defended blogging about arts and crafts projects by making salient his masculine identity ("yes, I have a penis"). The merging of references to DIY, crafts, and entrepreneurship with visual metaphors of masculinity (e.g., wrenches, woodworking, and tools) constituted a way of testing out a masculine fatherhood identity built on activities formerly associated with women's labor.

Maker practices remain male-dominated [257] and hackerspaces "largely account for narratives of hobbyist engineering culture driven by men." [237] Rosner and Fox describe how mothers hacked culture by creating feminist hackerspaces that were safe for mothers and their infants, and where the meaning of the term "hacking" was itself negotiated [88]. However, they are careful to point out that the members of these hackerspaces "did not deny current male distributions of power," but instead used "the language of hacking, and its emerging discourse of digital production, to define and legitimate women as hackers and, accordingly, as relevant actors in high technology markets." [237] Through the physical design of the makerspace itself and the centrality of less technical work such as weaving, members of feminist hackerspaces were hacking not only technology, but also their identities [88]. In this chapter, I have demonstrated how DIY practice allowed men to "move out of the shed" and legitimize their housework and care work. Many emphasized the innovative capacity of their work and the unique environment it provided for their children's coming-of-age and learning in a digital age. Through their DIY making and articulations thereof, fathers created "specific material configurings" constituting their world as parents [27, 250].

I argue that fathers engaging in DIY fatherhood have created "historically situated artifacts" on DIY dad blogs. Through participating in communities of practice, DIY father-

hood has evolved as a category [37]. My findings show that fathers identified with DIY practices and movements, which in turn helped shape their roles and identities amidst a climate of economic and social change. "Social categories arise from work and from other kinds of organized activity, including the conflicts over meaning that occur when multiple groups fight over the nature of a classification system and its categories" [37]. DIY fatherhood, I argue, is such a category, produced in action and continuously negotiated as it spans diverse practices and boundaries at home and online. DIY and making, in other words, have played a role in the articulation of a masculine father identity through labor that has been historically characterized as women's labor or carework.

Hartley argues that social norms are constituted in part through storytelling in mass media (e.g., television) [120]. Digital media, on the other hand, are often understood as sites to create and "gain some control over... their own cultural productions [225]" through "peer to peer emulation [120]." Through shared DIY performances on their blogs, the fathers in this study articulated a particular identity through a confluence of material and cultural co-production. Reitmaster and Zobl argue that "DIY culture 'encourages individuals to make their own culture, rather than simply consuming what is mass-produced.'"[225] Building on these earlier works, I have shown how fathers crafted identities materially (by creating DIY projects) and discursively (by writing and sharing DIY and parenting blogs) [45, 277].

Dad bloggers sought to portray themselves as "crafty" both in the DIY domain and in their roles as parents. Crafting, while often construed as a feminine activity (e.g., knitting or sewing) [40, 43, 88], was appropriated in ways that validated the activity within the DIY framing. For example, when fathers blogged about cooking, fathers legitimized it as a male practice by making it about innovative nutrition intake and creative intervention in their children's lives. When fathers created videos of the DIY projects they worked on with their children, they carefully crafted images of what it means to be a good father in the postmodern age. In other words, when fathers engaged in DIY making, they not only crafted with paper or baked cakes, they also crafted the crafty and entrepreneurial dad.

3.5.2 Dadpreneurs: DIY entrepreneurship in the "new economy"

An extensive body of work on the "new economy" has demonstrated how ideals of knowledge production and creative work go hand in hand with the promotion of a new kind of citizen: the entrepreneur [197]. In this chapter, I show how DIY fatherhood is situated within and emerging from these ongoing politico-economic processes. DIY making framed as entrepreneurship and a creative and productive form of labor has allowed fathers to enact a form of masculinity in the home, even as they engaged in care work typically

characterized as feminine.

The rise and proliferation of ideas of the "new economy" [197] have brought with it a reliance on contingent work [28] and entrepreneurship [197]. F3 declared that blogging about parenting issues is a "labor of love," and F6 dubbed his efforts to create a online blogging community for fathers as "a successful venture." Both F16 and TrepLifeDad explicitly described how their outlook on fatherhood roles was enhanced by their work as entrepreneurs. Much like earlier "true believers" in the "new economy" who, at the dawn of the dot com era, were using DIY mechanisms to create their own "zines" online [197], the fathers I interviewed created their own dad blogs in order to position themselves in relation to shifting social and economic processes. The blogs provided a safe space to connect with other like-minded people to negotiate shifting gender norms, share DIY tips, and to express respect for each other's points of view [272].

While some blogs were more topically focused on DIY, all of them shared the practice of documenting and promoting their particular stance towards fatherhood.Tremendous work went into creating these online sites with carefully crafted images: these fathers, in other words, were not just consumers of digital content, but also producers of cultural imagery through their ongoing writing, crafting, cooking, video editing, etc.

The DIY movement is often portrayed as an entrepreneurial practice: selling crafts on Etsy, setting up hackerspaces, or building hardware incubators in the U.S. are all tied to new forms of economic labor and production [6, 197]. Here, I describe a different kind of entrepreneurial practice among fathers. Being a good dad was enacted in a variety of ways among our participants: through inventive ways of engaging children in hands-on projects, through the production of digital accounts such as videos that would signal their parenting to others, and through approaching day-to-day chores like cooking in new and inventive ways. What these material and discursive productions crafted was an image of the "dadpreneur."

3.5.3   DIY as a Role Strain Moderator

While still lower than mothers' involvement in caretaking tasks, fathers are doing more at home [219, 171]. However, they are still viewed by many as the primary breadwinners in the family. Due to the ambiguity of the fatherhood role expectations (e.g., [153]) men experience role strain as they transition to their new parenting role [44]. Role strain might cause anxiety and discomfort for fathers transitioning to their new social role (see Section 2.1.3).

In Table 3.3, I draw on the findings in this chapter to show how fathers "reconfigure"

Domestic Masculinity	DIY project
Cooking and food preparation for children	Creating new snacks for picky eaters and blogging about hacking the kitchen (e.g.,lunchboxdad)
Father having to work on a crafts project for daughter's school	Father working with children to create new cheap Halloween costumes from scratch
Not finding father-centric support groups at the part or online	Create new father-centric online community as a DIY project

Table 3.3: Examples of domestic masculinity projects legitimized by framing in terms of DIY projects.

caregiving tasks in a way that allows them to craft these responsibilities as traditionally masculine labor. By re-framing caretaking in terms of DIY projects and making, fathers are engaging in the intrapersonal component of Zimmerman's empowerment model [288] (see Section 2.1.4). Through framing parenting skills differently, fathers gain a sense of self-efficacy and competence in their parenting skills. For example, Tom, introduced in Section 2.1.3 lacked skills in cooking and snack preparation — traditionally not part of the father's domestic role. Tom could engage in "hacking the kitchen" to "feed picky eaters" much like lunchboxdad. In so doing, he would build his competence in food preparation for children.

Fathers might engage in the interactional component of the empowerment model by finding resources that help them craft their DIY parenthood. For example, much like F17, a father who wants to engage with his children on crafting projects might look for resources to create DIY Halloween costumes. Fathers might also look for other resources to save money through self-sufficiency and thus providing for their families by other means.

Finally, as fathers engage in "crafting a new DIY fatherhood," they are also engaging in the behavioral component of the empowerment model by advocating for new fatherhood norms and building online communities that provide them with social support. The process of building the new father-centric online communities is itself seen as a DIY project. For example, F6 started coding a new father-centric community after he lost his job. Engaging in this effort allowed him to both find a project in lieu of formal employment whilst also formulating a new view of fatherhood and building a community with other like-minded fathers.

3.6 Limitations and future work

Since DIY practices tend to be an exclusive practice reserved for more affluent populations [257], the work presented in this chapter does not provide insights about whether less affluent fathers reframe their positions as fathers using blogs, social media posts, or other forms of digital production. Future work could focus on analyzing on how less affluent fathers cope with their social role change.

While the findings in this work are valuable, they are limited by the scope of user interaction that can be analyzed using qualitative analysis. In the next chapter, I will present work analyzing parents' online interactions at scale.

CHAPTER 4

What do parents discuss when pseudonymous online?

4.1 Introduction

Parenting can be a sensitive issue to discuss, especially that this social role is particularly salient for one's identity. Abernathy [1] argues that new parents need to build their competence by engaging with their social networks. In her view, the more a parent can connect with their social networks to ask for advice and gain social support, the better they can gain a sense of parental competence. Competence is one of the main drivers of the intrapersonal component of Zimmerman's empowerment model which describes how "people think about themselves" [287]. As I discussed in Section 2.1.4, gaining more competence will allow parents to better cope with their transition to parenthood.

While social media provides a chance for parents to maintain their existing social networks and form new networks with other parents, some topics may be too sensitive for parents to discuss on real-name social media sites such as Facebook. These topics might include discussions of sleep training, breastfeeding, and vaccinations [9]. Alternatively, social media sites such as Reddit allow users to engage in self-presentation using pseudonyms rather than their real names. People may feel more comfortable using pseudonymous social media sites to engage in discussions they would not have on a real-name social media site such as Facebook [131].

In this chapter, I present the results of a study of three major parenting forums on Reddit: r/Parenting, r/Mommit, and r/Daddit.

4.2 Related Work

In this section, I start by introducing the concept of technological affordances, specifically in the context of social media sites. I then explore research in the area of online self-disclosure and privacy. I introduce the concept of real-name and pseudonymous social media sites and explain the affordances of each. Finally, I focus on earlier work on the use of social media by parents.

4.2.1 Social media affordances

The term affordances describes the features of an object that gives an agent cues as to how the object can be used to achieve a goal. For example, the shape of a door handle gives one a cue to either push or pull to open a door [99]. Norman argues that there are two types of affordances: (1) real affordances inherent to the technology and (2) perceived affordances, which are more visible to users and easier to discover [198].

Zhao et al. [286] argue that social media sites provide users with (1) perceived affective affordances and (2) perceived control affordances. Perceived affective affordances allow the user to gauge the degree to which their post is accepted or supported by other members of the community. For example, on Facebook, the number of "Likes" represents a proxy to the response to one's post. On social media sites like Reddit, Karma score — the difference between up-votes and down-votes — is the proxy to the propriety of a post in the online community. Perceived control affordances allow users to control their environment on social media platforms by defining different audiences for their posts. For example, Facebook users can share their posts publicly, or they could limit their audience to "Friends only." By using a hashtag, users can engage a bigger audience on Twitter. Conversely, one could protect one's tweets so they are only accessible to one's followers on the site. This ability to control one's messages to different audiences is what Walther et al. [280] refer to as selective self-disclosure. I discuss this further in the next section.

4.2.2 Selective self-disclosure and social media

Social media affordances provide users with a chance to engage in self-disclosure using different communication channels depending on the audience. When engaging in self-disclosure, depending on their perceived audience, people tend to see themselves as performers on Goffman's "front stage" [103]. Eagly & Wood [73] argue that when "performing" for an audience, one behaves according to the "normative standards" of the social group. Selective self-disclosure allows social media users to manage how their audience

perceives them [162, 280].

Uski & Lampinen [275] refer to this self-disclosure management as "profile work." When engaging in profile work, users react to feedback from their audience as they attempt to understand the normative standards of the site. For example, users might reduce the frequency of their posts if they perceive that the response from their audience indicates that they post too often. They might also refrain from posting about specific topics if they perceive that the responses are too negative. Vitak & Kim [278] argue that users engage in self-disclosure management on Facebook by employing self-censorship. For example, users would send private messages to a subset of their friends when they think that certain posts may not be received well by the rest of their social network. The users would also disaggregate their audience by maintaining friend lists and private Facebook groups. Lampinen et al. [152] show how users employ different social media profiles and different accounts on the same site in order to better manage their selective self-disclosure.

Selective self-disclosure is used by social media users to remedy the problem of context collapse [129, 180]. Context collapse is the social phenomenon users face online when they have to reconcile their self-presentations to different social groups that would have otherwise been separate [129]. Social contexts in face-to-face interactions are naturally separate. When going on out with friends on a Friday evening, one's experiences are shared with friends, but not with other parts of one's social network such as parents. However, if a user shares a picture of their Friday evening outing on Facebook, the social context now includes all members of their social networks. Hogan argues that users address this issue by adhering to the "lowest common denominator" for everyone in their network [129]. In other words, they would only post to their Facebook wall if they thought the post was in line with the social norms accepted by all their Facebook friends.

Pseudonymous social media sites like Reddit allow the use of a pseudonym as opposed to user's real-names. The affordances of the pseudonymous media sites can mitigate the effects of context collapse [131, 276].

4.2.2.1 From Facebook to Reddit: Social Media and the Real Name Policy

One policy distinction among different social media platforms revolves around mandating the use of real-name accounts. A real-name policy calls for using one's legal name (first name and last name) rather than choosing a pseudonym. One of the main proponents of this practice is Facebook. In fact, Facebook founder Mark Zuckerberg has argued that "having two identities for yourself is an example of a lack of integrity." [130, p.2] Mandating the use real-names on the platform was central to a Facebook campaign countering cyberbullying against LGBTQ youth. In essence, the argument is that one would not act

against societal norms if one is using one's real name. Paradoxically, many LGBT teens use pseudonymous/anonymous social media accounts to express and explore their sexual identities "before proclaiming them publicly." [130, p.8-9]

Previous research has also described Redditors engaging in "identity-work associated with sexual identities that are not exclusively heterosexual" [230, p.51]. These reflections on one's sexuality often include not-safe-for-work (NSFW) content such as pornography. In order to separate other contributions on the site [195], Robards, echoing work done by [195] suggests that many posters use throwaway accounts to separate NSFW content from SFW content [230].

Reddit forums provide a space in which users can engage in the topics in which they are most interested. The network of users within any subreddit is more reflective of inter-est in a particular topic than existing social networks or geography [230, 195]. Some of these subreddits revolve around sharing news (e.g., [164]), others are explicitly focused on providing social support in specific context such as suicide watch (e.g., [61]), while others engage in identity work (e.g., [195, 230, 66]).

4.2.3 Parenting and social media

Parenting has been a common topic in online communities since the days of "the WELL"[1] — an early online community that shaped scholarship about how people interact online [226]. On the WELL's Parenting Conference, or board, parents shared intimate descrip-tions of their experiences, ranging from the mundane (e.g., changing diapers) to the more sensitive discussions about LGBT teenagers and children with special needs. Mothers and fathers provided "emotional support on a deeper level, parent to parent, within the bound-aries of Parenting [Conference], a small but warmly human corner of cyberspace" [226].

Engaging with other parents on social media sites provides parents with social support [215, 175, 18, 86, 132, 175, 174]. For example, mothers are empowered by and find a sense of community through blogging [261, 177], and fathers look for other fathers facing similar experiences and challenges to engage with online [9, 10, 262, 39, 242, 262]. These interactions allow parents not only to seek information about parenting, but also to make sense of their parenting experiences [175].

However, parents might also engage in self-censorship by refraining from discussing parenting topics that might be deemed problematic by others in their social networks. These topics might include breastfeeding, sleep training, vaccinations, or custody battles with their partners [9]. Pseudonymous online communities such as Reddit provide a platform

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[1]https://www.well.com/about-2/

for parents to discuss issues that might feel to sensitive to discuss on real-name social networking sites like Facebook. For example, newly divorced fathers prefer using Reddit for parenting advice because they perceive some of the responses to their parenting posts on Facebook to be judgmental [9].

Fathers are concerned about what might be considered suggestive content on their social media accounts, especially with regard to posts about their daughters [7]. For example, fathers do not want to share content that might be "over-sexualized" like wearing shorts that "were too short." [7]. However, mothers take on the responsibility of managing family disclosure online more than fathers do [7]. This responsibility includes not only finding suitable posts to share about their children and family, but also managing what other family members and friends post about their children. In essence, mothers assume a third shift which includes the invisible labor involved in taking on stewardship of their children's online presence and privacy [148].

4.3   Dataset

I used a publicly available Reddit dataset.[2] This dataset was collected by Baumgartner using the Reddit API. Pushshift is a "social media data collection, analysis, and archiving platform that since 2015 has collected Reddit data and made it available for researchers." [29] The dataset includes all public comments and submissions on Reddit[3] since the inception of the online community [29]. The dataset includes comments, user names (pseudonyms), comment timestamps, and Karma scores. A detailed description of the variables provided by the Pushshift API is available in [29, p.4-5]. No other identifying information, such as gender or age, is given. The data used in this analysis were drawn from public subreddits between March 31st of 2008 and October 31st of 2018.

While there are posts about parenting in Reddit before March of 2008, the first post on any parenting-centered subreddit was in March 31st 2008 when r/Parenting was created. I focused my analyses on three subreddits: r/Parenting, r/Daddit, and r/Mommit. I will introduce each of the subreddits next. For each subreddit, I start by quoting the community description as listed by the subreddit moderators.

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[2]`https://files.pushshift.io/reddit/comments/`
[3]`https://www.reddit.com/r/datasets/comments/3bxlg7/i_have_every_`
`publicly_available_reddit_comment/`

4.3.1 r/Parenting

> "/r/Parenting is the place to discuss the ins and out as well as ups and downs of child-rearing. From the early stages of pregnancy to when your teenagers are finally ready to leave the nest (even if they don't want to) we're here to help you through this crazy thing called parenting. You can get advice on potty training, talk about breastfeeding, discuss how to get your baby to sleep or ask if that one weird thing your kid does is normal."

The first comment on the Parenting subreddit was on 03/31/2008. There are more than 2 million comments on the subreddit throughout the decade between 2008 and 2018, which is comprised of a 100,000 threads posted by more than 128,000 users. Around 10,000 of the Parenting users are throwaway users. I will discuss this further in Chapter 5.

Figure 4.1: Parenting Subreddit Banner

4.3.2 r/Daddit

> "This is a subreddit for Dads. Single Dads, new Dads, Step-Dads, tall Dads, short Dads, and any other kind of Dad. If you've got kids in your life that you love and provide for, come join us as we discuss everything from birth announcements to code browns in the shower."

The first comment on the Daddit subreddit was on 09/04/2010. There are around 400,000 comments by 53,000 users over eight years. Figure 4.2 shows a screenshot of the Daddit banner.

Figure 4.2: The Daddit banner shows a number of father figures from popular and mass media.

	r/Parenting	r/Daddit	r/Mommit
First comment	03/31/2008	09/04/2010	07/17/2010
Comments	2,112,028	440,728	232,919
Threads	100,373	44,730	17,399
Unique users	128,527	53,059	22,683
Throwaway comments	9,838	416	378
Unique throwaway users	1,275	139	79
LDA topics	60	44	42

Table 4.1: This table reports the number of comments, threads and unique users per subreddit. It also shows the number of Latent Dirichlet Alocation (LDA) topics for the Parenting, Daddit, and Mommit subreddits.

4.3.3   r/Mommit

"We are people. Mucking through the ickier parts of child raising. It may not always be pretty, fun and awesome, but we do it. And we want to be here for others who are going through the same experiences and offer a helping hand."

The first post on Mommit was on 07/17/2010. There are more than 232,000 comments on Mommit submitted by more than 22,000 users. Figure 4.3 shows the Mommit banner.

Figure 4.3: Mommit Subreddit Banner

While there are a number of different parenting subreddits, I selected the largest three on the platform. There are 1,200,000 registered users on r/Parenting, 117,000 registered users on Daddit, and 730,000 registered users on r/Mommit. I chose not to analyze other related subreddits that focused on closely related, but distinct, topics, like pregnancy (r/Babybumps; 119,000 members) and expecting fathers (r/predaddit; 29,000 members). I also excluded r/beyondthebump (93,000 members), which perhaps could have been included but is an extension of the pregnancy experience and continues to focus on that aspect of parents' lives. Finally, I made the decision to focus on parenting communities with broadly similar (i.e., supportive) norms and not to focus on more sarcastic and edgy communities (r/BreakingMom; 44,000 members).

4.4 Study 1: What do parents discuss on pseudonymous online communities?

Pseudonymous social media sites like Reddit provide relative anonymity for users that protects their "security while enabling them to participate freely online without the fears of 'context collapse' that come with using 'real names' [like Facebook]" [195]. Given this relative anonymity when using Reddit, I ask

RQ2: What topics do parents discuss when pseudonymous online?

4.4.1 Method: Topic modeling of parenting subreddits

Unsupervised machine learning (ML) models employ "data-driven clustering and grouping explorations" [193, P.5]. First, the researcher develops a sense of the potential themes emerging from the data. Then the researcher iteratively fine tunes the model clustering parameters until they find interesting results that fit the data.

Latent Dirichlet Allocation (LDA) is an unsupervised machine learning model used to discover topics in text documents [36]. In a Document (D) there is a sequence of N words, $D = (w_1, w_2..., w_n)$. A corpus (C) is in turn a collection of documents. $C = (D_1, D_2,...D_n)$.

The output of LDA models is represented by abstract topics throughout the corpus. In this analysis, the corpus represents the text of the comments throughout the three parenting subreddits. I assume that each thread contains a related set of topics. Therefore, I take every thread to be a document. In order to train the LDA model, I represent each document as a bag of words (BoW) - a list of words disregarding grammar and word order [119].

Each of the LDA topics is represented by a number of topic terms, which I refer to as the key term group (KTG). I trained the LDA model using the Python Gensim package on the corpus of the aggregated subreddits, r/Parenting, r/Daddit, and r/Mommit.

In order to find the optimum number of topics for the LDA model, I trained 9 different LDA models. I set the number of topics k for the first model to 10. I then proceeded to train LDA models at an increment of 10 topics, setting the limit at 90 topics. For each of these iterations, I calculated the coherence score of the LDA model using the Gensim *CoherenceModel* feature[4]. Coherence values have been found to be better at approximating human rating of LDA model "understandability" [233] than other measures like perplexity [48]. Figure 4.5 shows the coherence values for each of the LDA models. I used these scores as a guide to analyze a subset of the LDA models. I verified three LDA models that represent local maxima in the graph at 40, 70, and 80 topics.

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[4]https://radimrehurek.com/gensim/models/coherencemodel.html
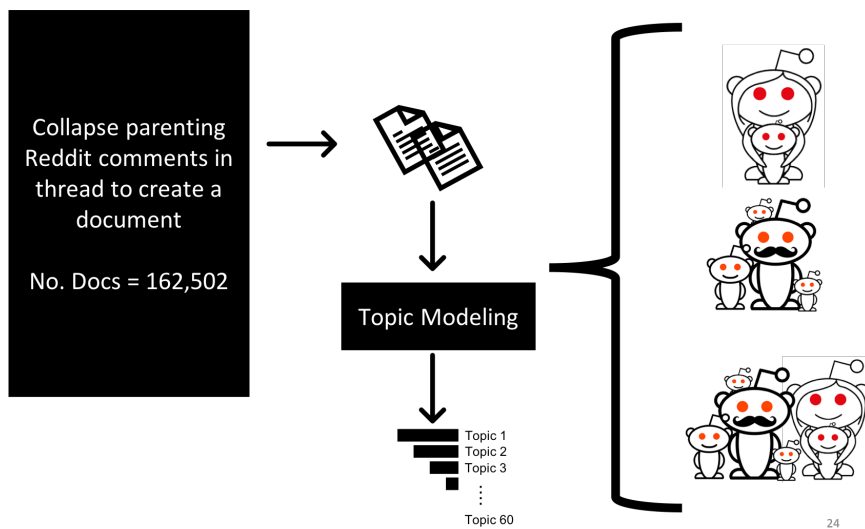
Figure 4.4: Aggregate LDA model for all three subreddits: r/Parenting, r/Daddit, and r/Mommit
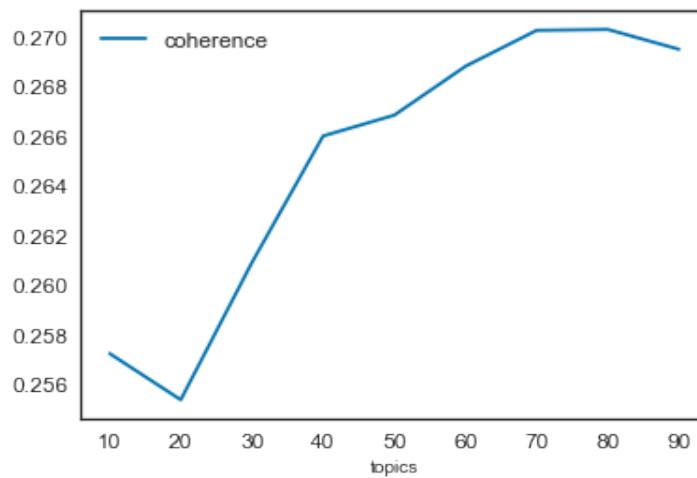
Figure 4.5: Coherence values for LDA models between 10 and 100 topics

To verify the LDA topics, I randomly selected comments with high topic scores (the process of finding the scores is discussed below) for each LDA topic. For each of the topics, I selected a random sample of 100 comments. I read as many of the selected comments as necessary to reach saturation, at which point I could describe and verify a topic, or deem the topic incoherent or irrelevant to the analysis (e.g., spam). I found the 70-topic LDA model to be the most coherent. Starting with 70 topics, I verified 60 and found 10 topics to be incoherent. Throughout this process, I read a total of 900 comments.

4.4.1.1 Topic score

In order to calculate the score per topic for each comment, I used the inference module in Gensim,[5] based on work by Hoffman et al. [128], in order to find the topic distribution over the corpus [36]. A stochastic model estimates the values of topic distributions over a corpus through converging values of estimators populated from the LDA model.

I used the average topic score as a proxy for the user's interest in particular parenting topics. Using this score, I can show differences in the topic distributions across different subreddits (for example, see figures 4.6, 4.7, 4.8, and 4.9).

4.4.1.2 Qualitative exemplars: about sharing Reddit user quotes

Muller et al. [193] argue that machine learning and qualitative analysis methods converge in that they are both iterative and grounded in the data analyzed. For example, as I describe above, I sampled comments with a high distribution of each LDA topic to verify that it is indeed a coherent topic. I applied qualitative analysis on topics identified using an unsupervised machine learning model (LDA) to verify which of the topics are in fact coherent and meaningful.

While qualitative studies usually provide quotes to support themes presented in the results, I have not done so in this study, and I also refrained from doing so in Chapter 5. I have decided to refrain from using quotes to maintain Reddit users' privacy. This privacy issue was identified in early work by Bruckman [42], who recommends introducing levels of user disguise when quoting users in a research study. More recently, Fiesler and Proferes [84] have shown that social media users do not expect to be quoted verbatim in academic research. Due to the potentially sensitive nature of parenting conversations on Reddit, I will describe the contents of comments without direct quotations from the dataset. When providing a quote from the dataset, the quote is edited on several layers as suggested by

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[5]`https://github.com/RaRe-Technologies/gensim/blob/develop/gensim/models/ldamodel.py`

Bruckman [42] to protect the privacy of the author. For example, identifiable proper names, geographical locations (e.g., the city where the poster resides), and narrative specifics are edited to maintain the user's privacy while conveying the gist of the text.

4.5   Results

An earlier version of this work was published in CHI'18 [11]. I have updated these findings to include Reddit parenting discussions throughout 2018, and I have included a number of new methods to differentiate between Daddit and Mommit discussions.

After determining the different LDA topics discussed over the parenting subreddits, I organized the topics into 13 main themes: (1) Pregnancy, birth, and postpartum experiences; (2) Sleep training and other child routines; (3) Discipline; (4) School and education; (5) Growth pains and adolescence; (6) Health; (7) Child development; (8) Faith and family; (9) Supporting fathers; (10) Parent and baby gear; (11) Media, leisure, and the holidays; (12) Financial planning; and (13) Abuse, divorce, and custody. Below, I describe each of these themes and the *constituent LDA topics* along with **their [KTGs]**. First, I will present the distribution of three topics on r/Daddit, r/Mommit, and r/Parenting. I found that Daddit users *congratulated* **[wife, day, week, baby, feel, daughter, year, home, dad, care, hope, fun, change]** and welcomed new fathers to the "fatherhood club." Meanwhile, *nursing* (breastfeeding) **[baby, formula, feed, breastfeed, pump, nurse, month, supplement, latch, pediatrician]** was a more central discussion on the mother-centric subreddit r/Mommit. However, the *discipline* **[behavior, parent, good, punish, attention, reward, calm, stop, tantrum, emotion, position, frustration]** discourse was more concentrated in r/Parenting than in either r/Daddit or r/Mommit (see figure 4.6). I selected these three LDA topics because their distribution across the three subreddits is representative of a trend throughout the corpus. r/Daddit provides a supportive platform for new fathers. r/Mommit users discuss topics that are more salient early in the child's life (e.g., nursing). r/Parenting provides a space where topics of interest to parents with a more developed sense of identity, and a focus on the changes associated with a growing child and adolescence.

