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**Privacy in Question-Answering Systems:
Managing Online Identity and Posting
Behaviour on Quora**

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2024

Abstract

There has been an ongoing debate concerning the impact of using real identities versus anonymity on the dynamics of online environments. Quora represents an interesting platform to study the interplay between identity and user behaviour, as a community question-answering system that combines strong identity and reputation mechanism with social aspects. In this thesis, I investigated how different forms of identity (real names, pseudonymity, and anonymity) affected posting behaviour using a mixed methods approach that emphasised the user perspective. The first two studies use pre-2021 data, when Quora still supported anonymous posting, while the final study uses data from 2023, after Quora eliminated anonymous posting and introduced pseudonymous profiles.

The first part of my thesis focused on understanding disclosure in questions posted on Quora by examining the relationship between the use of the anonymity feature and posting behaviour regarding sensitive content. Building upon previous research, I focused on questions about anxiety disorders as a special case of sensitive content. Employing a content analysis methodology, I compared the language and content of posts from anonymous askers with those from known (non-anonymous) askers. I found that the main topics of concern were consistent across both groups; however, the level of personal disclosure, indicated by question framing, was associated with whether the askers were anonymous or known. I concluded that the anonymity feature on Quora allowed askers to seek adequate support for certain aspects of sensitive content.

In the second part of my thesis, I broadened the scope of the investigation beyond sensitive content. Through an exploratory qualitative analysis of answers posted by Quora users, I established common reasons cited for posting anonymously on the platform. Findings highlighted how the aspect of reputation building associated with real identities could influence the use of the anonymity feature.

Lastly, in the third part of the thesis, I investigated the effect of identity on posting decisions through a survey study, building on the qualitative insights from the prior analysis. Identity was operationalised as profile type (whether using real names or a pseudonym). Clear differences emerged in the overall posting tendencies among users with different profile types, motivating a post-hoc analysis to further understand their characteristics. I found that users with Quora-specific pseudonyms reported being less willing to post in general, whereas users with real names demonstrated the highest willingness to post. Moreover, through text answers, participants reflected on the nature of Quora as a social knowledge platform when providing reasons behind their

views on anonymity. Qualitative analysis of text answers revealed insights into the nuances of posting behaviours. Those in favour emphasised its role in encouraging posting, particularly about sensitive and personal issues, while opponents raised issues of credibility. I found a difference in how anonymity is perceived as necessary for asking questions, due to privacy concerns, while it is less critical for answers, where credibility is considered more important.

Acknowledgements

I would like to start by expressing my gratitude for this journey, which began under the restrictions of Covid-19 and forced me to learn and grow while navigating through uncertainties on many levels.

I want to thank my family for their tremendous support; I'm blessed to belong to you. A special thanks to my parents, Abdulrahman Alshamrani and Fatimah Alshamrani, for giving me the freedom and space to find my way in life and for showing me what it means to start from humble beginnings yet reach their goals through persistence and perseverance. I offer heartfelt gratitude to my sister Afnan and brothers Mshari, Mohammed, Saud, Ali, and Naif for their ongoing encouragement and belief in me. I am deeply thankful to my husband, Rami Mosaoa, for his support and love. His constant encouragement, giving, and belief in my abilities have been valuable throughout this journey. I also want to give special recognition to my baby boy, who became part of this journey a month after submission and has been with me through my viva, corrections, and now as I submit this final copy. His presence has brought immense joy and meaning to this achievement, and I am grateful for how much he has added to this milestone. My gratitude extends to my uncle's family, my aunt Sharifah, and my cousin Reem, as well as to my niece Aseel, whose continuous communication brought joy and a sense of companionship, easing the loneliness of this journey. To my beloved cousin, Aishah, who left us too soon while I was finishing this thesis, I had hoped to reunite with you upon my return, but fate had other plans. You will forever be cherished and remain in our hearts.

I thank my principal supervisor, Dr Maria Wolters, for giving me the opportunity and showing me how to be empathetic while guiding. Your consistent advice to 'trust the process' has been a guiding light in my journey. I also extend my gratitude to my second supervisor, Dr Kami Vaniea, for her invaluable contributions to my research and for generously continuing her support after moving to the University of Waterloo. I would also like to express my gratitude to my viva examiners, Dr. Björn Ross and Dr. Martin Halvey, for their insightful feedback and guidance during my viva. Their thoughtful questions and suggestions have greatly contributed to the final version of this thesis.

I'm sincerely thankful to friends and colleagues who generously offered valuable insights and contributions to my work: Mona Alqassem, Dilara Keküllüoğlu, Adam Jenkins, and Liquan Chai. I also want to thank my colleagues from Catalytics and TULIPS lab members for their insightful thoughts: Rabia, Paulina, Nicole, Jocelyn,

Duncan, Youssef, Tarini, Florian, Sarah, Kholoud, and many others. I thank my friends who made this journey much easier: Mai, Anwar, Sahar, Khawlah, and Nouf. I would not have made it this far without your warm presence and companionship.

I'm grateful to my sponsor, my home country of Saudi Arabia, represented by King Abdulaziz University and the Saudi Cultural Bureau, for the generous support of my studies at George Washington University in Washington, DC, and the University of Edinburgh. I also thank the group of Saudi students in Edinburgh for their ongoing support.

To Edinburgh, the beautiful city that embraced me during times of challenge and moments of joy – you will always hold a special place in my heart. Finally, I am thankful for my own determination and persistence through every hurdle of this journey.

“All the praises and thanks be to Allâh, Who has guided us to this, never could we have found guidance, were it not that Allâh had guided us - Surah Al-A'raf [7:43], Holy Qur'an

Lay Summary

Quora has emerged as a popular social platform where people ask and answer questions on a wide range of topics. Until 2021, it maintained a strict real-name policy, encouraging users to showcase their expertise and build their reputations. The platform also permitted anonymous posting, allowing users to maintain their privacy while still contributing. Recently, Quora relaxed its real-name policy and removed the anonymity option for posting questions and answers. In my thesis, I explored the relationship between identity choices and posting behaviour on Quora.

My findings revealed that both anonymous and non-anonymous users generally asked about similar matters regarding sensitive topics like anxiety, but there was a notable difference in how anonymous users framed their questions, only with specific issues. I also showed that the decision to post anonymously was found to be influenced by the interest in reputation building on the platform. A survey also revealed distinct posting behaviours based on profile type: users with Quora-specific pseudonyms showed the least tendency to post, whereas those with real names tended to be more willing to post.

Declaration

I declare that this thesis was composed by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted for any other degree or professional qualification except as specified.

(Amirah Abdulrahman Alshamrani)

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Chapter 1

Introduction

1.1 Research Overview

Over the past decade, the widespread adoption of social networks has led to the creation of other popular venues for information seeking. Platforms structured around user content creation not only support users in contributing their knowledge to others but also provide the ability to directly ask for advice or knowledge. These user-generated content platforms have played a complementary role to highly popular search engines by enabling users to create content that fulfils the needs of others. To remain valuable, these sites must continue to be welcoming places where users are encouraged to ask for information and contribute content. This dynamic has drawn interest from researchers aiming to understand the associated user behaviour.

The practice of social search has been introduced and studied in human–computer interaction (HCI) literature as the process of information finding and sense-making that makes use of a range of possible social interactions [85]. Several studies have shown that results provided by search engines are not necessarily satisfying to searchers. As such, people might switch to alternative ways of obtaining satisfactory information that support more sophisticated needs and motivations [85, 71]. In addition to personal social networking services such as Facebook and X, formerly known as Twitter, other platforms that host user-generated content include community-based question-answering systems, which are crowdsourced services for sharing experiences and knowledge like Stack Overflow and Quora. Routing of information needs and transitions between social networks and search engines were also studied in prior work [70, 90, 84, 21].

Despite several reasons indicated by participants of these studies for preferring so-

cial networks over search engines, prior work also reported that users felt uncomfortable asking about topics such as health when using their real identity. For example, the use of search engines versus Twitter, currently known as X, was compared for health information seeking [21], according to the severity of the condition and associated social stigma. It was found that the use of Twitter, a personal and socially connected platform where real identities are commonly exposed or inferred, was not preferred when it comes to health conditions that are associated with social taboos and stigma for privacy reasons.

As online identity shapes user behaviour in these social platforms, various policies regarding privacy, identity and reputation mechanisms have been adopted by these platforms to control content and growth [77, 100]. There has been a continuing debate on the impact of using real identities and reputation versus anonymity on the dynamics of online environments among researchers from different fields and the public. On the one hand, identified communication can lead to accountability, producing better-quality content [86], as well as reduce negative interaction, and help users to judge credibility [62, 100]. On the other hand, negative effects include imposing constraints associated with an offline identity that are detrimental to honest and equal participation among users with different statuses [96]. Using pseudonyms seems to provide a middle-ground solution between the two types or levels of online identity. Nevertheless, pseudonymous posting also comes with its own downsides, as members may create multiple accounts to develop different characters to engage in negative behaviour [147, 64]. Although these accounts could be used for the purpose of seeking social support [5], they can also be misused by malicious attackers to harm other members of the community, such as spreading spam and fake reviews [142].

Many HCI studies have investigated the interplay between online identity and user behaviour across various platforms that involve different forms of identity. Yet, limited research addresses the dynamic on a platform like Quora. For example, one of the best-studied platforms is Reddit [4, 101], a discussion-based platform where pseudonyms are the main form of identity and communication. The emphasis on the platform is more on the individual posts and comments rather than the persistent identity behind them. Although each post or comment on Reddit is associated with a username, the focus on the continuity or connection between different submissions by the same individual is not strong. Specifically, while users on Reddit are not required to use real names, they also can easily create new accounts, including throwaway accounts (temporary accounts typically used for maintaining anonymity for a specific purpose or

situation). Other research works focused on the more personal social media platforms such as X where users would mainly interact with real-life contacts including family and friends [103], as well as services with relation-based anonymity models that could rely on existing digital social connections through other social networks, such as Secret [73, 122], or services with proximity relation filters where users can share content anonymously within a specific geographic location or community like Whisper [143, 82]. Other studies have investigated platforms with a semi- or fully anonymous nature where people are not required to create accounts or provide any personal information, like 4chan and ASKfm [11, 10, 31].

Studies on Reddit revealed that throwaway accounts, used as an anonymisation tool on the otherwise pseudonymous Reddit platform, facilitate more open communication on stigmatized topics like parenting and mental health [19]. These posts attract more and longer responses compared to non-throwaway ones. Although prevalent in mental health subreddits compared to other subreddits, only a small percentage of users seeking support in these subreddits use throwaway accounts, likely because Reddit is already pseudonymous. On X, many users remain anonymous, especially when discussing sensitive topics like pornography and racial hatred. Anonymity in this context, defined as using pseudonyms or avoiding real-life details, leads to higher activity levels. Anonymous users tweet more frequently and follow more accounts than identifiable users [103].

On anonymity-based platforms like Secret and Whisper, anonymity promotes more honest communication compared to real-name networks like Facebook. However, users often attempt to identify message posters through de-anonymization and geographic locality due to the "nearby" feature, leading to community formation [122, 143]. This dynamic highlights the tension between anonymity and social connectivity, which can undermine the platform's promise of anonymity. Additionally, literature on ASKfm links it to challenges like cyberbullying but also shows that anonymity encourages freer disclosure and social support in such settings [10, 12]. These findings suggest that anonymity can indeed facilitate more open communication but further emphasises the need for thoughtful design and policy improvements on anonymous platforms.

The popular community question-answering platform Quora provides a unique environment for studying privacy preferences and the interplay between online identity and posting behaviour for multiple reasons. First, and unlike many other general-purpose Q&A platforms, Quora has an underlying social structure and features that

allow users to have public profiles and interact with each other. Also, having had a strict real-name policy in place for a long time, Quora has emerged as a place for users to provide their education degrees or job affiliations and build a reputation as experts, as it started with well-known users from the start-up industry [100]. More importantly, Quora was one of the rare popular social platforms, if not the only, that enabled selective anonymity upon each posting, while users have persistent identities on the platform.

Recently, Quora changed its policies related to using real names and the anonymity feature, which were fundamental and integral parts of the platform. Prior to April 19, 2021, users were required to register with their real names instead of pseudonyms or other screen names; although there was no verification upon registration, fake names would later be spotted by the moderators and could also be reported by the community members. The strict policy was presented by the platform as a way to maintain answer credibility, while users could still have the option to write anonymously when needed. As of April 19, 2021, the real-name policy was rescinded; while users were still encouraged to use their real names, it was not as strictly applied as before [109]. Following the easing of the real-name policy, the option of anonymous posting was removed. First, the option to ask questions anonymously was removed on July 16, 2021 [111]; then, on November 22, 2021, it was no longer possible to post answers anonymously [110]. In their explanation of the changes in their official blog, Quora stated that the option of anonymous posting was no longer necessary once users were not required to use their real names [109].

Quora developed strong aspects of identity and reputation [99, 100]. It stands out as a crowdsourced knowledge community where people can also share personal experiences and opinions. This platform combines multiple components seen in other platforms, including identity, reputation and social dimensions. However, the nuanced relationship between identity and posting behaviour remains under-explored in Quora's context, especially from a user perspective. Prior studies on Quora have primarily focused on reputation alone [100] or on the use of anonymity to identify sensitive topics and predict or cluster topics accordingly [102, 80].

Prior research on Quora analyzed millions of posts to provide an initial understanding of the platform's anonymity feature. Specifically, Mathew et al. [80] found no significant linguistic differences between anonymous and non-anonymous questions at a global level, attributing this to topical mixing. This means that when questions from all topics are considered together, the differences between anonymous and

non-anonymous questions blend and become indistinguishable. However, differences emerged when considering specific topics. They created three clusters: topics that predominantly contained anonymous questions, topics that predominantly contained non-anonymous questions, and topics with a mix of both. By focusing on these clusters, they found that questions on topics like depression and anxiety were more likely to be posted anonymously. In these clusters, anonymous questions were often more expressive and contained a higher word count, while clusters with more non-anonymous questions tended to be more straightforward and concise.

Peddinti et al.[102] utilized Quora's anonymity feature to explore its relation to content sensitivity by analyzing answers to identify sensitive topics associated with anonymity. They highlighted that users often employed anonymity for sensitive topics such as race, religion, and drugs. The study also identified less commonly noted sensitive topics involving emotions, personal experiences, and insider knowledge. Using machine learning, they evaluated the prediction of sensitivity and the likelihood of anonymous answers, suggesting that behavioral or data-driven approaches can partially help in developing better privacy features. Both studies emphasized the importance of considering user perspectives, acknowledging the limitations of relying solely on content and the need for further user-focused studies[102, 80].

1.2 Research Questions and Contributions

As discussed above, prior research on online identity has demonstrated that users exhibit distinct behaviour on platforms with different designs and policies. According to research on Quora, previous studies have shown that certain topics are associated with the use of the anonymity feature and that general language differences exist between those topics and the ones with the least anonymity. There is a lack of further research on the behaviour within these sensitive topics associated with the high use of anonymity. These studies also highlighted a gap in understanding relevant behaviour on the platform due to a lack of user research. Furthermore, the focus was primarily on anonymity, and pseudonymity was not investigated in any of the existing literature on Quora, especially as it was strongly discouraged before the policy shift. Based on prior research on other platforms, it might be expected that identity leads to more straightforward behaviour, such as differences in topics discussed by anonymous and non-anonymous askers or increased activity by pseudonymous users compared to real-name users. However, given that Quora uniquely features the option of anonymity

along with the ability for users to either use their real name or a pseudonym, this thesis found a more complex dynamic.

This work presents one of the first in-depth attempts to investigate the topic of identity and posting behaviour on Quora. Specifically, I employed a multiple method analysis and considered the user perspective, taking an approach not previously applied to this specific context and topic, to provide a better understanding of the users on the platform. The overall goal of my research on Quora is to examine the relationship between identity and posting behaviours. To the best of my knowledge, no prior qualitative work has thoroughly examined identity on Quora. I conducted three separate studies. The first two studies focused on the time when Quora still had the anonymity feature, providing insights into user behaviours and preferences under that setting. The third study, conducted after the platform removed the anonymity feature, was designed as a broader exploration of the relationship between user identity and posting decisions, specifically, the use of pseudonyms to manage online identity.