Next, I will present different themes of parental discussions on the three subreddits. If the topic distribution is higher on one of the subreddits as opposed to the others, I will indicate this difference as I did above. The complete list of LDA topics in the aggregated LDA model, along with their KTGs are presented in Table A.1. I also present a heatmap showing the distribution of all sixty topics across the three parenting subreddits in Figure A. When comparing LDA topic distribution, I use normalized distribution values, not the raw distribution values, since this allows me to make the comparison across the three subreddits
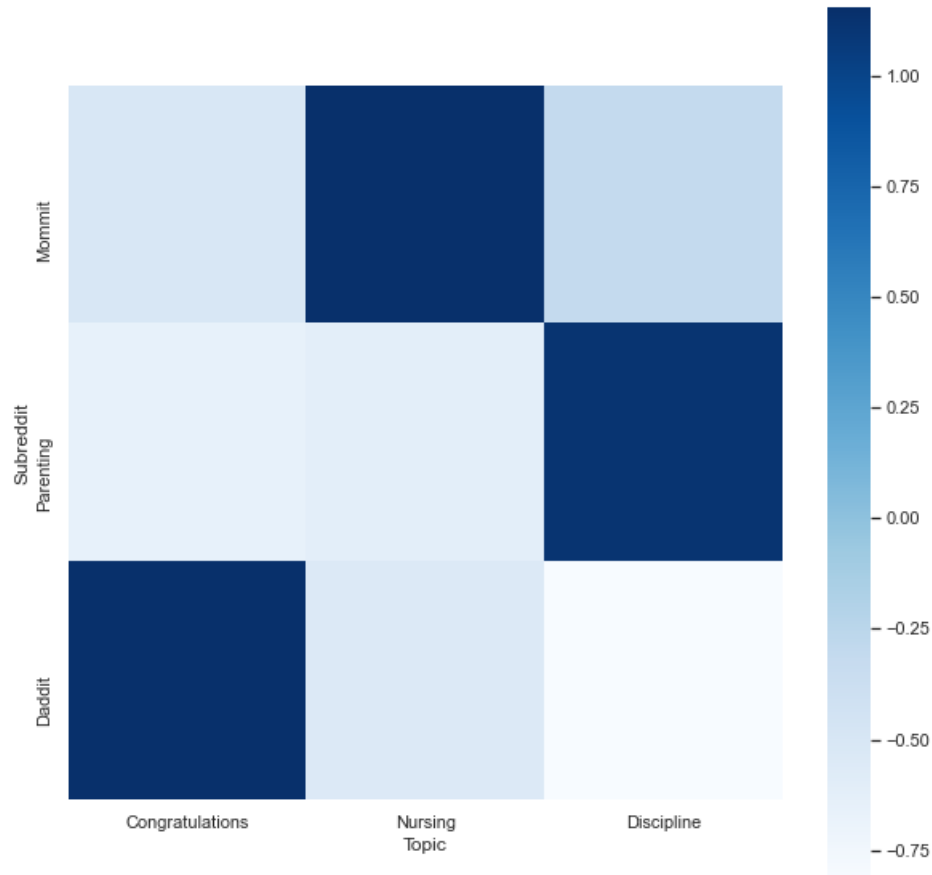
Figure 4.6: This figure shows the normalized distribution of topics for the r/Parenting, r/Daddit, and r/Mommit subreddits. I find that Daddit is a supportive community engaging in congratulating new fathers. Mommit users discuss topics such as nursing (breastfeeding). Finally, discipline is more heavily discussed in r/Parenting than either r/Mommit or r/Daddit

and between different LDA topics that might have varying distributions.

4.5.1 Pregnancy, birth, and postpartum experiences

This theme describes how parents talked about their experiences starting when they were trying to conceive, through their birthing decisions, and ending in the postpartum experiences, especially in the first few months of the child's life. Parents also talked about difficult experiences like miscarriages. The distribution of these topics is higher in r/Mommit than it is in r/Daddit or r/Parenting.

Though parents discussed *birthing experiences* [birth, hospital, doctor, first, pain, labor, c-section, nurse, pregnancy, blood, experience, epidural, delivery, natural] on all

three subreddits, the topic has the highest distribution in r/Mommit, followed by r/Daddit, and finally, r/Parenting (see Figure 4.8). Some mothers talked about their decision to give birth without using painkillers, being induced, going to the hospital, or relying on midwives. There were also discussions about natural vs. c-section births. Parents talked about some of the more difficult birth experiences and complications. For example, some mothers discussed their birth injuries (e.g., vaginal tears). Fathers on r/Daddit talked about the birthing experience from their point of view. They asked other parents how they prepared for birth and, specifically, how a father could support a mother. Though the subreddit is father-centric, some of the answers and suggestions came from mothers, drawing on their own experiences of what their partners got right and what they felt was lacking.

Discussions under the *parenting hardships* **[help, day, hard, life, husband, depress, cry, support, stress, normal, mother, family]** topic focused on parents' experiences throughout the pregnancy process and some of the common problems they faced in the early childhood days. Mothers talked about how pregnancy affected their work routines. For example, when did they stop going to work, and could they continue working from home?

Parents faced other challenges after birth. Mothers talked about their experiences with postpartum depression (PPD). For example, how did they feel about their children? When did they feel that there was a disconnect? When did they decide to consult a doctor? What was that process like? Additionally, mothers discussed whether their partners might themselves be experiencing PPD. Mothers raised that question when they thought that their partner seemed disconnected from their child during the first few months after birth.

In *work-parenting demands* **[work, time, day, home, husband, daycare, friend, daughter, house, care, wife, play, plan, schedule, sleep]**, parents discussed how they managed work and parenting responsibilities, especially pressures around maintaining home chores in the first year after a birth. For example, parents talk about how they schedule their activities around taking care of the child. Each parent will schedule time for work (e.g., which shift each parent has to cover), time for a workout (e.g., one parent goes to the gym on the way back home, while the other parent goes jogging early in the morning) around daycare services they can find for their child. Parents discussed scheduling across the week using abbreviations like MWF (Monday/Wednesday/Friday). They also talked about parental leave policies in different states/businesses and the division of responsibilities between mothers and fathers (or partners) especially when one partner returned to work before the other. Many parents struggled with lack of sleep, and discussed different ways to share the responsibilities of caring for the child throughout the night. Parents shared different ways to maintain comfortable schedules for both mothers and fathers through organizing a

tag-team with their partners so that each parent can re-charge. Parents talked about their attempts to schedule a "kid-free" time, especially through setting up date-nights to maintain their relationship.

Parents also talked about challenges and opportunities associated with being *parents of multiples* **[year, baby, old, two, apart, older, parent, sibling, play, need, sister, friend, work, oldest, big, enough, family, toddler, born, twin, pregnant, hard, wait]**. Some parents were determined to plan their families so that there would be a certain number of years between siblings, arguing that this gap between children would allow parents to give each child all the support they would need and that older children would also help with raising younger children. Other parents thought that children closer in age would be closer siblings since they would have more in common. In both cases, parents shared strategies for building strong connections between the siblings as they aged. Many parents also reflected on their own upbringing if they themselves had siblings. They talked about activities and family rituals that allowed them to build a strong relationship with their siblings.

Expecting parents and those who were considering having a child posted questions about *parenting nature* **[parent, children, family, life, daughter, wife, sibling, mom, relationship, husband, care, love, child, happy, enjoy, old, feel, first]**, specifically addressing how parents feel about their lives after having children and what they had to sacrifice from their child-free lives. Most of the responses suggested that while there are sacrifices associated with becoming parents, these sacrifices are justified as parents described how they were "smitten" by their "adorable" children. Some of the discussions revolved around whether or not a partner would potentially be a good parent. For example, some posters were considering becoming parents, but were still unsure of the stability of the relationship they were in, or whether their partners actually wanted to be parents. Most of the responses suggested that, while they love being parents, the changes associated with becoming parents are challenging, and one cannot become a good parent if they are not wholeheartedly invested in their children and their relationship.

4.5.1.1 Pregnancy complications

Some parents' discussions focused on *pregnancy challenges, loss, and grief* **[pregnancy, feel, year, wife, daughter, surgery, miscarriage, support]**. Part of the discourse focused on miscarriage and how parents coped with it. Parents also talked about medical problems and syndromes diagnosed in pregnancy and how they felt when they first learned of these medical conditions. The tone of these discussions is supportive as parents draw on their own experiences when responding to others going through difficult times. For example, mothers talked about their own experiences carrying a child to term after having a miscar-

riage.

4.5.2 Sleep training, child routines, and potty training

Throughout the first few months of the child's life, parents start to formalize their views on sleep training, preparing food for the child, and creating a routine for the child to regulate their schedule. Eventually, parents also start to consider the best way to potty train their child.

Parents discussed different views of *sleep training* [**sleep, baby, train, cry, nap, room, bedtime, read**] techniques they use to get their children to sleep every night. Parents talked about the benefits of co-sleeping, while also discussing the dangers that might be associated with it (e.g., smothering the child). Parents also shared the sleep training method that best worked for them. Some of the discussions involved differentiating the Ferber method from the cry-it-out method. The former is less strict than the latter and allows the child to gradually expect less contact with the parent throughout the night. Some parents favored neither and engaged in "attachment parenting" where the child and parents are in close physical contact for long periods of time.

Parents also discussed the *bath time and sleep routines* [**bath, year, sleep, eat, tub, play, shower, family, toddler, book, water, mom, older, sister, food, room, night, tell**] that they adopted for their children. These included reading children books at bedtime and singing lullabies. Bathing was another issue parents raised. They talked about how they coaxed children who hated water into the shower. Others talked about how to tell their children that bath time was over, especially after a child had started enjoying time in the water. They also talked about related safety issues such as how to lower a child into the tub and then how to lift them back out.

Yet questions about safety were not confined to bathing. *Baby proofing* [**walk, around, face, hold, crawl, toddler, sit, gate, floor, climb, hurt**] was also an area of discussion within this theme. Parents talked about accidents that happened when their children were younger and how "horrible" they felt about these incidents. Parents also talked about proofing their houses by introducing gates, child-proof locks, and breathable bumpers for cribs. The advantages and disadvantages of each method were raised. For example, a breathable bumper might keep a child confined and safe in a crib, but it could also lead to asphyxiation. In the case of older, more physically active children, parents discussed how to rearrange furniture to maintain their safety. As Figure 4.7 shows, fathers discussed this topic more often than mothers. Fathers saw baby-proofing as a home project in which they could build a better gate or make a latch from scratch.

Most of the discussions around *nursing* **[baby, formula, feed, breastfeed, pump, nurse, month, supplement, latch, pediatrician]** took place in r/Mommit (see Figure 4.6). Here, mothers discussed different challenges that they faced with breastfeeding. For example, some discussed the emotional difficulties they faced when they were not able to produce enough milk for their child. Others talked medical issues that might arise from nursing (such as mastitis, inflammation of breast tissue due to infection) and ways to wean a child off of breastfeeding. Mothers also discussed the ways they changed their attire in the first two years of the child's life. For example, they talked about shirts and bras they found comfortable throughout the time they were breastfeeding.

As children grew older, parents, mostly in r/Mommit discussed *preparing food* **[food, eat, start, cook, veggies, meat, egg, water, snack, banana, cereal, potato]** for their children (see Figure 4.8). Parents gave suggestions for appropriate foods at different ages. For younger children, these discussions revolved around introducing solid foods, how to prepare pureéd foods. For older children, parents shared easy recipes for *picky eaters***[make, meal, try, dinner, parents, snack, healthy, lunch, home, plate, differ, play]** to ensure their diets included vegetables and other healthy foods. As opposed to the *preparing food* topic, the distribution of this topic is higher in r/Parenting, followed by r/Mommit.

Potty training **[potty, train, time, poop, diaper, use, pee, old, accident, language, sit, bathroom, pull, give, clean, sign]** was another topic of discussion in which parents talked about issues such as what strategies worked and the age at which their children started to "get it." Some parents were worried that their children might be taking too long to be potty trained, but others suggested that individual children would make sense of potty training in their own time. As Figure 4.8 shows, this topic was discussed more heavily in r/Mommit than in r/Parenting or r/Daddit.

4.5.2.1 Child play, activities, and child socializing

Parents of older children also discussed ways to keep them occupied by involving them in some *activities* **[house, play, park, fun, love, feel, try, child, children, friend]**, including crafts and sports. One of the more commonly suggested sports is *swimming* **[swim, pool, parent, daughter, water, school, old, class, lesson, learn]**. Parents discussed the dangers associated with swimming and how to teach children to swim in a safe way. For example, they talked about the safety standards at school swimming camps which mandate a certain ratio of adults to children. Others talked about Infant Swimming Resource (ISR) lessons, which can be taken throughout a child's first ten years. They also commented on the swimming safety rules that they adopted for their children. For example, some parents suggested that even good swimmers should not be allowed to be alone at the pool without an adult.

Some parents argued that activities such as swimming, while important, would not provide children with a good chance to *socialize* **[kid, parent, like, time, get, friend, play, invite, park, older, adult, find, place, children]**. They suggested outings to parks and playgrounds. Parents listed locations at which they enjoyed activities with their children, especially in colder climates. For example, they found spaces in public libraries, museums, botanical gardens, and other public places. The discourse also touched on what social contexts might not be appropriate for children. For example, would it be acceptable to bring one's child to a bar? There was no agreement on the answer to this question, as some parents thought that it was never acceptable, but others responded with more contextual considerations such as the time of day, the type of bar, and the social occasion.
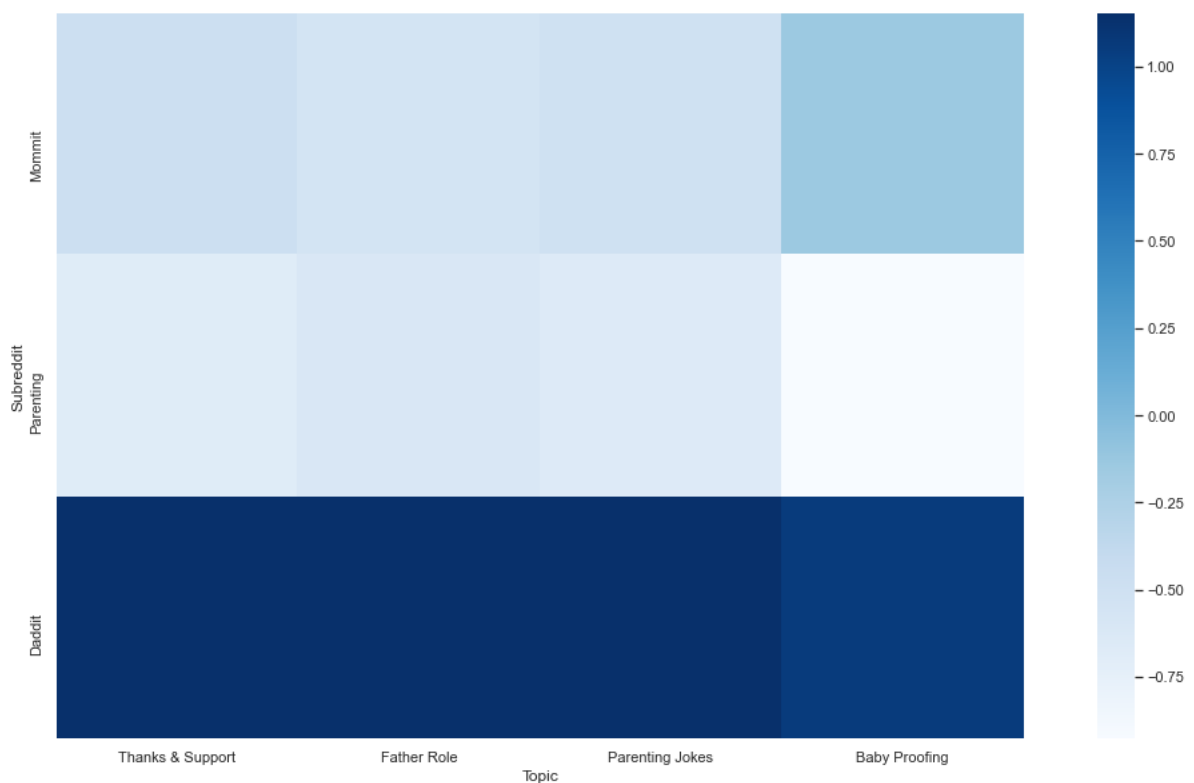
Figure 4.7: This figure shows the normalized distribution of topics discussed more heavily on r/Daddit.

4.5.3 Discipline

Discipline **[behavior, parent, good, punish, attention, reward, calm, stop, tantrum, emotion, position, frustration]** was one of the main topics discussed primarily on r/Parenting as opposed to r/Mommit or r/Daddit (see Figure 4.6). Parents focused on questions around

the use of behaviorism (i.e., introducing punishments related to particular behaviors to modify children's behavior). Other forms of discipline mentioned focused on various reward systems for children, and the discussion revolved around trying not to be emotional when implementing discipline (e.g., not losing patience when managing a child's tantrum). Parents also discussed the appropriateness of spanking as a disciplinary method. This discourse evolved into a question about whether or not spanking is a form of child abuse.

4.5.4 School and education

Schooling [**school, kid, teacher, year, class, parent, grade, play, help, home, daycare, kindergarten, preschool, activity, program**] was another focus of discussion. Some parents talked about how to find ("shop for") the best preschools and elementary schools for their children. Other parents who preferred home-schooling discussed their strategies and curricula. Such topics extended to *educational philosophies* [**school, homework, time, learn, grade, problem, ADHD, math, teach, study, hard, able, expectation, student**] that parents adopted for their children. Common questions included the appropriateness of helping children with homework and how best to do so.

Parents of children with special needs talked about the challenges they faced as they attempted to access educational resources needed by their children. For example, parents detailed the difficulties they faced when applying to the Individualized Education Programs (IEP) in their respective schools.

Language and reading development [**book, read, story, learn, letter, library, fun, picture, play, talk, teach, interest**] was also a topic of interest for parents. In order to engage children in reading at an early age, some of the suggestions were getting library cards, buying books, selecting books with the child, and establishing the child's favorite genres. Additionally, parents made book suggestions that would help children with letter recognition and keep them engaged at the same time. Parents of younger children discussed different ways to introduce children to the alphabet and reading (e.g., flashcards, foam letters, and phonemic awareness activities).

4.5.4.1 Bullying

Parents also discussed *bullying* [**kid, school, bully, teacher, situation, play, mean, help, right, talk, adult, social, problem, call**] challenges faced by their children at school. In some cases, they drew on their own experiences being bullied in childhood to give advice to other users. Some parents suggested increasing children's confidence by introducing them to martial arts. However, others responded with reminders of new "zero tolerance"

policies being adopted by many schools under which both the bully and the bullied might be viewed as breaking school rules. These parents advocated for always working with school administrators to resolve bullying issues rather than having students attempt to resolve the problem on their own. Some parents also shared challenges related to raising a child who is a bully and talked about different strategies they used to try to alter that behavior.

4.5.5   Growing pains and adolescence

As children grow older, parents grapple with *growing pains* [**kid, parent, go, school, ask, help, play, stranger, alone, situation, learn, girl, public, boy, leave, stop, adult, talk**] that accompany those changes. Parents shared their fears as they noticed their children starting to become more independent. For example, parents discussed safety issues around allowing their children to walk to school and other activities on their own, and they shared strategies for teaching children about "stranger danger." Some parents advocated for giving children more independence and allowing them to deal with the consequences of their own mistakes, arguing that these small struggles build character.

Parents also discussed their children's *body image and privacy* [**shower, year, kid, naked, bathroom, stop, look, weird, brother, sexual, private, room, front, cover, comfort, penis**]. This discourse focused on how parents managed the evolving privacy needs and body autonomy of their children as they grew older. For example, parents discussed the age at which it becomes problematic to shower with their children. Similarly, parents discussed when they should start requiring children to wear clothes at home, especially when visitors are present. When they had children of the opposite sex, parents also shared challenges they faced when taking them into public bathrooms. For example, fathers talked about the problem of taking their daughters into public men's rooms when their daughters did not want to go into the women's room alone.

As children transition into *adolescence* [**pierce, time, ear, daughter, old, porn, tattoo, adult, body**], parents discuss topics related to body modification. Specifically, parents disagreed about whether their daughters should have their ears pierced as infants and how to gauge whether children who ask to have their ears' pierced understand what caring for a piercing entails (e.g., how to clean it). Tattoo parlors came up both in discussions of places to get ear piercings and in discussions of whether or not to allow children to get tattoos. There was a divide between parents who themselves got tattoos in their early teens and considered them harmless, and others who thought that children should not be allowed to get tattoos until adulthood. They also discussed adolescents' online activity (including what they search for and which videos they watched), and they shared the processes they

adopted to monitor their children's online interactions. For example, parents discussed different ways to talk to their children about their online consumption (e.g., porn) without confronting them because they did not want to cause them to hide their activities in the future.
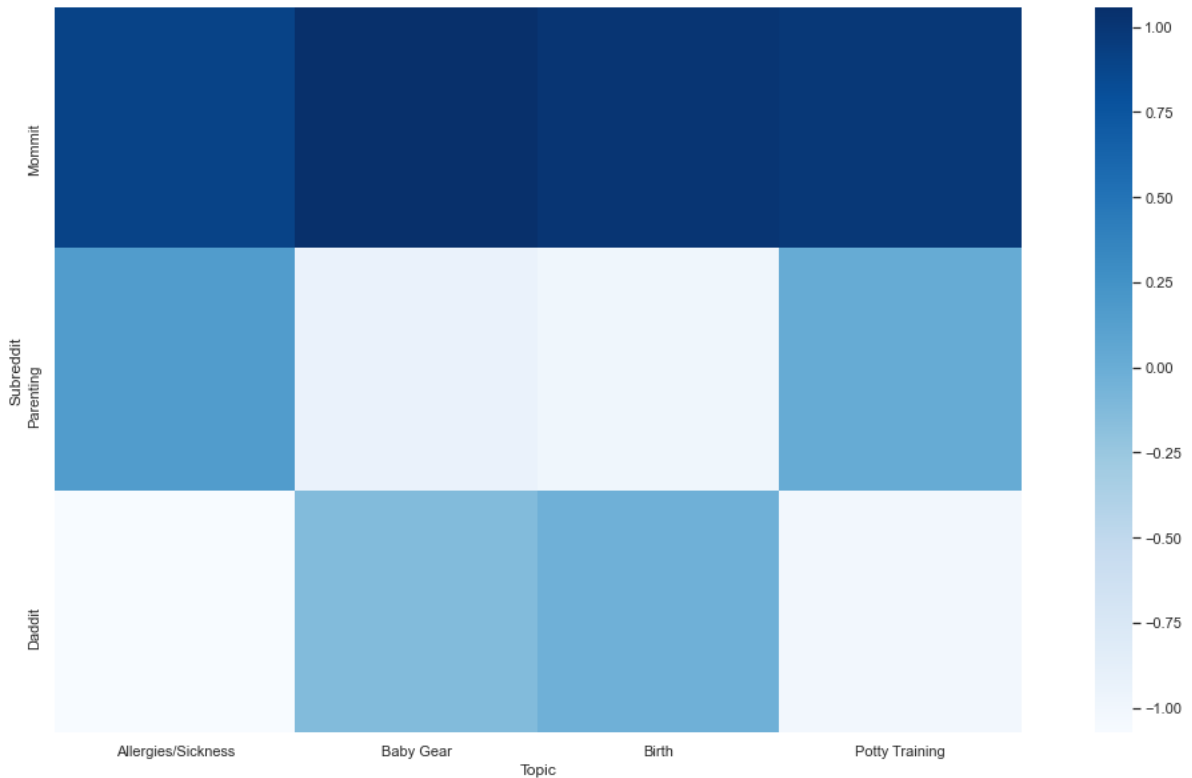
Figure 4.8: This figure shows the normalized distribution of topics discussed more heavily on r/Mommit.

4.5.6 Health

Parents discussed a number of topics related their children's health specifically focusing on problems that might occur in the first few years of a child's life. These topics included *vaccines* [**vaccine, risk, immune, disease, studies, flu, autism, article, protect, sick, infect, pox**], *circumcision* [**circumcise, insurance, foreskin, penis, doctor, medicine, hospital, healthy, care, retract, intact, decision**], *skin and hair care* [**hair, lice, oil, comb, shampoo, condition, dry, skin, eczema, treatment** , *family health* [**medicine, weight, food, diet, doctor, anxiety, sugar, juice, fat, calorie, eat, drink, doctor, healthy, change, pain, exercise**], *allergies/sickness* [**sick, infect, allergy, fever, mouth, cough, nose, care**],

and *smoking/drugs/alcohol* [**smoke, cigarette, drink, stop, change**]. All but three health-related LDA topics were most heavily discussed on r/Mommit. Vaccines (see Figure 4.9) had the highest distribution in r/Parenting, and circumcision was most heavily discussed in r/Daddit, while *smoking/drugs/alcohol* was mostly discussed on r/Parenting followed by discussions on r/Daddit.

Parents talked about the risks of decreasing vaccination levels including recent outbreaks of diseases like whooping cough and mumps. Many of the discussions were between parents who critiqued traditional vaccination schedules and others who defended vaccinations and their importance, especially for young children with undeveloped immune systems and those with underlying conditions. Some parents also shared the challenges they faced when enrolling their children in a school without knowing the rate of vaccination at the school. They feared that other children might be vectors for diseases such as mumps and rubella.

When discussing *circumcision*, some parents considered the procedure to be a dangerous cosmetic surgery that is not required for a healthy lifestyle. Others had more traditional views of circumcision, arguing that it is important medically because it reduces the risk of conditions such as Phimosis (an inability to retract the foreskin) and urinary tract infections. There was also discussion about whether or not circumcision reduces the risk of sexually transmitted infections.

Parents discussed *hair and skin* conditions such as lice and seborrhea (dry rash) and provided suggestions for managing these problems. Parents also discussed issues that do not necessarily have health consequences. For example, some parents talked about how they managed their children's frizzy or curly hair.

In *family health*, parents talked about (1) managing their own weight, especially after giving birth (e.g., following a Ketogenic diet), (2) countering child obesity by introducing children to healthy eating habits, (3) identifying and managing eating disorders such as anorexia and bulimia, and (4) managing the effects of medications for conditions such as ADHD on children's health (e.g., some ADHD medications are body weight dependent).

Allergies and associated sicknesses were also a point of discussion between parents as they shared their children's respiratory allergies or allergic reactions to food (e.g., peanuts). Parents talked about what exacerbated their children's allergies and ways to alleviate the effects of allergies. For example, some parents commented on how having pets might aggravate allergies and discussed the effectiveness of anti-histamines in managing them. Asthma and respiratory allergies were also mentioned in the context of respiratory infections. For example, a cold might develop into a more dangerous condition such as bronchitis if a child is asthmatic. This topic was most heavily discussed in r/Mommit (see Figure 4.8).

Parents talked about their attempts to quit smoking and to reduce their drug and/or alcohol consumption. Most parents suggested that there is no safe level of smoking, especially in the same physical space as children. Many highlighted second-hand smoke as a major issue. Parents shared the methods that worked for them when they attempted to quit smoking (e.g., quitting "cold turkey" or using nicotine patches). Most parents identified finding out that they were expecting a child as the reason they decided to quit smoking. The discussion also extended to other family members. For example, if a child's grandmother or uncle was a smoker, parents talked about how to avoid exposing the child to smoke without offending the smoker.

There was less consensus around questions of alcohol and drug consumption. While some parents connected giving up drinking with giving up smoking, others stated that they still consumed alcohol in moderation without becoming intoxicated. Discussions of drug use extended to related areas such as drug addiction and health. While some regarded any drug use to be inappropriate, especially after becoming parents, others noted that they might still enjoy "smoking a joint" on rare occasions, but that they would not do so in the house or when caring for their children. Some parents also talked about their use of drugs for pain management (e.g., effects of Multiple Sclerosis) which, if not kept at bay, would hinder their capacity to care for their children or interact with them (e.g., kneeling down or playing with a child on the floor).

4.5.7 Child development

Parents discussed their children's *speech and social development* [**hit, children, behavior, teach, speech, stop, sound, spank, language, sign, play, learn, need, help, develop**]. Parents talked about the words their children picked up from their surroundings. One of the main issues was the question of swear words. Some noted that, even if parents are careful about their language in their children's presence, children might still hear swear words that are uttered inadvertently in a specific context. For example, a child who hears a parent swear after stubbing a toe might copy the language without reference to the emotional context (e.g., pain). While some found it problematic that children learn such words, others considered it natural, especially if children understand the contexts in which such words are typically used.

Conversely, other parents worried that their children might be deaf or hard of hearing (DHH) because they were not uttering enough words and were more physical in their self-expression. Parents of late-talking children feared that they might have speech impediments and asked for advice from other parents about what to do. The use of sign language was
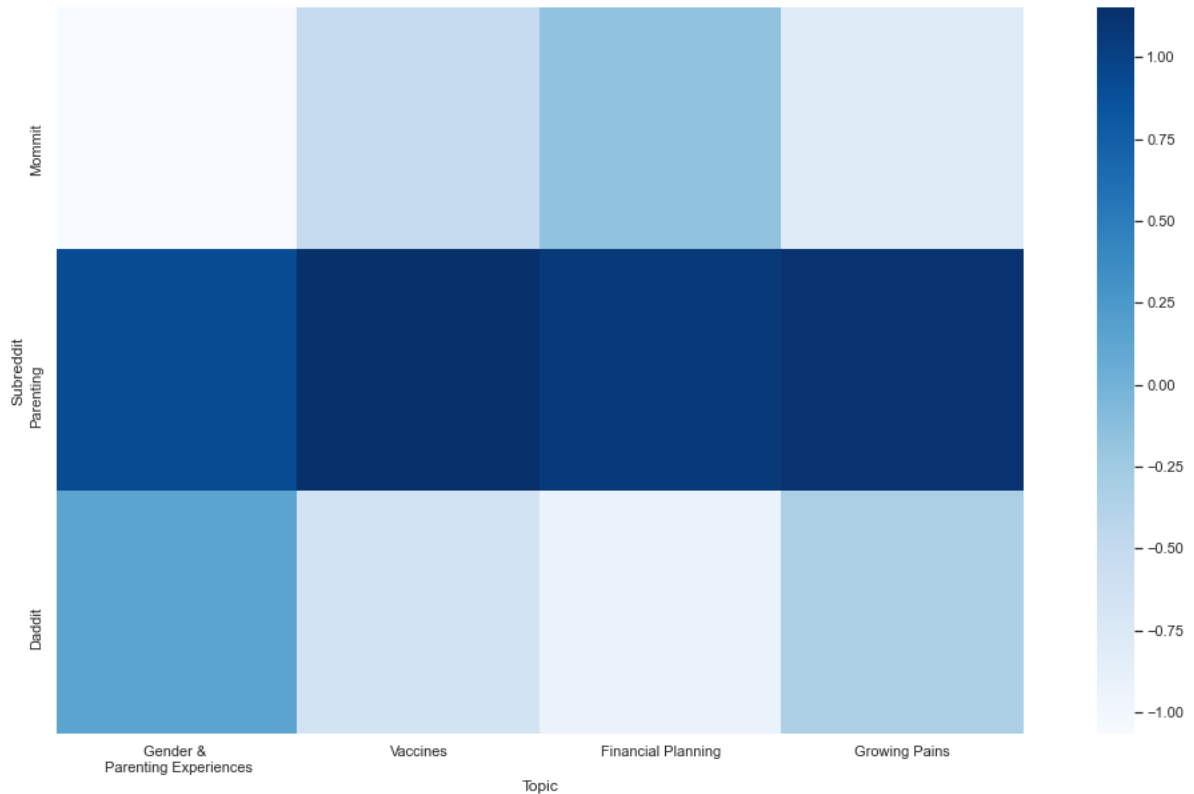
Figure 4.9: This figure shows the normalized distribution of topics discussed more heavily on r/Parenting.

seen by many parents as a good bridge. However, one parent described how his child used American Sign Language (ASL) quite well, but had trouble vocalizing words. He was worried because his child was around 18 months old and should have be imitating words more frequently. Another parent noted that his own child had a limited vocabulary at the same age but went on to develop a rich vocabulary by the age of five.

Parents of children with special needs (e.g., Aspergers, Autism Spectrum Disorder) and children with speech delays also discussed the challenges they faced as they tried to engage with their children, build their vocabularies, and give them the tools to socialize. For example, some children reacted negatively to specific words, while others were parroting their conversational partners. Parents explained how they had to change their behavior to sooth their children. They also discussed the steps they took to receive speech therapy and provided feedback on what kinds of speech therapy benefited their children.

4.5.8 Faith and family

Users talked about their relationships with their own parents and the parents of their partners. While *grandparents* **[grandma, children, friend, son, husband]** may support parents by contributing services such as baby sitting, they might also introduce friction if they have different rules than "dad and mom." Parents shared examples of such divergences in parenting philosophy and how they managed such differences. Responses mostly argued that grandparents should respect the parents' parenting philosophies.

Some of the differences between parents and grandparents arose from the fact that parents who grew up in religious households might be more secular in their adulthood. Others thought their parents were more socially conservative than they were. Such differences brought to the fore parents' *religious and social, beliefs* **[people, children, sex , teach, social, discuss, culture, religion]**.

Based on their social beliefs, parents might chose to be members of particular *parenting groups* **[school, scout, group, religious, language, catholic, teach, feel]**, be they religious or civic in focus. For example, some parents talked about the centrality of their Catholic identity to their way of life. In order to pass this identity to their children, parents focused on the benefits of enrolling their children in Catholic school or associated youth groups/organizations.

4.5.9 Father roles, dad community, and non-traditional families

Parents, mostly r/Daddit users as illustrated by Figure 4.6, *congratulated* newcomers to parenting subreddits, welcoming new fathers to the fatherhood and r/Daddit. Some fathers were more jocular, telling new fathers to expect very little sleep or rest. In fact, r/Daddit users engaged in *parenting jokes* **[kid, school, play, baby, feel, joke]** about their new roles as fathers more than r/Parenting and r/Mommit users as presented in Figure 4.7. Other fathers suggested that, while the transition to parenting could be difficult, it could also present one with a chance for personal growth. *Support and thanks* **[like, help, time, really, year, son, dad, ask, love, support, mean, person, school, cry, stop, issue]** was another LDA topic in which parents asked for advice about a specific parenting topic and thanked other users for support, especially if they provided suggestions about resolving a parenting issue. For example, when some fathers asked how to address a child's fear of "monsters," others responded with ideas based on their interactions with their own children (e.g., trying talk to them about it rationally). The distribution of this topic is highest in r/Daddit as shown in Figure 4.7. In *dad community* **[kid, need, help, parent, child, son, school, first, home, friend, care, wife, children, issue, wife]**, fathers connected with

newcomers to the subreddit by talking about common interests such as sports (e.g., being a Broncos fan), which in some cases led to discussions about where users grew up/went to college. Fathers also talked about their professions and compared their experiences with newcomers. For example, fathers in active military deployment wanted to find other fathers facing similar challenges. Users also suggested other relevant subreddits for newcomers (e.g., r/DadBeards for fathers attempting to grow a beard).

Fathers talked about the *role* **[work, home, parent, help, baby, wife, life, children, sleep, husband, differ, reason, watch]** they played at home as parents. They discussed the skills they would teach their children, especially their sons. For example, they talked about mowing the lawn and how their own fathers had taught them this skill. They talked about the age at which it is safe for children to operate a lawn mower and the best ways to supervise children as they start taking over that responsibility. Some mothers asked for suggestions for activities their children, especially sons, can do at home. Fathers suggested lawn mowing and simple home-repair (e.g. teach them to fix their own bicycles). They also mentioned that such work could be a child's first paying job. Fathers also discussed fixing machines at home and teaching their children home-repair. For example, fathers explained that they attempted to fix lawn mowers and cars in front of their sons so that they could learn these skills. This topic is also discussed more in r/Daddit than it is in other parenting subreddits as Figure 4.7 shows.

Gender and parenting expectations **[dad, mom, parent, father, family, children, husband, care, guy, change, different]** also addressed evolving fatherhood roles. However, this topic also involved discussions of less traditional parenting roles such as being a step-dad/mom or being a "father figure" in a child's life even if one were not the child's biological father. Parents also shared difficult experiences they faced in biracial families. For example, some posters complained about their parents or relatives acting in a racist manner toward partners of a different race. Adoptive parents of biracial children also talked about the awkward comments they might hear from other parents about their families. Parents also discussed sexism in a number of different contexts: (1) sexism faced by fathers stereotyped as less competent parents and (2) "casual sexism" by parents in everyday life or on parenting subreddits (e.g., a father commenting on allowing his son but not his daughter to go to a dance at the same age). As Figure 4.9 shows, this topic was discussed mostly in r/Parenting, followed by r/Daddit.

4.5.10   Parent and baby gear

Parents made suggestions about strollers, carriers, and other items of *parent gear* [**month, stroller, walk, carrier, parent, family, toddler**] such as wraps and slings. They shared the pros and cons of different products. For example, when comparing wraps, parents talked about which were more comfortable for them and for their children. They also noted how the wrap became less comfortable as children grew taller and gained weight. When picking strollers, some parents advocated for those that can be used as car seats as well. This item connected with parents' discussion of *travel* [**car, seat, stroller, face, trip, car-seat, buy, infant, strap, bike, vehicle, space, change, bring, road, plane, safety**] with a child. For example, when describing driving, parents shared the best car seats in terms of their weight and ease of installation. They also talked about whether a car seat is safest facing forward or backward. Similarly, parents discussed the best strollers/car seats to take on a plane. They also suggested different ways to keep children occupied during a flight (e.g., giving child a new toy after boarding).

Parents suggested that second-hand *baby gear* [**diaper, wear, size, blanket, buy, stuff, feed, hold**], especially children's clothes, onesies, and wraps can be borrowed from other parents throughout the first two years of a child's life. Baby *toys* [**toys, kid, play, thing, old, share, stuff, older, lego**] can also be collected from other parents. However, some parents discussed safety questions related to toys. For example, one parent pointed out that children's toys should not contain BPA[6] because this material can be harmful. Both the *parent gear* and *baby gear* topics were more heavily discussed in r/Mommit (see Figure 4.8).

Parents also discussed different *diaper* [**buy, diaper, cloth, year, use, need, brand, disposable**] types and brands. For example, some parents described their use of cloth diapers (e.g., Cotton Babies and Grovia) and how they were cleaned. When discussing cloth diapers and other clothing items, parents talked about *skin care and laundry* [**skin, cloth, water, wash, daughter, laundry, bag, wear, diaper, hand, shower, dry, buy**], sharing the best ways to clean different articles of clothing and the types of detergent that they found least irritating to their children's skin. Other parents talked about the best ways to get cheap disposable diapers. For examples, they described "couponing" and signing up for Amazon Mom in order to buy inexpensive diapers.

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[6]https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/expert-answers/bpa/faq-20058331

4.5.11   Media, music, pets, and the holidays

In this subsection, I will describe parents discourse under four LDA topics: *media* [**game, watch, video, phone, YouTube, book, tablet**], *music*[**music, instrument, piano, guitar, play, try, learn, band, drum, parent, feel, practice, suzuki**], *pets* [**dog, shoe, get, tooth, sock, teeth, play, puppy, house**], and *holiday rituals* [**Santa, lie, Christmas, believe, parent, tell, magic, present, still, story, gift, tradition, holiday**].

Parents discussed the different *media* their children consumed. They talked about the TV shows, YouTube videos, and video games they allowed their children to access and how they set limits on their children's media consumption (e.g., screen time limits). Parents described the *music* they introduced their children to and how they hoped this music would spark an interest in playing an instrument in the future. They talked about introducing children to classical and jazz music at an early age, and they also discussed the best musical instruments to start learning at an early age. Some suggestions included the drums, ukulele, piano, and the violin. To spark children's interest in musical instruments, parents mentioned planning their own concerts at home and buying old, inexpensive instruments.

In addition to music and media consumption, parents talked about their experiences with pets and children. They shared perspectives on the best breeds of *dogs* to have at home with a young child. For example, some users made distinctions between Great Danes and Pit Bulls among other dog breeds. While the Great Danes might be larger, many parents thought they were much better around children. Many also suggested raising *puppies* alongside children to allow them acclimate and encourage them to be protective of one another.

Another area of discussion by parents is *holidays* [**Santa, lie, Christmas, believe, parent, tell, magic, present, still, story, gift, tradition, holiday**]. They talked about when and how to tell their children that Santa Clause is not real. Some parents preferred for their children to reach the conclusion on their own and maintained the "magic" for as long as they could. Others thought that, while they might tell their own children, they did not want their children to spoil the fun for others by telling them that Santa is not real. Parents also talked about different holiday rituals (e.g., an Easter egg hunt).

4.5.12   Financial planning

Parents talked about *financial planning* [**work, job, pay, home, money, make, school, need, care, family, cost, daycare, plan**] when considering the needs of a new family member. They discussed child tax credits and setting up college savings accounts. They also discussed the financial costs associated with birth and the first few months of a child's

life. These costs were usually associated with medical needs, diapers, or gear for parents and babies (e.g., clothes, a crib etc.). The distribution of this topic is highest on r/Parenting as shown in Figure 4.9.

4.5.13 Abuse and therapy

Parents also discussed potentially sensitive topics with social and legal implications on Reddit. For example, they talked about being in *abusive relationships* **[help, feel, family, abuse, relationship, understand, mother, bad, mother care, therapy, support]** and having grown up in households where abuse and violence were common. Some parents talked about what they did to overcome this upbringing as they grew older. They noted that their experiences growing up in dysfunctional families served as their primary motivator for being better parents. Others talked about what they perceived as abuse of their children by ex-partners. This perceived abuse could be related to neglect or to the way the child was being treated at home (e.g., physical violence). This topic was mostly discussed on r/Parenting.

Abuse allegations brought parents to another set of discussions around *law, safety, and custody* **[child, parent, car, seat, post, kid, state, take, call, year, law, CPS, legal, report, safety, face, case]**. Parents asked about the threshold over which Child Protective Services (CPS) or foster care would be involved in protecting a child. They also asked how they could report cases of what they considered abuse to the authorities and what to expect after doing so. Many of these discussions revolved around legal questions connected to divorce or separation. This topic had the highest distribution in r/Parenting, followed by r/Daddit.

4.6 Study 2: Differentiating r/Daddit & r/Mommit

Most studies analyzing how parents use social media have focused on mothers. Gibson & Hanson [99] suggest that mothers use social media to build an image of themselves that is distinct from their identities as mother by minimizing their use of social media as a "baby diary." However, sharing information about their children also builds mothers' social capital [215]. For example, mothers engage in discussions of their parenting identities and build parenting communities through blogging [172, 190], and they use Facebook to discuss parenting issues with other mothers [189]. Additionally, most online communities for parents (e.g., BabyCenter) are designed for and marketed to mothers.

In contrast, it is more difficult for fathers to form new social networks through existing parenting forums [9]. This challenge is discussed in more detail in Section 3.2.2. In

response, fathers have founded new father-centric online communities where they can find other like-minded dads (see Section 3.4.3).

Approximately 23% of males online between the ages of 18 and 49 are Reddit users [69]. Therefore, studying parenting discussions on Reddit provides an opportunity to analyze how fathers engage with traditionally feminine topics related to parenting and childcare in an online environment characterized predominantly as a masculine space[182, 69]. At the same time, Reddit is not a monolith community: different subreddits are formed around specific topics of interest. Given that some parenting subreddits are father-centric (e.g., r/Daddit) while other subreddits are mother-centric (e.g., r/Mommit), I ask

> **RQ3: In what ways, if any, do topics differ across mother-centric and father-centric parenting boards?**

4.6.1   Methods

To answer RQ3, I employed a number of different methods. First, I used the Log Likelihood Ratio to find topic signals that differentiate the two subreddits. I coupled that approach with a contextual analysis across the two subreddits using Doc2Vec. I then trained independent LDA models for each of the subreddits. Finally, I trained Word2Vec embeddings to find contextual differences between the two subreddits when parents discuss similar topics. Figure 4.11 depicts this process, including the aggregate LDA model analyzed in Study 1.

4.6.1.1   Log Likelihood Ratio

The Log Likelihood Ratio (LLR) is the logarithm of the ratio of the probability of a word's occurrence in two documents. In this case, LLR is used to compare comments in r/Daddit and r/Mommit. A large positive LLR value indicates that a term is more likely to appear in r/Daddit, while a large negative LLR value indicates that the term is more likely to appear in r/Mommit. Terms closer to zero are almost equally likely to appear in either community.

First, I created a word frequency list for each of the documents. These frequency lists were then used to build a contingency table (see Table 4.2). The value of c corresponds to the number (N1) of words in r/Daddit, while d accounts for the number (N2) of words in r/Mommit. The values of a and b are referred to as the observed values within each of the subreddits. I calculated the Expected values (E) using the following formula:

$$E_i = \frac{N_i \sum_i O_i}{\sum N_i} \tag{4.1}$$

	r/Daddit	r/Mommit	Total
Frequency of word	a	b	a+b
Frequency of other words	c-a	d-b	c+d-a-b
Total	c	d	c+d

Table 4.2: Contingency table for Log Likelihood Ratio calculations

Therefore, in this case, $E_1 = c \times (a + b)/(c + d)$ and $E_2 = d \times (a + b)/(c + d)$. Note that the calculation of the expected values takes into account the size of both corpora $(c + d)$. This feature of LLR makes the method particularly useful for comparing corpora of different sizes. The log-likehood value I used is:

$$-2\ln\lambda = 2\sum_i O_i \ln \frac{O_i}{E_i} \tag{4.2}$$

Finally, I can calculate

$$LLR = 2 \times (a \times \log\frac{a}{E1}) + (b \times \log\frac{b}{E2}) \tag{4.3}$$

By listing the terms in LLR order, this in effect places words with a higher probability of occurrence in r/Daddit at the top of the list, and conversely terms with a higher probability of occurrence in r/Mommit at the bottom of the list.

LLR has been used to determine if terms can be treated as "topic signatures" [70, 167], and Gupta et al. [115] found that LLR "defines the aboutness" of a list of words in a topic. In the area of topic discovery, Chancellor et al. [47] used LLR as a measure of the linguistic content when determining the differences between two subreddits focused on weight loss. However, LLR can be unreliable with rare word occurrences [188]. To address this problem, I have only maintained terms with frequencies of at least 10 occurrences throughout the corpus.

4.6.1.2   Building independent LDA topic models

In this step, I repeated the process I used to train the aggregate LDA topic as discussed in Section 4.4.1 by training independent LDA models for r/Daddit and r/Mommit. Given that r/Parenting is the biggest of the three subreddits (see Table 4.1), training independent LDA models for r/Daddit and r/Mommit allowed me to discover topics that might be salient in one of the smaller subreddits (r/Daddit or r/Mommit) but not r/Parenting (see Figure 4.11).

In order to determine the optimum number of LDA topics for both the Daddit and Mom-

mit subreddits, I repeated the same process discussed above by verifying the LDA models with the highest coherence scores for the independent r/Daddit and r/Mommit LDA topics. The coherence scores for r/Daddit and r/Mommit are presented in Figure 4.10. I randomly sampled 50 comments for each LDA topic in order to identify meaningful topics and discard incoherent topics. I read as many of the selected comments as necessary to reach saturation, at which point I could describe and verify a topic, or deem the topic incoherent or irrelevant to the analysis. I found a total of verified 44 topics in the independent r/Daddit LDA model (see Table B.1) and 42 topics in the independent r/Mommit model (see Table C.1). I read a total of 800 comments to verify topics from r/Mommit and r/Daddit.
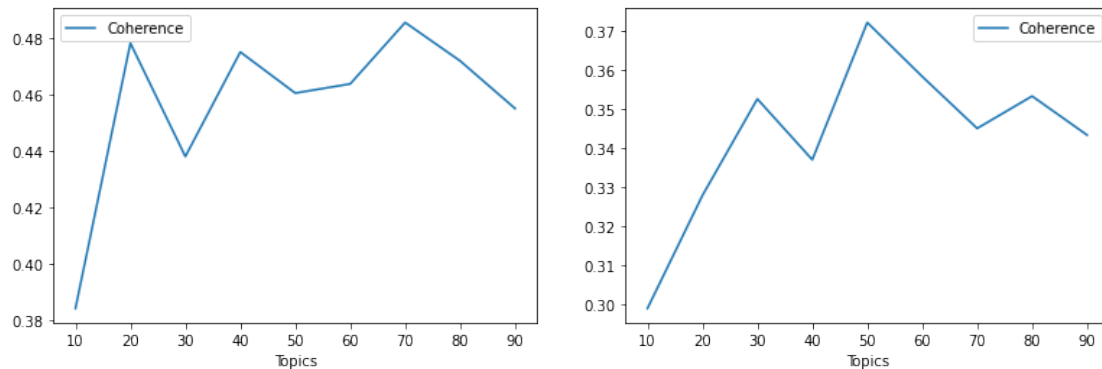
Figure 4.10: Coherence scores for the Daddit and Mommit subreddits

4.6.1.3 Building independent word embedding models

If similar topics appeared in the independent LDA models for each of the subreddits, I wanted to understand the differences between these discussions on different subreddits. These differences represent the variations between r/Daddit and r/Mommit when discussing the same topic. In order to measure this variation, I used embeddings from Word2Vec models [187] applied independently to each of the subreddits.

While LDA produces a list of topics from the document, it does not account for the semantics of the document because the order of words is not preserved (as discussed in Section 4.4.1). Word2Vec creates word embeddings [187] using continuous bag of words (CBOW). CBOW allows us to predict a target word based on a context window. In other words, a term is predicted based on the surrounding terms. I used a window of 5 words for both independent Word2Vec models. The context words are passed as inputs to a neural network that outputs a large multidimensional space which represents the semantic context and distance between different terms in the corpus. For example, the word "powerful"

is semantically closer to the word "strong" than it is to "Paris," and word embeddings maintain these distances [159].

Documents can be modeled as semantic spaces in which vectors represent the semantic similarity between words. The similarity between words in the corpus depends on a context, *c*. For each word, *w*, in the corpus, there is a set of contexts *c(w)*. By representing the words and the contexts as vectors, I can find words that are related by a shared context.

The distribution principle [85, 147], which assumes that words appearing in closer proximity are semantically similar and used in similar contexts. Mikolov et al. [187, 235] based their Word2Vec model on the assumption that words appearing in close proximity are used in similar contexts [147]. In other words, as Mandelbaum and Shalev [179] explain, "the simplest property of embeddings...is that similar words tend to have similar vectors." By building a distance matrix among all terms in the corpus based on the embedding vectors, the closest neighbors to any term can be determined based on the cosine similarity between the vectors.

I trained two independent Word2Vec models, one for r/Daddit and other for r/Mommit to represent the the separate r/Daddit and r/Mommit corpora. When I found that an LDA topic in the r/Daddit independent LDA model was similar to an LDA topic in the r/Mommit independent LDA model, I used the Word2Vec models to find the closest terms associated with terms common to both LDA topics in each of the subreddits. In doing so, I produced a richer description of the differences and similarities between the r/Daddit and r/Mommit conversations.

4.6.1.4   Understanding context using Doc2Vec

The Doc2Vec model builds on Word2Vec embeddings by accounting for the context of words within "documents." [159] By doing so, Doc2Vec makes it possible to determine the difference between the same term in different documents. Documents in the Doc2Vec model can be defined as sentences or paragraphs. I defined each Reddit comment as a document for the Doc2Vec model using Gensim's implementation of Doc2Vec.[7] I then tagged each comment as either appearing in r/Daddit or r/Mommit and trained the model accordingly.

By extending the Doc2Vec model using r/Daddit and r/Mommit as tags, I analyzed how each document and its associated tags "share high semantic similarity which allows [me] to learn the embeddings of [r/Daddit vs. r/Mommit] along with the documents" [51, P. 2].

Again, in an extension to Word2Vec models, cosine similarity can be used to deter-

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[7]https://radimrehurek.com/gensim/models/doc2vec.html

mine the closest terms to the tags used to train the Doc2Vec model, namely, r/Daddit and r/Mommit. The distance in this case represents not the distance between words in a corpus, but the distance between corpus words and the associated tags.

A note on qualitative analysis of LLR, Word2Vec, and Doc2Vec terms When analyzing LLR, Word2Vec, and Doc2Vec terms, I randomly sampled 10 comments for each term. After reading the first 10 comments, I re-sampled the document for another 10 if I could not make sense of an underlying theme. I repeated this process for the top LLR and Doc2Vec terms. In analyzing the differences between r/Daddit and r/Mommit, I read 780 comments.
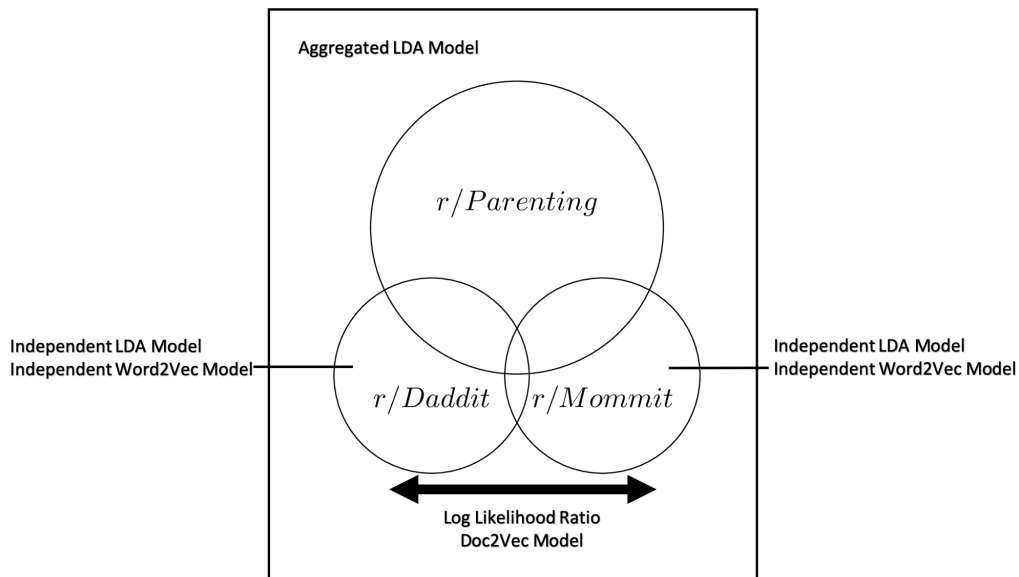
Figure 4.11: I used a number of models to differentiate between r/Daddit and r/Mommit. First, I used Log Likelihood Ratio and Doc2Vec to provide some broad differences based on keywords. I then trained independent LDA and Word2Vec models for each of the subreddits. Embeddings from independent Word2Vec models were used to show differences when similar topics were detected in each of the independent LDA models. It was important to train independent LDA models because r/Parenting is significantly larger than either r/Daddit or r/Mommit, and thus the aggregated model might not show distinct topics in the smaller subreddits.

4.6.2   Results

In this section, I start by differentiating between r/Daddit and r/Mommit using LLR and Doc2Vec as topic signatures to show high-level differences between the subreddits. Next,

I show differences between r/Daddit and r/Mommit by discussing LDA topics specific to each. Finally, I use Word2Vec embeddings to expand on the differences between r/Daddit and r/Mommit by focusing on the different contexts associated with terms common to the two subreddits. I mark the LLR or Doc2Vec values when describing terms more likely to appear in r/Daddit to connect the findings to Table 4.3. To conserve space, I refrain from adding any values in the following sections unless there is a particular need to do so.

4.6.2.1   Main differences between r/Daddit and r/Mommit

r/Daddit topic signals: As Section 4.5.9 shows, fathers *congratulated* (LLR=6,741) and *welcomed* (LLR=1,063) new *dads* (LLR=11,022) to their father-centric community. New fathers posted witty introductions of the child and the new father to other members of r/Daddit. The vast majority of the responses to these introductions were supportive.

The terms *fatherhood* (LLR=815, Doc2Vec=0.39) and *wife* (LLR=45,295) are more likely to be used in r/Daddit. Fathers talked about how they saw themselves in their new father role and how it related to the mother's role. For example, while some fathers saw themselves as the main *disciplinarians* (Doc2Vec=0.26) at home, others countered that this view is linked to the traditional *macho* (Doc2Vec=0.31) views around men and fathers. Men also talked about how they sometimes struggled with their self-image as *losers* (Doc2Vec=0.25) especially if they are *stay-at-home* (Doc2Vec=0.25) dads, especially if they do not have a stable income.

Fathers also talked about changes in their role that are brought about by *divorce* (LLR=206) and *custody*(LLR=304). Terms like *ex-wife* (LLR=183), and *court* (LLR=129) were more likely to be used in r/Daddit. Similarly, terms like *biological* (Doc2Vec=0.23) were closer to the r/Daddit tag. Fathers were more likely to talk about their experiences going through divorce and fighting for custody. For further discussion of these terms, see Section 4.6.2.3.

r/Daddit users were more likely to suggest other father-centric subreddits. Most of these subreddits host lighter discussions of parenting. For example, they suggested *r/DadJokes* (LLR=120), which is described in this way: "a homely place for the best and worst of jokes that make you laugh and cringe in equal measure...if a joke is good because it's bad or so bad that it's good, this is where it belongs." They also suggested *r/DadBeards* (LLR=34), a subreddit dedicated to fathers' posts about their beards, and *r/dadreflexes* (LLR=18), a space for sharing videos showing "reflexes only dads have," usually in the context of saving a child from injury. However, some of the suggested subreddits included "edgier" content such as r/breakingdad (LLR=71), which is a private subreddit in which users have to provide evidence that they are actually fathers. r/breakingdad was considered

a more "real" community in which fathers could vent about their problems. Additionally, it was depicted as a "no-mom" zone. Further discussion of r/breakingdad is presented in Section 5.7.3. In contrast, although r/Daddit is a father-centric online community, some users noted that mothers do post to the subreddit to better understand their partners' experiences as fathers or to comment on posts or answer questions posted by r/Daddit users. r/MensRights (LLR=87) is another subreddit more likely to be discussed in r/Daddit. Views of r/MensRights were mixed. While some r/Daddit users thought r/MensRights provided good advice for men going through divorce and custody, others viewed the community as a toxic space that shifts the focus away from constructively analyzing fathers' problems to attacking mothers, women, and feminism.

r/Daddit users were more likely to use a number of terms traditionally associated with masculine activities. For example, they were more likely to discuss *fishing* (LLR=206), *camping* (LLR=117), *bikes* (LLR=593), and *hardware* (LLR=109), including *hammer* (Doc2Vec=0.38), *chainsaw* (Doc2Vec=0.32), and *machinery* (Doc2Vec=0.27). r/Daddit users also discussed sports references such as the National Football League (NFL), Mixed Martial Arts (MMA), and Major League Baseball (MLB) in addition to sports-related terms such as *fumble* (Doc2Vec=0.36). r/Daddit users referenced being in the *military* (Doc2Vec=0.26) or being a *veteran* (Doc2Vec=0.26). All these references are consistent with the *dad community* LDA topic presented in Section 4.5.9 in which fathers looked for common experiences (e.g., being veterans) or common interests (e.g., sports) they had with others on r/Daddit.

Finally, fathers talked about how they introduced their children to their favorite movies, especially Star Wars (e.g., *Anakin* (Doc2Vec=0.25) and *light saber* (Doc2Vec=0.23)).

r/Daddit users were also more likely to discuss their experiences in the *Neonatal Intensive Care Unit (NICU)* (LLR=857), and *circumcision* (LLR=292) — *foreskin* (LLR=224). For further discussion of these terms, see Section 4.6.2.3.

r/Mommit topic signals: r/Mommit users were more likely to discuss *nursing*, including *pumping* breast milk and *weaning* children off of breastfeeding. Mothers were also referenced tools and websites such as *Kellymom*[8] as resources that might be helpful for breastfeeding mothers. All these terms are in line with the finding that the *nursing* topic has the highest distribution on r/Mommit (see Section 4.5.2). The nursing discourse also touched on the *guilt* mothers face when they cannot breastfeed their children. For some mothers, this guilt was the result of a "rivalry" between breastfeeding mothers and mothers who bottle-feed. For further discussion of this, see Section 4.6.2.2.