The multiple methods approach in this thesis involves integrating quantitative and qualitative research techniques to comprehensively understand the topic. In the first study, the preliminary statistical analysis provided an overall understanding of patterns in the entire dataset, which then informed and tailored the subsequent qualitative analysis. In the second study, qualitative analysis was employed to explore users' experiences, serving as a basis for designing the survey. This approach follows a classic instrument-building mixed methods design [25]. The survey's statistical analysis in the third study then helped to identify patterns in identity and posting behaviour, which were triangulated with responses to free-text questions. This iterative process of combining both quantitative and qualitative exploration to inform each other was intended to leverage the strength of multiple methods in capturing the complexity of user behaviour on Quora.

In my first study, I focused on understanding the interplay between the use of the anonymity feature and posting behaviour for sensitive content. The first part of the research focused on mental health and anxiety because questions related to anxiety were among the most frequently posted in an anonymous manner [80]. In addition, while the HCI literature has linked anonymity to posting questions, the relationship between anonymity and social question-asking remains under-investigated [72]. In this study, I used a mixed methods approach to investigate the differences between questions posted by anonymous askers and those posted by non-anonymous askers. First, I started with a preliminary analysis to examine if linguistic differences existed

between questions posted by anonymous versus known (non-anonymous) askers in my data set. For 7087 questions about anxiety posted on Quora, I used statistical analysis on the Linguistic Inquiry and Word Count (LIWC) linguistic features to address the following research question:

RQ1: For anxiety-related questions as a special case of sensitive content on Quora, are questions posted by anonymous askers different than those posted by known askers, in terms of linguistic features?

The results showed some significant linguistic differences between the two groups in the data set. In the second step, I explored the posting behaviour to investigate differences in the content among anonymous versus known askers, by employing qualitative content analysis. In this part, I addressed the following question:

RQ2: How does the content of questions differ between anonymous and known askers on Quora?

RQ2.1: What do users post about? In other words, what themes emerge in questions posed by users, and how frequent is each theme?

RQ2.2: Across these identified themes, is there a difference in the number of questions posted by anonymous askers versus known askers?

RQ2.3: Within each theme, do the questions posed by anonymous and known askers differ in linguistic features, namely, in framing (self vs generic)?

Initially, I conducted a qualitative analysis on a set of 520 randomly selected questions to identify the common topics discussed and to determine whether the questions were framed generically or referred to the asker's self. This was followed by a statistical analysis comparing the prevalence (frequency) of topics and framing between the two groups of askers. The findings identified three major topic themes emerging from my data set. Namely: 1) related to the pathological aspects of the condition of anxiety, 2) focusing on personal aspects, and 3) addressing social aspects of the condition. In addition, I found that both anonymous and known users tend to discuss similar topics, as there were no significant differences between their posts. However, when examining the framing of questions, it emerged that anonymous askers were more likely to self-disclose and frame their questions in reference to themselves when discussing certain topics related to the personal and social aspects. In contrast, when questions inquired about a pathological aspect of the condition, there was no difference in how questions

were framed, whether around self or general, between anonymous and known askers. These significant differences suggested that the anonymity feature on Quora indeed provided users with the opportunity to self-disclose for particular aspects of sensitive content.

In the second study, I extended the scope of the work beyond sensitive topics and investigated potential reasons for the anonymous posting of questions and answers derived from relevant discussions on Quora itself. The research question was:

RQ3: What are the common reasons that Quora users give for using anonymity features when posting questions or answers on the platform?

Using in-vivo coding followed by affinity diagramming, I analysed 127 answers to 18 anonymity-related threads. My qualitative analysis of the reasons for posting anonymously on Quora showed that the anonymity feature was used judiciously in a complex decision process weighing personal preferences, benefits, cost, risk, content, and reputation. Specifically, I identified four main themes that described users' reasons for posting anonymously. Further, some of the findings highlight the specific context of Quora. I found that the factor of reputation building associated with real identities played a role in the use of the anonymity feature. In general, I found that reasons for anonymous posting on Quora can broadly be categorised into two groups: reasons that are more intrinsic or endogenous to users, affecting their regular decision-making, and other reasons that are more situation-specific and might only apply in specific scenarios or contexts. Examples of the former include what motivates users to post on Quora (including interest in reputation), the perceived risks or effects of sharing and personality. Meanwhile, the situation-specific reasons involve scenarios that are related to the content being shared. In addition to sensitive and personal subject matter, some users stressed the nature of the content – such as being an opinion versus a fact – as a reason, and not necessarily the subject itself. For the purpose of the next survey, I identified seven typical scenarios associated with anonymous posting based on the qualitative findings.

In the third part of my thesis, I designed and conducted a survey study based on the previous qualitative findings to explore the user perspective of identity and posting decisions on Quora. Specifically, I aimed to examine the relationship between identity and posting decisions by focusing on what users do now, given that Quora has removed the option for anonymous posting and made changes to the real name policy. I examined the last main research question (RQ4):

RQ4: How does user profile type influence posting behaviours on Quora?

RQ4.1: How does the type of scenario (common situations where some Quora users previously chose to post anonymously) influence posting decisions on Quora, while accounting for account type (real name or pseudonym)?

RQ4.2: To what extent do the user-related factors identified in the previous study, as detailed in Chapter 4, affect posting decisions? I am interested in the level of disclosure (the amount of personal information) about self shared in the profile, motivation for posting, engagement with Quora, views about anonymity and perceived effect of engaging with sensitive content.

To investigate the relationship between posting decisions and profile type (whether users used their real names or pseudonyms), as well as the additional user characteristics that emerged from the literature and Study 2, I recruited 300 users who were active on Quora at the time of the study through iterative screening and testing. In addition, I coded and analysed 352 free-text responses.

I found that only one of the scenarios consistently affected the decision to post: users were less willing to post to Quora if their post might contain information about others. When considering user profile type, I found clear differences in the posting tendencies among profile types; namely, users with Quora-specific pseudonyms were less willing to post across all scenarios. As such, I conducted a post-hoc analysis to further understand the differences between profile types (real name, pseudonym used on other platforms or pseudonym specific to Quora). I found a common pattern where users with Quora-specific pseudonyms disclosed less information on their profile, reported higher previous use of anonymity and preference for anonymity, compared to the other two groups. In addition, the qualitative analysis of the text answers further highlighted the challenge of balancing credibility and privacy on Quora, as Quora serves as a platform for both asking questions and sharing knowledge on diverse topics.

Key Contributions

My thesis contributes to the literature on online identity and posting behaviour on social knowledge platforms. Using qualitative approaches, I compared the content of questions posted by anonymous and known askers about sensitive topics on Quora. I also explored the user perspective on posting anonymously and identified situational scenarios derived from common reasons for Quora users to value anonymity on the

platform. Additionally, using a survey, I examined the broader user perspective of identity forms and posting behaviours and compared these different forms of identity on the platform. Based on the research questions listed above, this thesis contributes the following key findings:

A content analysis of questions posted on the sensitive topic of anxiety showed that asking questions anonymously about such issues was navigated in a nuanced way. The topics of concern remained consistent, but the framing of the questions differed. When asking questions within the sensitive topic of anxiety, anonymous and non-anonymous users covered similar topics. However, anonymous askers were more likely to frame their questions with reference to themselves, only for social and personal aspects of the issue; for other pathological aspects, no differences were found between anonymous and non-anonymous questions. Thus, within a sensitive topic, anonymous questions were particularly helpful in allowing users to self-disclose more freely and seek advice when discussing these certain issues.

The interest in reputation building affected how users choose to post anonymously. In the case of Quora, where users can build a reputation as subject matter experts, the interest in reputation building was a factor in how the anonymity feature was used. For people interested in reputation building, the anonymity feature was leveraged to control disclosure and content associated with their reputation, particularly when posting content that might negatively impact it. Conversely, a lack of interest in reputation building was reported by other users as the reason for frequent anonymous posting, regardless of the content. Also, I found that the feature was used to control not only disclosure but also later communication, where the interest in reputation building also played a role in how users used anonymity to manage their interactions on the platform.

Pseudonyms are carefully curated identities compared to real names, with distinct behaviour patterns observed among different types of pseudonyms. When Quora discontinued the anonymity option, they argued that pseudonymity would naturally fill the same role. They believed it would offer users similar protection as the previous feature and potentially encourage more and freer posting. The common assumption implied in Quora's announcement, as well as in prior research, was that identity and posting on the platform were primarily driven by protection or privacy concerns. However, my findings revealed a complex dynamic: the motivation to be on Quora that involves interest in reputation building was associated with posting behaviour. This motivation factor, associated with different forms of identity, emerged

as a key influence on posting decisions on the platform. I found that accounts with Quora-specific pseudonyms are more carefully curated than generic pseudonyms and real-name accounts. Specifically, users with Quora-specific pseudonyms demonstrated the lowest tendency to post when compared to users with general pseudonyms and real names. This observation was consistent across multiple variables: these users were less motivated to post on Quora, shared less personal information in their profiles, reported more previous use of anonymity, showed more preference for anonymity in both questions and answers, and were less willing to post in various scenarios.

Among Quora users, there was a higher perceived preference or need for anonymity in sharing questions compared to answers. I found a distinction in attitudes toward anonymity among all users, with a higher overall preference for posting questions anonymously than answers. Also, as participants discussed their views on questions and answers, they specifically highlighted the privacy required for asking questions, while emphasising the importance of being identified when sharing answers to ensure credibility. More nuanced insights supported this distinction in the survey text responses to open-ended questions. Participants discussed questions in general and also highlighted certain topics, primarily sensitive ones, where anonymity was deemed more valuable, as these often involve sharing advice and experiences.

1.3 Thesis Outline

This thesis is organised as follows;

Chapter 2: In this chapter, I provide an overview of community question-answering systems, with emphasis on Quora and how it compares to other online platforms, as well as research on Quora. I also present a literature review of studies on online identity and behaviour and sensitive information in online communities.

Chapter 3: Previous literature indicated that anxiety-related questions are among the most common content posted anonymously on Quora [80]. In this chapter, I investigate posting behaviour using anxiety-related topics on Quora as a special case of sensitive content. I collected questions from topics related to anxiety disorders. Then, I started with a preliminary statistical analysis on the linguistic features (LIWC) of my data set. After that, I conducted a qualitative analysis to identify themes of topics within these questions. I compared the content posted

by anonymous and known askers, examining differences in topic prevalence and question framing within these themes. This chapter addresses the gap in qualitative and in-depth mixed-method research on identity and disclosure on Quora by answering RQ1 and RQ2.

Chapter 4: In this chapter, I focus on what Quora users say about reasons to post anonymously on the platform. I collected 127 answers to 18 relevant threads about the topic on Quora. I qualitatively examined the reasons that people had for choosing to post anonymously and how posters used the anonymity option to curate their online identity pre-2021. I took a user-perspective approach in this chapter by relying on posts by Quora users to thoroughly examine anonymity and posting behaviour on Quora. This study contributes to filling the gap in existing qualitative research on the platform concerning identity and privacy. This chapter answers RQ3.

Chapter 5: This chapter describes the design and conduct of a user survey based on the qualitative findings from the previous chapter. I recruited users who are currently active on Quora, to explore the broader relationship between user identity and posting decisions, as anonymous posting was replaced by permission to use pseudonyms in 2021. Specifically, I looked at the relationship between using real names versus pseudonyms and posting decisions. Further, Through a qualitative analysis of the survey's text answers, I gained deeper insights that complemented the findings of the previous chapter. I answered RQ4 in this chapter, and the study extends the limited existing user studies on Quora around privacy and identity.

Chapter 6: In this chapter, I summarise the main findings and contributions and discuss implications for the studies of identity and posting behaviour on social question-answering platforms. I also discuss overall limitations and future work.

Chapter 2

Background and Related Work

2.1 The Question/Answer Platform Quora

Quora is a widely recognised online platform established with the aim of crowdsourcing knowledge. It provides a space where users can post questions on a variety of topics and receive answers from other users with expertise or interest in those particular areas. Since its public launch in 2010, Quora has evolved into a diverse community where individuals can share knowledge, experiences and opinions for a collective understanding of various subjects.

The core of Quora lies in its Q&A format, where users can ask questions and receive answers from the community. These questions are organised by topic, making it easier for users to navigate and find information in their areas of interest. Quora Spaces are communities centred around specific topics or interests that provide a dedicated space for more in-depth discussions and engagement. Quora helps users find new topics and content through a personalised feed based on users' interests and interactions. Users can follow spaces, topics and questions to receive notifications when new content is added. Users must create profiles to post on the platform, and users have the opportunity to showcase their credentials, areas of expertise and other personal information to establish credibility and personalise their user experience.

2.1.1 User Profiles and User Interaction on Quora

Users are encouraged to develop complete profiles by providing accurate information about education, employment and areas of expertise. New users are prompted to add details about their education, work experience and links to profiles on other social me-

dia platforms. The platform has designated fields for this information. Quora's policy on credentials states that information must be true, helpful and describe a personal connection to at least one topic area that a person could write about. Not following the policy would result in the account being flagged by moderation and hidden until it is edited [112]. This information about credentials (provided in a user profile) is displayed next to a writer's answers, providing context to readers about the background of the individual providing the answer.

Further, verified users are indicated by a blue check mark on their profile. On the page that describes the verification process [114], Quora states that a profile is verified if they believe that a significant percentage of Quora readers recognise the person's name or background and would value confirmation of the person's identity. While verification is primarily aimed at well-known individuals or organisations, the process seems to be open for others to apply, especially if they have a recognisable name or background that Quora readers would value. Users interested in verification can submit their profiles using a form provided on Quora's website and are encouraged to provide any relevant information to support their request for verification. Specifically, Quora highlighted providing links to other social media accounts in the verification request form and in the profile information to help the process of verification and support the authenticity of user identity.

Quora provides various forms of user interaction, including following other users, commenting, up-voting and down-voting answers and targeting questions to selected users. Upon following other users, their questions and answers will appear in the user's feed. Also, users can comment on answers of others, upvote and downvote. The upvotes and downvotes system allows users to rate the quality and relevance of answers. Users can share (repost) answers posted by others so that they appear in their own feeds. When posting a question, Quora suggests a list of users who are likely to provide valuable answers based on their previous activity and expertise in related topics. Quora has a feature called 'Ask to Answer' (A2A), which allows question writers to direct their questions to specific individuals whom they think can provide insightful answers. Other users can also request certain people to answer specific questions. Quora provides several guidelines for users to personalise their experience on the platform. As users follow topics and writers of interest and upvote answers, their activities are reflected in their personalised feeds.

On a user's profile page, as shown in Figure 2.1, both the number of followers a user has and the number of people they are following are visible to others. The profile

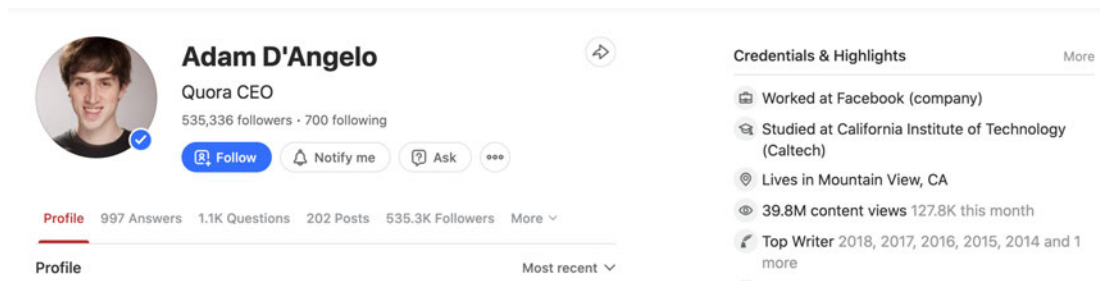


Figure 2.1: User profile on Quora, showing the number of followers and the number of other profiles they are following amongst other things.

page also displays the questions and answers posted by the user. While these are fixed settings, Quora provides additional options for users to control how their content and profile are interacted with and displayed, both on the platform and in search engine results. Namely, as of October 2023, users can control whether search engines can index their name, making their Quora profile and content searchable from outside the platform, whether other users can comment on their answers and whether followers are notified when they ask new questions. These settings provide a level of control over privacy and interaction on Quora. However, as noted earlier, Quora is inherently a public platform, and certain interactions and pieces of content, such as the ones listed above, are designed to be public to promote knowledge sharing and discovery.