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[8]https://kellymom.com/

In addition to nursing, r/Mommit users were also more likely to comment on feeding children at an early age by talking about *puréed* food and when to introduce children to *solid* baby food. Some users also recommended *Wholesome baby food*[9], a website that provides healthy baby food suggestions. For further discussion of these terms, see Section 4.6.2.2.

r/Mommit users also discussed both their *birth control (BC)* choices and *trying to conceive (TTC)*. Also more likely to appear in r/Mommit are terms about pregnancy and birth complications such as *Vaginal Birth After Cesarean (VBAC)* and *Symphysis Pubis Dysfunction (SPD)*, a painful condition in which mothers' pelvic joints become stiff.[10] Indeed, *health concerns during and after pregnancy*, *recovering birth*, and *birth control* are all topics specific to r/Mommit which are discussed further in Section 4.6.2.2.

Postpartum Depression (PPD) and *postpartum* were both more likely to be used on r/Mommit. r/Mommit users were also more like to talk about the *guilt* and *anxiety* they felt during their *maternity* period. Anxiety, Obsessive-Compulsive Disorder (OCD), and feelings of guilt are all associated with PPD. r/Mommit users also discussed *therapy* they sought for PPD. For further discussion, see Section 4.6.2.2.

r/Mommit users were more likely to talk about *motherhood*, especially *first time mothers (FTM)* who sought advice from more experienced mothers. Mothers talked about their *daycare* setups as they transitioned back to work. Other discussions focused on the division of labor between mothers and their *husbands*. Mothers also talked about *helpers* especially in the first few months after birth. Helpers could be hourly hires, but mothers also talked about the best ways they found to enlist help from their children as they grow older, and can become helpers themselves. Mothers also talked about how other family members like the (*mother-in-law (MIL)*) might be helpers, especially for babysitting in the first few months of the child's life and as mothers start transitioning back to work. However, echoing the disagreements between *grandparents* and parents described in Section 4.5.8, some comments referred to disputes parents had with other family members (e.g., *MIL*, *sister in law (SIL)*) when they looked after a child. For further discussion, see Section 4.6.2.2.

r/Mommit users were more likely to mention different family members, including their their *Dear Daughter (DD)*, *Dear Husband (DH)*, *Little One (LO)*, *Darling Son (DS)*. These terms are used in other parenting communities such as *cafemom* and *BabyCenter* as well, which indicates that mothers were using online communities for parents beyond r/Mommit. r/Mommit users suggested particular communities (boards or clubs) on cafemom and BabyCenter. Those communities ranged from spaces for expecting or nursing mothers to private

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[9] https://wholesomebabyfood.momtastic.com/
[10] https://www.healthline.com/health/symphisis-pubis-dysfunction

groups in which users could share cloth diapers. They also shared resources (i.e., links) from cafemom and BabyCenter. However, others noted that they had moved to r/Mommit because of trolling, one-upmanship, and other negative experiences on cafemom and Baby-Center communities.

Mothers also focused on losing pregnancy weight *lb - pounds* and going back to their *pre-pregnancy* body, symbolised for some mothers by their level of comfort wearing a *bikini*. For further discussion, see Section 4.6.2.2.

4.6.2.2   Topics specific to r/Mommit

The following four topics only appear in the independent r/Mommit LDA model: (1) Health concerns during and after pregnanc, (2) Recovering from birth and losing pregnancy weight, (3) Breastfeeding challenges, (4) Birth control, (5) Introducing children to solid foods, (6) Constipation, (7) Sunscreen, (8) Home chores, and (9) Frustrations and support.

Health concerns during and after pregnancy   r/Mommit users discussed their health concerns during and after pregnancy. One of the main problems they talked about was postpartum depression (PPD). Mothers described their own experiences prior to being diagnosed with PPD. They also talked about how support from their partners was central to managing their PPD, and how, when such support was lacking (e.g., partner thought mother is "faking"), this added yet more stress to their condition and strained the relationship. Mothers described the symptoms they experienced, the tests they took, and the effects of the medications they used. In addition to PPD, there were discussions around other medical conditions that might affect the mother's emotional and physical well-being postpartum (e.g., hormonal imbalance). The topic terms include: **[doctor, test, depress, medicine, feel, day, PPD, know, med, time, anxiety, month, week, call, check, symptom, even, normal]**.

Recovering from birth and losing pregnancy weight   Mothers outlined and discussed strategies for losing pregnancy weight. The topic includes the following terms: **[weight, month, lb, body, still, back, baby, like, look, stretch, get, gain, exercise, mark, pound, start, belly, week, feel, lose, size, much, pregnancy, eat, year, normal, time, walk, think, old, lot, little, boob, day, calorie, lost, skin, fat]**. Strategies mentioned included different diets (e.g., Ketogenic diet) and activity regimens (e.g., crunches, Kegel, belly dance) used to lose pregnancy weight and return to a sense of normalcy.

	Daddit				Mommit		
LLR		Doc2Vec		LLR		Doc2Vec	
Term	Score	Term	Score	Term	Score	Term	Score
wife	45,295	fatherhood	0.39	husband	-4,995	DD	0.53
dad	11,022	hammer	0.38	pump	-1,720	SIL	0.49
congrats	6,741	fumble	0.36	nursing	-1,720	DH	0.49
r/daddit	1,632	NFL	0.33	daycare	-790	LO	0.47
picture	1,425	manly	0.32	motherhood	-772	DS	0.46
welcome	1,063	chainsaw	0.32	solids	-772	kellymom	0.43
NICU	857	camera	0.32	weaning	-736	pumpingmom	0.36
fatherhood	815	brew	0.32	PPD	-588	BC	0.36
beer	815	macho	0.31	MIL	-456	cafecmom	0.35
bike	593	courtroom	0.31	VBAC	-438	TTC	0.34
thanks	437	stoic	0.30	meds	-431	helper	0.34
custody	304	joke	0.30	postpartum	-396	BabyCenter	0.34
circumcision	292	machinery	0.27	maternity	-383	homemade	0.32
paternity	262	veteran	0.26	puréed	-356	Whbabyfood*	0.31
foreskin	224	military	0.26	childcare	-356	tandem	0.31
lawyer	220	manhood	0.26	therapy	-355	paraguard	0.30
batman	214	disciplinarian	0.26	guilt	-353	montessori	0.30
fishing	206	Stay-at-home	0.25	speech	-351	homemade	0.30
divorce	206	MMA	0.25	anxiety	-351	FTM	0.29
exwife	183	MLB	0.25	rash	-329	babywear	0.29
court	129	loser	0.25	SIL	-267	OCD	0.28
r/DadJokes	120	divorce	0.25	vaccines	-194	bikini	0.28
camping	117	Anakin	0.25	lbs	-190	pre-pregnancy	0.28
hardware	109	lightsaber	0.23	FTM	-150	psychtoday**	0.27
masculinity	102	biological	0.23	Etsy	-48	SPD	0.25

Table 4.3: This table shows the top Log Likelihood Ratio and Doc2Vec terms for r/Daddit and r/Mommit. * Wholesome baby food ; ** Psychology Today (website)

Breastfeeding challenges   It was shown in Section 4.5.2 that nursing is a topic mainly discussed in r/Mommit. Mothers also talked about challenges related specifically to breast-feeding. Such challenges could be health conditions like Insufficient Glandular Tissue (IGT)[11] where a mother cannot produce enough milk for her child. Other health conditions included blocked ducts and Mastitis[12]. Mothers talked about the guilt they felt when they could not breastfeed their children and the pressures they felt as different lactation consul-tants could not determine a reason for their problems producing milk. Most mothers argued that there should not be guilt associated with not breastfeeding, and that different ways of feeding the child work for different families. For example, a mother's schedule might not allow her to breastfeed the child, and therefore, she might be more reliant on pumping and freezing the milk, or supplementing the child's breastfeeding with formula. Finally, moth-ers shared negative reactions they got for breastfeeding in public, juxtaposing them against the pressure on mothers to breastfeed their children. The topic's terms include: **[breast-feed, feed, formula, baby, breast, mom, nurse, mother, breastfed, women, would, best, feel, like, people, make, bottle, support, want, need, know, fed, even, think, post, sur-vey, child, latch, research, month, study, public, take, pump**.

Birth control   r/Mommit users described their experiences resuming sexual activity with their partners after giving birth. They debated the pros and cons of different birth control methods (e.g., those that might affect their hormone levels vs. those that would not). This topic includes the following words: **[period, Mirena, IUD, pill, cramp, remove, insert, month, spot, year, control, bleed, hormone, effect, light, heavy, BC, string, cervix, heavier, got, one, condom, Paraguard, pap, week, stop, like, shot, day, first, still, bled, try, regular, copper]**.

Introducing children to solid foods   r/Mommit users discussed when they should start introducing solid foods. Some mothers described difficulties in this process, and they talked about different ways to manage strong gag reflexes and other problems, such as gastroe-sophageal reflux. This topic includes the following terms: **[month, solid, baby, start, cereal, food, rice, teeth, vomit, spit, pediatrician, reflux, swallow, like, first, old, feed, time, mouth, wait, also, stomach, try, choke, dentist, son, week, eat, thing, gag, much, would, one, puke, digest, purée]**.

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[11]https://kellymom.com/bf/got-milk/supply-worries/insufficient-glandular-tissue/

[12]infection of breast tissue

Constipation One side effect to introducing solid foods to children might be constipation. Most mothers suggested increasing the child's fiber intake through including prunes, plums, pears (trick is to remember all start with a p) and other fruits in their diet. Others suggested increasing access to probiotics by feeding children yoghurt. For more serious cases of constipation, mothers talked about how they had used Miralax and other laxatives, while others described the use of a suppository after a constipation that lasted more than two days. The topic terms for this topic are: **[constipate, prune, Miralax, poop, laxative, grunt, suppository, poo, fiber, clump, get, juice, use, soften, day, stool, iron, bowel, go, probiotic, mustard, one, chewable, work, like, fibre, time, help, make, diaper, glycerin, also, take, lot, colon, raisin]**

Sunscreen Mothers shared the Sunscreen brands that they use for their children and the sources they used to find the safest products. This included discussions of not only the Sun Protection Factor (SPF), but also the safety of the chemicals used in the product. One of the sources cited to find "safe" sunscreen products was the Environmental Working Group (EWG). EWG is a non-profit that publishes a database of products showing any safety issues associated with their use to help consumers make better choices.[13] Topic terms for this topic include: **[sunscreen, EWG, baby, SPF, help, never, feel, year, first, think, take, good, kid, sure, pain]**

Home chores r/Mommit users discussed how to maintain their homes, especially in the months after giving birth. The *home chores* topic included the following KTG: **[day, time, work, home, take, baby, like, kid, week, hour, husband, house, thing, one, make, clean, also, play, help, need, would, mom, even, old, really, stay, daycare, much, around, good, month, year, watch, lot, dog, love, every]**. r/Mommit users described the decline in standards of cleanliness in their houses due to added childcare responsibilities. They also talked about how they managed to distribute domestic labor between themselves and their partners. Among parents of older children, there were also discussions about the best ways to teach children to do various chores as they grow older.

Frustrations and support Mothers talked about different frustrations they faced as mothers in the early few months of the child's life. One area of discussion was having a partner who is not adequately supportive. A number of mothers complained about the lack of support they are getting from their partners. Others suggested ways to express the need for more support without being perceived as "nagging." Another area of discussion revolved

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[13]https://www.ewg.org/about-us

around setting boundaries for relatives, especially in-laws. For example, mothers talked about making a grandparent's interaction with a child conditional on them not smoking. Finally, mothers complained about being judged in public by other adults/parents when their young children misbehaved. Most of the responses were supportive, many reminding mothers that they have to take care of themselves, and that they are not only mothers, but have other responsibilities and interests. Topic terms include: **[baby, need, feel, child, think, help,care, one, mother, husband, want, right, mom, much, leave, way, could, say, happen, work, someone, parent, see, better, first]**.

4.6.2.3   Topics specific to r/Daddit

My analysis of the r/Daddit independent LDA model showed that Daddit users talked about: (1) Neonatal Intensive Care Unit (NICU) experiences, (2) Diaper changing stations, (3) The fixit-man, (4) Hair styling for my daughter, (5) Guns and gun safety for children, (6) Introducing children to science fiction, (7) Halloween, (8) Names, and (9) Divorce and custody.

NICU experiences   Fathers posted about their experiences in the *Neonatal Intensive Care Unit (NICU)*. The topic terms included: **[wife, hospital, birth, baby, week, nurse, labor, home, nicu, doctor, c-section, little, first, day, hour, good, get, went, like, got, one, well, delivery, time, room, look, pain, much, want, hope, best]**. It covers a time when the mother might also be hospitalized, or unwilling to post on social media sites. Fathers shared their experiences and asked others for support. Some of the responses included other fathers' own experiences when their children had been in the NICU.

Diaper changing stations   Fathers on r/Daddit noted the lack of changing tables in public men's rooms. They listed different strategies they used to change their children's diapers when in businesses that did not provide a changing table in the men's room. Some said that they used the floor in men's rooms. Others suggested calling into women's restrooms to make sure that no one was present and then using the changing table (station) there. One father suggested that a confrontation in the women's restroom, while problematic, might be advantageous in bringing more pressure on managers to rectify the situation by installing a changing station in the men's room as well. Another said that he raises this issue with managers in most restaurants and public spaces he frequents. One father joked that he used the fact that many public spaces do not provide a changing table in the men's room to avoid changing diapers. A mother visiting r/Daddit responded that she would now be more suspect of her husband's excuse that there are no changing tables in public spaces.

The topic terms are: [**diaper, change, cloth, use, table, bag, wipe, room, one, disposable, baby, men's, bathroom, place, women's, station, restroom, clean, dirty, size, put, poop, manager, lady, nappy, restaurant, shit, floor**].

The fixit-man   Fathers described their home projects in four main groups: (1) baby proofing their house (e.g., installing gates and baby-proof locks), (2) fixing damage caused by their children (e.g., painting over drawings on a wall), (3) building furniture or modifying the house to better serve children (e.g., building a nursery/bunk beds from scratch) (4) working on children's toys (e.g., fixing a bike or removing training wheels), and (5) do-it-yourself (DIY) projects that fathers worked on with their children (e.g., re-tiling the bathroom). The topic terms include: [**bike, wall, climb, room, floor, house, ride, crawl, lock, could, would, open, kid, paint, wheel, gate, stand, back, fall, got, toddler, train, slide, step, stair**].

Dads can do hair too!   In addition to the fix-it areas discussed above, fathers created and shared tutorials to hairstyle their daughter's hair. Fathers taught themselves how to do ponytails, and found quicker ways to do it (e.g., using vacuum hose to hold the hair before snapping the band on). They also started looking for tutorials about more complex hairstyles (e.g., french braid) and learned hairstyles associated with specific occasions (e.g., bun for the dance). Fathers shared different strategies to keep their daughter occupied and still as they work on her hair (e.g., watching a cartoon she enjoys). Fathers also shared their own tutorials on r/Daddit to introduce new easier ways to do different hairstyles. The tutorials are seen as a project fathers accomplish with their daughters. One father thanked his daughter for being patient enough to allow him to try the same hairstyle a number of times until he got it right. Topic words include [**hair, look, cut, brush, head, like, daughter, braid, skin, hat, haircut, ponytail**]].

Guns and gun safety for children   r/Daddit users also discussed whether or not to introduce children to firearms. Those who wanted to teach their children about guns wondered about the best time to start and how best to teach children about safety issues related to firearms. While some fathers were opposed to teaching children about guns at an early age, others wanted their children to know more about the dangers of using guns, and knowing how to use them safely. Some of the discussion was also framed around teaching children skills like hunting. The topic terms included: [**gun, shoot, firearm, weapon, rifle, BB [gun], ammo, safety, trigger**].

Introduce children to science fiction   Fathers talked about "introducing" their children to their favorite science fiction movies/series. The mass majority of comments were about Star Wars. Fathers shared the sequence in which they watched the different Star Wars movies with their children. Some questioned the propriety to watching these movies with their young children (3-4 years) due to the violence involved (e.g., light-saber duels). Others suggested starting with *The Clone Wars*, a Star Wars animation series, before moving to the movies. Fathers enjoyed the shared experiences with their children, especially when going together to new big movie releases (e.g., The Force Awakens - 2015). Fathers also built toys (e.g., light-saber) and fashioned costumes (e.g., for Halloween) to enjoy with their children. Other major titles mentioned included Star Trek and Back to the Future. The topic terms are: **[star, war, trek, Luke, Jedi, rebel, evil, solar, 'faggot','TNG'[14]]]**.

Halloween!   Fathers discussed their preparations for Halloween. The topic terms are **[costume, love, kid, look, paw, guitar, mask, Halloween, metal, rock]**. Fathers described costumes they created for their children and how they matched the costumes of different family members to create a theme. For example, r/Daddit users shared how they created Halloween masks from scratch for their children. Some of the costumes mentioned were music-related (metal or rock groups), and fathers connected these choices with their musical preferences and the genres to which they wanted to introduce their children.

Names   r/Daddit users talked about the decision process to chose their child's name. They shared their concerns about potential nicknames and name pronunciations, which also led to discussions about name spelling. Much of this discourse centered around making the name easier to spell or pronounce. Another factor in the decision process was the cultural heritage associated with the name (e.g., is the name Chinese? Italian?). A group of fathers jokingly focused their discussion on whether their daughter's name might be considered a "stripper" name, which included listing different names, and specifying name spellings, that fell under that category.

Divorce and custody   This topic is specific to the experiences of fathers (or their family/friends) during legal processes related to custody and adoption. Fathers talked about their roles as biological fathers or as fathers sharing custody with ex-partners. Fathers who were going through divorce or custody proceedings asked for advice from others who had gone through similar experiences. Other users relied on their own experiences or legal knowledge in answering the questions. Most of the suggestions included documenting

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[14]Star Trek Next Generation

interactions with one's partner for use in court, especially interactions related to shared custody of children. The topic terms are: **[dad, father, mother, mom, men, child, sex, women, relationship, life, make, good, family, ex, parent, marry, wife, thing, year, even, adopt, husband, work, divorce, time, daughter, custody, support, love]**.

4.6.2.4 Differentiating similar topics in r/Daddit and r/Mommit

There were four topics in common between r/Daddit and r/Mommit: (1) Food preparation, (2) Vaccinations, and (3) Circumcision. In order to differentiate between r/Daddit and r/Mommit, I used Word2Vec word embeddings trained independently for each of the subreddits. Below, I expand on the differences in each of the three LDA topics.

Food preparation   Food preparation was discussed by both r/Daddit and r/Mommit users. Both parents shared different ways to introduce more fruits and vegetables in their children's diets.

However, there were also differences in the ways they talked about food. Mothers primarily discussed food preparation for children of younger ages, while fathers focused more on preparing food for older children. Using the Word2Vec$_{r/Daddit}$ independent model, I found that the word *snacks* is the 4th closest word to food, while it was the 39th most similar word to food in the Word2Vec$_{r/Mommit}$ independent model.

In comparison, the closest words to food in the Word2Vec$_{Mommit}$ independent model were puréed and solids, reflecting the fact that r/Mommit users were more likely to talk about puréed food (see Table 4.3) and that introducing children to solid foods is a r/Mommit-specific LDA topic (see Section 4.6.2.2). The difference between the terms closest to food in r/Daddit and r/Mommit is graphed in Figure 4.12.

Vaccinations   Vaccination is a topic identified in both the r/Daddit and r/Mommit independent LDA models. On r/Daddit, the words closest to *vaccine* are **[HPV, disease, STD, autism, HIV, pertussis, statistics, UTI, diagnosis]**. On r/Mommit, the terms closest to vaccine are **[disease, statistic, measles, vax, MMR, unvaccine, pertussis, polio, claim, outbreak]**.

Both r/Daddit and r/Mommit users discussed the importance of vaccines in preventing illnesses such as measles and pertussis. r/Mommit users focused more on the declining rate of immunization and how that might affect their own children. They noted the importance of herd (20th closest term) immunity and how it can only be achieved if most people who can get vaccines (e.g., those who do not have compromised immune systems) are actually vaccinated. However, r/Daddit users focused on the Human Papillomavirus (HPV)
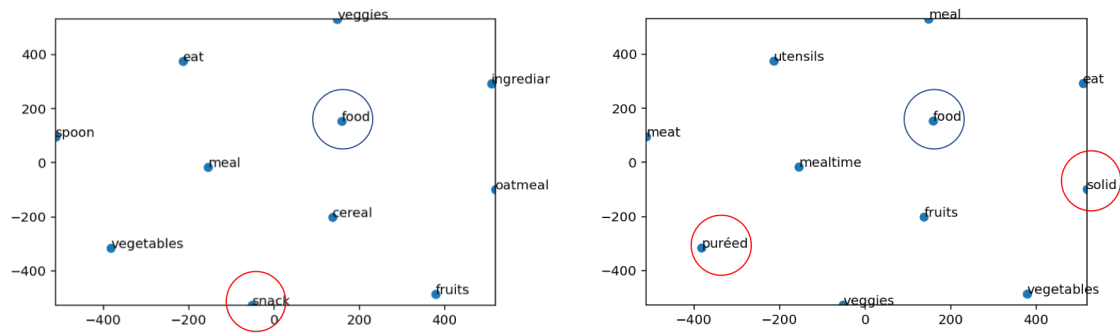
Figure 4.12: The figure on the left shows the words closest to the term "food" in the Word2Vec$_{r/Daddit}$ independent model. Notice that the word "snack" (toward the bottom) is the fourth closest to the term. In the Word2Vec$_{r/Mommit}$ independent model on the right, the words closest to the term "food" include "puréed" and "solid," both related to introducing solid food to a younger child. Both models, however, show that parents talk about feeding their children vegetables and fruits

vaccine. HPV is one of the most common sexually transmitted diseases (STD).[15] These discussions revolved around whether allowing their daughters to receive the HPV vaccine might encourage them to be sexually active at an earlier age.

Circumcision Similarly, r/Daddit users were interested in discussing how circumcision might provide some protection from STDs (14th closest word to circumcise). The focus of the discussion on r/Daddit was male circumcisions. r/Daddit users thought that circumcision might protect their sons from medical conditions like phimosis (the inability to retract the foreskin) and urinary tract infections. Fathers drew on their own experiences if they were "cut" or "uncut" to inform their decision about whether their child should be circumcised.

For r/Mommit users,the closest terms to vaccine include**[male, belief, mutilation, female, genitals, perception, FGM, culture, society]**. r/Mommit discussions included not only male circumcision, but also female genital mutilation (FGM), specifically, cultural beliefs that might make FGM more acceptable for some social groups. Mothers also commented on which medical cultures might be more accepting of the circumcision (e.g., the United States) and which might be more opposed (e.g., Europe).

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[15]https://www.cdc.gov/std/hpv/stdfact-hpv.htm

4.7 Discussion

The results in this chapter show how parents used Reddit to discuss everyday concerns about housework and carework (e.g., preparing food). They also used the platform to discuss more sensitive parenting issues including breastfeeding and sleep training. In this section, I describe how having an online space to discuss these parenting topics allows parents to moderate their transition into their new social roles. This is especially true for fathers who engage in supportive behavior and are making sense of their parenting role. Mothers find, in Reddit, a new avenue to seek answers and support especially when other online communities prove too rigid in their views on the mother's role. Finally, I show how mothers and fathers diverged in their use of Reddit when discussing similar topics.

4.7.1 Parenting subreddits and housework cognitive labor

Domestic labor is not limited to the physical labor involved in maintaining a home — it also includes cognitive labor. Cognitive labor (often referred to as invisible labor) involves identifying family needs, making decisions about fulfilling those needs, and gauging the efficacy of the choices made in order to modify them should the need arise [59]. Based on 70 interviews with 35 couples, Daminger identified nine cognitive labor domains: (1) Food, (2) Care for children, (3) Logistics/scheduling, (4) Cleaning/laundry, (5) Finances, (6) Social relationships, (7) Shopping, (8) Home/car maintenance, and (9) Travel/leisure. The discussions on the three parenting subreddits reflect all nine caregiver cognitive labor domains. In Table 4.4, I list LDA topics and discussion themes corresponding to each of the domains identified in [59].

Mothers coping with a second shift [127, 59] can use the Reddit community to access information about the criteria involved in selecting a daycare center, or the best strollers on the market, thus decreasing their cognitive load.

As men do more carework [171], they can also benefit from accessing a community similarly grappling with new parenting expectations. Men do not have as much access to support structures such as mommy groups [127, 289] or online parenting communities [175, 9]. Therefore, access to parenting content on a predominantly masculine online community provides a venue in which fathers can make sense of their new role.

Having access to a parenting community that provides advice covering the different cognitive labor domains can allow parents to gain a better sense of parental competence (e.g., [1, 289]). Parents who have a higher perception of self-efficacy are, in turn, likely to cope better with their transition to parenthood.

Domain	Domain Example	Example LDA topics
Food	Preparing family meals	Preparing food (Section 4.5.2)
Care for children	Finding daycare center, sleep training	Work-parenting demands; Bath-time and sleep routine (Sections 4.5.1 and 4.5.2)
Logistics/scheduling	Creating a schedule for family	Work-parenting demands (Section 4.5.1)
Cleaning/laundry	Cleaning clothes/sheets; hire help	Skin care and laundry (Section 4.5.10)
Finances	Paying bills/mortgage financing	Financial planning (Section 4.5.12)
Social relationships	Coordinating play dates with other parents	Grandparents; Activities (Section 4.5.8)
Shopping	Choosing between different brands and models	Baby gear; Parent gear; Diapers (Sections 4.5.1 and 4.5.10)
Home/car maintenance	Identifying repair needs/hiring repair professional	Father role, Baby proofing (Section 4.5.9)
Travel/leisure	Planning travel schedule/itinerary	Travel (Section 4.5.10)

Table 4.4: Housework cognitive labor domains identified in Daminger [59] and the equivalent parenting subreddit LDA topics

4.7.2 Discussing sensitive parenting topics

Parents avoid discussions of controversial topics such as circumcision, vaccines, sleep training, and breastfeeding (e.g., [201, 9]) on real-name social media sites like Facebook [189, 99] because doing so could put them at odds with other parents in their social networks who have divergent and deeply held views on these issues. Since Facebook networks tend to mirror and reinforce offline social networks [75], parents do profile work [275] by engaging in self-censorship and limiting their posts to the least common denominator [129] with other parents — sharing a picture of a happy child, for example, so as not to offend other parents in their social networks.

On the other hand, Reddit provides a platform for parents to discuss sensitive parenting topics while avoiding constraints introduced by context collapse [131, 195]. Reddit's subdued identity cues facilitate discussion of sensitive topics [15]. All four parenting issues identified as sensitive parenting topics in earlier work (circumcision, vaccines, sleep training, and breastfeeding) are featured in discussions across all three parenting subreddits.

While these topics might be deemed too sensitive to discuss on some social media sites, they still contribute to a parent's perceived competence. For example, guidance on bottle feeding is associated with mothers' perceived competence [239, 25]. Therefore, it is important for parents to have an online community where such topics can be discussed.

4.7.3 r/Daddit: A supportive community for fathers

Discourse on r/Daddit tended to be supportive of new fathers. Newcomers typically posted a witty introduction, including a picture of themselves holding their newborn, and they were congratulated and welcomed to the subreddit. Fathers engaged in discussions of their role as parents, especially in relation to the mother's role. As I presented in Section 2.1, defining one's social position, or "location in the social system," in this case the father family unit, can only be done in relation to complementary social roles [243] — hence dads defining their roles in relation to moms. Given that the norms around fatherhood are in flux (e.g., [153, 127, 149]), this subreddit provided a space for fathers to make sense of, and construct a new fatherhood identity. The construction of this identity can contribute to fathers' psychological empowerment [287] (See section 2.1.4) by allowing them to make sense of the role they play as fathers, which in turn, moderates the transition into fatherhood.

Referring back to the scenario presented in Figure 2.2, Reddit provides a chance for a father like Tom to find other fathers who are unsure of their new roles as parents, or, as in Tom's case, stay-at-home parents — Section 4.6 shows that the term stay-at-home is highly associated with discussions on r/Daddit. Tom, having lost his job, also misses social

interactions at work related to sports and leisure. As the *dad community* topic shows, he can find a community in which he can have these discussions on r/Daddit.

r/Daddit users also shared experiences about their legal custody battles. Historically, mothers have been granted custody of children [253] as discussed in section 2.2.2. Therefore, r/Daddit provides a community for fathers to discuss legal issues related to custody disputes. It also provides them with support from others who may have experienced similar problems. Prior work indeed shows that fathers outside of the traditional family structure (e.g., divorced fathers, stay-at-home dads) look for support from other fathers online [10, 9, 138, 163]. By becoming more aware of political and social issues — specifically in relation to custody — in their new social context as divorced fathers, dads engage in the interactional component of Zimmerman's empowerment model [287], which would could moderate their transition.

The lack of access to diaper changing stations in men's restrooms is another political and social issue associated with being a father. The Bathrooms Accessible in Every Situation (BABIES) act,[16] signed in 2016, mandates the provision of diaper changing stations in men's restrooms in federal buildings open to public use, but no equivalent mandate exists for private institutions open to the public [255]. While the number that provide a diaper changing station in the men's room has increased [200], fathers still have less access to diaper changing stations than mothers [255]. Fathers on Reddit discussed challenges associated with the lack of diaper changing stations, and they also talked about methods they found to work best in advocating for changing tables in men's restrooms.

Revisiting Tom's scenario (presented in Figure 2.2), he too may find it challenging to access diaper stations in men's rooms when taking his child to public places. Seeing that this challenge is shared with other fathers on r/Daddit, and having learned how to advocate for change, may encourage Tom to ask for diaper changing stations in the places he frequents with his daughter. Such advocacy satisfies Zimmerman's [287] behavioral component by attempting to change the current social context for fathers, and it can be a moderator for Tom's transition to the role of a stay-at-home parent (see Section 2.1.4).