Quora’s Top Writer program was initiated to recognise outstanding contributors on the platform. It went through some changes and controversies over the years. Initially, the program aimed to honour the most knowledgeable and skilled writers across various topics, with selections made by Quora staff based on somewhat vague criteria according to Quora users [113]. Top Writers received recognition through badges and meetups. However, as discussed by Quora users, the program faced challenges, particularly in 2018, when the selection process, possibly algorithm-driven, led to questionable choices, including awarding the Top Writer status to a large number of users, some of whom had questionable qualifications. Although there was no official statement, the absence of the annual Top Writer announcement indicated the program’s discontinuation. The growing complexity of managing the program and maintaining standards, coupled with the need to address community concerns, likely led to its end in 2021. This move was probably in line with Quora’s broader strategy to diversify content and foster a more inclusive range of voices on the platform, as suggested by other changes on the site.

2.1.2 Anonymous Q&A Posting on Quora

As previously discussed in the introduction in Chapter 1, Quora has made policy changes regarding the use of real names and the anonymity feature. Until April 19, 2021, users were required to register with their real names, which aimed to maintain the credibility of answers, although users had the option to post questions and answers anonymously if needed. After that time, this real-name policy was relaxed, and while real names were still encouraged, the enforcement was not as strict. After that, the feature for anonymous posting was removed, first with the removal of anonymous question asking on July 16, 2021 [111], and then the ability to post answers anonymously was discontinued on November 22, 2021 [110]. Quora's official blog stated that the need for anonymous posting decreased with the easing of the real-name requirement [109]. When the anonymity feature was available on Quora, it was provided as a selective feature, allowing users to post questions and answers anonymously at the time of posting. Unlike platforms such as Reddit that allow users to create a throw-away account, users in Quora used their actual accounts when posting anonymously, and they could edit the content later through an anonymous edit link. Figures 2.2 and 2.3 show the previous anonymity options for questions and answers.

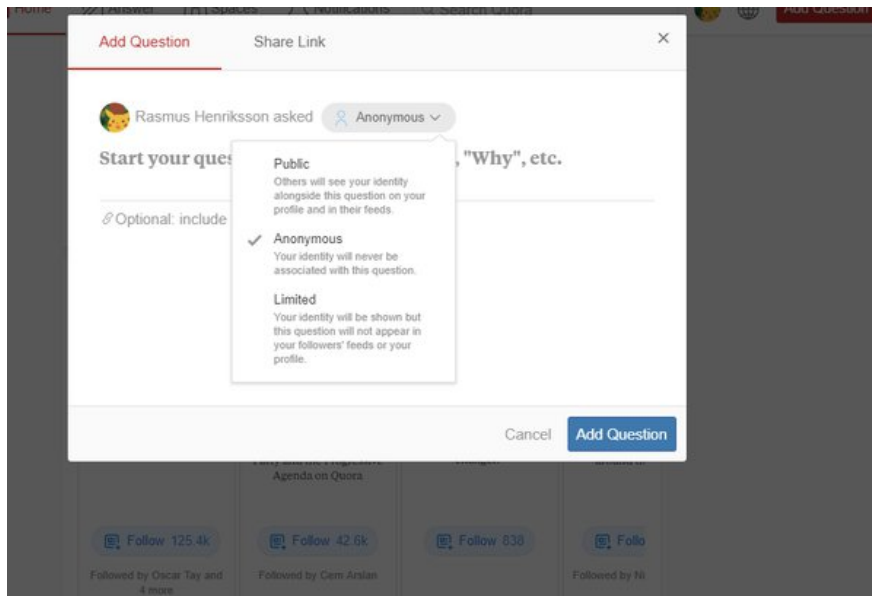


Figure 2.2: Posting a question anonymously.

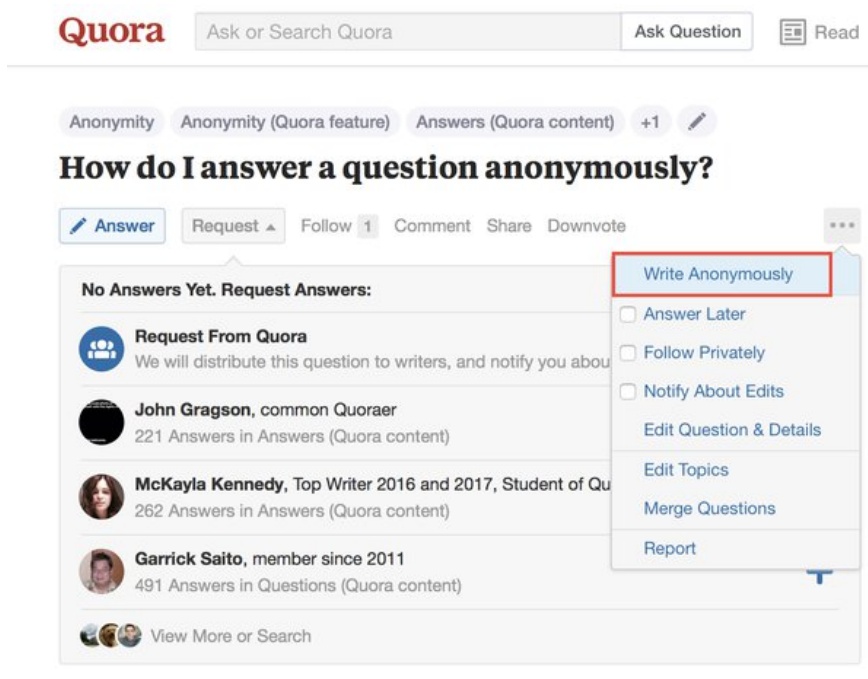


Figure 2.3: Posting an answer anonymously.

2.1.3 Comparison Between Quora and Other Online Platforms

Quora, as a knowledge-sharing platform, holds a unique position in the digital space. It facilitates a structured Q&A format that encourages collective understanding, distinguishing itself in a space where similar platforms, such as Yahoo Answers, have folded. When compared to other platforms, distinct differences and similarities between Quora and other platforms emerge based on aspects including primary purpose served, content shared, identity and users' social interaction.

2.1.3.1 Reddit

Among the platforms discussed in this section, Reddit and Quora seem to share the most similarities on the surface; however, there are also some considerable differences between the two. Both platforms serve as knowledge-sharing spaces that foster communities where users can share knowledge and engage in discussions. However, Reddit's engagement is more discussion-oriented, while Quora focuses on providing direct answers to specific questions. Quora organises content based on topics, which are broad categories that include a wide range of questions and answers related to a specific subject, while Reddit uses subreddits for categorisation, where each subreddit is a separate community with its own set of rules, discussions and moderators, focused

on more specific interests or themes.

Similar to Quora, Reddit employs a reputation mechanism known as the ‘Karma system’ to gauge a user’s contributions to the community. Karma is earned through points from upvotes on a user’s posts and comments and lost with downvotes. Karma serves as an indicator of user engagement and the quality or popularity of a user’s contributions.

Nevertheless, user identity is one of the major differences between the two platforms. As previous research indicated, Reddit is centred around discussions where users commonly use pseudonyms [5, 8]. Each post or comment is linked to a user-name, but the platform does not strongly emphasise the connection between different submissions by the same user as the norm is largely pseudonymous, whereas on Quora, the norm of using real names creates a more direct and transparent link between users and their contributions. In addition to the fact that Reddit does not have a ‘real-name’ policy and allows pseudonyms, it also allows easy creation of temporary ‘throwaway’ accounts, which can be created without an email address, require only a user name and password, and do not link to a user’s primary Reddit identity [65]. These accounts are often used to maintain anonymity for specific posts or situations. Reddit’s flexible approach to user identity contrasts with Quora, which had a strict policy regarding use of real names and established a stronger link between users and their contributions. Even after the recent relaxation of the policy, Quora still encourages using real names, and that use has shaped the culture since the platform’s beginning.

2.1.3.2 Stack Overflow

Stack Overflow and Quora are platforms designed for question-and-answer interactions, although they serve different audiences. While Quora is a general-purpose platform covering a wide range of topics and interests, Stack Overflow targets a professional audience, primarily in the tech and programming areas. Both platforms have mechanisms to build reputation; Stack Overflow uses a point system based on the quality of answers and user engagement [77, 86, 145, 144, 13], similar to Quora’s up-vote system and credentials. A notable distinction lies in Quora’s social aspects. For example, a study by Paul et al. [100] about reputation on Quora introduced the ‘social voting’ practice, reported by users as a way to draw the attention of higher-status users for reputation building by up-voting their posts. In contrast, ‘serial voting’, referring to consecutive voting between specific users or from a single user, is not allowed on Stack Overflow. This can lead to vote reversal, causing users to lose points from their

reputation score or even face account suspension [127]. Following the success of Stack Overflow, its concept was expanded to other fields of knowledge, leading to the creation of Stack Exchange, a network of Q&A websites. Interaction on these platforms remains primarily professional, focusing on sharing knowledge and problem-solving, while Quora has both a broader topic range and a significant amount of content involving personal experiences and opinions.

2.1.3.3 Yahoo Answers

Unlike Quora, Yahoo Answers, which was discontinued in May 2021 [139], was often perceived as a platform for casual or less serious inquiries. It lacked a robust reputation system, which could be associated with lower quality responses and less engagement from professionals or experts. Yahoo Answers did not provide features like following topics and users or the ability to comment on answers, limiting interactive and engaging user experiences. The lack of these features, coupled with a less strict moderation policy, contributed to a more casual and less structured environment on Yahoo Answers.

2.1.3.4 Ask.fm

Ask.fm operates on a more personal and informal level than Quora. It allows users to ask questions anonymously if they choose, often leading to more casual or social interactions [10]. Unlike Quora, Ask.fm lacks a robust reputation system, which can result in a variance in the quality and seriousness of the content. The platform's focus is more on individual interactions and social engagement than building a repository of knowledge. The anonymity feature on Ask.fm is a fundamental part of its user experience, allowing for casual and personal interactions without revealing identity, contrasting with Quora's former selective use of anonymity within a platform focused on credible and identifiable contributions. The anonymity feature on Ask.fm, while fostering a more relaxed interaction, can sometimes lead to issues like cyberbullying or spam as indicated by Binns [12], challenges that Quora tries to mitigate with its moderation policies encouraging the use of real names. Overall, while both platforms serve as mediums for Q&A interactions, the frameworks and user engagement largely differ, aligning more towards professional and informative interactions on Quora and personal, informal and often anonymous interactions on Ask.fm.

2.2 Privacy, Online Identity and Behaviour

2.2.1 Theoretical Background

In *Unpacking Privacy for Networked World*, Palen and Dourish built upon social psychologist Irwin Altman's conceptualisation of privacy [2] by expanding it to online communication. They defined privacy as a dynamic and dialectic process that needs constant negotiation and balancing by management [95]. This continuous negotiation of boundaries involves three aspects: 1) disclosure (balancing the need for publicity with the need for privacy), 2) identity (managing the presentation of self against various audiences) and 3) temporality (navigating tensions between past, present and future actions and interpretations).

Moreover, this ongoing process varies depending on the context, suggesting that managing these boundaries may be trivial in some situations and require more effort in others. This concept aligns with what Nissenbaum describes as contextual integrity [89], which is defined as the appropriateness of information flow within a specific context based on the norms of distinct social spheres and the roles of participants involved.

Delving into the disclosure aspect of the boundaries mentioned above, Palen and Dourish suggest the mere fact of being active and part of online communities means that one must self disclose. Further, the act of disclosure is not merely about sharing information; it also involves strategic management of what to disclose, to whom and under what circumstances. Regarding the second aspect of identity boundary, they indicated that the idea of 'self' is built based on social setups, and 'other' is not a single, uniform group. This means that disclosure requires balancing between personal and collective identity. While initial thoughts might lean towards a clear, individualistic boundary, the reality is nuanced due to affiliations and allegiances, as people often act as part of broader social or professional groups. There are also various 'others' like work colleagues, friends or the general public. The third temporality boundary concerns with the tension between past, present and future in managing privacy and sharing information. It is not just about what information is shared now, but also how past actions and future possibilities influence current privacy management. By keeping information available, technology adds a challenge to managing this boundary because it affects how information shared now might be used or seen in the future. So, managing disclosure involves thinking about how sharing information now might affect things later on, especially considering that technology can make information

accessible indefinitely.

Anonymity emerges as a prevalent strategy for privacy management among internet users [56]. The common narrative regarding online identity in literature revolves around the tension between the importance of personal accountability in identified communication to prevent trolling and negativity [41], as opposed to anonymity to preserve people's privacy. A considerable body of literature has associated anonymous communication with the disinhibition effect, which refers to the phenomenon where individuals exhibit uninhibited and open behaviour when their identity is concealed [17, 129, 52, 53].

Diving deeper into the nuanced relationship between online identity and behaviour, several studies in the literature have looked at the complex interplay between them. Goffman's dramaturgical approach [36] has been used to examine how people present themselves depending on the audience in both online and offline settings [154]. It views social interactions as analogous to performances on a stage, where individuals adopt different roles to shape how others perceive them.

Hogan extended Goffman's theory to include online communities by distinguishing between two distinct forms of self-presentation [47, 48]. In addition to what Goffman proposed in everyday life situations as ephemeral 'performance' or situational form that occurs synchronously within bounded settings, Hogan introduces the concept of 'artifacts' or 'exhibition' forms that take place asynchronously like posting status or pictures, which involves a more careful curation by the poster. Hogan suggested that most online interactions occur asynchronously, with audiences viewing the curated self-presentation of individuals after the act of performance is finished. Moreover, he discussed how the existence of all of the different groups of audience in a single space, which is referred to as 'collapsed contexts' as it collapses all of the partially overlapping social circles, would lead to the 'lowest common denominator', where individuals present themselves in a way that they think would appeal to the broadest online audience or those who might have access to the persistent content.

Further, Hogan pointed out that the lowest common denominator for the same person might differ across different platforms. Several other HCI studies have also shown the ways that different norms or affordances impact how users behave when presenting themselves and disclosing information [140, 6, 27, 131].

Regarding the debate over the use of real names in online communities in particular, while platforms such as Facebook, according to their Transparency Center, are designed for users to manage their singular real-name identity as having multiple

identities might lead to a lack of integrity [30], others argue that this approach views identity as being detached from its context, as if online identity is simply a binary between being fully identified and fully anonymous [138]. As Hogan suggested earlier, the challenges start emerging with using real names online as this practice does not allow for the segmentation of social roles that happens naturally in real life. The design of the Google+ platform, for example, incorporated these distinct but partially overlapping social circles [54]. However, the issue is not solely about the different segmentations of audience but also the lack of spatial and temporal boundaries associated with much of online communication. While offline individuals are typically understood within specific roles that are confined to particular spaces and times, often changing and temporary, online individuals have persistent names that are associated with searchable content.

The theoretical frameworks discussed above by Palen and Dourish and Hogan address online identity and privacy but focus on different aspects and perspectives. Palen and Dourish [95] concentrate on the broader concept of privacy management in networked spaces, emphasising the fluidity and context-dependent nature of privacy as a dynamic process in online settings. Meanwhile, Hogan delves into the specifics of self-presentation and audience management in online interactions, highlighting the challenges posed by asynchronous communication and collapsed social contexts [47].

2.2.2 Key Work on Related Platforms

A general investigation of why people seek anonymity across the internet by Kang et al. [56] indicated that the motivation behind participation online could shape how users view potential risk. The authors explored through interviews how individuals utilise anonymity for various online activities. The authors identified five categories of personal threats: online predators such as hackers and stalkers, organisations including government and business organisations, known others, other users on the site or in the community and unknown others. Their findings also revealed that, regardless of their technical experience, half of the participants achieved anonymity by refraining from participation, restricting their shared information or providing false personal details. Further, the authors distinguished between using a consistent pseudonym across multiple platforms and using a specific pseudonym for a certain community. Similarly, literature on online social communities has reported various strategies employed by users to control disclosure; in addition to the use of different profile types such as

pseudonyms, these strategies include self-censorship [125] and the creation of multiple profiles [49, 140, 132].