Another challenge Tom faces relates to managing his daughter's hair. On r/Daddit, fathers shared tutorials — or hacks — for hairstyling, specifically for daughters. In other discussions about topics such as Halloween and fixit projects, fathers engaged in caregiving work by framing it in terms of DIY activities. Halloween has been described as the "ultimate dad holiday" [185] for which fathers work with their children to create their own costumes and elaborate lawn decorations. Fathers also referenced DIY projects they worked on with their children as they grew older, and they framed domestic work such as

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[16]https://www.congress.gov/bill/114th-congress/house-bill/5147/text

91

baby proofing the house as DIY projects (e.g., building a gate from scratch). Framing these topics as DIY projects allowed fathers to share what they considered valuable experiences, while also legitimizing housework. For a deeper discussion of legitimizing domestic work, see Sections 3.5.1 and 3.5.3.

r/Daddit also provided a space for masculine domesticity — "doing domestic activities in a masculine way" — as users discussed traditionally masculine roles such as teaching children about guns and hunting (see Section 3.2.1).

4.7.3.1 Overprotective fathers

Discussions of vaccines on r/Daddit focused on the HPV vaccine and the perceived association between administering it to a child and the child's sexual activity. A number of studies on the perceived effects of the HPV vaccine on sexual disinhibition have relied mostly on surveys of mothers (e.g., [146, 249]). Other studies that focused on sampling men showed mixed results on the topic. For example, while Myer et al. [184] showed that most fathers and sons do not think receiving the HPV vaccine increases sexual disinhibition among boys, Thomas et al. [269] found that mothers were twice as likely as fathers to have the HPV vaccine given to their sons. Since recruiting fathers for academic research can be challenging (e.g., [176]), Reddit provides a platform for social scientists and public health practitioners to determine challenges faced by fathers and ways to engage them on these topics.

The focus of the discussion on childrens'—and especially the daughters'— sexual activity or disinhibition when discussing HPV vaccines in r/Daddit was echoed in another LDA topic in which fathers filtered lists of potential *names* for daughters by looking for "stripper names." This finding echoes results from earlier work that showed fathers' concerns about sharing what might be considered "oversexualized" pictures of their daughters on social media (e.g., photos featuring short shorts or duck-lip face) [7]. Such discussions might be attributed to benevolent sexism [102], in which fathers might not be hostile to women, but do express overprotective attitudes that amplify traditional characterizations of women (e.g., women need to be protected).

4.7.4 Traditional norms held on r/Mommit

r/Mommit LDA model results indicate that r/Mommit users were more focused on accessing health information for the family in the areas of postpartum depression, nursing, birth control, allergies, family health, and sunscreen selection. LLR values showed that r/Mommit users were more likely to talk about medications. This finding is in keeping

with the conclusions of Plantin and Daneback [215], who argue that mothers seek more health information for the family than fathers.

r/Mommit users also discussed home chores and the general decline in the cleanliness of their homes after the birth of a child. They also talked about the best ways to find domestic helpers, be they paid help, partners, or growing children. These discussions indicate that traditional social norms around motherhood, in which mothers are expected to take on the responsibility of childcare and housework [127], extend to parenting communities on Reddit.

4.7.4.1 Another community for moms

As shown in 4.6, some r/Mommit users referenced other online parenting communities (e.g., cafemom and BabyCenter) when giving parenting advice or information on breast-feeding and other issues. Some users, however, indicated that they started using r/Mommit because they found some of the forums on other parenting online communities to be "trolly," or too rigid and polarizing in their perspectives. For example, some communities considered breastfeeding to be the only acceptable way to feed a child. Such rigidity alienated mothers who could not produce enough milk for health reasons, or mothers whose work schedules made such an ideal difficult to maintain for extended periods of time.

Having access to multiple parenting communities that have different norms and comprise different social networks allows mothers to build a "variegated repertoire of [social] ties" from which they "shop for help" [282] from different networks as the need arises. An expecting mother can join a birthing club on BabyCenter. After the birth of the child, she can join a a private cafemom forum to share cloth diapers. As the child grows older, she can buy second-hand baby gear from other mothers on a private Facebook group [191]. However, if she finds the discourse grating and polarizing, she may not want to discuss breastfeeding on cafemom or BabyCenter. Not wanting to alienate her Facebook friends either [9], she may opt to discuss breastfeeding challenges on r/Mommit instead. As presented in Section 2.1.4, having access to multidimensional networks is a moderator for social role strain, and can thus allow mothers to cope better with their new social role.

4.7.5 Differences between r/Mommit and r/Daddit

r/Mommit users focused more on early childcare needs. For example, they talked about breastfeeding, skin care (e.g., rash), introducing solid food (e.g., puréed food) to the child, and constipation issues associated with introducing solid food. The distribution of discussion about sleep training and finding the most suitable diapers was higher on r/Mommit

as well. When discussing vaccines, r/Mommit users were more likely to mention vaccines that are earlier on the vaccine schedule. For example, doses of MMR, Polio, and Pertusis vaccines are scheduled in the child's first year.[17]

r/Daddit users, on the other hand, focused their discussion on the HPV vaccine, which is scheduled to be administered between 11-12 years of age.[18] When discussing food preparation, fathers talked about preparing snacks for older children.

However, by the time children reached adolescence, differences diminished as discipline, growing pains, religious and social beliefs, and financial planning were all discussed more on r/Parenting than either r/Mommit or r/Daddit. This topic distribution may reflect parents' evolving identities: while a parent may primarily identify as either as a mother or a father when a new child is born, over time, parent roles may converge [183], with questions about good parenting remaining salient for all parents throughout adolescence [30].

4.8   Limitations and future work

One limitation of this work is that the gender identity of an individual user is not known, and therefore, the gender representativeness across each of the three subreddits is also unknown. The results in this chapter speak to gender norms associated with the labeling of each subreddit (see Section 4.3). However, some of the results do show that mothers may interact with fathers on r/Daddit. For example, in Section 4.5.1, I showed how mothers answered question on r/Daddit. I gave another example of a mother commenting on diaper changing stations for fathers in Section 4.6.2.3. In fact, one the main motivations for using r/breakindad is that it is a mom-free zone (see Section 4.6.2.1). Future work can explore the gender distribution across the three subreddits by devising a robust method for determining the gender of users on parenting subreddits. Engaging in this analysis would allow us to understand the needs of both mothers and fathers, and how online communities can be better designed to satisfy those needs.

In Section 4.6, I showed that fathers recommended other parenting forums on Reddit that might satisfy different needs/interests for different fathers (e.g., r/DadJokes and r/DadBeards). There are other subreddits that support diverse parenting roles including r/SingleParents, r/SingleDads, and r/Samesexparents. Future work could combine machine learning and qualitative methods to examine the needs and struggles of diverse parenting groups.

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[17]https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html
[18]https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#note-hpv

When asked for divorce and custody advice, some fathers suggested r/MensRights as a space to discuss this issue (see Section 4.6.2.1). r/MensRights is one of many blogs, websites and social media sites engaged in building a "toxic techno-culture," [182] in which users share more traditional and, at times, regressive views of gender roles, focusing on countering the feminist movement [181]. Future work could study how parents (especially fathers) engage in supportive subreddits such as r/Daddit as well as exclusionary subreddits like r/MensRights.

One limitation of this work, addressed in Chapter 5, is the differences arising from the use of throwaway accounts [163] on parenting subreddits. If parents reserve specific parenting questions or discussions for throwaway accounts, that may provide more insight into what issues parents deem too sensitive to discuss even when using a pseudonym.

CHAPTER 5

How do parents use temporary anonymous accounts?

5.1 Introduction

Parenting requires complex, subjective decisions about difficult dilemmas. Even before a baby is born, parents are asked to make decisions on behalf of their children's health, education, development, and well-being. While parenting may not be an inherently stigmatized topic, some issues related to parenting can indeed be stigma-inducing. For example, post-partum depression (PPD) is sometimes associated with the belief that parents are not are not able to fully love or care for their children [63]. Parents of children with special needs have to construct narratives around their interaction with their children that not only include their roles as parents, but also their roles as caretakers and advocates [117]. Parents can experience stigma associated with lingering societal perceptions about their identities (e.g., lesbian, gay, bisexual, or transgender (LGBT) parents [34]) or social status (e.g., parents who are divorced or non-custodial [145]). Stigmatization can also be provoked by association, based on close interaction with another stigmatized person. For example, having a child who exhibits violent behavior [111, 260] or a child who identifies as LGBT [241] requires parents to assess and navigate appropriate disclosures on behalf of their child.

A significant challenge that parents face is perceived stigma and judgment from family members and other parents [117, 112, 12]. Parents can feel pressure when sharing the details of a child's experiences and health problems with grandparents and other family members who might not support the parents' approach (e.g., parents of children with special needs [141]). Similarly, divorced parents have to manage the stigma associated with their new roles as divorced or estranged, especially as they relate to custody battles between the parents [98]. At the same time, prior research shows that self-disclosure provides an important therapeutic outlet [140] that in turn has positive psychological and physical health implications [259].

Social media sites provide a potential platform for parents to access information and social support as they navigate parenting questions; however, studies also suggest that parents can be judgmental toward on another online (e.g., [10, 247]). On sites such as Facebook or Instagram, parents may feel a social expectation to perform an idealized version of parenting [148, 7, 160, 175], making it difficult for them to disclose concerns related to sensitive topics [13]. At times, parents may feel unable to gauge the propriety of sharing their experiences with other parents who might perceive such self-disclosure as one-upmanship or unfair comparison with their own children [12]. Many popular parenting sites such as BabyCenter support the use of pseudonyms, while others like YouBeMom [247] provide complete anonymity, allowing parents to disclose sensitive content more freely. However, it has been difficult to evaluate disclosure differences across different levels of anonymity because of the wide variance in community norms across sites. On Reddit, for example, users can easily alternate between posting under their username and creating a temporary "throwaway" account that allows them to post anonymously. This affordance provides a natural context in which to investigate differences in parents' posting behaviors between username (pseudonymous) and throwaway accounts.

Throwaway accounts have been used by Reddit users to discuss sensitive issues related to relationships, gender identity, sex, and confessions [163], as well as stigmatized experiences such as sexual assault [15] and mental illness [206]. Reddit has also been used to discuss stigmatized parenting content. For example, a recent news story highlighted how mothers on Reddit — many using throwaway accounts — discussed the view that "motherhood was a bad idea" [52], an assertion that would be received critically in many contexts.

This chapter reports on what parents disclose when they use throwaway accounts on Reddit and whether their disclosure behaviors differ from those using pseudonymous accounts. In Study 1 (Section 5.4), I explore the factors that predict parents posting to Reddit using throwaway accounts rather than with their pseudonyms. In Study 2 (Section 5.5), I examine the main themes discussed when using those throwaway accounts. In Study 3 (Section 5.6), I investigate whether responses to comments made using throwaway accounts are different from responses to comments made from pseudonymous accounts.

Study 1 uses topic models (see the model built in Section 4.4.1) and lexico-syntactic categories as features in a logistic regression classifier to determine the topics/lexical categories that predict if a throwaway account has been used. Study 2 uses log likelihood ratios (see Section 4.6.1.1), coupled with qualitative methods, to produce eleven themes discussed using throwaway accounts on parenting subreddits. Finally, Study 3 uses propensity score matching (PSM) to find that throwaway comments received more responses which were longer and had higher average Karma scores.

The results in this chapter offer two overarching contributions. First, throwaway accounts allow parents to overcome societal expectations that they will be "good" parents. Second, that anonymity enables increased disclosure and support for parents. I explore how temporary accounts allow parents to discuss potentially stigmatizing topics, thus gaining information and social support from parents with similar experiences. I further argue that throwaway accounts provide parents with shared norms and expectations for sharing potentially stigmatizing experiences while remaining embedded within their existing online communities. Using throwaways can also allow them to make better sense of the boundaries and norms of the subreddit, after which they can "graduate" to pseudonymous accounts. I also propose design opportunities for joint hybrid identified and anonymous social media sites that can provide more supportive online experiences for parents and other users.

5.2 Related work

Here I focus on two relevant areas of literature. The first section summarizes research on parenting and online self-presentation, especially when considering potentially stigmatizing issues. The second section focuses on the use of anonymous social media sites to discuss potentially stigmatizing issues.

5.2.1 Parenting, stigma, and self-presentation

Early research on parenting and online communities by Madge and O'Connor [177] suggests that mothers use anonymous sites to examine non-normative perspectives on motherhood. For example, YouBeMom, an anonymous online community, allows mothers to discuss topics that they may not want to share with friends on Facebook or in face-to-face interactions (e.g., negative opinions of their spouses and/or their children [247]).

When parents present themselves to others in their social networks, they do so in ways that are considered to be socially acceptable. For example, when sharing pictures of their children online, parents share images that present the family in a good light [7, 148]. Mothers mostly share pictures that feature a happy child in a "cute" setting, especially when they are commemorating childhood milestones [148]. Parents usually refrain from posting images that feature crying children, naked children, or any other socially unacceptable content [148]. Parents may also want to avoid sharing their views online on specific topics about which other parents might have different and strongly held views.

Adherence to these norms may threatened if parents have a child with behavioral chal-

lenges [104, 141, 260] or if the traditional family unit is dissolved (e.g., due to divorce or allegations of abuse). Parents experiencing postpartum depression (PPD) may also feel stigmatized by their condition [214]. Parents "fear the disclosure of mental illness and stigmatization and, in turn, often forgo treatment to avoid label attachment. Additionally, stigma causes withdrawal and social exclusion" [214], which adds to the negative effects of PPD. Moreover, fathers may not have as much support when they face PPD as mothers [205].

Finally, while the stigma faced by divorcees has declined [106, 5], divorced parents still have to face social stigma and ambivalence about their status [145, 285]. Gertsel [98] argues that stigma associated with divorce is not related specifically to the act of divorce, but rather to all the associated transitions that occur at the time of divorce. One such transition, custody battles for children, can be particularly stigmatizing, especially when allegations of abuse are used by one or both parties involved in the divorce [253, 93].

5.2.2 Discussing stigmatized topics on anonymous social media sites

Suler [264] argued that online anonymity has as an "online disinhibition effect," which allows users to engage in antisocial behaviors such as trolling and flaming [131]. However, Bernstein et al.'s [31] study of 4chan argues that anonymity can also be advantageous in "advice and discussion threads [in which] anonymity may provide a cover for more intimate and open conversations."

Reddit is a social news site which does not require that users disclose their real names, which is why it is described as a *pseudonymous* social media site. I have discussed Reddit at length in Section 4.2.2.1. As opposed to anonymous sites like 4chan, however, Reddit requires a username and a persistent identity. All user posts, comments, and associated responses can be accessed by other users. Additionally, one's score (the difference between upvotes and downvotes) is archived throughout one's use of the site. This score is a reflection of the community's acceptance of one's posts.

Leavitt [163] demonstrates that when sharing personal and sensitive information on Reddit, users regularly post to the site via "throwaway accounts." Throwaway accounts are "temporary" Reddit accounts that users create in addition to their primary account. Throwaway accounts provide relative anonymity by disaggregating throwaway account posts from the user's primary account [90], thus acting as proxies for anonymity on Reddit [163, 90, 274]. Throwaway accounts allow users to "navigate boundaries" on Reddit by disaggregating throwaway and pseudonymous comments, especially when posting about personal issues such as "relationships, sex, gender, confessions [etc.]" [163], "identity-

work associated with sexual identities that are not exclusively heterosexual" [230, p.51], and seeking support for stigmatized experiences (e.g., sexual abuse and mental health) [15, 61, 206].

The use of social media sites is framed by platform affordances [273] (see Section 4.2.1) and norms on the site [246]. Specifically, Reddit's design facilitates easy setup and use of throwaway accounts. It is also generally acceptable in Reddit's communities to use throwaway accounts when discussing stigmatizing issues (e.g., [163]).

Reddit users can seek social support when facing particularly stigmatizing issues like sexual abuse, mental health issues, or eating disorders. Andalibi et al. [15] argue that seeking support when experiencing sexual harassment can be helpful, but only if the discloser is supported by those who respond to their comments. They argue that moderators and other subreddit members pay more attention to throwaway accounts that are usually employed by users discussing their sexual abuse. Their study found that throwaway account users seek support, provide support to other users in similar situations, and engage in sense-making and in asking explicit questions about their experience. Similarly, Reddit users who have experienced domestic abuse often discuss their abuse in detail using throwaway accounts [248].

De Choudhury & De [53] describe how throwaway accounts empower users to engage in mental health discourse without affecting their reputation (i.e., Karma points). Indeed, throwaway accounts were six times more prevalent than pseudonymous accounts on mental health subreddits when compared to other subreddits [206]. Using a text categorization scheme proposed by Altman and Taylor [4] and weighting n-grams of throwaway comments, Pavalanathan and De Choudhury found that throwaway users shared more detailed information about themselves, including their "personal beliefs, needs, fears, and values." In their study, pseudonymous account users on the same subreddits shared considerably less personal information about their experiences and focused on the help they were seeking from the site [206].

5.3 Dataset

For all three studies in this chapter, I used the same Reddit dataset introduced in Section 4.3. Table 4.1 shows the number of throwaway comments as well as the number of unique throwaway accounts under each subreddit.

5.3.1 Finding throwaway accounts

Based on earlier work in [15, 163], I identified throwaway accounts by first looking for the term "throwaway" or a variant of it in the account names. I used the list suggested by Andalibi et al. [15], specifically "[*thrw*, *throwaway*, *throw*, *thrw*, *thraway*]." In addition, I added any users who made statements such as, "This is a throwaway account." or "I'm using a throwaway account." After I identified a set of users, I randomly selected 50 accounts to manually verify that they were indeed throwaway accounts. All but one of these users explicitly stated that they were using throwaway accounts.

Many users explained that their use of a throwaway account was "for obvious reasons." Others provided some explanations, including (1) that other members of the family were Reddit users and (2) that they felt more at ease using a throwaway account for what they perceived to be a stigmatizing narrative — "I am ashamed of what I am divulging here." I provide a deeper analysis of the reasons for using throwaways in Section 5.5.2.11.

I found 1,459 throwaway accounts who made a total of 10,632 comments. The average Karma score for throwaway accounts was 5.53, while the average tenure was 39.26 days. Most of the throwaway accounts were used only within the same day (tenure = 0) or for just a few days. However, some users maintained their throwaway accounts longer, which might reflect the fact that parents keep using the throwaway account for specific parenting discussions.

In their analysis of posts about mental health on Reddit, De Choudhurry and De [53, p. 78] note that despite mental illness being a stigmatized topic, "a rather small percentage of users in our dataset used throwaway accounts (1,209 users; 4.46%)." While there may be particular topics that parents find socially stigmatized, parenting, as a general topic, is a less sensitive subject than mental health. That might explain why the percentage of throwaway accounts in our study is almost one fifth the percentage of throwaway users in [53].

5.4   Study 1: Topics of discussion in throwaway comments

The results in Section 4.4.1 show that while parents may not want to discuss some sensitive topics such sleep training, breastfeeding, and vaccines [9] on real-name social media sites, they find space to discuss such topics on pseudonymous social media sites such as Reddit.

In this section, I analyze how parents use throwaway accounts on Reddit. Since throwaway accounts provide users with a more anonymous way to post on Reddit, I ask:

> **RQ4: What are the predictors of parents posting to Reddit as throwaways?**

5.4.1 Methods

In Study 1, I used a logistic regression classifier in a prediction task in which I found the features predicting throwaway accounts. Below, I introduce logistic regression classifiers, and I introduce the feature vectors used in the predictive model. Additionally, I describe how I managed the imbalance between Throwaway and Pseudonymous accounts.

Logistic regression classifier: In logistic regression classifiers, the best-fit set of parameters are built for the training data. Fitting the data is done using a function called a sigmoid function, which is similar to a smoothed step function. Using the sigmoid function,

$$\phi(z) = 1/1 + e^{-z} \qquad (5.1)$$

each of the feature values is weighted, and the results are added up. The result is the input to the sigmoid function, providing a result between [0,1]. Any value above 0.5 is classified as class 1. Anything under 0.5 is classified under class 0 [118]. I built a logistic regression model using the Reddit data. The model had two classes—class 1: Throwaway and class 0: Not Throwaway.

A note on balancing the dataset: The target class in my logistic regression classifier, throwaway accounts, was the minority sample in the dataset. Any classifier would perform better by predicting that the value is *not* classified as a throwaway account.

In order to balance the dataset, I under-sampled the majority class. Undersampling [281] balances the dataset by randomly removing values from the majority dataset (non-throwaway comments). This generated a 50:50 class ratio for the classifier with a baseline accuracy of 0.5.

One of the disadvantages of undersampling is that there is some data loss since some of the data from the majority class is removed. Another method that can be employed to balance datasets is oversampling. Oversampling works by randomly creating synthetic data that is similar to the data in the minority class. Oversampling, however, increases the possibility of overfitting, which can affect the predictive capacity of the model [251]. I chose to use random undersampling to reduce the chances of overfitting.

However, I also trained the same models on oversampled minority classes using the SMOTE [50, 49] implementation in SKLearn to compare the results of the models presented in this paper. I found that the performance of the models was comparable in both cases, and the features and their importance to the prediction were also comparable.

Splitting the data for the classifier: Building a classifier requires a *training set* to build the model and a *test set* to measure the classifier performance. Performance measures include accuracy, precision, recall, and the F1 scores. Accuracy is defined as the number of correct predictions (predicting a throwaway account) divided by the total number of predictions. Precision represents the total number of Type 1 predictions that do belong to Type 1. In this study, this represents the total number of throwaway accounts predicted by the model that are actually throwaways. Recall represents the number of Type 1 predictions as a fraction of the total number of Type 1 data points in the dataset. F1 takes into account both precision and recall through this formula:

$$F1 = 2 \times \frac{Precision \times Recall}{Precision + Recall} \tag{5.2}$$

I split the data set into training data between 2012/01/01 and 2018/01/01. The test dataset used the rest of the data between 2018/01/01 and 2018/10/31. I opted to begin training the data in 2012 in order to reduce any effects of changes to the subreddits too close to their creation dates (see Table 4.1). By time-splitting the dataset, I also avoided data leakage since the test data did not yet exist when the training data was generated [143].

To check against the time-split model, I also trained a model using a random split, using 80% of the accounts as training data and 20% as test data and 5-fold cross validation. This classifier showed only marginally better results than our model. However, because I wanted to reduce the amount of time leakage from earlier comments, I decided to use the time-split model.

5.4.1.1 Features used in the classifier

I used 135 features in the logistic regression classifier to predict if the Reddit account was a throwaway account. Sixty of the features are LDA topics. Seventy two features are sentiment analysis values (LIWC linguistic measures). Finally, three features represent control features including Karma scores, comment length and user tenure on parenting subreddits. While these three control features are not directly related to the comment text (LDA topics and sentiments), they describe the behavior of users on parenting subreddits. Below, I describe the three groups of features in detail.

LDA Topic Modeling for Topic Detection [60 features]   I used the LDA topic scores introduced in Section 4.4.1. The topic scores represent the distribution of a particular topic over the corpus. In other words, the higher the score, the more prevalent a particular topic was in the text. Using the bag of words representation instead of LDA topics as features

would create too many features in relation to the number of observations. Additionally, I was interested in interpreting the results of the logistic regression classifier with regard to different topics parents discuss rather than particular words.

After finding the significant LDA topics from the classifier, as I did in section 4.6.1.4, I used the Doc2Vec model to make more sense of the topic context. In order to do so, instead of tagging the comment with the subreddit that it was posted in, I tagged each document with an LDA topic tag if the comment had a high topic score (see subsection 4.4.1.1). By extending the Doc2Vec model using the LDA topic tags, I analyzed how each document and its associated tags "share high semantic similarity which allows us to learn the embeddings of [the top LDA comment tags] along with the documents" [51, P. 2]. In other words, in addition to the topic terms associated with each significant LDA topic, I also showed the closest words associated with them. The topics, associated LDA KTG topic terms, and Doc2Vec context terms are presented in Tables 5.2 and 5.3.

The Doc2Vec terms are not used as features in the logistic regression classifier since they are not easily interpreted. In other words, I would not be able to make sense of the embeddings if they are associated with predicting throwaway accounts. However, they do provide context for each of the significant LDA topics, especially those terms that might be stigmatizing. For example, the *Gender and parenting expectations* LDA topic terms might not show any stigmatizing words, but the Doc2Vec model shows words like as "sexist", "estranged," and "child-molest."

LIWC linguistic measures [72 features]   I used the Linguistic Inquiry and Word Count (LIWC) text analysis program, a lexicon of linguistic categories that has been psychometrically validated [210, 208] and performs well on social media datasets (e.g. De Choudhury et al.[60]) to extract lexico-syntactic features. I applied the LIWC 2015 processor [209] on each of the comments in our dataset. While there are other tools to extract lexical categories such as Empath [79] whose categories are highly correlated to LIWC categories, using LIWC allowed me to compare the results to earlier work analyzing lexical categories on social media. For example, LIWC has been used to analyze the differences between discussants on separate sides of the abortion debate on Reddit [256]. Gilbert and Karahalios [100] used LIWC categories to predict the strength of social ties between Facebook users.

There are 72 LIWC categories divided as follows: (1) standard linguistic measures (e.g., pronouns, articles, etc.); (2) 41 term categories measuring psychological constructs (e.g., affect, cognition, and biological processes); (3) personal concern measures relating to work, home, money, religion, and leisure activities; (4) categories covering informal language (e.g., fillers, netspeak, swear words, etc.).

Control features [3 features]   In addition to the 60 LDA topic features and 72 LIWC linguistic categories, I also used 3 control features: (1) average user tenure, (2) average Karma score per comment, and (3) average comment length. These three features provide controls in our logistic regression classifiers because they describe user contributions but are not dependent on the LDA topic scores or LIWC lexical category scores.

User tenure provides a measure of engagement in the parenting subreddits. Longer tenure indicates longer engagement in the community. Tenure is calculated by finding the number of days between the first comment by the user and the latest one in our dataset. If comments were only made in the same day, the value of the tenure was zero. Since throwaway accounts are usually used for discussions related to specific topics that might be stigmatizing, the tenure of the user could be used as a proxy to predict whether a user is a throwaway account or not.

Similarly, average Karma score measures the acceptability of user comments within parenting subreddits, and their engagement is reflected in the number of comments they have on parenting subreddits. Each Reddit comment has an associated Karma score, which is the difference between up-votes and down-votes. The more up-votes a comment gets, the higher the Karma score, and vice versa. I divided the average Karma score by the total comments as a proxy for user activity on the subreddit. Both these values can be considered platform signals [157] that provide proxies for both the acceptability of the topics discussed by a user and his/her activity levels on site. Basically, if a post receives a higher vote (i.e., more upvotes), that signals that the topic is normatively acceptable in the subreddit.

Finally, average comment length is a proxy for user engagement in a particular discussion. The longer the comment, the more engaged the user.

I built a logistic regression classifier model applying L2 regularization, which penalizes the complexity of the model (i.e. large number of features) to produce robust coefficients [**?**, p. 114-118]raschka$_p$ython$_2$015[1]

5.4.1.2   The predictive classifier

The model has an accuracy of 0.699, precision of 0.690, recall of 0.683, and an F1 score of 0.712. I also calculated the area under the curve (AUC) metric for the model in order to analyze its fit [266]. The AUC is a common metric used to evaluate regression models [166, 81]. After plotting the true positives (i.e., predicting a throwaway when the user is actually a throwaway) on the y-axis and the false positives (i.e., predicting a throwaway when the user is **not** a throwaway) on the x-axis, the AUC for our model is 0.777. Thus,

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[1]I used the logistic regression classifier as applied in Scikit-learn `https://scikit-learn.org/stable/modules/generated/sklearn.linear_model.LogisticRegression.html`
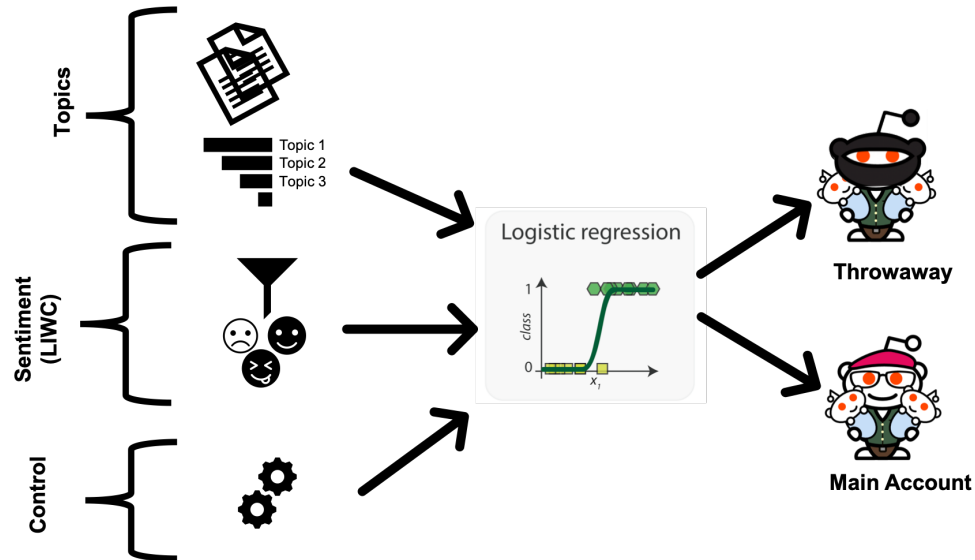
Figure 5.1: I built a predictive model using logistic regression classifier to understand the predictors for using a throwaway account on parenting subreddits. The classifier uses 135 feature vectors including LDA topic scores, sentiment analysis values (LIWC), and control measures describing users' behavior on the site. Control measures include tenure on the parenting subreddits, average Karma score per comment, and average comment length.

our model is reasonably well fit [227].