Some studies highlighted challenges with professional or science-related online communities in particular [96, 135], where transferring offline identity to an online platform helps to overcome the cold start phase, which refers to the early stages when there is limited or no existing user base or content. However, transferring an offline identity could also introduce the halo effect, a cognitive bias in which the overall impression of something is influenced by the perception of its specific traits or qualities. A prior study by Park et al. [96] compared two Reddit communities: one where people share peer-reviewed articles and another focused on casual science discussions. In the first community, the findings indicated that users who revealed their academic degrees were more likely to receive higher audience votes and larger discussion sizes than those who did not disclose their identities. Conversely, in the casual science community, only users with higher degrees, such as a PhD or an MD, experienced similar benefits in terms of interaction and feedback. This indicates that, while academic credentials still hold value in more informal settings, they may not boost user interaction unless they are of the highest order. Furthermore, in a study by Tausczik and Pennebaker [135] on MathOverflow, a mathematics question-and-answer (Q&A) website, votes were also correlated with offline social status. Although this seems like a factor that would positively impact the dynamic of the platform, biased community feedback can also discourage members who receive less feedback from posting or even staying on the platform, which would eventually affect the overall participation and growth [69, 76].

Similar results were reported in the previous study on Quora by Paul et al. [100], as users would check other users' profiles to judge credibility and view answers posted by experts to be more authoritative. The challenge of privacy and identity management on Quora is even more complex. Because Quora offers a wide range of topics and personal sharing, it requires freedom from the constraints typically associated with real identities. This dual focus on professional and personal contexts makes navigating privacy and identity on Quora more challenging than in communities geared solely towards professional settings.

Other studies investigated privacy and anonymity in the crowdsourced knowledge community Wikipedia. For example, one study by Forte et al. [32] conducted interviews to understand how privacy concerns might impact participation in open collaboration projects. Participants expressed concerns about having their editing history

revealed to others. Their concerns extended beyond how the content itself might reflect on them; they also worried about how the social connections and group identity formed or implied through their contributions might be perceived. Wikipedia editors employed various strategies to maintain anonymity that were categorised as technical and operational approaches. Some editors used the Tor browser for anonymous contributions, while others altered their behaviour, such as meticulously managing editing activity to avoid revealing their location, thereby safeguarding their identity from being easily pieced together through editing patterns related to personal or nearby locations. Also, some reported practical methods that prevented others from linking activities to participants' real identities, such as using multiple accounts. In another study, Tran et al. [137] employed a mixed method approach to compare Wikipedia editors who used Tor and those who did not. They found that although editors using Tor were more likely to revert (undo) others' contributions and have their own work reverted, additional quality indicators suggested that their contributions were similar.

Another study of Wikipedia by McDonald et al. [81] focused on service providers and their perceptions of privacy-enhancing technologies that allow Wikipedia contributors to attain different degrees of anonymity. They found that service providers, who rely on IP data as a tool to identify and eliminate sources of bad contributions, recognise the importance of anonymity primarily as a means to make it easier for people to contribute content rather than as a tool for protecting user identity. Specifically, they acknowledge that linking contributors' identities with their contributions could be seen as a barrier and that concealing contributions helps newcomers avoid worrying about how their contributions reflect on them. This concealment could be achieved through pseudonyms. The study highlighted that service providers view anonymous users as those who have not logged in rather than individuals actively seeking anonymity for privacy reasons. This understanding aligns with the policy simplifying the contribution process by not requiring user logins. These findings suggest that the decision-making and policies around user identity on Wikipedia are driven more by concerns about user engagement and contribution, prioritising ease of participation and lowering barriers for new contributors rather than privacy protection.

Twitter, currently known as X, is an example of a widely used platform that does not impose a real-name policy. Also, while it could be used for both personal and professional communications, it has been described and studied as a tie-based platform. In a study about identity on Twitter, Peddinti et al. [103] compared the prevalence and behaviour of users disclosing their full name with anonymous users who disclose neither

their first nor last name. Only about 5.9% of users used non-identifiable pseudonyms, and about 25% were semi-anonymous in that they did not provide both their first and last names. They found that anonymous users are generally more likely to be active users, as they tweet more, follow more accounts and are more likely to expose their activity by having public accounts (as opposed to private accounts with protected posts).

Platforms with a semi-anonymous Q&A structure, such as Ask.fm, have been associated with an increased reputation for cyberbullying [12]. These platforms are primarily characterised by their anonymity, often lacking detailed user profiles, social structures or reputation systems that are typical in more identity-centric online communities, as discussed in Section 2.1.3.4 above. Despite that, another study by Ashktorab et al. [10] shows that these platforms that are semi-anonymous in nature can also be used for positive purposes. Namely, the authors found that self-disclosure and social-support-seeking behaviours were common. One highly cited reason for anonymous self-questioning was to share information that a user wanted others to see, suggesting that anonymous self-questioning lowers the barrier to disclosing sensitive information. On the Whisper platform, a previous work by Kang et al. [57] examined users' experiences with completely anonymous communication. Despite the lack of affordances for social identity or relationships, users primarily had social motivations for posting. Specifically, study participants indicated that they used the platform to obtain social validation from the crowd by evaluating their opinions and behaviour without confronting conflicting expectations from different social groups or dealing with the issue of context collapse in social media.

2.2.3 Questionnaire-Based Methods for Privacy Research

Regarding research methodologies, the advantages of using questionnaire-based methods to understand self-disclosure and posting decisions have been highlighted by several studies in the HCI literature. Specifically, it was pointed out by Ma et al. [74] that questionnaires enable researchers to gather information on items that participants might not, or have not, shared in specific situations, complementing other methods that primarily analyse already-shared content and behaviour on online platforms. A questionnaire also allows collecting data across multiple items and scenarios, resulting in a more detailed understanding of the relationships between different variables. For example, a previous study by Liao [67], employed a questionnaire approach to investigate how people balance self-presentation and privacy as they disclose personal health

information online. In another survey study by Kang et al. [55], privacy preferences, including the use of anonymity, were examined among different groups of workers on Amazon Mechanical Turk (MTurk), an online crowdsourcing platform where individuals can perform tasks for monetary compensation. By using a survey approach, they were able to examine people's preferences and perceptions and link them to their individual and personal characteristics.

As mentioned above, a prevalent strategy for privacy management is the use of anonymity. On multiple platforms, prior HCI research has employed anonymity features as a proxy to indicate and manage sensitive content. The next section discusses this relationship and explores how anonymity has been utilized in examining the sharing of sensitive information in relevant research.

2.3 Anonymity as a Cover for Sensitive Information

Due to its subjectivity, defining content sensitivity is complex. Definition disparities appear in privacy policies and terms of service adopted by different online services. Despite these differences, health is a common sensitive category for many online service providers such as Google and Facebook [29, 38].

Prior literature demonstrated that people perceive content with different levels of anonymity sensitivity. For example, to compare the anonymity sensitivity of content, MTruk workers were asked to annotate posts from anonymous (Whisper) and non-anonymous (Twitter) platforms without revealing the source of the post [22]. The study by Correa et al. found that according to users, Whisper contains more anonymous sensitive content than Twitter. However, content posted on Whisper has many levels of anonymity as it exhibits a wide range of anonymity sensitivity as perceived by annotators. In other words, the anonymity of content on Whisper is not binary or straightforward but spans a spectrum where some content might be perceived as highly anonymous, some as slightly anonymous and other content exists at various points in between. The authors stated that their experiment confirmed that anonymity is highly subjective in nature, as previous literature indicated [105].

In defining anonymity, sociologist Gary Marx states that 'to be fully anonymous means that a person cannot be identified according to any of the seven dimensions of identity knowledge', which include legal name, location, behaviour patterns, social group membership, identifying personal characteristics or pseudonyms that can be linked with these [79]. Despite Marx's strict definition, several studies in HCI litera-

ture suggest that platforms like Quora and Reddit are perceived as providing an acceptable level of anonymity through the provision of privacy-related features [7, 101, 65]. These studies indicate that by allowing users to post anonymously or use throwaway accounts, users are given the opportunity to participate in freer and more open self-expression and interaction. The authors also ground their work on the premise that anonymity is not a binary construct but instead can be achieved to different degrees.

For example, anonymity usage on a corpus of answers posted on Quora was analysed by Peddinti et al. [102] using an anonymity feature as a proxy for content sensitivity to identify sensitive topics that are more likely to be posted anonymously. The authors also built machine learning classifiers to assess sensitivity prediction based on content. They concluded that content alone, despite being a good indicator of sensitivity, is not enough and that other contextual factors, including information needs, ought to be considered when developing an understanding of sensitivity. Further, based on their survey study, they suggested that user-specific differences could be significant contextual factors that need more extensive investigation in terms of their role in sensitivity perception. The authors also suggested that data-driven and self-report approaches complement each other in understanding privacy preferences. Mathew et al. [80] grouped the set of topics on the same data set into three major clusters: an anonymous cluster containing topics with many anonymous questions, a non-anonymous cluster with topics with predominantly non-anonymous questions, and a neutral cluster. Then, they investigated differences between clusters using linguistic and personality trait features. A major finding was that using an anonymity feature and receiving fast responses are associated with queries about anxiety and depression.

Among the research that investigated identity and behaviour on Reddit, several studies focused on sensitive and stigmatised topics in particular. For example, it was revealed in a study by Ammari and Schoenebeck that pseudonymity on Reddit enabled users to discuss topics such as parenting that they would not feel comfortable posting about on Facebook [3]. Another study by Choudhury and De examined mental health discussions on the platform and showed that anonymous users were more open and talked more about negative things [19]. Further, aligning with previous findings by Gagnon [34], it was observed that most users posting under throwaway accounts posted only once; the one-time use indicated a tendency to use these accounts for discussing sensitive topics, allowing writers to engage without leaving a trace for future discussions. Analysing posts on an anonymous mom online forum, for example, showed that the mothers discussed situations and issues that disregard societal and cultural

norms [120].

2.4 Social Information Searching

The concept of social search refers to social interactions within the framework of searching. Several studies have shown that in many cases, results provided by search engines do not satisfy the original information needs [70, 85]. Therefore, people might choose to switch to alternative ways of obtaining satisfactory information, often due to more sophisticated needs and motivations. Relevant alternative platforms of user-generated content include community-based question answering, which are crowdsourced services for sharing experiences and knowledge like Quora, in addition to the more personal social networking services such as Facebook and Twitter. Community question-answering (CQA) or social Q&A platforms like Quora, Stack Overflow and Yahoo! Answers are crowdsourced sites where people can share knowledge by asking and answering questions.

Previous literature traced how failed search engine queries turned into questions in Q&A websites [70]. To understand the transition, Liu et al. analysed the characteristics and intent of such queries during web search sessions, and the associated behaviour of searching, as well as differences between a query and corresponding question posted on Q&A websites. The subjects of questions were very similar to the subjects of the corresponding queries, whereas the questions were significantly longer than the queries and were expressed in natural language with many more details. In their comparison of questions posted by those who transitioned and all Q&A questions on Yahoo! Answers, it was found that questions asked by searchers were more informational, looked for advice and facts, and expected faster responses, whereas other questions on Yahoo! Answers tended to be more personal, and users engaged in discussions and conversations with people who responded. An interview study by Jeon and Rieh investigated why people value social search on Q&A sites in particular [51]. Their findings indicate that common reasons were the need for firsthand information, diverse perspectives, and others' value judgments. Further, participants reported preferring social search systems over web search engines in situations that require tailored information and original and non-popular information. In a study by Choi and Shah that surveyed users of Yahoo! Answers and WikiAnswers, participants expressed their desire to ask questions themselves and receive personalised responses, even if they knew that the question had been asked by others [18].

Other studies have looked at the transition from traditional search engines to social networks such as Facebook and Twitter. For example, a prior work by Oeldorf-Hirsch et al. [90] carried out a laboratory study to understand the search behaviour in status message question asking (SMQA) and the routing of information needs between the two different types of search. That study showed that factors such as the perceived audience of the social network and the specificity of information needs might affect routing decisions. Another study by Liu and Jansen [71] developed a framework called 'ASK' that classified questions asked on Twitter into three types: accuracy questions (i.e., 'A') that sought facts and how-to answers, social questions (i.e., 'S') that requested either companionship or coordination support, and knowledge questions (i.e., 'K'), wherein people asked for opinions and recommendations. The taxonomy was also implemented using machine learning classifiers to automatically classify questions into these ASK types.

When it comes to health in particular, it has consistently remained a widely searchable and explored subject. According to the findings of the national survey project 'The Social Life of Health Information' by the Pew Research Centre [33], about 72% of US internet users have looked online for health information, and 26% were interested in other people with similar experiences and health concerns. Further, a survey study in Scotland reported that not only did 68.4% of respondents search online before a medical appointment, but the search results also influenced the decision of approximately 34.6% of participants to attend the appointment [83]. Increasing demand has resulted in the evolution of research areas related to health informatics, including health information searching. Extending beyond studies that examined search behaviour by relying on search logs, several information retrieval researchers suggested using the Q&A platforms to overcome the lack of context in search logs of simple queries. For example, the user-generated health-related questions posted on the social Q&A platform Yahoo! Answers were examined in a prior work by Zhang [153]. The study argued that such questions and interactions provide a context-rich and valuable source that represents the factors of the underlying sophisticated health information needs and search behaviour and that deeper analysis and understanding can help to gain insight into designing better personalised and usable health information systems.

When examining the content of Q&A platforms, various research works have adopted a qualitative approach to perform in-depth analyses on health-related questions and answers shared in Q&A platforms. For example, a corpus of Yahoo! Answers questions was analysed by Zhang [152] to characterise contextual factors that are involved in

health information searching in Q&A websites. In a more detailed study, a layered model was developed to contextualise and convey health information searching based on the author's analysis of user-generated questions on the Q&A website Yahoo! Answers [153]. Questions on Yahoo! Answers about eating disorders were investigated by Bowler et al. [15] to provide a taxonomy of questions about the topic on social Q&A platforms. Detailed sub-categories showed that a rich and broad range of contextual factors exists in questions posted on Q&A platforms. Gui et al. [40] have also looked at pregnancy support seeking from peers in online health communities as an example of a staged condition.

Also, language analysis is among the approaches commonly used on these platforms. Some studies have highlighted the importance of analysing the linguistic features of the content shared on these Q&A platforms. For example, based on the previously mentioned taxonomy of questions about eating disorders on Yahoo! Answers, another study by Oh et al. [91] carried out an analysis to understand the linguistic characteristics of questions in each category and the underlying needs by utilising term frequency analysis and part of speech (PoS) tagging. Language analysis revealed distinct linguistic and thematic differences between socio-emotional and informational questions, with the former showing a focus on personal and past experiences and a more negative emotional tone. Other studies performed statistical analysis on LIWC linguistic features to understand content and user behaviour on Quora [80, 75]. Linguistic Inquiry and Word Count (LIWC) is text analysis software that quantifies various aspects of language use [134]. Specifically, it calculates the count score (percentage) of words in the given text that belong to each of the predefined categories. It examines psychological, cognitive, and structural components in a given text by analysing words in categories like emotions, thinking styles and parts of speech.

2.4.1 Community Question-Answering Platforms

Prior research looked at various aspects of CQA platforms. A previous study by Kayes et al. [59] classified the work done by HCI and information retrieval researchers on these platforms into categories that include content perspective, user perspective, system perspective and social network perspective. The first category focuses on content-related aspects such as looking into the sentiment and language of content posted on these platforms [63], the quality and answerability of questions and answers [75, 66], and categorising content by building taxonomies or model of questions

or answers [153]. User perspective works involve the human factor aspects such as investigating the posting behaviour that includes motivations behind participation [94], moderation [50], and how users view and assess credibility. System perspective works are concerned with developing tools and algorithms to improve the performance of the system, such as question routing and answer ranking [150], while the social network-related research involves analysing the underlying social links and graphs that connect users and content [141].

From the user-centric perspective, several previous studies looked at posting behaviour in terms of the motivations to post or participate in the platform. Users on CQA can be motivated to participate extrinsically or intrinsically. In a study by Mamykina et al. [77] on Stack Overflow, interviewees demonstrated a combination of intrinsic motivational factors that include a desire to help their community and learn as well as extrinsic factors such as wishing to enrich their professional portfolios or simply collect reputation points. Consistent with previous research, the interview study by Paul et al. [100] with Quora users found that while extrinsic motivations such as reputation building and social capital were reported to be important, users also mentioned other intrinsic factors that motivate them to post, like gaining personal satisfaction in answering questions or fulfilling their curiosity by exploring new topics.

Most of the work has been done on the motivational factors of posting [87, 149], nevertheless, some studies shifted the focus to investigate the behaviour of not actively participating in these communities, which is often called 'lurking'. Lurking refers to the practice of passive participation where users regularly visit the platforms and view the content but never or very rarely post, share or interact with others. A recent study by Liu et al. [69] explored the reasons behind lurking in Q&A sites and categorised them into motivation-related and ability-related obstacles. In their investigation of the barriers to participating in arguments or opinions in particular, the authors reported motivation-related obstacles that include a lack of confidence in a post that they are reluctant to share, either because existing answers seem to be perfect and intimidating or because the answer that they are about to post has to be comprehensive enough to be perceived as useful. Some participants reported reasons related to the willingness aspect of motivation, such as worrying about the time-consuming tasks associated with posting these answers. From the ability side, challenges related to unstructured arguments and finding the proper angle were reported. Further, due to the loosely connected nature of CQA compared to other closer online groups where they would receive faster feedback and feel the importance of their roles, participants reported that they would

avoid posting altogether.

Lurking was also described in the literature as a phase for newcomers who need time to become familiar and comfortable with the platform and start making contributions [94]. Privacy-related reasons were outlined in a review study by Sun et al. [130] on lurking in online communities. In this case, the decision to lurk could be seen as a form of self-censorship, where someone who is engaging in self-censorship may choose to lurk in an online community rather than actively participate in order to avoid the risk of attracting negative attention.

Regarding how users engage with CQA platforms, a prior work by Mamykina et al. [77] analysed how users on Stack Overflow engage with the platform. The most common user group was people who only ask but do not answer or vote on questions, followed by users who only answer but never ask or vote. When considering the overall activity, the authors also found that users with the highest activity tend to post more answers than questions, whereas users with less activity have higher question ratios. People who provided answers were classified into groups such as activist and low-profile according to the frequency of answering. The previous findings are in line with what was found in the largest question-answering online community in South Korea by Nam et al. [87], Naver Knowledge-iN, as there was a separation between the larger number of users who were either mostly askers or mostly answerers and a smaller number of users who maintain a balance in a certain topic or category.

Demographics have been examined as one of the factors influencing participation in CQA platforms. The behaviour of asking and answering questions was analysed across different social Q&A users in a study by Yang et al. [148] about the role of demographic factors on social search. Cultural characteristics appear to have the strongest influence compared to other demographic variables in terms of differences between preferences and motivations of information-seeking perception and behaviour between people from Asian (China and India) and Western (the United States and the United Kingdom) countries. Previous results regarding the existence of cultural differences in behaviour are consistent with the findings of another study that investigated the influence of cultural factors on behaviour on Q&A platforms, including privacy concerns [60]. Specifically, a data set of Yahoo! Answers from 67 countries was analysed using cultural metrics from Geert Hofstede's cultural dimensions theory [45, 46], including power distance, individualism versus collectivism and uncertainty avoidance. In addition, Robert Levine's Pace of Life metric was also utilised, which is an indicator of the pace of life according to measures such as walking speed across

different countries. Considerable behavioural differences were observed in the users from different countries. The findings indicate that users from individualistic countries provide more answers, have higher contributions than take away, and are more concerned about their privacy than those from collective cultures.

To understand possible cultural differences that could be associated with lurking as opposed to participation in CQA platforms, a prior study by Oliveira et al. [93] looked at the differences among users of Stack Overflow. Their findings reveal tensions between collectivist values, such as the openness for social interactions, and the performance-oriented, individualist values embedded in Stack Overflow's design and community guidelines. Participants from China and India mainly pointed out the insufficient social interaction on Stack Overflow as a reason for not engaging with the community. Meanwhile, participants from the US were comfortable with mainly being content consumers and not actively engaging with others.

2.5 Studies on Quora

Despite its popularity and being one of the few remaining general-purpose Q&A sites, Quora has not received as much research attention as Stack Overflow [133, 93, 94, 77, 145, 104, 155], Yahoo! Answers [60, 63, 26, 1, 14, 63, 28] or Reddit [116, 4, 5, 8]. To my knowledge, apart from an interview study that explored reputation mechanisms on Quora by Paul et al. [100], most research on this platform has employed a data-driven approach. These studies include a large-scale analysis of the connection networks of topics and users [141], investigation of the answerability of questions through linguistic analysis [75], detecting experts on the platform [99] and analysing the anonymity feature [102, 80, 43]. In a recent CSCW study by Das and Semaan, an API for Quora data collection was introduced to support multiple languages in a step that both encourages and acknowledges the need for further research on the platform [24]. In particular, there is limited qualitative and quantitative research delving into the user perspective of identity and posting behaviour on the platform; most existing research uses text analyses to detect behavioural patterns.

Some of the studies mentioned above have focused primarily on the reputation and social aspects of Quora. For example, the study on the reputation mechanism on the platform reported that Quora's real-name policy and social network structure encourage users to build and judge reputation based on past contributions [100]. This study also found that answers from these primary sources were considered high-quality

and authoritative by the Quora community. The presence of firsthand, experience-based responses was a key factor in the user's perception of the quality and reliability of information on the platform.

In emphasising the social structure of Quora, a study by Wang et al. [141] that analysed the connection networks within Quora revealed several relevant findings. It highlighted the importance of social relationships in generating high-quality answers. On Quora, users can follow other users and topics, creating a social network within the platform. This network facilitates the flow of information and enables users to see questions answered or up-voted by people they follow. The study suggested that these social interactions contribute to the quality of answers, as users are likely to provide more thorough, well-thought-out responses within their social networks. A study by Patil and Lee assessed the effectiveness of several features in classifying experts and non-experts on the platform [99]. They showed that the key features in predicting experts on Quora included the number of edits a user made, the number of followers they had, the entropy of their answers and the temporal features. These temporal features track the dynamic behaviours of users over time to improve the accuracy of expert detection.

Regarding the topic of identity, a prior work by Guo and Caine [41] compared three Q&A sites, including Quora, to examine engagement and quality of answers associated with anonymity. Another study by Paskuda and Lewkowicz explored the role of anonymity on answers in general health-related topics on Quora [98]. The first study focused on how different identity forms impact user behaviour, specifically in terms of sensitivity, quality and trolling behaviour [41]. The authors used a data set of 3,000 questions and answers from three Q&A sites with varying identity policies: Yahoo Answers, Quora and Zhihu. The study categorised questions based on their topics to determine sensitivity. The quality of answers was evaluated based on factors like relevance and helpfulness, while trolling was identified through behaviours such as offensive content. They found that questions about sensitive topics were more likely to be asked anonymously across these platforms, but anonymity did not detrimentally affect the quality of answers as answer quality remained consistent irrespective of the identity option chosen. However, an increase in trolling behaviour was associated with anonymity across all three sites.

Relevant to the finding about the quality of anonymous answers, the second study investigated how anonymity influenced answers in health discussions, with a specific focus on designing an online platform for elderly informal caregivers [98]. The re-

search aimed to identify differences between anonymous and non-anonymous answers by analysing 3,626 answers to general health-related questions on Quora. The authors examined aspects including social appreciation (measured by up-votes) and the length of answers to assess the impact of anonymity on the quality of user contributions. The key finding was that there was only one notable difference: anonymous answers showed a correlation between length and social appreciation. In other words, the longer an anonymous answer was, the more likely it was to receive up-votes, suggesting that when users were unable to identify the author of an answer (due to anonymity), they seemed to use the length of the answer as a cue for its quality or value, leading to more up-votes for longer answers. This contrasts with non-anonymous answers, where the correlation between length and up-votes was not as significant. This insight suggests that in the absence of identifiable information about the answerer, other factors, like the comprehensiveness or thoroughness of the answer as inferred from its length, become more important for users deciding how to express their appreciation or endorsement of the content. It is worth noting that their analysis did not examine either language or content; thus, their conclusion was based solely on the length of answers. Other studies in the literature have linked anonymous posting with greater openness, which could be an additional factor contributing to higher interaction and appreciation.

Research Gap

Related to the topic of my thesis, prior studies on Quora have either focused solely on reputation, as discussed above [100], or examined identity and the use of anonymity from a topical level to investigate which topics are sensitive and to try predicting or clustering topics accordingly. In the latter category of identity and privacy-related research, a notable study by Peddinti et al. [102] used the anonymity feature to explore content sensitivity. They analysed answers posted on Quora to identify sensitive topics associated with anonymity and built models to assess sensitivity prediction based on content. In another study by Mathew et al. [80], topics were grouped into major clusters depending on the prevalence of anonymity. The authors then investigated differences between clusters using linguistic and personality trait features.

Both studies took a data-driven approach and, based on their findings, it was acknowledged that considering the user perspective is crucial, indicating that further user-focused studies are needed to fully understand the nuances of online identity and behaviours on the platform. Namely, in the first study by Peddinti et al. [102], both

the prediction results, showing the limitations of relying only on content, and the brief user survey conducted confirmed the importance of the user perspective. In the second study by Mathew et al. [80], the lack of user-level information was reported as a limitation. This limitation was also apparent in how the authors relied on grouping LIWC categories of Quora posts according to the Big Five personality traits when they investigated the personal traits when posting anonymously versus using a real name. This approach did not provide information about what personal characteristics might impact the use of anonymity, as the comparison was carried out in general and not on a user level. This approach was taken as there was no link between anonymous posts and users when following the data-driven approach.

To sum up, when it comes to identity and posting behaviour, previous research on Quora has identified and compared topics with high and low usage of the anonymity feature, revealing generic LIWC and linguistic differences between these two groups. However, there is limited understanding of the specific case of questions within topics associated with anonymity. Specifically, within sensitive topics, it remains unclear how users behave in terms of content and language when they ask a question anonymously versus under their known identities. Additionally, little is known about how the anonymity feature was utilised beyond sensitive topics and what other factors, aside from content sensitivity, might influence its use. Also, the broader relationship between different identity forms and posting decisions, including preferences for anonymity in questions and answers on Quora, has yet to be fully explored.

I chose to focus on Quora for this thesis due to its unique combination of social networking features and Q&A format, which is underexplored in terms of user perspectives on anonymity and pseudonymity. Unlike other platforms, Quora's lack of an open API and limited research creates a gap that my work aims to fill. Its blend of public profiles, a prior strict real-name policy, and selective anonymity option provides a uniquely valuable setting to study the interplay between online identity and posting behaviour. Previous studies have primarily focused on reputation or anonymity at a large scale, but I aim to explore the nuanced relationship between identity and posting behaviour on this platform. In addition, the change in anonymity policies during the PhD afforded a unique opportunity to explore the effect of different anonymity policies within the same platform.

The view of privacy that I adopt in this thesis is based on the perspective of Palen and Dourish, who describe privacy as a dynamic and dialectic process involving constant negotiation and balancing by individuals to manage their disclosure and iden-

tity [95]. Their perspective has been extensively used in privacy-related research as it thoroughly covers multiple aspects of privacy involving identity and disclosure. Additionally, the context-dependent nature of privacy, as emphasised by Hogan and Nissenbaum, is integral to this viewpoint [47, 89]. Regarding anonymity, I follow relevant HCI research that recognises the anonymity features on platforms like Quora as providing sufficient levels of anonymity despite the strict definition of the term, and that these features are linked to managing sensitive content.

Chapter 3

Understanding Disclosure in Questions Posted on Quora (Anxiety Disorders as a Case of Sensitive Content)

3.1 Overview

This study aims to understand the disclosure in sensitive questions posted on Quora in-depth, focusing on the relationship between the use of the anonymity feature and posting behaviour about sensitive topics. A mixed-methods approach was employed to examine the differences between questions posted by anonymous and known (non-anonymous) askers.

In HCI research, mental health has been linked to anonymity in contexts such as searching for online information [107] and designing support groups [92]. However, the effect of anonymity on social question-asking, particularly on platforms like Quora, has been under-explored in prior literature [72]. In this study, I build upon previous work by Mathew et al. [80], focusing on a specific case identified as being highly associated with anonymity: posting questions related to anxiety. While previous studies on Quora primarily utilised LIWC for broad linguistic analysis, this study adopts an in-depth qualitative approach to delve into both the content and language associated with anonymous question posting on Quora.

First, I carried out a preliminary analysis to investigate if linguistic differences exist between questions posted by anonymous versus known askers in my data set to answer

this research question:

RQ1: For anxiety-related questions as a special case of sensitive content on Quora, are questions posted by anonymous askers different than those posted by known askers, in terms of linguistic features?

For this set of questions, I applied statistical analysis on linguistic features as extracted by LIWC to answer RQ1. I found some significant differences between the two groups of questions. In general, questions posted by anonymous users were significantly longer. Also, anonymous askers used significantly more personal pronouns, especially the 'I' pronoun, when asking questions, compared to known askers. To compare the content posted by the two groups of askers, I then addressed the following questions:

RQ2: How does the content of questions differ between anonymous and known askers on Quora?

RQ2.1: What do users post about? In other words, what themes emerge in questions posed by users, and how frequent is each theme?

RQ2.2: Across these identified themes, is there a difference in the number of questions posted by anonymous askers versus known askers?

RQ2.3: Within each theme, do the questions posed by anonymous and known askers differ in linguistic features, namely, in framing (self vs generic)?

To answer RQ2, I conducted a qualitative content analysis on a set of 520 randomly selected questions. Specifically, I investigated the prevalent topics discussed as well as the framing of questions. In general, I found that three major themes emerged from the topics discussed that involve three aspects: The Pathological Aspect – The Journey of Figuring it Out, The Personal Aspect – Living with Anxiety and The Social Aspect – Filling the Support Gap. In the first theme, askers delved into the pathological sides of their condition, emphasising its chronic nature. The second theme, Living with Anxiety, focused on the challenges of daily life with the condition, including routine management and dealing with it. The third theme highlights the need for social support with both professional and non-professional issues.

When comparing the content of anonymous and known askers, I found that both groups discuss similar topics, with no significant differences observed between their posts. However, examining the framing of questions revealed that anonymous askers

were more likely to self-disclose than known askers by framing their questions to refer to themselves as opposed to generic framing, especially when touching on topics related to personal and social aspects. On the other hand, the framing of questions that revolved around both the personal and general pathological aspects of the condition did not differ between anonymous and known askers.

3.1.1 About Anxiety Disorders

In this section, I give a brief overview of anxiety disorders to provide relevant context to this analysis. While normal anxiety has an important role as a motivation to take action, get things done and avoid certain unwanted life situations, pathological anxiety disorders have an extreme, persistent and disruptive effect on someone's life [88].

There are different types of anxiety disorders, with the most common ones being generalised anxiety disorder (GAD), social anxiety disorder and panic disorder [88]. A diagnosis of **generalised anxiety disorder (GAD)** requires experiencing persistent and intense worries over a period of at least six months, more days than not, and experiencing any three of the symptoms of feeling restless, difficulty concentrating, being easily tired, muscle tension, irritability and sleep difficulties. GAD also involves a greater risk of heart attacks. People with GAD feel intense and continuous worry most of the time about things that relate to various aspects of daily life, such as health, family, work and daily routines and activities [126].

Social anxiety disorder, also known as social phobia, is the overwhelming and intense feeling of anxiety in social situations, which leads to avoiding these situations because of the fear of being criticised or judged [126]. While it is normal for most people to get nervous in some situations, people with social phobia are more likely to be negatively affected in terms of educational and income level [58], in addition to job performance. Withdrawing due to fear also extends to their family, friends and leisure activities [128].

Unlike previous types of anxiety disorders that tend to be associated with certain situations or threats, **panic disorder** is characterised by the recurrence of unexpected and sudden panic attacks. A panic attack is defined as 'a period of extreme fear or discomfort that reaches a peak within 10 minutes' [126]. It is accompanied by at least four of the following physical symptoms: chest pain, accelerated heart rate, excessive sweating, trembling or shaking, sensations of shortness of breath, feelings of choking, hot flashes or chills, dizziness or light-headedness, fear of losing control and fear of

dying [39]. Panic disorder is also described as a fear of fear, as people are likely to develop a fear of having future attacks [37]. In general, anxiety disorders are the most common and frequent type of mental disorder. They are also likely to have a co-morbid co-occurrence with each other and with other types of mental disorders [61].