All 135 features are used to answer **RQ4**.

5.4.2 Results: What topics do throwaway users discuss

When analyzing the logistic regression classifier, the features that have positive weights provide a better chance for the user to be classified as a throwaway user. Features with negative values predict that the user belongs to Class 0, that is to say, the user is not using a throwaway account. Our logistic regression classifier describes throwaway users who engage in discussions on the following topics: (a) gender & parenting expectations (see Section 4.5.9), (b) abuse and therapy (see Section 5.5.2.1), (c) parenting hardships, (d) work-parenting demands, (e) parenting nature (see Section 4.5.1), (f) financial problems (see Section 4.5.12), (g) family health (see Section 4.5.6), (h) speech and language development (see Section 4.5.7), (i) growing pains (see Section 4.5.5), (j) religions and social beliefs (see Section 4.5.8), (k) body image and privacy (see Section 4.5.5), (l) pregnancy challenges, loss, and grief (see Section 4.5.1.1), and (m) circumcision (see Section 4.5.6).

The list of topics and associated KTG are shown in Tables 5.2 and 5.3. All of these LDA topic features are positively associated with throwaway accounts.

Predictor	Coefficient	p-values	OR	Feature Type
Tenure	-1.045	****	0.352	Control
Gender & parenting expectations	0.297	****	1.346	LDA
Abuse & therapy	0.334	****	1.397	LDA
Parenting hardships	0.270	****	1.310	LDA
Work-parenting demands	0.213	****	1.237	LDA
Parenting nature	0.210	**	1.233	LDA
Religion	-0.264	**	0.768	LIWC
Financial problems	0.238	**	1.269	LDA
Family health	0.171	**	1.186	LDA
Speech & social development	0.171	**	1.186	LDA
Adjectives	-0.812	**	0.444	LIWC
Growing pains	0.125	*	1.133	LDA
Religious & social beliefs	0.137	*	1.147	LDA
Numbers	-0.219	*	0.804	LIWC
Body image & privacy	0.131	*	1.140	LDA
Pregnancy challenges, loss, & grief	0.136	*	1.146	LDA
Verbs	1.906	*	6.724	LIWC
Parenting groups	0.117	*	1.124	LDA
Circumcision	0.112	*	1.118	LDA

Table 5.1: This table presents the significant features from the logistic regression classifier. OR refers to the value of the odds ratio which represents the odds of the variable having the baseline exposure. Only significant values are presented in this table: **** $p < 0.0001$, *** $p < 0.001$, ** $p < 0.01$, and * $p<0.05$. The feature type indicates whether the term is an LDA topic, LIWC, or control features.

Topic Name	KTG
Gender & parenting expectations	son, parent, father, different, relationship
father, step-dad, step-mom, biodad, stepmom, child-molest, gay, father-figure, bio-father, biracial, bighug, conciliatory, estranged, ex-girlfriend, birth-father, DNA, daughter-in-law, sexist	
Abuse & therapy	parent, feel, abuse, children, someone, relationship, work, happen, issue, understand, adult, behavior, therapy, deal, problem, support
ex, child-molest, counsel, relationship, divorce, stepfather, bio-mom, estrange, drug-addict, narcissist, bi-polar, lowlife, abusive, no-contact, co-depend, bio-dad, legal, sordid, ultimatum, breakup, therapy, custody	
Parenting hardships	baby, care, support, mother, home, cry , wife, husband
PPD, exhausted, motherhood, postpartum, PPA, cluster-feed, overwhelm, pre-baby, sleep-deprived, SAHM, de-stress, supermom, mom-mod, me-time, PND, frazzle, hormone, stress, newborn, housework, partner	
Work-parenting demands	get, time, work, daycare, schedule, sleep
SAHM, evenings, re-charge, SAHP, childcare, stir-crazy, weekend, SAHD, vacation, solo, kid-free, weekday, daddy-baby, getaway, baby-time, date-night, babysit, daycare, tag-team, full-time, lack-of-sleep, MWF	
Parenting nature	love, child, feel, old, first, happy, older, relationship, watch, enjoy
cherish, remarry, regret, grandchildren, selfless, bittersweet, joy, love, smitten, truly, enjoy, mini-mom, adore, grandma, child-free, childless, uncles, overshadow, grand-kid, nostalgia, congratulate, parenthood	
Financial planning	work, pay, job, money, make, year, school, college, daycare, nanny
salary, mortgage, job, finance, part-time, paycheck, well-paying, pay-cut, unemployed, pittance, financial, self-employed, employed, pretax, tax, better-pay, afford, down-payment	
Family health	eat, drink, anxiety, doctor, healthy, change, pain, exercise
effexor, carbs, strattera, anti-depressant, advair, zofran, caffiene, lexapro, nausea, mirilax, keto, medicine, diet, floradix, celexa, concerta, bulimia, adderal, fibromyalgia	
Speech & social development	play, learn, need, help, sign, develop, language
dadada,jibberish, mamama, word, speech, whines, vocab, babble, echolalia, baby-talk, phrase, unintelligible, speech langauge pathologist, mimick, nonverb,language,verbal, autism, hyperlexia, speech-delay, siri	
Growing pains	stranger, pay, understand, friend, room, live, school, public, bad, family
pedophile, pedo, cop, creeper, kidnap, abduct, molest, leer, passersby, crosswalk, cul-de-sac, stranger, sheriff, escort, suspicious, lock-down, locker, sketchy, restroom, playground	

Table 5.2: This table shows **the LDA topic name**, top **LDA topic words (KTG)**, and select **Doc2Vec context terms** in the row beneath for each of the significant LDA topics from the logistic regression classifier

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Topic Name	KTG
Religious & social beliefs	**children, sex, differ, teach, social, question, discuss, culture, respect, religion**
racism, bigotry, hypocrite, religion, christian, gay, blackface, objectify, prude, prejudice, atheist, duckface, libertarian, publicly, prejudice, neo-nazi, president-elect	
Body image & privacy	**naked, shower, year, body, nudity, bath, change, penis, wear, bathroom, weird, sexual, private, comfort**
nudity, naked, modesty, bikini, swimsuit, prudish undress, penis, disrobe, ogle, erect, two-piece, change-room, tankini, cleavage, turn-on, boner, masturbate, self-conscious	
Parenting groups	**friend, religious, church, learn, believe, catholic**
gay, bisexual, LGBT, Mormon, atheist, lesbian, christian, heterosexual, geeky, trans, religion, non-belief, Wicca, queer, agnostic, atheist, prude, Unitarian, Sikh, non-religious, Jesuit, transgender, girly, Pentecost, non-christian, feminine, homosexual, tomboy, all-girl, anti-theist, cultish, mosque, scout, pastor	
Pregnancy challenges, loss, & grief	**pregnant, family, birth, friend, miscarriage, find, support, lost, heart**
miscarriage, stillbirth, infertile, IVF, amnio, pregnancy, hysterectomy, ultrasound, abort, grieve, conceive, devastate, cyst, vasectomy, pco, pro-choice, amniocenteses, IUD, OBGYN, sonogram, ovary, stillborn	
Circumcision	**circumcise, insurance, foreskin, pay, procedure, husband, clean, intact, decision**
circumcise, foreskin, uncut, labia, intact, phimosis, genital, cosmetic, retract, mutilate, procedure, suture	

Table 5.3: Continued. This table shows the rest of the significant LDA topics from the logistic regression classifier

.

Conversely, the use of the LIWC categories adjectives $\{free, happy, long\}$ and numbers $\{second, thousand\}$ are negatively related to predicting a throwaway account. The *verbs* LIWC category is also positively associated with predicting a throwaway account. Using more verbs indicates "attitude markers...which indicate the writer's affective" response to certain propositions. Attitude toward a topic can be signaled by "attitude verbs (e.g., agree, prefer)." [135]

While the LDA topic *religions and social beliefs* is positively associated with throwaway accounts, the LIWC religion category is negatively associated with throwaway accounts. I provide an explanation of this result through qualitative analysis of the data in Section 5.5.2.8.

Tenure is expected to be negatively associated with being a throwaway account since, in most cases, throwaway accounts are created to engage particular topics and, therefore, tend to have shorter tenures than the accounts of pseudonymous users. Figure 5.2 shows the tenure profile for throwaway users (top) vs. pseudonymous users (bottom). While most throwaway accounts were used only within the same day (i.e., a tenure of zero), some users maintained the use of their throwaway accounts for longer periods of time.
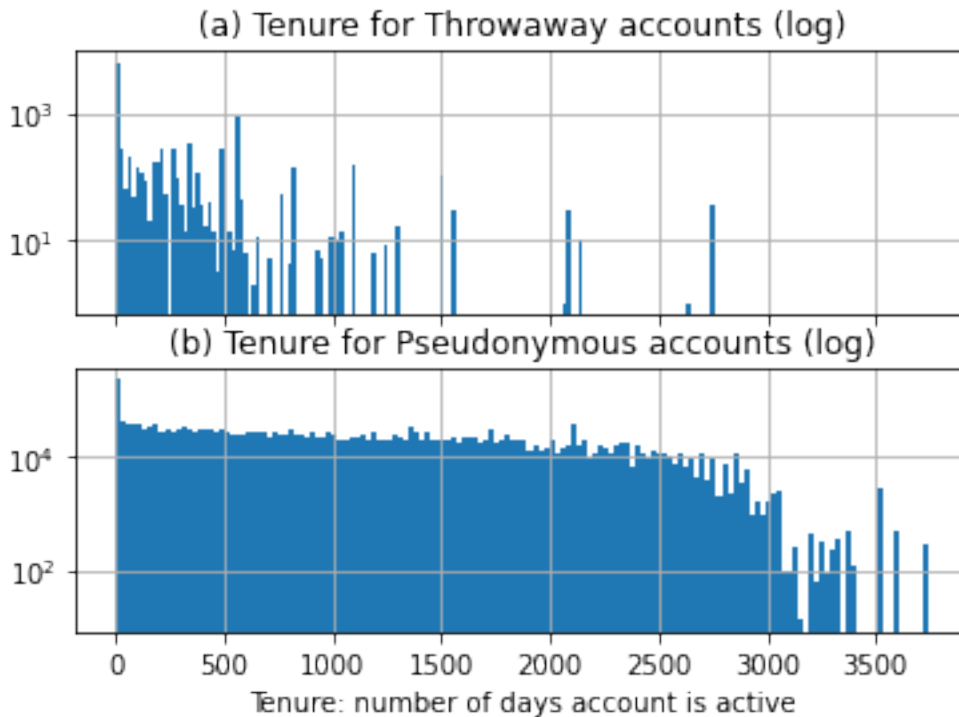
Figure 5.2: This figure shows the tenure distribution for Throwaway (a) vs. Pseudonymous accounts (b). Most throwaway accounts have a shorter tenure on the parenting subreddits than pseudonymous accounts.

This model confirms what is expected: that users might want to use throwaway accounts when engaging in topics that might be stigmatizing and that the tenure for throwaway accounts is shorter than pseudonymous accounts.

5.5 Study 2: Throwaway conversations

In this section, I contextualize results from Study 1 by expanding on the quantitative results using both quantitative and qualitative methods. I use LDA scores (see Section 4.4.1.1) and Log Likelihood Ratio (see Section 4.6.1.1) to build documents for throwaway and pseudonymous conversations. I then use qualitative analysis to expand the inquiry into the nature of parents' comments. Given the significant LDA topics discussed in Section 5.4, I ask:

RQ5: What are the main themes discussed by throwaways?

5.5.1 Methods

The purpose of this study is to identify distinctions between comments made with throwaway accounts vs. pseudonymous accounts when users engage the same LDA topics. The result is a number of themes that provide more nuance regarding the significant LDA topics presented in Tables 5.2 and 5.3. Themes emerging from the LDA topics are discussed in detail in Section 4.5.

First, I wanted to have a high-level view of the distinctions between throwaway and pseudonymous comments. As I did in Section 4.6.1.1, I used Log Likelihood Ratio (LLR) to make sense of the "topic signatures" from throwaway and pseudonymous accounts. A large positive LLR value indicates that the term is more likely to appear in throwaway conversations as opposed to pseudonymous conversations. A value closer to zero means that the term is equally likely to occur in both throwaway and pseudonymous comments. A large negative LLR value indicates that the term is more likely to appear in comments made with pseudonymous accounts.

As noted earlier (see Section 4.6.1.1), LLR can be used to differentiate corpora of different sizes [223]. So, even though the number of throwaway conversations is smaller than pseudonymous conversations, LLR presents a good measure to differentiate between the two.

First, I use LLR to make a more generalized differentiation between throwaway and pseudonymous conversations. I present those differences in Table 5.4.

5.5.1.1 Qualitative analysis of throwaway conversations

I also used LLR to build qualitative documents for a qualitative analysis of throwaway conversations related to each of the significant LDA topics. A sample of these LLR values is shown in Table 5.5.

Step 1: Creating throwaway and pseudonymous documents for each significant LDA topic   For each of the significant topics in Table 5.1, I selected comments with high topic distribution (>0.9) (see subsection 4.4.1.1).

Using the top comments for each of the significant LDA topics, I appended the responses to each of the comments to create separate throwaway and pseudonymous conversation documents. In each document, I included the comments, and responses to them, related to a particular significant LDA topic. For example, I had (1) an *abuse and therapy - throwaway* document and (2) an equivalent *abuse and therapy - pseudonymous* document to compare. I repeated this step for each LDA topic to find the throwaway and pseudonymous comments with high topic scores and create associated documents. This process gave me a total of 28 documents, 2 for each significant LDA topic.

Step 2: Finding comments for qualitative analysis   In this step, I selected comments from the documents (described in step 1) that included terms more likely to appear in throwaway (high LLR) or pseudonymous (low LLR) documents. For example, if "therapy" had a high LLR value for the *gender & parenting expectations* LDA topic, I selected comments that used this term in the *gender & parenting expectations throwaway document*.

LLR is used to compare throwaway and pseudonymous conversations discussing each of the significant LDA topics (see Table 5.1). A large LLR value indicates that the term is more likely to appear in throwaway conversations as opposed to pseudonymous conversations. A value closer to zero means that the term is equally likely to occur in both throwaway and pseudonymous comments. A negative value means that the term is more likely to appear in pseudonymous conversations.

I also checked the LLR values of LDA KTG and Doc2Vec words (see Tables 5.2 and 5.3). Again, I selected comments that included LDA topic words and Doc2Vec words with high LLR values from the throwaway document. For example, in the *Family health* LDA topic, one of the Doc2Vec terms, "Strattera" had a high LLR value, indicating that it was more likely used by throwaways. I selected throwaway comments referencing "Strattera" from the *family health throwaway document*.

If any of the LDA topic words and doc2vec words had LLR values close to 0 (i.e., equally likely to occur), I randomly sampled comments that used these terms from both

throwaway and pseudonymous comments. This allowed me to understand how these terms were used in throwaway documents, and how their discussions differed from discussions in pseudonymous documents.

In essence, using the LLR values as signatures for throwaway and pseudonymous conversations, I created 28 documents representing top LDA contributions for each of the significant LDA topics. These documents were in turn used for qualitative analysis.

Step 3: Qualitative analysis   For each of the significant LDA topics, I read the comments identified in the earlier step iteratively in order to identify emerging themes discussed by throwaway users across the significant LDA topics. I continued coding comments from different documents until I reached saturation and could establish a number of themes across the 28 documents.

I read a total of 1,993 comments. Of these, there were 630 pseudonymous comments and 148 responses to these comments. I also read 840 throwaway comments and 375 responses to them.

To demonstrate this process, I share an example in subsection 5.5.2.1 that shows how I differentiated between throwaway and pseudonymous comments, and then found common threads across different LDA topics.

5.5.2   Results

In this section, I present a qualitative interpretation of the themes in comments by throwaway accounts when discussing the predictive topics. In doing so, I describe meaningful themes that are distinct from those in comments made with pseudonymous accounts, even when engaging the same predictive LDA topics

First, I show the main differences between throwaway and pseudonymous conversations by focusing on the topic signatures that differentiate the two conversations using the top LLR values for throwaway and pseudonymous conversations. As Table 5.4 shows, references to abuse, therapy, counseling, custody, and CPS (Child Protective Services) were more likely to appear in throwaway conversations than in pseudonymous conversations. On the other hand, pseudonymous conversations were more likely to include words such as baby, sleep, school, and eat.

Next, I present a qualitative analysis of throwaway conversations. There are 11 emergent themes from these conversations: (1) Defining and managing abuse trauma; (2) financial problems; (3) postpartum depression in mothers and fathers; (4) fathers lacking support in public spaces and by government programs; (5) adolescence, sexual experimen-
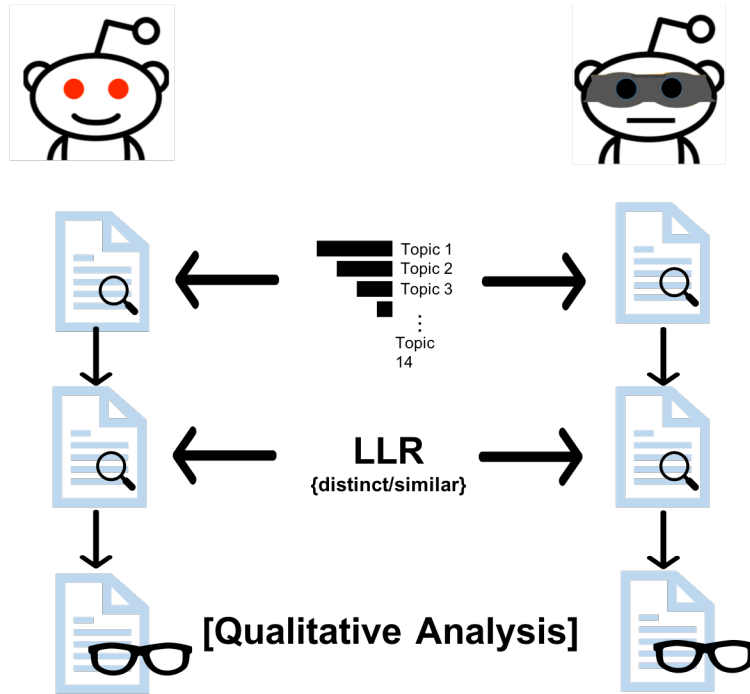
Figure 5.3: This figure shows the process of finding throwaway conversations and comparing them to pseudonymous conversations.

Throwaway		Pseudonymous	
Term	**LLR**	**Term**	**LLR**
abuse	10,866	baby	-5,764
therapy	10,183	sleep	-4,504
counseling	7,797	school	-3,212
custody	5,691	play	-2303
CPS	2,234	eat	-2,116

Table 5.4: Main differences between throwaway and pseudonymous accounts

tation, and setting boundaries; (6) difficult pregnancies, miscarriages, and infertility; (7) health management: from circumcision to special needs; (8) social beliefs, LGBT youth, and parenting groups; (9) divorce: effects on relationships with children and partners; (10) gratitude in throwaways; and (11) the reasons for using throwaway accounts. Some of these themes aligned closely with the LDA topics identified in Study 1. Other themes incorporated more than one significant LDA topic. Below, I present a description of each of these emergent themes. As was discussed in Section 4.4.1.2, I am not using any direct quotes in the results in order to protect users' privacy.

5.5.2.1 Defining and managing abuse trauma

In this subsection, I present a detailed description of how I analyzed the differences between throwaway and pseudonymous conversations in the *Gender & parenting expectations* LDA topic using the steps outlined in the Methods section. I then describe the same process in an analysis of the *Abuse and therapy* topic. The LLR values for both topics are shown in Table 5.5.

Gender & parenting expectations. When discussing gender and parenting norms in the family context, pseudonymous accounts were more likely to discuss the role of the mother and father as adoptive (LLR=-8,141) parents and to contrast those roles with the roles of biological (LLR=-2,392) parents. For example, one parent described himself as both a "biodad" (LLR=-480) and a "stepdad" (LLR=-417) and compared both parenting roles using his personal experience.

Throwaway discussions were more likely to talk about the need (LLR=4,981) for help (LLR=4,882) and to discuss abuse (LLR=4,234) in the context of gender stereotypes. Many of the discussions revolved around how some fathers withheld affection from their children and often treated their partners with disrespect. The fathers discussed had often had unhealthy relationships with their own parents. ed, throwaway comments suggested that the parents' attitudes were in many cases related to childhood mental (LLR=1,591) trauma, with many insisting that parents who inherit such psychological issues should invest in therapy (LLR=3,731).

In the *Gender & parenting expectations* LDA topic, I also noticed a focus on negative views of fathers in public spaces. I found that similar discussions about abuse were more likely to appear in throwaway conversations under the *Abuse and therapy* LDA topic. Specifically, discussion focused on the definition of abuse, especially in the context of men's interactions with children are described in detail below.

Abuse and therapy   . Throwaway accounts under the *abuse and therapy topic* were more likely to discuss non-physical forms of abuse. Some parents described a partner, usually a father, who was distant and degrading when interacting with both themselves and their children. They were attempting to determine if this behavior amounted to abuse. Most answers suggested that when a partner continued to engage in what they identified as emotional abuse, that partner should be given an ultimatum (LLR=12) to engage in counseling (LLR=2.21). Throwaway conversations were also more likely to discuss how abused children themselves might become abusive parents, locked in a cycles (LLR=1.58) of abuse because of their lack of empathy (LLR=2.06). They also suggested therapy resources for both parents and children in families that experienced abuse. Parents updated others on the progress of their children after receiving therapy. They thanked (LLR=83.20) those who had responded for their concern and for sharing detailed responses with relevant information (e.g., resources such as books, contact information for organizations that support for abuse victims, etc.).

Pseudonymous comments under the *abuse and therapy topic* were more likely to discuss parents' (LLR=-33.18) responsibility for setting boundaries (LLR=-6.12) and rules (LLR=-9.90), especially when dealing with teenagers (LLR=-1.68). Discourse on how to maintain these lines also brought punishment (LLR=-8.25) into focus. For example, pseudonymous conversations focused on the question of whether or not corporal punishment constitutes abuse.

The theme emerging from throwaway comments discussing both *gender & parenting expectations* and *abuse and therapy* LDA topics is *defining and managing abuse trauma*. I used the same process for the rest of the significant LDA topics. In the remainder of this section, due to space limitation and because I am focused on use of throwaway accounts, I focus on the emerging themes that are more likely to be discussed by throwaway accounts. Aside from cases in which the difference might be particularly interesting, I do not reference the equivalent pseudonymous themes or corresponding LLR values.

5.5.2.2   Financial problems

Throwaways discussed the cost associated with giving birth or the budget a new child might require. Such questions came from those who were not yet parents but considering becoming parents, or from those considering having another child. For those considering having children, a number of responses intimated that the decision to have a child should be more than just a decision to compromise with a significant other who wanted one (e.g., "if you think a child will save your marriage or complete it, you are deeply mistaken.")

Parents using throwaways also discussed problems in financing their children's college

degrees, especially if their children were failing college courses. Further, throwaway conversations discussed the propriety/need for parents to help finance their children's graduate education. Parents discussed the effects of their own college debts on their ability to provide for their children and on their credit, bringing up issues such as debt consolidation.

Throwaway comments were also more likely to discuss resources for needy parents. For example, responses provided links and phone numbers for single parents to find resources from which they might benefit.

5.5.2.3 Postpartum regrets and depression

Throwaways discussed regretting having a child because of challenges in the first few months after birth. Some parents noted that they did not know the extent of the challenges associated with raising a child, and they felt ill-equipped to support the child. Other parents suggested that "it gets easier" with time. Some parents also discussed their sex-lives, mostly focusing on their partner's low sex drive and how that was affecting their relationship. Others talked about their regrets for not leaving a large gap in age between their children. They talked about feelings of resentment, especially when considering the restrictions a new child adds to potential activities they could do with their older children.

Many of the comments focused on Postpartum Depression (PPD). Discussants in throwaway conversations were more likely to offer others a chance to private message (pm) them to continue the conversation in a more private manner. Many of the comments were from fathers who wanted to know more about how their partners were feeling in the early stages of parenthood, especially with reference to PPD. When fathers asked if their partners might be dealing with PPD, mothers replied with their own experiences with PPD and offered fathers advice about how to support their partners. For example, one father had recently gone back to work after a short paternal leave and thought that his wife was suffering from PPD. When he asking how he might help, other parents offered advice: "Push your wife to take a break even if she does not want to. Just take the kiddo yourself for awhile to a play-date or something...give her some time off."

Throwaway father accounts discussed their own experiences with PPD. They talked about how they felt disconnected from their child and partner, how they had aggressive thoughts about their own child at times, and the effects the experience had had on them and their partners. When new fathers indicated that they could not relate to their children, others suggested that they consult with a doctor for a PPD diagnosis.

5.5.2.4 Fathers lacking support in public spaces and from government programs

Throwaway accounts discussed other issues at the intersection of parenting and masculinity. For example, single fathers lamented the lack of resources available in rural areas of the US. They compared these resources with what they perceived to be better programs for single mothers. This tendency to perceive fathers as relegated to a secondary status behind mothers in parenting domains extended to everyday parenting experiences. Fathers talked about how difficult it was for them to find public spaces or parenting support groups that catered to their needs as parents. Some comments suggested that mothers could be paranoid around fathers. Men felt they usually judged as being inappropriate when they interacted with children in the same way women do. For example, they suggested that when men tickle, hug or otherwise touch children, it is more likely to be seen as inappropriate. Some responses argued that since the statistics show that men are responsible for the vast majority of sexual abuse against children, these prejudices are rational.

5.5.2.5 Adolescence, sexual experimentation, and setting boundaries

Throwaway conversations were more likely to mention scenarios in which users found either teenagers or other adults being "pervy." For example, they wondered what forms of physical contact with parents/relatives (e.g., hugging or sitting in a lap) were acceptable as a child grows older (tweens). Perspectives ranged from considering such physical contact to be a form of affection to regarding it as totally inappropriate. In related threads, throwaways discussed setting appropriate boundaries at home as the children grew older, especially if they were of the opposite sex or if the adult Was a step-parent. For example, throwaway accounts discussed the appropriate dynamics of interactions with children in gendered locker rooms as they grow older.

Throwaways were also more likely to comment on their children's sexual experimentation as they transitioned into adolescence, especially in discussions of whether such experimentation was appropriate. Responses from other parents focused on how they navigated similar circumstances with their own children, or, in some cases, users shared stories of their own experiences as teens. These discussions included issues related to sexting, sleepovers, and sexual relations between teenagers. Some throwaway conversations also extended to discussions of Romeo and Juliette laws in different states. These laws govern sexual relations between teenagers, especially when one is older than the other (for example, a 14-year-old and a 16-year-old).

Financial problems				Abuse and therapy			
Throw		**Pseud**		**Throw**		**Pseud**	
Term	**LLR**	**Term**	**LLR**	**Term**	**LLR**	**Term**	**LLR**
degree	28.71	per	-15.38	thank	146.68	sound	-21.05
thanks	25.55	can	-12.37	try	23.91	parent	-13.63
consolidate	24.48	week	-11.88	we've	21.20	kid	-13.10
big-law	23.53	tax	-10.40	spoken	18.80	may	-11.63
flagship	21.32	watch	-9.87	throwaway	16.66	unless	-11.31

Gender & parenting expectations				Parenting nature			
Throw		**Pseud**		**Throw**		**Pseud**	
Term	**LLR**	**Term**	**LLR**	**Term**	**LLR**	**Term**	**LLR**
need	4,951	dad	-8,141	thank	143.60	teach	-8.86
help	4,882	adopt	-4,543	parent-child	27.57	punish	-6.00
abuse	4,234	mom	-4,208	long-term	27.57	respect	-4.97
therapy	3,731	girl	-3,968	non-custodial	19.00	rule	-4.10
well-adjusted	18.38	father	-3,745	well-adjusted	21.32	action	-3.6

Table 5.5: Pseudonymous and throwaway LLR values for *gender & parenting expectations*, *financial planning*, *abuse and therapy*, and *parenting nature* LDA topics. Throwaway users were usually more likely to **thank** other users for their responses. They were also more likely to mention the use of **throwaway** accounts.

5.5.2.6 Difficult pregnancies, miscarriages, and infertility

When discussing issues around difficult pregnancies, miscarriages, and infertility, throwaway accounts were more likely to talk about the stigma associated with abortions and miscarriages. They also talked about tests for genetic and other medical screenings (e.g., Spina bifida) that would have made them consider ending a pregnancy. Throwaway accounts were also more likely to share details about their challenges in conceiving children. For example, a number of throwaway comments shared that they had used anonymous egg donations through medical tourism in Spain.[2] They also provided details about how many times they had to go through the IVF (In vitro fertilisation) process in order to console those whose first IVF round was not successful.

5.5.2.7 Health management: from circumcision to special needs

Throwaway conversations were more likely to discuss specific medications used by children with ADHD, such as Strattera.[3] Throwaways discussed the effectiveness of medications and their side effects. Throwaway conversations were also more likely to discuss autism, especially if a user's child exhibited mimicry and adaptation behavior or if they failed to follow behavioral norms. Many thought these behaviors might be signs that the child had a disorder (e.g., was on the spectrum). Parents asked for advice if their child was in need of psychological consultation and sought recommendations for resources such as therapists to help their children if they were diagnosed with autism or other disorders. Parents who had a diagnosed child used throwaway accounts to vent about their struggles. For example, throwaways talked about being in marriage counselling due to the pressure to attend to their child's needs while maintaining a positive self-presentation publicly.

When discussing circumcision, throwaways talked about medical conditions such as Urinary Tract Infections and phimosis (a medical condition in which the foreskin of the penis cannot be pulled back past the tip of the penis. This condition can result in pain and other medical complications), and other infections that might be considered sensitive. Throwaway accounts were also more likely to discuss medical consent to the circumcision procedure. Some parents compared European and American healthcare systems, suggesting that they had to be more active and adamant about not consenting to the circumcision procedure in the US where circumcision is a more culturally and medically dominant procedure.