3.2 Methodology

3.2.1 Data Set Characteristics

A customised web crawler was used to collect data between August and September of 2020. The crawler was built using Python and utilised the Selenium and Pandas libraries. Selenium is a web driver that can be used to automate navigation through dynamic pages, and Pandas is a powerful and flexible library to handle data wrangling [121, 136]. In order to only include questions associated with anxiety disorders and not normal anxiety, questions under the following topics were collected: anxiety disorders, social anxiety disorders, generalized anxiety disorder (GAD), panic disorder, and anxiety attacks. These topics were identified by searching for ‘anxiety disorders’ and then reviewing the options under the Topics tab. From the related topics that appeared on the ‘anxiety disorders’ page, I selected those specifically related to anxiety disorders, excluding general topics like ‘anxiety’ and ‘panic’ to avoid including questions about non-pathological anxiety. First, from the page listing questions for each selected topic, the crawler navigated to the individual pages of each question. Then, the full question text was obtained and classified as to whether it was posted anonymously. This resulted in a data set containing a total of 7,087 questions, with 1,242 (17.5%) being asked anonymously. Details about the data set are provided in Table 3.1.

3.2.2 Qualitative Analysis

A total of 520 questions were randomly selected for the thematic content analysis: 260 posted by anonymous askers and 260 posted by known askers. The thematic analysis employed iterative open coding, a process where codes are continuously refined and redefined, as described by Saldana [118]. Each question was coded by two researchers (Myself and Dr Mona Alqassim) according to three aspects: question topic, type of support requested and question framing. For the question topic, we used iterative open

Quora Topic	Known #Q	Anon #Q	Anon %Q	Total #Q
Anxiety Disorders	1818	242	11.7%	2060
GAD	1081	366	25.3%	1447
Social Anxiety Disorders	882	221	20%	1103
Panic Disorders	438	133	23.3%	571
Anxiety Attacks	1626	280	14.7%	1906
Total	5845	1242	17.5%	7087

Table 3.1: Summary of collected Quora questions by topic and if the asker associated their identity with the post (known) or posted anonymously (anon).

coding until the researchers agreed on the final codes. Initially, the researchers independently coded a 100-question sample of the data set and discussed their decisions to establish a common understanding. After that, 200 additional questions were independently coded by the same researchers, resulting in an inter-rater agreement of 0.80. After resolving disagreements through discussions, the questions were re-coded to fit into the emerging themes. The final codebook was checked by my supervisor Dr Maria Wolters, who independently reviewed the thematic coding of a sample of 200 questions. Open coding served as a starting point to understand the data without imposing predetermined categories, ensuring that we captured the nuances and emergent themes organically. During the open coding process, the type of support and framing emerged as additional relevant categories for coding the questions. The codes for the type of support were derived from earlier work by Dr Mona Alqassim and open coding as the analysis evolved.. The main distinction about question framing that emerged during the preliminary analysis and open coding was whether the question referred to oneself or was posted in a generic form. This iterative approach allowed us to refine our understanding continuously and ensure that our analysis was both comprehensive and grounded in the data.

3.2.3 Quantitative Analysis

To answer RQ1, the computational LIWC tool was performed on each group of questions. LIWC, or Linguistic Inquiry and Word Count, is a widely used tool for linguistic analysis in such platforms in prior research [80, 75]. It provides insights across a wide

range of linguistic features compared to other methods, such as Part of Speech Tagging (PoS) for example. Then, the statistical significance test of Mann–Whitney U was applied to each of the LIWC features to compare these two groups. The Mann–Whitney U was used as a non-parametric test of continuous, non-paired data, given that the LIWC feature values had a strongly skewed distribution on inspection. I applied the Bonferroni correction to adjust the p-values for the list of LIWC features by dividing each p-value by the total number of features. This approach was chosen as a straightforward and conservative technique for controlling the family-wise error rate. By using the Bonferroni correction, we ensure that the probability of making at least one type I error across all comparisons is kept at a conventional level, thus enhancing the reliability of our results when distinguishing between the anonymous and non-anonymous groups. To address RQ2.2 regarding the comparison between questions posted by anonymous and known askers after thematic classification, a statistical analysis was conducted on the frequency of questions across the themes derived from the qualitative analysis. Specifically, the chi-square test was applied to assess differences in the distribution of anonymous questions across the three top-level themes. The chi-square test was selected because it is appropriate for analyzing the frequency of categorical variables that involve more than two levels. Fisher’s exact test, a test for categorical variables with two levels that provides an exact p-value for small sample sizes, was used for RQ2.3, which focuses on the comparison between the proportions of anonymous and known questions based on self vs generic framing. Ethical approval for this study was granted by the University of Edinburgh with reference number 10728.

3.3 Findings

3.3.1 Preliminary Findings: Linguistic Differences in Anonymous vs. Known Questions

This section addresses RQ1, which investigates whether quantitative linguistic differences between questions posted by anonymous versus known users exist.

Table 3.2 and Figures 3.1 and 3.2 show the comparison of the linguistic categories between the two groups. As shown, questions added by anonymous users were significantly longer, with a median question length (word count: WC) of 16 words compared to 13 in the known users group. Moreover, anonymous askers used significantly more personal pronouns, especially ‘I’. All other personal pronouns (we, you, she, he, they)

had a median frequency of 0 and interquartile range (IQR) of 0, which means that they rarely occurred in the text. This suggests that questions address a person's individual feelings and not stories involving other people. In addition to pronouns, anonymous askers also tend to use more function words.

We noticed that using LIWC for further analysis may not be the most suitable approach, despite indicating significant differences in the preliminary analysis, for several reasons. First, a considerable number of our 7087 questions were short, leading to skewed distributions for multiple LIWC features and most values being zero, as reported above. Given this distribution, we reported both the median and interquartile range and opted for non-parametric significance testing. Secondly, the subsequent analysis was applied to a smaller subset of the data, further classified into themes. Prior research on Quora by Mathew et al. [80] that utilised LIWC conducted large-scale analyses involving millions of questions. Meanwhile, studies of Reddit focused on discussions and disclosures, which are typically longer and more detailed, making the use of LIWC more suitable [8].

Further, among our major findings was the significantly higher use of the 'I' pronoun among anonymous askers. This observation led us to delve deeper into question framing in the next qualitative analysis. Specifically, we examined whether questions were centred around oneself or framed in a more generic manner. By focusing on framing, as a more direct and concise way of examining language, we aimed to gain a focused and more insightful understanding of the data than what the extensive list of LIWC features might provide.

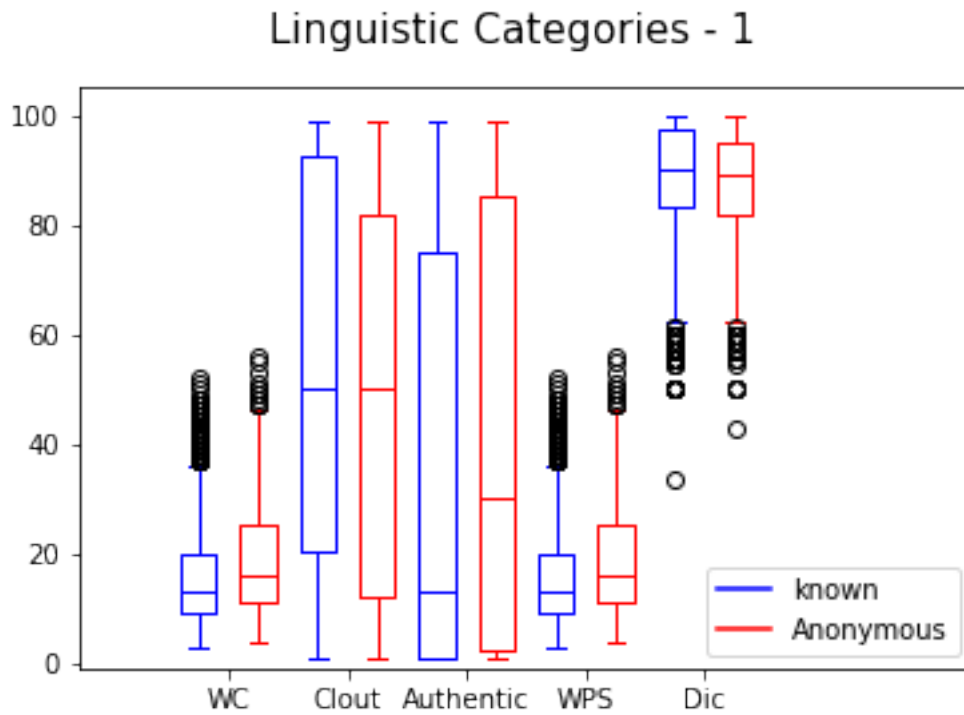


Figure 3.1: Significantly different LIWC features between questions posted by anonymous and known askers (Part 1 of 2).

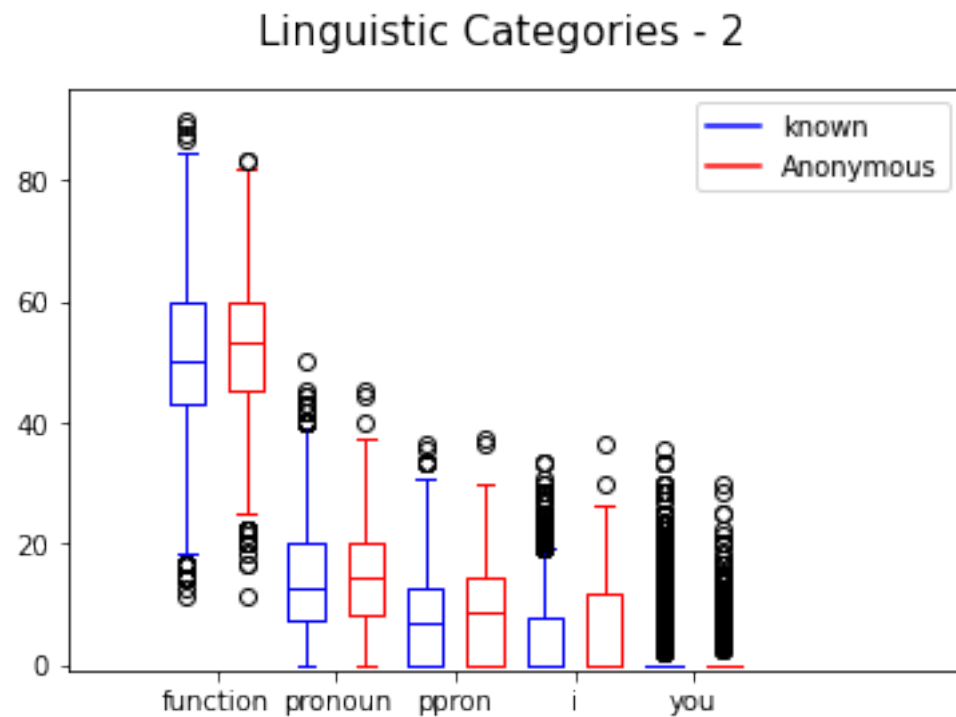


Figure 3.2: Significantly different LIWC features between questions asked by anonymous and known askers (Part 2 of 2).

Feature	IQR		Median		Adj. Sig.	ES
	Known	Anon	Known	Anon		
WC	11	14	13	16	***	0.172
Analytic	69.09	69.61	44.96	38.6	n.s.	-
Clout	72.09	69.87	50	50	***	0.133
Authentic	73.76	82.81	13.15	30.28	***	0.118
WPS	11	14	13	16	**	0.172
Sixltr	16.66	17.33	25	23.08	n.s.	-
Dic	13.97	13.18	90	88.89	*	0.064
Function	17.14	14.55	50	53.12	*	0.066
Pronoun	12.86	11.67	12.5	14.29	***	0.071
Ppron	12.5	14.29	6.67	8.76	***	0.107
I	7.69	11.76	0	0	***	0.176
We	0	0	0	0	n.s.	-
You	0	0	0	0	***	0.085
Shehe	0	0	0	0	***	0.029
They	0	0	0	0	n.s.	-
Ipron	10	9.09	5.56	5.26	n.s.	-
Article	8.33	8	3.85	3.51	n.s.	-
Prep	8.7	8.4	11.11	11.11	n.s.	-
Auxverb	7.97	7.05	12.5	11.76	n.s.	-
Adverb	9.09	10	4.76	5.56	n.s.	-
Conj	11.11	10.5625	7.14	7.69	n.s.	-
Verb	10.32	10.32	15.79	16.22	n.s.	-
Adj	7.69	7.14	0	2.355	n.s.	-
Interrog	10	9.09	5.88	5.26	n.s.	-

Table 3.2: LIWC analysis for all questions posted by anonymous vs known askers, analysed using the Mann–Whitney U test. Symbols ‘***’, ‘**’ and ‘*’ and ‘n.s.’ represent p-values <0.001 , <0.01 , <0.05 , and not significant, respectively. The Bonferroni correction has been used to adjust p-values. The ‘ES’ column presents the effect size of significant differences, measured using the rank-biserial correlation.

3.3.2 Qualitative Findings

I address RQ2.1 in the following two subsections. Subsection 3.3.2.1 presents the themes discussed in the questions posed by askers, with the details about the prevalence of themes in our data set 3.3.2.2. The findings in these subsections relate to the content posted by askers across both anonymous and known groups.

3.3.2.1 What Do Askers Post About?

This section summarises the themes and codes. Examples are minimally modified from the original questions, given that it was not possible to obtain consent for direct quotations from the question askers. These quotes appear in italics with the question number in superscript. I first describe the two supplementary dimensions of codes, type of support and framing and then the themes identified in our analysis of question topics. The themes are summarised in Tables 3.3- 3.4.

Support Goals (Type of Support Needed) and Framing Most questions sought informational support. Three main categories of informational support were requested: facts, advice and information about personal experiences. This confirms that information seeking is not only about the abundance of information available online. In particular, the exchange of experiences can provide access to practical information that has worked for someone with similar experience. Some advice requests were very general, while others specified the type of recommendations and information they were looking for.

Under emotional needs, users expressed their lack of hope and motivation and asked for emotional support to get inspired and encouraged by peers experiencing similar and successful experiences living with or treating anxiety. Some askers questioned their self-esteem, faith and the point of living and, in some extreme cases, shared suicidal thoughts. Within the emotional group, a few askers needed immediate help during urgent situations, asking for peer support to help them get through a difficult time.

Regarding framing, questions were either framed so the asker referred to self or in a generic form, with questions being asked generally instead of being directed towards a particular individual's situation.

Topic of Question There were three question topics identified by the themes: Pathological Aspects, Personal Aspects, and Social Aspects.

Pathological Aspect – The Journey of Figuring It Out Under the first theme, The Journey of Figuring it Out, most questions reflect the continuous and easy-to-miss nature of anxiety. Anxiety is an ongoing personal journey that involves uncovering possible causes, such as traumatic experiences that might go back to childhood, pinpointing triggers that provoke anxiety and developing coping skills. As a person's experience and solutions are individual, there is no 'one path' that will work for all. Most questions included in this theme were posted in a generic form. Also, most questions sought factual information, the most common type of informational support requested, followed by questions that sought others' personal experiences. Far fewer questions looked for advice.

Under this theme, askers discussed several issues related to anxiety. These included identifying symptoms and feelings associated with anxiety, distinguishing anxiety from other mental or physical health conditions, and understanding the triggers and patterns of anxiety. Additionally, there were questions about the potential resolution of anxiety, often framed as questions: 'Will it go away?'

Some questions were posted by askers seeking to identify symptoms and feelings of anxiety. Askers shared the symptoms they experienced at early stages of recognising the problem, to clear things up for self-identification and labelling the problem. Some people seeking peer support might not identify themselves as having the condition yet. Examples:

“Do I have anxiety? Sometimes, I'm calm, and then the next minute, my heart starts to race. I'm finding it hard to sleep. At what stage is it reasonable to assume that one has an anxiety disorder and should seek treatment?”^{Q.179}

In a related issue, askers sought help with distinguishing anxiety from normal feelings of being anxious:

“Sometimes I overthink stressful events and start feeling sick. Does that mean I'm having an anxiety attack, or is that normal anxiety in general?”^{Q.466}

Anxiety is a condition that can be easy to miss and mistake for other physical and mental conditions; it is also highly co-morbid with other mental health conditions. Diagnosis may require identifying specific forms of anxiety disorders such as panic disorder. Questions in this category were posted by askers who wanted to make a clear distinction between anxiety and these other conditions. Examples included:

“How do I know that I’m having an anxiety attack and not a heart attack?”^{Q.492}, and *“How can I tell whether I’ve got a personality disorder or whether I have social anxiety disorder?”*^{Q.60}

Understanding the causes, triggers and patterns of anxiety was the next issue. Some questions were about general causes of anxiety, such as genes and nature vs nurture factors, while others were posted by people trying to understand their own anxiety patterns and make sense of the situation. This includes trying to determine how bad the anxiety could get. Many askers came after a recent change in the frequency or severity of their anxiety; some had experienced anxiety for the first time. Related to this need, in some questions, users have reported that they have previously dealt with anxiety either through therapy or medications and had some improvement for a while. However, they are now going through a relapse and seeking peer support to understand. For example:

“Can panic disorder go away on its own? When I’m off school, mine flares up and then goes away after a week”.^{Q.233}

As part of understanding the problem, some askers want to know if anxiety can be cured (‘Will it Go Away?’). Some questions specify certain factors, such as age or if being treated versus left on its own, but the main focus of questions is whether anxiety can be cured, or is it a permanent condition. Most questions in this category sought personal experiences and success stories. For example:

“Will I ever get over my massive anxiety attacks?” ^{Q.300}

Personal Aspect – Living with Anxiety The next theme is Living with Anxiety. In addition to being chronic, anxiety is a condition that can interfere with nearly every aspect of life, affecting daily activities such as studying, work, relationships and parenting. Thus, finding the right coping mechanisms is challenging. The variety of questions under this category highlights the need for holistic support for living a full life with the condition and finding support for navigating through those challenges, either as a person with anxiety or a person supporting someone with anxiety.

Most questions in this theme were posted by people seeking advice on coping with anxiety, while other questions asked for personal experiences, such as success stories in dealing with anxiety. There is more balance than the pathological theme between generic questions and questions about oneself.

Two sub-themes emerged: handling specific life situations (e.g. *“how can I deal with my panic attacks when I’m at school?”*^{Q.196}) and managing anxiety or panic

attacks (e.g. *“My anxiety attacks usually last 20 minutes. What do you do while you wait for the horrible feelings to end?”* Q.476).

Social Aspect – Filling the Support Gap The last major theme is Filling the Support Gap. Some questions address needs related to formal, professional mental health assistance, where peer support is not meant to replace professional help but rather help with better self-management and facilitating seeking help from those professionals. Other questions seek support in communicating with the asker’s informal social network. In general, advice is the most common support type requested, followed by personal experience and, lastly, factual information. Generic questions and questions about oneself are equally common.

Within the sub-theme of professional help, questions asked about when to seek help, what treatment involves, how to choose the right type of professional help, barriers to seeking it and avoidance of professional help. Examples include:

“How do you decide when to cope on your own and when to reach out for professional help?” Q.42, *“I don’t want medicine, and I don’t want to see a psychiatrist. What can I do about my crippling anxiety?”* Q.37

Barriers to seeking professional help included difficulties opening up, lack of trust (e.g. chances of being misdiagnosed, trust in treatment), stigma (including from professionals themselves), and limited access to mental health services (including cost, extreme anxiety and being too unwell to seek treatment). For example:

“What would my therapist think of me if I have a panic attack during a session?” Q.195

Within the sub-theme of non-professional support, askers expressed difficulties in communicating with others about their mental health, including family and friends. One of the most common challenges is disclosing the problem, while other askers want help with communicating their needs regarding their mental health to people around them. Peer knowledge and lived experiences in resolving communication problems were highly valued.

Some questions in the data set involved multiple topics or types of support. A small proportion of questions sought either general advice or personal experiences without specifying a particular topic. These questions, along with those seeking general emotional support, were classified as ‘Other’ in Table 3.3.

Topic	N	%
Pathological – The Journey of Figuring Out	157	30
Personal – Living with Anxiety	168	32
Social – Filling the Support Gap	167	32
Other	63	12

Table 3.3: Themes identified in question topics. Percentages are calculated based on a total of 520 questions.

Type of Support	N	%
Informational	509	98
Fact	122	24
Seeking advice	229	45
Seeking personal experiences	158	31
Emotional	16	3
Framing	N	%
Self	237	45.5
Generic	283	54.5

Table 3.4: Type of support and framing across the data set. Note: Percentages for the major themes (Informational, Emotional) are based on a total of 520 questions, while percentages for subthemes (Fact, Seeking advice, Seeking personal experiences) are based on the total of the Informational theme.

3.3.2.2 How Frequent is Each Theme?

Pathological – Continuous Journey of Figuring the Problem Out Personal – Living with the Condition and Social – Filling the Support Gap were the three main topics discussed by askers, making up about 30%, 32% and 32% of the questions, respectively.

In the first theme, Pathological – Journey of Figuring Out, as Table 3.5 shows, more questions, around 59%, were posted in a generic form, asking questions without specifically referring to themselves. Approximately 41% of questions were self-referencing, meaning people included themselves in the questions they asked. Also, as shown in Table 3.6, nearly 60% of questions sought factual information, making it the most

common type of informational support needed for this category, followed by 31% of questions that sought others' personal experiences, while only 7% of questions looked for advice.

For the Personal – Living with Anxiety theme, generic and personal questions made up 48% and 52% of the total, respectively. Approximately 64% of the informational support questions requested peer support in the form of advice. Personal experiences were requested in 34% of the questions, and only 2% requested factual responses.

Within the last theme of Social – Filling the Support Gap, 49% of the questions requested advice, 31% requested personal experiences and 20% requested factual information. Furthermore, generic and personal questions were equally prevalent, each constituting 50%. Detailed information about the distribution of framing and support type across different topics within the data set can be found in Tables 3.5 and 3.6.

Topic	Self (%/N)	Generic (%/N)
Pathological	41% (65)	59% (92)
Personal	52% (87)	48% (81)
Social	50% (83)	50% (84)

Table 3.5: Distribution of questions framed as self versus generic across the data set.

Topic	Facts (%/N)	Advice (%/N)	Experiences (%/N)
Pathological	59% (96)	7% (11)	31% (50)
Personal	2% (4)	64% (109)	34% (58)
Social	20% (33)	49% (83)	31% (52)

Table 3.6: Distribution of support types across the data set.

3.3.3 Quantitative Findings: Anonymous versus Known Askers

This section presents the findings of the quantitative analysis to answer RQ 2.2 and 2.3. After categorising the questions into themes, we examined the prevalence of questions posted anonymously across themes. Additionally, we analysed how the framing of questions differed between anonymous and known askers.

3.3.3.1 Topics of Questions

The prevalence of major topics discussed in questions, when viewed as percentages, appears to vary between the two groups of askers. Some topics were discussed more often when the asker was anonymous. As Table 3.7 and Figure 3.3 show, among anonymous questions, the predominant theme was Social – Filling the Support Gap, accounting for approximately 37% of the questions, while the least discussed was Journey of Figuring It Out, with 25%. Meanwhile, for known askers, Pathological – Journey of Figuring It Out, was the most common, containing 35% of the questions, while the Social – Filling Support Gap was the least common with 27%. The theme Personal – Living with Anxiety had a similar distribution in both groups, with 33% of the questions asked anonymously and nearly 32% asked by known askers.

Significance testing found that the distribution of these themes across both groups of askers was broadly similar ($\chi^2 = 3.335, p = 0.188$). Therefore, it can be concluded that the major topics, namely Pathological – Journey of Figuring It Out, Personal – Living with Anxiety and Social – Filling the Support Gap, are equally prevalent across both types of askers.

3.3.3.2 Question Framing

Previous findings showed no significant differences in the prevalence of top-level topic themes between the two groups. However, a significant difference existed in the way questions are framed by anonymous vs known askers in the data set across all topics ($p < 0.00001$). Particularly, whether questions are posted in a generic form as opposed to when posted about oneself / one's own situation. The effect is that anonymous askers are more likely to frame their questions in terms of themselves ('self') than are known askers, and the effect size, as indicated by the odds ratio, is substantial (OR=2.16), as shown for all topics in Table 3.8 and Figure 3.4.

To further understand the differences in question framing between anonymous and known askers, we conducted a within-topic analysis. Specifically, we examined the

frequency of generic versus self-framed questions within each theme for both groups of askers. Significant differences in question framing were mainly within the topics of Personal – Living with Anxiety and Social – Filling Support Gap. In these topics, anonymous askers were more likely to frame their questions in a way that disclosed themselves. The effect sizes, as indicated by the odds ratio, were 2.81 for the Personal topic and 2.79 for the Social topic, both with ($p = 0.002$). For the Pathological – Journey of Figuring Out topic, it didn't quite reach significance ($p = 0.191$).

Given the significant differences observed in these topics, we also examined the sub-themes of those topics that showed significance. As Table 3.8 shows, for Personal – Living with Anxiety, anonymous posters were more likely to ask questions about themselves in Handling Life Situations ($p = 0.007$), but less so in Managing Attacks ($p = 0.154$). Moreover, the differences in the association between anonymity and question framing (self versus generic) between two categories under Social – Filling Support Gap, seeking professional and seeking non-professional help, were significant with $p = 0.045$ and $p = 0.026$ and effect sizes of 2.22 and 5.46, respectively. Details of the comparison between askers per topic are illustrated in Table 3.8 and Figure 3.5.

Topic	Anon (%/N)	Known (%/N)
Pathological	25% (67)	35% (90)
Personal	33% (86)	32% (82)
Social	37% (96)	27% (71)
Others	13% (33)	12% (30)

Table 3.7: Topics discussed: Comparison between anonymous and known askers. Percentages are calculated based on a total of 260 questions in each group of askers.

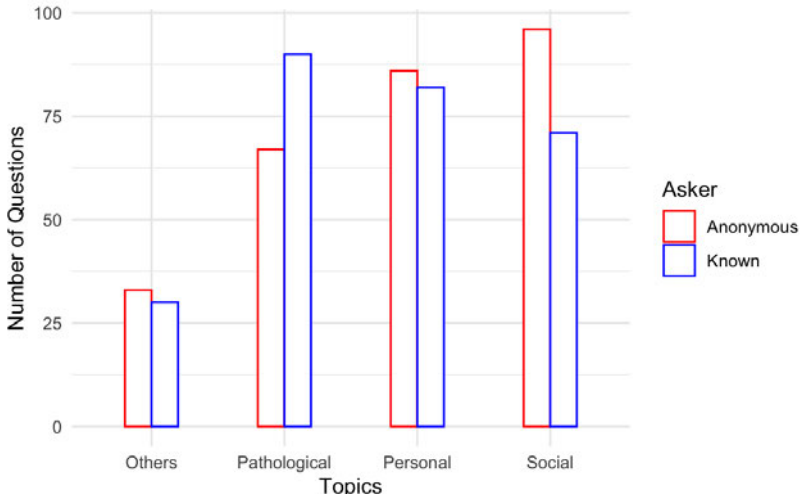


Figure 3.3: Topics discussed: Comparison between anonymous and known askers.

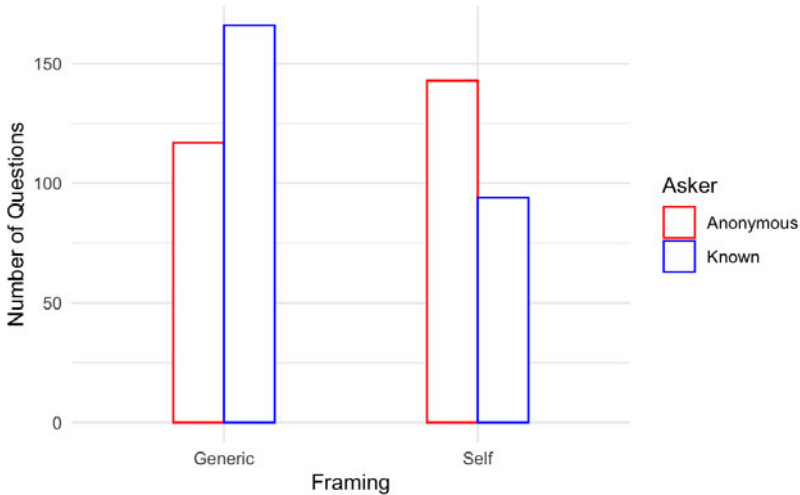


Figure 3.4: Question framing: Comparison between anonymous and known askers.

Topics	Anon		Known		p-value
	Self	Generic	Self	Generic	
All topics	55% (143)	45% (117)	36% (94)	64% (166)	***
Pathological	48% (32)	52% (35)	37% (33)	63% (57)	n.s.
Personal	64% (55)	36% (31)	39% (32)	61% (50)	**
Life situations	64% (43)	36% (24)	36% (18)	64% (29)	**
Managing attacks	60% (12)	35% (7)	40% (14)	60% (21)	n.s.
Social	60% (58)	40% (38)	35% (25)	65% (46)	**
Prof. help	51% (35)	49% (34)	32% (18)	68% (39)	*
Non-prof. help	85% (23)	15% (4)	50% (7)	50% (7)	*

Table 3.8: Question framing: Comparison between anonymous and known askers per topic, using Fisher's exact test. Symbols '***', '**' and '*' and 'n.s.' represent p-values <0.001, <0.01, <0.05, and not significant, respectively.

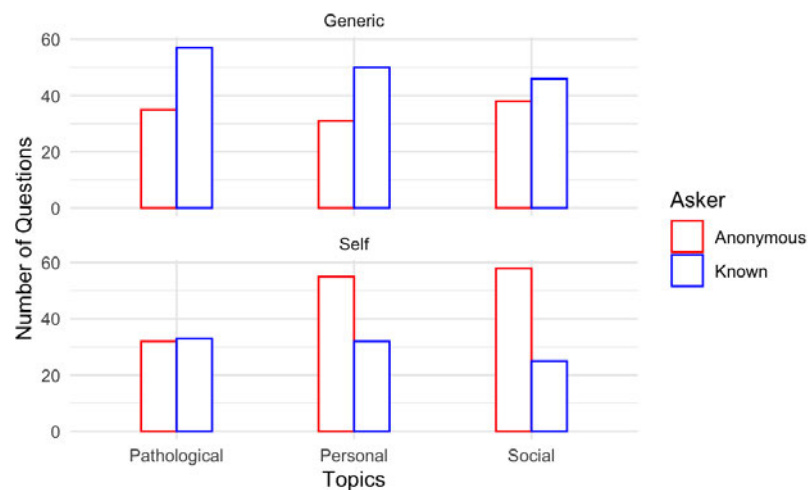


Figure 3.5: Question framing: Comparison between anonymous and known askers per topic.

3.3.3.3 Additional Exploratory Analysis: LIWC Features and Support Types

The work described in this section was conducted as an exploratory step and was not initially part of our analysis. While our primary focus was on question framing as discussed in Section 3.3.3.2, the comparison of LIWC features presented here might offer further insights. Given that there was a clear distinction in framing (self versus other), we would like to assess how would this be reflected in linguistic features. Also, as support types emerged from qualitative analysis, I explored the type of support requested in questions posted by anonymous and known askers.

LIWC Linguistic Features This subsection presents the comparison of LIWC features between anonymous and known askers for each topic. Regarding the Pathological – Journey of Figuring Out topic, Table 3.9 reveals no significant differences between the two groups. This suggests that, this content was not tied to anonymity, as the frequency of posts, the level of self-disclosure through self-framed questions and the linguistic features remain consistent regardless of whether users post anonymously or as known users.

For the Personal – Living with Anxiety topic, as shown in Table 3.10, the use of the pronoun ‘you’ was more common among known askers. For Social – Filling Support Gap topic, Table 3.11 indicates that the personal pronoun ‘I’ was used significantly more often among anonymous askers, which is in line with the previous findings reported in Section 3.3.3.2, Question Framing, that found a strong association between being anonymous and the self-disclosing content when the question is about the support gap.

Some significant differences were observed when examining LIWC features within topics. Nevertheless, the findings further illustrated the advantage of focusing on question framing when analysing question language. The major significant LIWC differences revolved primarily around the use of pronouns ‘I’ and ‘you’ among askers, which could be addressed through framing.