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[2]Spain is a leading country in fertility medical tourism `https://www.theguardian.com/lifeandstyle/2010/aug/22/spain-fertility-tourism`

[3]This term appears in the Doc2Vec terms in Table 5.5

5.5.2.8 Social beliefs, LGBT youth, and parenting groups

Throwaway comments also posed questions about LGBT teenagers since some parents were not sure how to support the teenager. Responses were mostly supportive and included personal narratives of coming out as adolescents or personal experiences among parents whose children identify as LGBT. Many parents brought into the discussion their own conservative and/or religious upbringing and how they were coming to terms with having an LGBT child. Other parents commented on the tension between their LGBT children and more conservative relatives. This tension was related to discussions about differences between more conservative parents and family living in rural areas of the US and more liberal, younger children residing in more liberal parts of the country. Some parents suggested that they did not want their children to interact with family members whom they thought were prejudiced, which provoked descriptions of family members perceived to exhibit transphobia, homophobia, and Islamophobia.

LGBT parents also discussed their personal experiences using throwaways. For example, one parent identified as a "single, gay parent who adopted a child from [foreign country] noted that they could "relate to the challenges faced by other adoptive LGBT parents."

Throwaway accounts were more likely to discuss their search for parenting groups that suited their parenting philosophy and social/religious background. Parenting groups organized by churches were seen by many parents as safe environments to form communities with other parents. In fact, some parents indicated that they would like to see their partners join parenting groups at their churches even though if the partner was not a members of the church or did not hold the same theological beliefs. Responses to such posts were divisive. While some were supportive and offered their own positive experiences, others had reservations. For example, some respondents noted that a church might not be the best place to find community if the parents were not believers in the tenets of the religion.

The focus of throwaway conversations was on the cultural side of religious affiliation, which might explain why the "religion" LIWC category was negatively related to throwaway accounts (see Table 5.1). Sharma et al. [256, p. 7] found that the LIWC religion lexical category was a predictor for pro-choice activists online, with the top words including "Jesus, religion, bible, God and faith." Most of the discussions in both of these topics were related to cultural discussions as opposed to those related to the religious terms identified in [256]. Even when the discussion referenced church groups, the focus was on the social groups and how they related to users' upbringing, as opposed to discussions of theology and doctrine.

5.5.2.9 Divorce: effects on relationships with children and partners

Throwaway accounts discussed serious challenges to the relationship between parents, which in some cases might lead to family court. When fathers described the deteriorating relationship between themselves and their partners, a number of responses from other fathers suggested that they contact a lawyer as soon as possible in order to protect their paternal role in court as fathers.

Throwaway comments about divorce and custody can be sub-categorized into (1) instrumental posts asking specific legal questions, and (2) venting posts venting about the challenges. Parents discussed their own experiences in family court. Parents also discussed their interactions with their ex-partners and their families in supervised visitations and similar settings.

Throwaway discussions also focused on how parents could mitigate the effects of the separation process on children. A number of unmarried parents asked about custody issues for unmarried partners and what kinds of responsibilities/rights they would have in relation to their child.

5.5.2.10 Thanks, mate!

The term "thanks" was more likely to appear in throwaway conversations in a number of the significant LDA topics. Thanks was the top throwaway term (highest LLR value) under the *abuse and therapy*, *parenting challenges*, and *speech and social development* topics. It was the second most likely term to appear in comments by throwaway accounts for the *financial problems* topic (see Table 5.5), and it was in the top ten terms for three other topics. Throwaways thanked other parents for their contributions in three main ways:

1. They thanked others for providing different perspectives ("from the other side"). For example, a father who wanted to understand his wife's PPD experience would thank other mothers on the subreddit who gave him insight.

2. They also thanked others on the subreddit for being supportive. For example, Reddit users responding to throwaways who disclosed a stressful parenting experience would tell them that things get better with time, or that they also felt exhausted as parents of children with special needs. Throwaways said that supportive responses made them feel less lonely and that these responses were "exactly what they needed to hear."

3. Finally, they thanked other parents for providing specific and practical suggestions from their experiences. For example, responses to throwaways shared ways to access

social services and resources for families with low incomes, as well as resources for families of children with special needs or therapy/counseling resources for both parents and children. Respondents also gave suggestions to fathers facing custody battles or mothers facing domestic abuse.

5.5.2.11   Why I'm using a throwaway

Throwaway was the top term (highest LLR) for throwaway conversations discussing *religious and social beliefs*. It was the fifth most likely term for throwaway accounts discussing *abuse and therapy* (see Table 5.5) and generally more likely to appear in throwaway conversations for mutiple LDA topics.

When explaining their use of throwaway accounts, parents gave three main reasons:

1. Some users explained that they used a throwaway account because they were ashamed to discuss some experiences in their pasts, especially if they talked about incidents of sexual assault/domestic abuse and its repercussions on themselves and their families.

2. Others were afraid of friends and family who might know their Reddit screen ID (pseudonym).

3. Yet others wanted to ask questions that might be "risky" to ask with their main account. One parent explained that his decision to use a throwaway account was vindicated by the fact that he had received a number of threatening messages from other users on the subreddit while using a throwaway. He wondered how much worse it would have been for those users to have known his main Reddit ID since there might be more identifying information connected to that account.

Some users recommended that new users to the subreddit or to discussions around sensitive topics use throwaway accounts until they were ready to *"graduate to"* pseudonymous accounts after becoming more acquainted with the norms of the subreddit and/or the boundaries of debate about the topic. Through their use of a throwaway account, they argued, such users would get answers to their most burning questions about the sensitive topic and adapt to the norms of subreddit/topic discussion. Parents could also *graduate to* throwaways should they decide to share particularly stigmatizing details about different parenting topics.

In some cases, using throwaways caused others to question the credibility of the user since they might be trolling others on the subreddit. For example, throwaway users who asked for financial assistance (e.g., for medical costs to save a child) were considered trolls

or scammers. A number of moderators explained that they would delete any posts/comments from throwaways if they recognized that they were indeed trolls. However, they were also cognizant of the difficulties that throwaways might be facing. As one mod pointed out, discussing sensitive topics is a good reason for the use of throwaway accounts. Therefore, moderators suggested that they tended to give throwaways a wide berth before they considered deleting throwaway posts.

5.6   Study 3: Responses to throwaway comments

Pavalanathan and De Choudhury [206] studied the use of throwaway accounts on mental health related subreddits. They found that while throwaway users received fewer responses than the control group, they received longer responses and they received their first response sooner than other users on mental health subreddits. They also received responses at a higher rate than the control group. The authors argued that these differences might reflect that the "Reddit audience tends to sympathize more with the throwaway [mental health] posters, and provide more helpful and contributory feedback and opinions because of their honest confessions." Given that throwaway comments in contexts like mental health and sexual harassment [15, 206] receive more responses that are also longer, I ask:

> **RQ6: How do the responses to throwaway comments differ from responses to other comments in the parenting context?**

5.6.1   Methods

When studying causal effects, randomized trial experiments are the gold standard. Experiment designers can randomly assign users to user groups representing a particular treatment (e.g., a new medication) and to a control group (e.g., placebo) [236]. However, in observational studies, researchers do not have the choice of setting control and treatment groups. In this section, I draw on methods from causal analysis to calculate the effect of the treatment (using a throwaway account) on the outcome (change in number of posts, score, etc.) while controlling for the effects of LDA topics and LIWC categories to reduce bias based on the confounding variables (determined in Study 1).

The propensity score shows the "probability of treatment assignment conditional on observed baseline characteristics" [22]. Using the propensity score, I analyzed observational, non-randomized data in much the same way as I would a randomized controlled trial. Specifically, the propensity score acts as a balancing score since "the distribution of observed baseline covariates will be similar between treated and untreated subjects" [22].
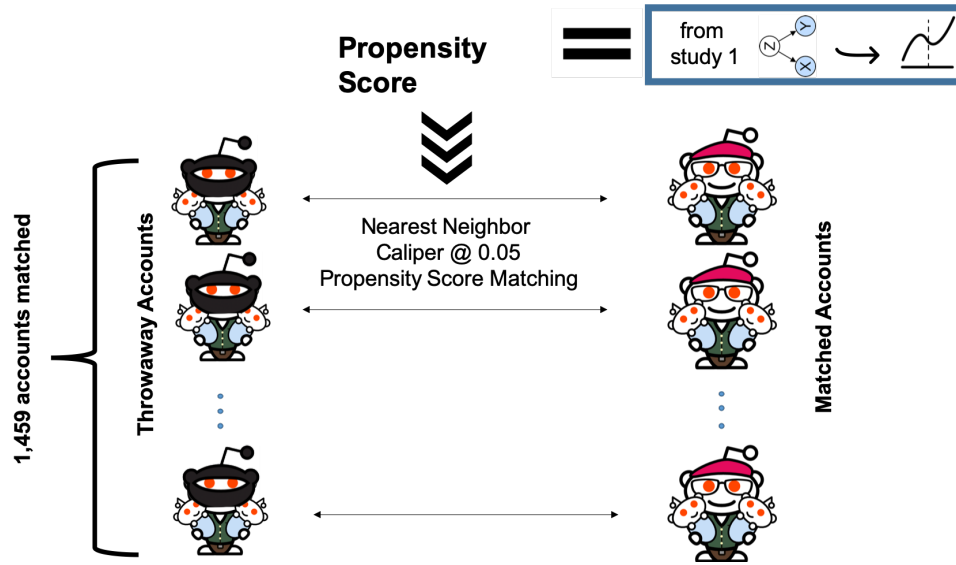
Figure 5.4: In order to analyze the causal effects of using throwaway accounts on the quality of the replies, as compared to pseudonymous accounts, I used propensity score matching. The propensity score acts as a balancing score holding constant the baseline covariates between the throwaway (treatment) and pseudonymous (control) groups.

In this case, I consider **treated subjects to be throwaway accounts** and **untreated subjects to be pseudonymous accounts**.

In Propensity Score Matching (PSM), the goal is to match throwaway accounts and pseudonymous accounts based on features capturing the mechanisms that predict that the user is in the treatment class, namely a throwaway user.

I used logistic regression on the covariates to calculate propensity scores for the PSM. I then matched the throwaway and pseudonymous groups using 1:1 nearest neighbor matching (matching 1,459 accounts). I used a nearest neighbor (KNN) algorithm with a caliper of 0.05, matching on the logit of the propensity score using calipers of width equal to 0.05 of the standard deviation of the logit of the propensity score. Figure 5.4 summarizes this process.

Table 5.6 shows the standardized difference for each of the covariances before and after PSM matching. I employed the standardized difference here since, unlike significance testing, it is not confounded by sample size [87] and thus can be used to compare different matched samples containing different pair counts [22]. Austin [21] defines the standardized difference, d, as

$$d = (\overline{x_{treat}} - \overline{x_{cont}})/\sqrt{(s_{treat}^2 + s_{cont}^2)/2} \qquad (5.3)$$

Covariate	*	**
Tenure	0.089	0.003
Gender & parenting expectations	0.001	0.001
Abuse & therapy	0.001	0.001
Parenting hardship	0.000	0.001
Work-parenting demands	0.000	0.001
Parenting nature	0.000	0.000
Financial planning	0.000	0.003
Family health	0.000	0.002
Speech & social development	0.000	0.003
Adjective	0.026	0.021
Growing pains	0.000	0.002
Religious & social beliefs	0.001	0.003
Numbers	0.005	0.007
Body image & privacy	0.000	0.001
Pregnancy challenges, loss, & grief	0.001	0.006
Verbs	0.122	0.042
Parenting groups	0.000	0.002
Circumcision	0.000	0.002

Table 5.6: Summary statistics showing the standardized difference values for each of the covariates before and after matching. * Standard Difference Before Matching. ** Standard Difference After Matching

After matching throwaway and pseudonymous accounts, I compared average values from responses to throwaway comments with responses to the matched comments in parenting subreddits. I compared average values of (1) chance of receiving a response, (2) number of responses, (3) comment length (by word), (4) karma score, (5) two LIWC lexical categories that are psychologically correlated with social support, (6) one LIWC category measuring affect, and (7) one LIWC category measuring cognitive process. I applied Bonferroni corrections to the multiple hypotheses tested in section 5.6.2.

5.6.2 Results: How do responses to throwaway comments differ from other responses on parenting subreddits?

I found 917 responses to the control accounts by 679 unique responders and 3,993 responses to throwaway accounts by 2,249 unique responders. Below, I present the results of t-tests to investigate the difference between average values in responses to throwaway groups and responses to their matched pseudonymous comments.

I represented the chance for a response by a boolean variable *get_response* that would have a value of 1 if the comment got a response and a value of 0 otherwise. The difference in average value for receiving a response between a throwaway comment and a matched comment is 0.18 ($p = 0.0$). Throwaway accounts also received 3.1 ($p = 0.0$) more responses per comment.

I found that responses to throwaway accounts on average had a score 2.11 points ($p = 1.53e^{-4}$) higher than matched responses. Additionally, throwaway responses were, on average, 12.90 words longer ($p = 1.233e^{-2}$) than their matched comment lengths. In summary, responses to throwaway accounts were longer than baseline responses, and they received higher Karma scores than the baseline comments. The difference in average time before the first response for throwaway and pseudonymous comments was not significant.

I also measured LIWC categories with psychological correlates to social support, specifically the *third person singular* category and the *social process category* [268]. Examples of the LIWC third person singular category are $\{she, her, him\}$, and the social processes LIWC category includes $\{mate, talk, they\}$ [209]. I found that responses to throwaway accounts on average, have a higher value for the *third person singular* category than the matched comments (difference of 0.84 with $p = 3.62e^{-2}$). I also found that responses to throwaway accounts, on average, have a higher value for the *social processes* category (difference of 3.07 with $p = 2.82e^{-6}$). In other words, responses to throwaway accounts had higher average values for language categories that have been shown to be psychologically correlated with social support [268, p.16].

I also found that responses to throwaway accounts show more affect (9.18 difference at $p = 0.0$), a LIWC category that includes the words $\{happy, cried, abandon\}$. The use of these terms is associated with "emotionality," which involves showing one's emotions to others [268].

Throwaway replies were also more engaged in cognitive processes at a difference of 2.4 ($p = 2.53e^{-2}$). The cognitive process LIWC category, which includes $\{cause, know, ought\}$, is related to successful interactions in online communities [19] and is associated with positive change in quality of life for users in health-support groups [203].

Throwaway accounts were more likely to receive responses from other users. Throwaway accounts also received more responses than control users. On average, those responses were longer, and had a higher Karma score. Additionally, these responses were more affective, expressed more emotionality, and offered more social support. These results are summarized in Table 5.6.2.

Variable	$\overline{R_T} - \overline{R_P}$	p-values
Chance of getting a reply	0.18	****
Average number of replies to comment	3.10	****
Average reply Karma score	2.11	****
LIWC social processes category	3.07	****
LIWC affect category	9.18	****
Average response comment length	12.9	**
LIWC third person category	0.84	**
LIWC cognitive processes	2.4	**

Table 5.7: This table presents the comparison of average variables between responses to throwaway comments ($\overline{R_T}$) and pseudonymous ($\overline{R_P}$) comments. Only significant values are presented in this table. **** p<0.0001; *** p<0.001; ** p<0.01; * p<0.05.

5.7 Discussion

The results reported in this chapter demonstrate how parents use throwaway accounts in unique and important ways that are distinct from their use of pseudonymous accounts. First, I describe how throwaway accounts allow parents to discuss topics that might be too stigmatizing to discuss using their primary Reddit accounts. I then discuss how responses to throwaway comments provide parents with emotional and informational support that they might not find in other contexts. I argue that Reddit provides such advantages because it affords the flexibility of moving between throwaway and pseudonymous accounts, and because the use of throwaways is closely aligned with the norms of Reddit communities. Building on these findings, I propose a hybrid platform that supports toggling between identified and anonymous accounts to enable better discussion of stigmatized topics.

5.7.1 Throwaway discussions of stigmatizing parenting topics

While parenting may not be inherently socially stigmatized, hegemonic discourses around parenthood, emphasizing "intensive" parenting raise the expectations for what constitutes normatively acceptable parenting [258, 121, 234]. Parents feel pressured as they grapple with life issues that may not align with the hegemonic normative view of parenting. This dissonance often leads to unreasonable expectations and extensive judgment when parents appear to "fail." Results from Study 1 show an association between posting to throwaway accounts and parenting topics that span growing pains, financial problems, work-parenting demands, and abuse.

Next, I reference five qualitative themes from Study 2 to show how parents discussed issues that earlier literature characterizes as stigmatizing: (1) divorce and custody, (2) transition to adolescence, (3) LGBT transitions (under the parenting and social beliefs theme), (4) postpartum depression, and (5) pregnancy complications, loss and grief.

Earlier work suggests that the stigma associated with divorce is primarily related to custody battles between parents [98]. In Study 2 (see 5.5.2.9), I found that most of the discussions around divorce and custody relate to managing one's relationship with an ex-partner and asking questions about other's experiences with respect to custody. Throwaway accounts provide a space for parents to vent and ask about other parents' experiences. For example, some parents discussed strategies to stay connected to their children after divorce.

When discussing the transition to adolescence (see 5.5.2.5), throwaway comments discussed parents' experiences of the social changes associated with adolescence. Parents discussed sexual experimentation and the ways they might inform/manage their child's transition. Such topics can be stigmatizing when they relate to one's sense of self and religious/societal beliefs [62]. Throwaway conversations provided a window for parents to see different views of transitions to adolescence, especially ways of understanding sexual experimentation at that age.

Similarly, issues related to LGBT adolescents coming out to their parents [83] have been found to be stigmatizing both for children and their parents, which can cause parents to reject their children [221]. The discussions I identified in Study 2 (see 5.5.2.8) provide a broader range of perspectives on coming out to family and managing relationships with extended family members who might reject the child. While parents might have general discussions about religious and social beliefs using pseudonymous accounts (see Section 4.5.8), they might use a throwaway account when talking about particular problems relating to their child's sexual orientation.

Pregnancy complications and associated struggles was also a theme in Study 2 (see section 5.5.2.6). Throwaway accounts discussed abortion and ways that it is still stigmatized

[116]. They also highlighted their experiences with abortion after a prenatal diagnosis of special needs, which might provoke different responses than those associated with other reasons for abortion [186]. Throwaways also discussed pregnancy loss and challenges associated with infertility. Such experiences are considered stigmatizing for both mothers [194, 105] and fathers [158] as they make sense of their identities after the loss of a child or engaging in IVF experiences.

Postpartum depression (PPD) is socially stigmatised both as a parenting issue and a mental health issue [214]. In 5.5.2.3, I described how parents used throwaway accounts to ask others about their experiences with PPD in order to better understand their own experience or that of their partner. These discussions may be an important outlet for mothers, who experience PPD at relatively high rates, and for fathers, who may receive less support for their PPD [205].

Tom, presented in the scenario in Figure 2.2 felt disconnected from his child in the first few months of her life. He found it difficult to discuss this issue with his wife. He could use a throwaway account to ask other parents about their experiences with regret after the birth of a child. Other parents on Reddit could respond by talking about PPD and other challenges they faced after the birth of a child. Once Tom finds that he is not the only parent — specifically not the only father — to deal with feelings of anxiety, regret, or PPD, he can graduate to a pseudonymous account where he can share more details about his experience. Other parents might share medical resources and father support groups. Knowing more about these resources for fathers allows them to engage in the interactional component of Zimmerman's empowerment model [287] (see Section 2.1.4), in which people can find and access resources that can help them with their transition.

Tom's wife, also a Reddit user, could use a throwaway account to ask other mothers if their partners had experienced PPD or similar conditions, and how they went about helping their partners access support and therapy should the need arise. Using the throwaway account allows Tom's wife to ask about this personal issue while disaggregating these posts from her Reddit pseudonymous account which her husband knows.

5.7.2 Stigmatized narratives and supportive responses

Results from Study 1 and Study 2 demonstrate that parents use throwaway accounts — which provide greater anonymity — to discuss potentially stigmatizing issues relating to divorce and custody, raising neuroatypical children, adolescent transitions, domestic abuse, and financial challenges. Using anonymous throwaway accounts, parents may feel less constrained in their ability to openly disclose psychological or other kinds of challenges that

they and/or their children are experiencing. This result echoes findings from Andalibi et al. [15], who noted that more support-seeking behavior was detected for users of throwaway accounts in different contexts including discussions of sexual identity [163, 229], sexual abuse [15], domestic abuse [248], or mental health [61, 53, 206].

When people share intimate personal experiences, responses to these disclosures tend to be equally intimate [206, 140, 55]. Jourard refers to this phenomenon as the "reciprocity effect" [140, 74]. This "mutual disclosure is often defined as an index of positive mental health...and an influential factor in the development of relationships" [212, p.51]. The results of Study 2 show how responses to throwaway comments contain "equally intimate" [55] personal experiences. Replies to throwaway comments were supportive, sharing users' personal experiences, wishing the throwaway users good luck, and inviting users to consider therapy and other forms of support. These results echo findings about other online support groups in which responses "show similarity, empathy, and understanding" of the original disclosure [178]. My results show how throwaway posters thanked those who responded to them both for their emotional support (e.g., "this is exactly what I needed to hear") and for their informational support (e.g.,"thanks for all the suggestions"). Throwaway posters felt that responses to their comments were supportive because they demonstrated that they were "not alone." Additionally, in Study 3, I found that, on average, throwaway responses have higher values of lexical categories psychologically correlated with social support [268].

Study 3 showed that responses to throwaway accounts are longer on average than responses to non-throwaway accounts. These findings echo those of Pavalanathan and De Choudhury who found that throwaway comments received responses that were longer on average [206] and findings from Pan et al. who found that more intimate disclosures elicited "higher levels of reciprocal self-disclosure in response message[s] [204]." Using LIWC categories, I also found that responses show more social support, affect and emotion than responses to pseudonymous accounts. In Study 3, I found that replies to throwaway comments had higher Karma scores on average than matched responses, indicating that these responses are endorsed and appreciated [137] in parenting subreddits.

5.7.3 Supporting disclosures with throwaway accounts

Prior work suggests that when observing a stigmatizing disclosure on social media, users may be unwilling to disclose their personal experiences in support of the original disclosure because of their own privacy concerns [14]. However, people may share stigmatizing experiences such as miscarriages on real-name, or identified, social networking sites (e.g.,

Facebook) after sharing them on pseudonymous social media sites such as Reddit [13]. In subsection 5.5.2.11, I showed that Reddit users "graduate" or move between their throwaway and main accounts depending on their experience posting on a particular subreddit or discussing a particularly stigmatizing issue. Allowing users on identified social media sites to move seamlessly between real-name and throwaway accounts could provide users with an opportunity to engage in disclosure of stigmatizing topics while providing an environment to receive supportive messages with equally intimate levels of disclosure from other users. I propose two design ideas for supporting sensitive disclosures on sites beyond Reddit, such as Facebook, Instagram, or BabyCenter. The proposed ideas are based on our results in tandem with best practices for online communities [246, 38].

Design proposal 1: Adopting throwaway accounts in real-name social media sites
First, I argue that the use of temporary accounts can be productively adopted by real-name and other pseudonymous sites. The current design of identified social media sites and real-name norms on these sites inhibit users from sharing potentially stigmatizing issues; however, boyd argues that privacy is about users having agency to reveal "appropriate information in a given context" [38]. The use of hybrid accounts could be particularly useful in closed or secret Facebook groups, where group norms currently often require that members message moderators a question that the moderators then post as "anonymous." This hybrid design proposal would encourage identified social media sites to incorporate throwaway account options into their designs. For example, a site like Facebook or Instagram might add a specific tag that signals the use of a throwaway account rather than relying on users to directly state, "This is a throwaway account." These platforms could also make it easier for users to navigate between their real-name/pseudonym identity and their throwaway account(s) for ongoing use.

Design proposal 2: Using community moderators to manage and assign throwaways
Sites with communities and groups (e.g., Facebook Groups, BabyCenter groups) could rely on moderators to enable one or more "throwaway" identities for each user. For example, on Reddit, a private subreddit currently mandates that new members fill out an "application"[4] to join the subreddit, which asks for "a link to a post you've made on reddit indicating you have children" and a picture of the username next to items only new fathers would have (e.g., a stroller or diapers). On Reddit, as well as in other communities, evidence of membership could be verified and, if accepted by the group moderators, the user could be

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[4]https://www.reddit.com/r/BrDaPublic/comments/48i4t1/how_to_join_ rbreakingdad_an_idiots_guide/

provided with a throwaway token for a set period of time. This could be a one-click option for group moderators so the additional burden on them is minimal, while allowing group members to seek support for particularly stigmatizing experiences within their own communities — these practices are already informally used in Facebook Groups, as described above, but they are not yet supported by Facebook's design.

Newcomers could use throwaway accounts to learn about and gauge the norms of the community. In subsection 5.5.2.11, I described how Reddit users could use a throwaway to make sense of the boundaries around appropriateness of topics. For example, on a group for parents of children with special needs, a parent might use their real-name account to ask questions about resources for their child in their local geographical area, but if they wanted to discuss an experimental medical operation, a topic that has been found to be sensitive for parents of children with special needs [12], they could gauge how the community would respond via a throwaway. This design would need to navigate the challenges of allowing parents to ask sensitive questions without overburdening the group with topics that might be negative or harmful (e.g., allowing questions about anti-vaccination principles via throwaways might negatively impact a parenting community). In this case, the proposal above might be extended to allow administrators to govern users' throwaway accounts (as is currently done when users message a question to a moderator in secret groups to post anonymously) so that they could permit sensitive but appropriate topics, while removing inappropriate topics. An important question to address is how much power moderators should have, which while beyond the scope of this work, is an important issue to address.

5.8 Limitations and future work

Gaffney and Matias [89] discussed the limitations of the Baumgartner dataset and noted that, while some of the comments were missing from the dataset, they found little risk associated with building machine learning models conducting linguistic analysis of the dataset. They examine work by Saleem et al. [240] which trained machine learning models using the comments of subreddits that were subsequently quarantined. Their re-analysis of the data did not find any substantial differences from their original findings. While there are limitations of the Baumgartner dataset, I believe the results of our analysis using the dataset are robust.

The method I used in this chapter only accounts for those users who self-identify as throwaway accounts. That means that I may have excluded those Reddit users who used throwaway accounts that were not defined as such. I could gain more insight into the decision to use a throwaway account by interviewing parents who use Reddit and asking

about their decision process when creating a temporary account.

The findings in this chapter relate to affordances and platform politics specific to Reddit. Future work could analyze the use of other parenting social media sites to provide a more complete view of context collapse, anonymity, and discussion of stigmatizing topics across different social media sites.

Future work could also focus on studying how different social media affordances affect the way parents use different sites. For example, Twitter provides a broadcasting affordance [76] which parents can use to advocate for social and policy change. Studying parents' use of Twitter can provide a contrast to analyzing how parents use varying levels of anonymity online.

CHAPTER 6

Online Communities as Moderators in Social Role Transition

In Chapter 2, I introduced the role transition model [3]. The model identifies social role transition as a move from one set of expected behaviors to another. Social role transition can come about when an "individual moves across positions for a long period." [3] Allen and Vliert cite pregnancy, divorce, early childhood, job-change, and entering school as some examples of moving across social positions for a long period. Another kind of social transition occurs when an individual has the same social position (e.g., parent), while the expected behaviors associated with it change. Parents have to make sense of, and react to, changes to societal expectations. For example, the normative view of fatherhood is in flux [153, 97], and fathers have to make sense of the new expectations (a more detailed discussion of this can be found in Section 2.1.3.1). Other examples include having to cope with transitions associated with divorce, or having a child diagnosed with special needs.

In all of these social transitions, parents might face a perceived loss of control, which in turn can lead to social role strain as they grapple with their new social position or changing norms [3]. The social role transition model contains a moderating component that can aid in the transition process. In Allen and Vliert [3], the moderators are classified as (1) individual moderators, and (2) environmental moderators. Below, I discuss the ways in which online communities contribute to both moderators.

6.1 Individual moderators online

New parents might find that they have to learn a number of new skills. They might have to learn how to change diapers, feed the child, or put the child to sleep. If parents feel that they cannot do these tasks well, this might affect their self-efficacy – one's belief in his or her capacity to complete a task [23]. Learning how to better take care of one's child increases the parent's sense of parental self efficacy (e.g., [161]).

One of the ways parents gain more self-efficacy is by asking other parents for their advice [1, 161]. In Chapter 3, I show that fathers learned and shared basic skills like preparing food for their children while legitimizing such traditionally feminine tasks by framing them as DIY projects (e.g., hacks for picky eaters).

Some parenting issues like sleep training and breastfeeding can be sensitive to discuss, especially with family members or friends who might have strong feelings about these issues [7, 129, 1]. While these and other topics like vaccinations might be too sensitive to discuss, making sense of them would contribute to parents' self-efficacy [161]. In Chapter 4, I find that parents on pseudonymous social media sites like Reddit discuss sensitive topics like sleep training, vaccinations, and breastfeeding.

6.1.1 Measuring parental self-efficacy

While having access to content that shows how to prepare meals for children, change diapers, or fulfill other parenting tasks could potentially contribute to parents' self-efficacy, this study does not measure how access to such information online affects parents' self-efficacy. Future work can focus on measuring the effects of access to such information online affects parenting self-efficacy. Those studies can survey parents or conduct field experiments to identify how access to parenting information online affects parenting self efficacy.

6.2   Environmental moderators online

Environmental moderators rely on one's capacity to access supportive social networks. Dense overlapping social networks (e.g., one's family) can provide one with support as one experiences social role transition. However, such dense social networks also constrain one's role transition according to the norms held by the members of network [110]. Access to different social networks allows people to "shop for" the support they need from a "variegated repertoire of [social] ties" as they transition to their new roles [282]. A more detailed discussion of social network composition and how it affects access to social support is presented in Section 2.1.4.

In Chapter 3, I find that fathers, challenged by the lack of online spaces catering to them, created their own father-centric online communities. This allows fathers to access new social support networks that are more suited to their needs. Similarly, in Chapter 4, I find that fathers showed solidarity in the father-centric subreddit. r/Daddit provides a space for fathers to discuss divorce, custody, and other issues important to them.

Chapter 4 shows how users of the mother-centric r/Mommit forum found new parenting communities that provide them with spaces to discuss topics like breastfeeding which might be too polarized on BabyCenter, cafémom, and other mother-centric parenting communities. Not wanting to alienate their Facebook friends either, mothers may opt to discuss breastfeeding challenges and other sensitive parenting issues on r/Mommit instead.

In Chapter 5, I find that parents move between different levels of anonymity by alternating between their pseudonymous accounts and the more anonymous throwaway accounts on Reddit. Using throwaway accounts, parents can probe the limits of acceptable debate around a particular area of discussion (e.g., miscarriage). By doing so, they can gauge if the topic can be discussed on an online forum, and they can frame their discussions in accordance with the acceptable norms in the online community. The results suggest that responses to throwaway accounts on Reddit tend to be supportive, which in turn opens up new social networks that parents might not have access to if they did not use throwaway accounts.

By creating their new father-centric online communities, using multiple social media sites, and moving between different levels of anonymity for parenting discussions, both mothers and fathers have access to a more variegated repertoire of social ties from which they can shop for support in the way that reflects their needs.

CHAPTER 7

Conclusion

People go through social role changes throughout their lives. Social roles are defined by societal norms. This dissertation focused on the transition to parenthood. This is an important social role transition that is central to people's self concept. Social roles defining fatherhood and motherhood shifted over the past four decades. This shift is associated with changes in the labor market: while in the 1960's, fathers were the single breadwinners in most families, dual-earner families are the majority today. Social media provides a space for gender role negotiation and enactment. In this dissertation, I focused on the way parents use social media to make sense of their transition to parenthood, and advocate for change when they face challenges.

In Chapter 3, I find that fathers use do-it-yourself projects to craft a masculine fatherhood identity. Since DIY projects are traditionally viewed as masculine activities, fathers find that they can engage in traditionally feminine caretaking tasks while maintaining their masculinity. Through blogging about their DIY projects at home, fathers are building a new fatherhood identity – the DIY dad. In addition to DIY home projects, fathers built father-enteric parenting online communities (e.g., LifeofDad.com) since they found that most parenting online communities cater to mothers.

Given the lack of father-centric online communities, I focused my analysis in Chapter 4 on Reddit, a predominantly masculine social media site. I find that the father-centric Reddit forum, r/Daddit, provides a supportive and welcoming community for fathers to make sense of their parenting role. r/Daddit also provides a space for fathers to engage in lighthearted conversations about sports, movies, and dad jokes. Discussions on the mother-centric board (r/Mommit) are more inline with the traditional responsibilities of caretaking such as breastfeeding, introducing solid food to a child's diet, and vaccinations.

Discussions about vaccinations can be sensitive for parents. Reddit is a pseudonymous social media site, which provides users with a level of anonymity since they use pseudonyms instead of their real names. I find that parents discuss sensitive parenting top-

ics including breastfeeding, sleep training, divorce, and custody. Such topics are usually not shared on other social networking sites like Facebook.

Reddit also provides users with a higher level of anonymity when using throwaway accounts. Throwaway accounts are anonymous and distinct from the pseudonymous accounts that users may have on the site. In Chapter 5, I find that topics such as abuse, pregnancy challenges, loss, miscarriages, abortion, and LGBT youth are all predictors of posting to Reddit as a throwaway user. When posting using a throwaway account, parents are more likely to receive a response, and they receive more responses, which are longer on average and provide more social support.

The findings in this dissertation suggest that parents' interaction on online communities can be moderators in their social role transitions by allowing parents to access more information about their roles, and to find social support from different social networks at different levels of anonymity.

APPENDIX A

Aggregate LDA topic list

Table A.1: List of all LDA topics and associated KTG in the aggregated LDA model for r/Parenting, r/Mommit, and r/Daddit

Topic #	Topic Name	KTG
1	Picky eaters	make, meal, try, dinner, parents, snack, healthy, lunch, home, plate, differ, play
2	Sleep training	sleep, baby, train, cry, nap, room, bedtime, read
3	Nursing	baby, formula, feed, breastfeed, pump, nurse, month, supplement, latch, pediatrician
4	Dad community	kid, need, help, parent, child, son, school, first, home, friend, care, wife, children, issue, wife
5	Parenting jokes	kid, school, play, baby, feel, joke
6	Smoke/Drugs/Alcohol	smoke, cigarette, drink, stop, change
7	College	college, parent, daughter, care, help
8	Grandparents	grandma, children, friend, son, husband

9	Body image and privacy	shower, year, kid, naked, bathroom, stop, look, weird, brother, sexual, private, room, front, cover, comfort, penis
10	Allergy/Sickness	sick, infect, allergy, fever, mouth, cough, nose, care
11	Preparing food	food, eat, start, cook, veggies, meat, egg, water, snack, banana, cereal, potato
12	Parenting groups	school, scout, group, religious, language, catholic, teach, feel
13	Father role	work, home, parent, help, baby, wife, life, children, sleep, husband, sleep, differ, reason, watch
14	Toys/Playing	toys, kid, play, thing, old, share, stuff, older, lego
15	Diapers	buy, diaper, cloth, year, use, need, brand, disposable
16	Parents of multiples	year, baby, old, two, apart, older, parent, sibling, play, need, sister, friend, work, oldest, big, enough, family, toddler, born, twin, pregnant, hard, wait
17	Activities	house, play, park, fun, love, feel, try, child, children, friend
18	Baby gear	diaper, wear, size, blanket, buy, stuff, feed, hold
19	Psychological stress	feel, friend, find, issue, hard, bad, behavior
20	Parent gear	month, stroller, walk, carrier, parent, family, carrier, toddler

21	Growing pains	kid, parent, go, school, ask, help, play, stranger, alone, situation, learn, girl, public, boy, leave, stop, adult, talk
22	Circumcision	circumcise, insurance, foreskin, penis, doctor, medicine, hospital, healthy, care, retract, intact, decision
23	Hair care	hair, lice, oil, comb try, shampoo, condition, dry, skin, eczema, treatment
24	Vaccines	vaccine, risk, immune, disease, studies, flu, autism, article, protect, sick, infect, pox
25	Adolescence	pierce, time, ear, daughter, old, porn, tattoo, adult, body
26	Baby proof	walk, around, face, hold, crawl, toddler, sit, gate, floor, climb, hurt
27	Swimming	swim, pool, parent, daughter, water, school, old, class, lesson, learn
28	Moderator	post, like, parent, kid, remove, dad, message, submission
29	School	school, kid, teacher, year, class, parent, grade, play, help, home, daycare, kindergarten, preschool, activity, program
30	Gender and parenting expectations	dad, mom, parent, father, family, children, husband, care, guy, change
31	Birth	birth, hospital, doctor, first, pain, labor, c-section, nurse, pregnancy, blood, experience, epidural, delivery, natural

32	Joke	parent, school, feel, never, age, learn, issue
33	Dogs	dog, shoe, get, tooth, sock, teeth, play, puppy, house
34	Family health	medicine, weight, food, diet, doctor, anxiety, sugar, juice, fat, calorie, eat, drink, doctor, healthy, change, pain, exercise
35	Financial planning	work, job, pay, home, money, make, school, need, care, family, cost, daycare, plan
36	Naming	name, like, love, kid, girl, one, call, cute, middle, last
37	Children socializing	kid, parent, like, time, get, friend, play, invite, park, older, adult, find, place, children
38	Holidays	Santa, lie, Christmas, believe, parent, tell, magic, present, still, story, gift, tradition, holiday
39	Work-parenting demands	work, time, day, home, husband, daycare, friend, daughter, house, care, wife, play, plan
40	Religious and social beliefs	people, child, teach, social, discuss, culture, religion
41	Abuse and therapy	help, feel, family, abuse, relationship, understand, mother, bad, mother care, therapy, support,
42	Bath-time and sleep routine	bath, year, sleep, eat, tub, play, shower, family, toddler, book, water, mom, older, sister, food, room, night, tell

43	Media	game, watch, video, phone, YouTube, book, tablet
44	Discipline	behavior, parent, good, punish, attention, reward, calm, stop, tantrum, emotion, position, frustration
45	Puppy	dog, month, baby, old, sleep, family, home, clean
46	Parenting hardships	help, day, hard, life, husband, depress, cry, support, stress, normal, mother, family
47	Potty training	potty, train, time, poop, diaper, use, pee, old, accident, language, sit, bathroom, pull, give, clean, sign
48	Language and reading development	book, read, story, learn, letter, library, fun, picture, play, talk, teach, interest
49	Music	music, instrument, piano, guitar, play, try, learn, band, drum, parent, feel, practice, suzuki
50	Educational philosophy	school, homework, time, learn, grade, problem, ADHD, math, teach, study, hard, able, expectation, student
51	Congrats	wife, day, week, baby, feel, daughter, year, home, dad, care, hope, fun, change
52	Speech and social development	hit, children, behavior, teach, right, speech, stop, sound, spank, language, sign, play, learn, need, help, develop

53	Pregnancy challenges, loss, and griend	pregnancy, feel, year, wife, daughter, surgery, miscarriage, support
54	Child accidents	room, door, sleep, cry, scream
55	Travel	car, seat, stroller, face, trip, carseat, buy, infant, strap, bike, vehicle, space, change, bring, road, plane, safety
56	Bully	kid, school, bully, teacher, situation, play, mean, help, right, talk, adult, social, problem, call
57	Support and thanks	like, help, time, really, year, son, dad, ask, love, support, mean, person, school, cry, stop, issue
58	Parenting nature	parent, children, family, life, daughter, wife, sibling, mom, relationship, husband, care, love, child, happy, enjoy, old, feel, first
59	Skin care and laundry	skin, cloth, water, wash, daughter, laundry, bag, wear, diaper, hand, shower, dry, buy
60	Law, safety, and custody	child, parent, car, seat, post, kid, state, take, call, year, law, CPS, legal, report, safety, face, case
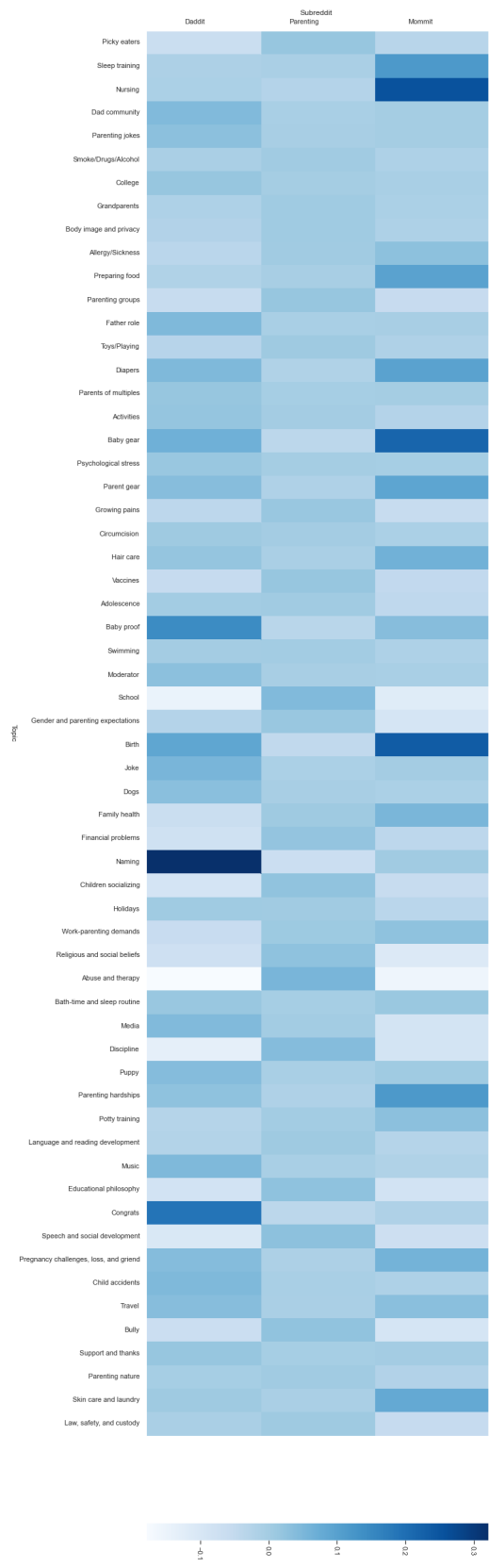
Figure A.1: Heatmap for all LDA topics in aggregated LDA model

APPENDIX B

r/Daddit LDA topic list

Table B.1: List of all LDA topics and associated KTG in the r/Daddit LDA model

Topic #	Topic Name	KTG
1	Food prep	eat, food, like, make, cook, get, meal, kid, thing, cheese, try, dinner, one, good, egg, want, fruit, chicken, give, veggie
2	Cameras and picture archiving	picture, photo, look, phone, pic, video, camera, like, great, old, one, year,take, month, little, nice ,love, Christmas
3	Car seat	car, seat, belt, safety, rear, car-seat, install, strap, face, check, back, safe, drive, accident, front, seatbelt, forward, clip, buck
4	Brands	daddy, glass,brand, mommy, Huggies, say, pamper, mama, Costco, dada, unglass, Peppa, Gerber, onesie, sunscreen, Target, Kirkland
5	Sharing introduction picture	imgur, forest, img, introduction, rugrat, uniform, gif
6	Star Wars	star, wars, trek, Luke, Jedi, rebel, evil, solar

7	Song	song, sing, music, dance, listen, youtube, band, rock, album, Beatles, lyric, CD, tune, love, bob, lullaby, Zelda, playlist
8	Baby colic	baby, bottle, sleep, swaddle, use, one, help, work, month, blanket, like, feed, teeth, pacifier, crib, thin
9	Congrats	girl, boy, little, cute, congrats, look, like, daughter, dress, shirt, birthday, man, love, adore, beautiful, one, happy, wear
10	Sick	doctor, sick, kid, ear, infection, pediatrician, normal, onetime, medicine,test, pain, year, effect
11	Fixit-man	door, bike, walk, put, use, wall, climb, room, floor, house, around, like, ride, crawl, lock, could
12	Circumcision	circumcise, risk, reason, study, cut, medicine, research, decision, done, health, issue, son, benefit
13	Child smile	smile, grin, melt, goo, laugh
14	Diaper changing stations	diaper, change, cloth, use, table, bag, wipe, room, one, dispose, baby, men, bathroom, place, women, pad, wash, toilet
15	Transition to fatherhood	first, month, one, time, wife, baby, week, feed, day, good, best, born, little, know, pregnancy
16	Speech & language development	book, read, word, language, sign, talk, start, learn, say,speak, month, develop, son, age, really, speech, use, teach, story, like

17	Divorce and custody	lawyer, court, law, state, religious, legal, custody, church, Christian, faith, religion, attorney, file, CPS, police, atheist, believe, document, service
18	Health Crises and loss	hope, know, feel, sorry, family, pain, wife, man, strong, heart, help, loss, imagine, wish, time, son, little
19	Halloween	like, costume, love, kid, look, paw, old, little, say, son, word, blue, patrol, guitar, mask
20	Travel	trip, take, park, time, kid, travel, flight, around, like, bring, hour, old, walk, month, plane, summer
21	Financial plan	money, pay, cost, insurance, save, bill, taxes, expenses, paid, college, plan, account, fund, financial, budget, year, cover, per
22	Vaccine	vaccine, shot, flu, pertussis, immune, booster, anti, CDC, autism, outbreak, remake, schedule, disease, pox, cough, virus
23	NICU experiences	wife, hospital, birth, baby, week, nurse, born, c-section, labor, home, NICU, doctor, section, little, first, day,hour, good
24	Hardship in early days	baby, feel, help, thing, time, like, wife, need, take, make, better, month, much, first
25	Savings	get, buy, baby, stuff, need, use, wife, store, like, make, time, kid, take, good, much, shoe

26	Sleep training	sleep, night,hour, time, day, wake, nap, month, bed, week, work, PM, start, every, feed, old, routine
27	Child starting to move	face, like, laugh, look, eye, hand, old, little, daughter, month, son, one, head, mouth, finger, start, nose
28	Holidays	Santa, beard, fan, Easter, proclaim, engrave, holiday, bunny, Christmas
29	Nursing	milk, feed, formula, breast, breast-fed, pump, wife, bottle, baby, lactate, consult, mom, breastfeed, boob, nipple, feed, supplement, latch, enough
30	Name	name, like, middle, call, first son, wife, spell, one, pick, list, boy, daughter, girl, great, think, love, sound
31	Work-parenting demands	work, time, day, home, wife, week, take, month, job, stay, leave, hour, daycare, need, care, first, much
32	Swimming	pool, swim, water, dunk, lesson, invoke, underwater, float, class
33	Welcome to dad-dit	post, like, picture, Reddit, r/Daddit , dad, look, pic, see, thank, comment, subreddit, link, cute, downvote, share, good
34	Cleaning baby	poop, water, use, like, clean, time, bath, potty, day, diaper, wash, pee, start, make
35	Play	play, game, kid, time, like, toy, video, make, watch, fun, love, one

36	Father role	dad, father, mother, mom, men, child, sex, women, like, would, get, relationship, life, make, good, family, ex, want, right
37	Child shows (media)	watch, show, TV, movie, kid, episode, youtube, Disney, anime, Gabba, Netflix, Character, old, dinosaur, cartoon, pig, tiger
38	Baby growth - early years	month, lb, oz, weight, drink, size, alcohol, smoke, pound, big, week, old, weigh, baby, height, born, percentile, teeth
39	Parent gear	baby, use, carrier, wrap, carrier, stroller, wear, one, walk, like, hold, leg, around, get, back, sling, arm, hand, ergo, bjorn
40	Family car	car, seat, drive, kid, van, one, fit, vehicle, like, get, minivan, back, space, Honda, row, need, wife
41	Guns and gun safety for children	gun, shoot, firearm, weapon, rifle,BB, ammo, safety
42	Dentistry/Health	Premature Atrial Contraction (PAC), dentist, whoop, transplant, eczema, dental
43	Dad does hair care	hair, look, cut, brush, shave, head, like, daughter, braid, skin, hat, use,haircut, nail, little, bald, ponytail, clip

| 44 | Push/shower present | gift, ring, flower, necklace, mother, jewelry, mop, present, study, eyebrow, bracelet, wed, fur, footprint, leash, frame, awesomthank |

APPENDIX C

r/Mommit LDA topic list

Table C.1: List of all LDA topics and associated KTG in the r/Mommit LDA model

Topic #	Topic Name	KTG
1	Travel	seat, car, stroller, use, baby, bag, one, carseat, infant, face, strap, carry, check, rear, travel, fit, carrier, convert, back, easy, install, buy, lbs, much, really, old, safety, good
2	Constipation	constipation, prune, miralax, poop, lax, grunt, suppositori, poo, fiber, clump, get, juice, soften, stool, baby, iron, bowel, probiotic, mustard, chewable, work, fiber, time, help, make, mousse, diaper, glycerin, also, take, lot, colon
3	Hair care	use, wash, get, water, bath, soap, oil, smell, nose, cold, dry, brush, skin, work, ear, clean, like, spray, also, clear, make, wipe, little, baby, shampoo, time, help, eczema, bug, every, one, hair, try, put, kid, lotion, good, detergent

4	Cosleeping	sleep, bed, baby, month, night, get, crib, room, time, like, old, use, nurse, one, would, put, first, start, work, week, back, co-slept, try, still, wake, little, around, need, really, son, help, thing, good, think, asleep, swaddle
5	Hair/eye color	eye, blue, brown, color, dark, green, look, red, black, colour, blond, light, hair, like, white, grey, turn, darker, bright, hazel, son, pale, daughter, shade, one, gene, born, comic, gray, change, yellow, skin, genetics, baby, pink, get, figuring, little, husband, month
6	Nursing	pump, feed, supply, milk, baby, nurse, work, get, breast, day, bottle, time, help, try, formula, nipple, like, much, would, make, latch, month, oz, need, lactate, also, one, breastfeed, enough, first, go, good, use, supplement, eat, week, hour, every, produce, side
7	Social behavior - early age	like, kid, get, thing, one, time, say, think, want, go, know, old, would, baby, make, child, year, really, need, parent, son, people, ask, also, talk, way, daughter, little, try, good, even, tell, feel, let, see, take, use, said, play

8	Baby gear	teeth, carrier, baby, wrap, ergo, moby, use, sling, chew, little, ring, gum, also, get, love, work, tooth, month, pain, really, boba, bjorn, frozen, would, seem, son, front, carry, insert, much, teether, give, first, back
9	Food for nursing mother	milk, nurse, formula, breast, get, baby, drink, breastfeed, feed, day, like, one, much, time, good, also, month, week, try, think, give, pump, know, breastmilk, would, start, eat, thing, lot, dairy, really, make, go, supplement, could, need, take, want, enough, help
10	Baby clothes	use, one, baby, like, cloth, get, wear, buy, also, amp, love, would, really, go, got, good, thing, month, great, store, look, size, need, shirt, blanket, make, put, bought, little, find, stuff, nice, lot, much, still, fit, even, never, bra, want
11	Recovering from birth and losing pregnancy weight	weight, month, lb, body, still, back, babi, like, look, stretch, get, gain, exercise, mark, pound, start, belli, week, feel, lose, size, much, really, pregnancy, eat, year, normal, time, walk, think, old, lot, little, boob, day, calory, lost, skin, fat

12	Health concerns during and after pregnancy	doctor, test, help, get, depress, medic, take, like, go, feel, day, PPD, know, med, time, anxiety, really, would, month, week, first, also, thing, good, see, need, think, better, call, one, baby, check, symptom, even, normal, start, try, much, could
13	Birth	birth, pain, baby, labor, get, go, hospital, time, like, hour, contract, push, epidural, feel, really, want, first, would, one, think, thing, got, week, went, even, know, much, could, day, husband, natural, nurse, c-section, felt, start, second, back, help
14	Beautiful picture	picture, love, little, cute, look, baby, photo, beautiful, adorable, like, thank, smile, old, one, pic, month, daughter, girl, get, son, sweet, boy, imager, year, face, happy, got, first, see, much, great, oh, congrats, day, awesome, birthday, hope, post, make, lol
15	Birth injuries	like, get, one, year, month, look, baby, head, back, little, still, really, much, pain, son, first, go, time, got, make, think, feel, old, would, even, week, since, also, know, say, well, try, use, right, kid, could, see, never, around, said

16	Solid Food	month, solid, baby, start, cereal, food, rice, teeth, vomit, spit, pediatrician, reflux, swallow, like, first, old, feed, time, give, mouth, wait, also, stomach, get, tri, choke, dentist, son, week, eat, thing, gag, much, would, one, puke, digest, pure, day
17	Breastfeeding challenges	breastfeed, feed, formula, baby, breast, mom, nurse, mother, women, would, best, feel, like, people, make, bottle, support, get, want, need, one, know, fed, try, even, think, post, survey, child, latch, research, month, study, public, take, pump, time, really, breastfeed
18	Holidays	santa, costum, halloween, dress, utm, go, chang, pumpkin, fairi, one, year, tabl, like, old, want, clau, would, pretend, babi, get, put, vampir, kid, littl, think, real, also, pirat, lie, hat, use, make, amp, princess, month, magic, thing, day, spiderman, monther
19	Homebirth/Hospital	c-section, birth, section, hospital, circumcision, midwife, risk, doctor, medic, midwives, VBAC, vagina, emergency, OB, home-birth, would, labor, delivery, home, natural, gun, doula, center, procedural, complications, experience, option, deliver, baby, penis, rate, women, intact, foreskin, necessary, elect, one, plan, also, pain

20	Frustration & support	baby, get, need, like, go, feel, time, know, would, take, thing, child, think, help, make, care, one, mother, even, husband, want, right, really, people, mom, much, leave, way, could, day, say, happen, work,, parent, see, better, first
21	Best age	kid, year, want, get, time, one, old, babi, love, like, think, go, feel, thing, much, realli, would, month, day, first, mom, make, know, famili, son, littl, two, daughter, husband, parent, child, older, way, also, still, sister, even, age, got, good
22	Sunscreen	sunscreen, EWG, like, baby, get, one, time, use, need, problem, SPF, really, help, never, feel, thing, even, would, much, want, year, first, think, take, good, make, day, say, kid, try, sure, pain
23	Reading	book, get, like, time, read, kid, thing, help, give, would, make, go, teacher, learn, behavior, use, also, work, hit, let, good, say, start, know, want, play, need, one, put, way, child, son, tantrum, take, hand, age, teach

24	Travel	flight, plane, fly, bring, travel, airport, check, gate, time, land, secure, take, baby, lap, flew, trip, airline, hour, old, get, one, ear, month, attend, extra, TSA, board, snack, help, bottle, pack, make, sure, airplane, seat, need, would, ticket, flown, takeoff
25	Sleep training (schedule)	sleep, night, time, get, cry, nap, hour, baby, go, month, wake, bed, day, tri, back, would, work, start, need, minute, like, put, asleep, one, let, still, help, know, every, bedtime, routine, old, around, much, really, room, good, thing, little, week
26	Song	song, sing, music, youtube, cake, watch, love, favorite, show, dance, video, sesame, listen, dinosaur, lullaby, frost, bear, theme, little, episode, channel, Elmo, sang, star, Disney, rhyme, sunshine, tune, french, twinkle, version, classic, old, lyric, cartoon
27	Skin care	rash, cream, use, skin, infect, get, yeast, also, diaper, clear, like, wipe, work, make, antibiotic, sun, sunscreen, one, red, try, go, would, doctor, help, little, good, keep, day, water, powder, area, thing, time, sensitove, son, bad, baby, allergy, put

28	Home chores	day, get, time, work, home, go, take, baby, like, kid, week, hour, husband, house, thing, one, make, clean, also, play, help, need, would, mom, even, old, really, stay, day-care, much, around, good, month, year, watch, lot, dog, love, every, know
29	Planning for motherhood	mom, kid, feel, get, like, time, go, know, friend, school, help, parent, make, would, need, thing, think, work, realli, talk, even, good, tri, one, child, peopl, year, want, take, group, see, much, lot, also, way, son, find, life, famili, say
30	Birth control	period, mirena, iud, pill, cramp, remov, insert, month, spot, year, control, bleed, hormon, get, effect, light, heavi, bc, string, use, cervix, heavier, got, one, condom, para-guard, pap, mine, back, week, stop, like, shot, day, first, still, bled, tri, regular, copper
31	Vaccine	vaccine, get, child, people, kid, risk, would, children, one, sick, immune, shot, think, know, doctor, study, re-search, parent, disease, even, time, baby, fever, cause, medic, make, ar-ticle, reason, well, want, die, say, thing, us, see, take

32	Drink, pregnancy and breastfeeding	time, day, month, babi, wine, get, go, like, feel, mom, one, drink, alcohol, husband, littl, take, would, week, kid, night, old, work, make, love, thing, glass, sleep, year, realli, first, much, start, want, think, even, still, need, got, coffe, say
33	Work-parenting demands	work, would, get, time, make, job, like, home, pay, go, money, one, year, want, know, kid, think, need, also, good, much, really, people, take, could, back, family, month, thing, child, school, find, look, care, live, use, stay, daycare, lot, help
34	Potty training	potty, train, poop, go, pee, diaper, toilet, time, use, day, accident, start, try, sit, pull, bathroom, ready, month, get, underwear, naked, like, would, pant, kid, put, big, up, daughter, one, make, work, change, want, wet, really, got, son, every, let
35	Hair styling	hair, post, blog, cute, reddit, link, look, use, like, girl, get, r/Mommit, little, one, long, pink, make, nail, daughter, curly, thank, mod, try, boy, short, love, good
36	Early health problems	baby, get, help, also, try, time, like, would, day, take, need, use, go, much, one, thing, really, put, little, week, nurse, work, bath, keep, month, diaper, good, sleep, first, make, could, feed, even, change, water, give, night, hold, better, every

37	Early challenging behavior	time, get, like, hand, old, bite, month, shower, baby, would, little, head, walk, daughter, touch, start, son, kid, face, one, try, put, hold, thing, go, still, sit, stop, back, year, day, around, take, think, crawl, make, got, nail, laugh, kiss
38	Diaper	diaper, cloth, use, dispose, brand, size, wash, change, baby, one, pamper, get, wet, like, wipe, poop, cover, work, also, laundry, leak, Huggies, dry, prefold, detergent, time, go, month, much, every, day, differ, buy, pocket, never, rash, son, good
39	Prepare food	eat, food, like, make, get, fruit, baby, thing, also, meal, give, one, cheese, month, veggie, good, really, much, little, use, love, start, day, kid, cook, would, egg, banana, time, snack, meat, cut, lot, old, juice, want, pure, feed, yogurt
40	Gifts	toy, gift, one, get, Christmas, kid, book, door, play, birthday, thing, year, open, room, got, car, put, like, also, old, present, go, make, gate, parti, keep, use, box, lock, little, stuff, would, could, time, idea, table, fun, buy, plastic

41	Pregnancy	pregnancy, pregnant, week, baby, first, time, like, birth, one, month, would, want, day, feel, got, really, help, also, know, take, much, even, thing, year, make, sex, born, think, still, start, lot, second, good, two, could, work, back
42	Vacations/outings	kid, movie, drive, stroller, one, go, car, trip, get, walk, love, baby, use, old, also, great, like, park, play, ride, swim, would, pool, city, little, lot, around, year, take, toddler, make, water, really, camp, back, time, good, want, got, bring

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