As illustrated earlier, the pronoun ‘you’ was used significantly more often in the known group of askers in some of the topics. This could indicate that fewer askers tend to seek others’ experiences when being anonymous than when being known, which is further analysed in the next section under support types.

Feature	IQR		Median		Adj. Sig.
	Known	Anon	Known	Anon	
WC	14.75	21	20	20	n.s.
Analytic	58.6475	67.07	22.815	38.6	n.s.
Clout	74.17	63.25	25.175	32.48	n.s.
Authentic	86.95	79.56	37.24	63.54	n.s.
WPS	6	6.375	11.75	13	n.s.
Sixltr	12.32	15.995	21.98	21.21	n.s.
Dic	12.375	12.83	94.59	91.67	n.s.
Function	10	10	55.13	56.52	n.s.
Pronoun	11.7325	8.635	16	14.29	n.s.
Ppron	14.29	12.5	9.39	7.69	n.s.
I	10.81	10.13	0	0	n.s.
We	0	0	0	0	n.s.
You	4.76	0	0	0	n.s.
Shehe	0	0	0	0	n.s.
They	0	0	0	0	n.s.
Ipron	9.52	6.675	6.275	6.52	n.s.
Article	8.2475	7.14	4.88	4.44	n.s.
Prep	7.265	9.325	8.71	11.76	n.s.
Auxverb	7.295	6.565	13.16	13.64	n.s.
Adverb	9.09	8.605	4.76	5.71	n.s.
Conj	6.1075	6.54	7.89	6.25	n.s.
Verb	10.435	8.28	18.18	17.02	n.s.
Adj	9.88	8.165	4.655	5	n.s.
Interrog	7.9225	5.57	4.085	2.5	n.s.

Table 3.9: LIWC analysis for questions posted by anonymous versus known askers (pathological topics). Data were analysed using the Mann–Whitney U test. Symbols ‘***’, ‘**’ and ‘*’ and ‘n.s.’ represent p-values <0.001, <0.01, <0.05, and not significant, respectively. The Bonferroni correction has been used to adjust p-values.

Feature	IQR		Median		Adj. Sig.
	Known	Anon	Known	Anon	
WC	11	14	17	21	n.s.
Analytic	64.23	52.61	32.58	27.87	n.s.
Clout	76.56	77.27	68.29	40.36	n.s.
Authentic	78.94	92.27	35.37	14.43	n.s.
WPS	6	8	14	15	n.s.
Sixltr	16.23	11.93	22.22	22.58	n.s.
Dic	8.25	9.18	92.31	90.48	n.s.
Function	11.91	11.54	53.85	56.10	n.s.
Pronoun	11.83	9.35	16	16.67	n.s.
Ppron	9.32	8.23	10	11.36	n.s.
I	11.76	13.1	0	7.69	n.s.
We	0	0	0	0	n.s.
You	6.25	0	0	0	*
Shehe	0	0	0	0	n.s.
They	0	0	0	0	n.s.
Ipron	10	5.47	5.88	6.25	n.s.
Article	8.33	8.33	4.76	4.76	n.s.
Prep	6.09	8.61	10	12.50	n.s.
Auxverb	8.08	6.29	11.11	12.50	n.s.
Adverb	9.09	7.85	6.25	4.35	n.s.
Conj	8.40	7.59	9.09	7.69	n.s.
Verb	11.13	8.02	15.38	15.38	n.s.
Adj	8.01	7.23	4.55	4.55	n.s.
Interrog	4.54	4.05	6.67	5.88	n.s.

Table 3.10: LIWC analysis for questions posted by anonymous versus known askers (personal topics). Data were analysed using the Mann–Whitney U test. Symbols ‘****’, ‘***’ and ‘**’ and ‘n.s.’ represent p-values <0.001, <0.01, <0.05, and not significant, respectively. The Bonferroni correction has been used to adjust p-values.

Feature	IQR		Median		Adj. Sig.
	Known	Anon	Known	Anon	
WC	19	11.25	19	20.5	n.s.
Analytic	49.415	53.6675	41.91	23.855	n.s.
Clout	78.745	62.0125	50	29.52	n.s.
Authentic	77.76	80.95	23.51	62.44	n.s.
WPS	5.75	7	13	13	n.s.
Sixltr	11.775	15.47	21.74	24.04	n.s.
Dic	13.555	10.44	92.86	92	n.s.
Function	15.04	12.1525	53.85	55.99	n.s.
Pronoun	12.91	11.605	15.15	15.265	n.s.
Ppron	15.19	9.595	8.82	12.13	n.s.
I	10.725	15.8425	0	8.895	*
We	6.67	0	0	0	n.s.
You	0	6.67	0	0	n.s.
Shehe	0	0	0	0	n.s.
They	0	0	0	0	n.s.
Ipron	8.99	7.69	6.67	4.55	n.s.
Article	7.69	6.67	5.26	3.33	n.s.
Prep	7.475	7.69	12.5	11.11	n.s.
Auxverb	7.095	7.0925	13.04	11.05	n.s.
Adverb	7.595	10	5	6.25	n.s.
Conj	6.935	5.1925	7.69	8.165	n.s.
Verb	10.165	9.4875	20	19.23	n.s.
Adj	5.26	6.1525	2.5	2.515	n.s.
Interrog	5.06	4.18	5.26	5.56	n.s.

Table 3.11: LIWC analysis for (social topics) posted by anonymous versus known askers. Data were analysed using the Mann–Whitney U test. Symbols ‘****’, ‘***’ and ‘**’ and ‘n.s.’ represent p-values <0.001, <0.01, <0.05, and not significant, respectively. The Bonferroni correction has been used to adjust p-values.

Support Type As previously stated, Support Type was not part of the initial analysis when the research questions were developed; it emerged through the qualitative work. Also, some of the previous LIWC results showed that the pronoun ‘you’ was significantly less frequently used among anonymous askers. To better understand if the larger use of the pronoun could be associated with requesting others’ experiences when not being anonymous, the type of support requested (facts, advice or experience) was examined using a chi-squared test. As most questions sought informational support, and only a few requested emotional support, we focused on informational support when performing significance tests.

To further understand the association revealed by the chi-squared test, a post-hoc analysis was conducted using standardised residuals. These residuals are calculated by taking the difference between the observed and expected frequencies in each cell of the contingency table, divided by the square root of the expected frequency. This analysis helps to identify which specific categories contribute most to the overall chi-squared statistic.

The findings shown in Table 3.12 revealed a significant association between the type of support requested and whether the asker was anonymous or known ($\chi^2 = 14.248, p = 0.0008$). Specifically, the difference in seeking facts between anonymous and known askers was small (residual=0.689). However, anonymous questions showed a higher tendency to seek advice (residual=2.847). In contrast, questions posted by known askers were significantly more likely to seek others’ personal experiences, as indicated by a residual of 3.697. This suggests that anonymity was associated with the nature of the information or support individuals seek, with anonymous askers seeking advice, while people disclosing their identity lean towards asking for others’ personal experiences.

Anon.			Known			Sig.
Fact	Advice	Exp.	Fact	Advice	Exp.	
24% (63)	49% (128)	23% (58)	23% (59)	39% (101)	38% (100)	***

Table 3.12: Support type: Comparison between anonymous and known askers, using the chi-squared Test. Symbols ‘***’, ‘**’, ‘*’ and ‘n.s.’ represent p-values <0.001, <0.01, <0.05 and not significant, respectively.

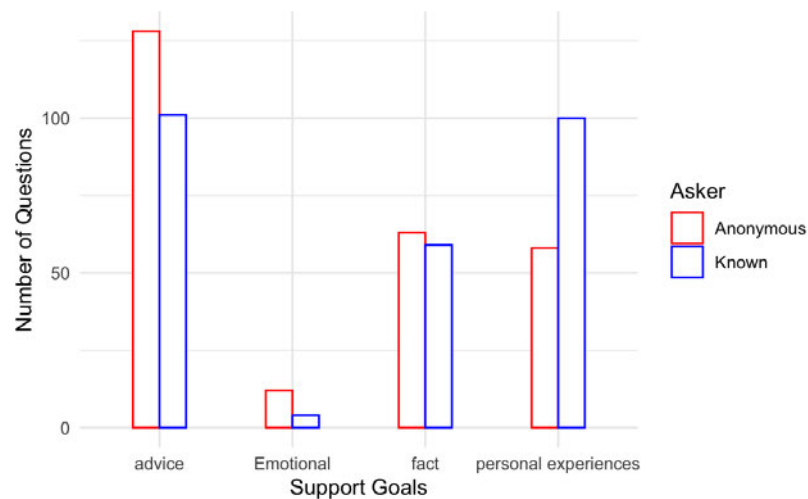


Figure 3.6: Support types: Comparison between anonymous and known askers.

3.4 Conclusion and Discussion

3.4.1 Summary of the Findings

In this chapter, I answered the first and second research questions regarding understanding the posting behaviour associated with questions of a sensitive nature on Quora. Using questions posted about anxiety disorders, I carried out an in-depth analysis of content and language to investigate potential differences in posting behaviour between anonymous askers and people disclosing their identities. In doing so, I conducted a content analysis of 520 questions, examining the topics discussed, the framing of questions (whether around self or generic) and the type of support sought. The findings revealed that askers discussed three major topics related to the pathological, personal and social aspects of managing anxiety. Most questions asked for informational support, including factual information, advice and the personal experiences of other people. The topics discussed in questions remained consistent regardless of anonymity. In other words, people discussed the same topics, whether they were anonymous or identified. However, anonymous askers tended to frame their questions more personally, especially within topics that involve social and personal aspects. Furthermore, the type of support sought also differed based on anonymity, as anonymous askers were more likely to seek advice, whereas known askers often looked for others' personal experiences. This suggests that while the overarching topics of concern remain consistent, the depth of personal disclosure and the nature of support sought were influenced by whether the asker's identity was anonymous or known. The anonymity feature on

Quora offered users the opportunity to seek the adequate support needed about sensitive topics.

3.4.2 Discussion

In the context of mental health, certain aspects have received increasing attention, such as detecting mental illness through social media posts and understanding sensitive disclosures and support seeking on social media. For example, prior research by Park et al. [97] analyzed the differences between depressed and non-depressed individuals in terms of their perceptions of and behaviors when using Twitter. Other work by Choudhury et al. [20] leveraged signals in Twitter posts as attributes of a classification model that predicts depression; a different study predicted anxiety through Reddit posts [123]. Another study by Andalibi et al. [9] characterized content that contains depression-tagged disclosures on Instagram. To date, Reddit has been extensively studied for understanding sensitive disclosures and support seeking, whereas research on Quora has predominantly focused on data-driven analysis of large volumes of content, primarily exploring topics associated with anonymity, and utilised LIWC for a broad linguistic analysis. In this study, building upon previous work by Mathew et al. [80], I focused on within-sensitive-topic analysis of a specific case identified as being highly associated with anonymity: posting questions related to anxiety. I adopted an in-depth qualitative approach to delve into both the content and language associated with anonymous question posting on Quora.

My findings align with prior literature on information seeking in online health communities. In particular, previous studies have shown that the value of health information in Q&A communities involves gaining access to experiential information, where users share their needs for first-hand knowledge of peers with similar experiences [40, 44]. In addition to experiential knowledge, seeking opinions to obtain social validation was also one of the prominent support types sought in these platforms [35].

Within the topic of *The Journey of Figuring Out*, my results are consistent with previous studies [117, 35], which found that individuals utilised health forums to co-construct their information needs. In these forums, people help each other to express what they are looking for in the early stages of a health condition. They used the platform to clarify and make sense of their less articulated, early-stage information needs. While some studies suggest that online forums are predominantly used for such purposes when seeking health information [44, 119], my findings indicated a

broader range of information requested and shared, including factual information. This emphasised the nature of Quora as a knowledge-sharing platform that also serves as a space for support seeking.

Regarding anonymity in particular, my preliminary findings align with prior work by Mathew et al. [80] in terms of LIWC language style: anonymous askers were significantly more likely to use the personal pronoun 'I', as well as having significantly higher LIWC authentic feature score, which indicates to what extent the language used is personal and self-revealing, rather than detached and guarded. My results further revealed the distinct association of LIWC features findings with social and personal topics. On the other hand, for topics related to the pathological aspect, there was no association between anonymity and any differences in the LIWC language style used between anonymous and known askers. Another interesting result was related to the use of the pronoun 'you', which was used less frequently by anonymous askers. This observation could be further confirmed by the finding that askers were more likely to seek others' experiences when they were not posting anonymously and more likely to ask for advice anonymously.

Moreover, my work extended on previous findings by Mathew et al. [80] that general LIWC differences existed between topics with a high frequency of anonymous postings and those with fewer frequencies and that anxiety was associated with high use of anonymity. Specifically, I found that within the content about anxiety, anonymous posting was not associated with the topics people asked about. However, even though the topics discussed were similar among both groups of askers, the level of self-disclosure in question framing varied significantly for certain topics. Namely, when asking about personal aspects of living with the condition, askers were more likely to self-disclose and frame their questions to refer to themselves when writing anonymously than when they were known. Likewise, when askers sought help regarding filling their social gap, for both professional and non-professional support, there was a significant association between anonymity and how askers focused their questions to be around themselves. Anonymity was not associated with question framing when asking pathological questions.

Some of the prior research has demonstrated the role of anonymity in health information support seeking on other platforms. For example, mental-health-support seeking on Reddit was examined by Choudhury and De [19]; the authors found that anonymity was associated with greater disinhibition in expressing mental health issues. Also, it was suggested in another work by Hirvonen [44] that platform affor-

dances, such as anonymity on Suomi24, a very popular online forum in Finland, provided users with unbiased opinion-based support regarding health issues. However, it is worth noting that both platforms are largely pseudonymous. This might potentially lead to some differences, such as their finding that a very small percentage of Reddit users in their data set used throwaway accounts for mental health support seeking, despite being highly stigmatic. Thus, the insights from my study might be most suitably interpreted or generalised within contexts similar to Quora, where the emphasis on using real names is more pronounced.

3.4.3 Limitations

It is important to acknowledge certain limitations in this work. In this study, I explored the use of anonymity on Quora by examining anxiety-related questions as a specific case of sensitive content. I focused on the interplay between anonymity and posting behaviour in terms of content and language use. While anxiety represents a case of sensitive content associated with anonymity, other general and mental health topics might be associated with even greater stigma, as might various personal topics. Therefore, while the findings from this study offered direct insights into anxiety-related questions, a more comprehensive understanding could emerge from analysing a broader range of topics or conditions with varying degrees of stigma or sensitivity. Additionally, given that I employed a qualitative approach, the volume of content (i.e. questions) analysed is inherently limited compared to studies that exclusively utilised quantitative analysis. In the upcoming chapters, I will delve into sensitive content from the user's perspective, as part of a broader investigation into the use and perceptions of anonymity on Quora.

Chapter 4

Analysis of Reasons to Post Anonymously Cited by Quora Users

4.1 Overview

In the previous chapter, I investigated the posting behaviour associated with sharing questions about sensitive topics. In this chapter, I expand the scope of the investigation beyond only sensitive topics to examine the broader relationship between identity and behaviour on Quora. Specifically, I focus on the user perspective of behaviour to provide a comprehensive understanding of the reasons for the anonymous posting of questions and answers on the platform. This addresses the gap in the literature by exploring the holistic reasons for anonymous posting beyond sensitive subjects, thus providing a more comprehensive view of user behaviour on Quora. The focus on anonymous posting was motivated by the change in Quora policy during the course of the PhD, which afforded a unique opportunity to understand the functions of anonymity, and whether pseudonymity can be used for similar purposes. Further, this holistic understanding of the reasons for anonymity, using the perspectives of the users themselves, was aimed at meaningfully informing the subsequent user study (survey) in Chapter 5. To the best of my knowledge, no prior qualitative work has examined identity and anonymity on Quora. Thus, in this exploratory study, I derive insights directly from Quora posts to thoroughly capture user perspectives within actual discussions. I address the third research question:

RQ3: What are the common reasons that Quora users give for using anonymity features when posting questions or answers on the platform?

To gain a holistic understanding of the use of anonymity, I conducted a thematic analysis of the discussions by Quora users about anonymous posting on the platform. In doing so, I analysed 127 answers to 18 relevant questions about reasons for posting anonymously on Quora pre-2021. I identified four main themes that described users' reasons for posting anonymously: Personal Preference, Rooted in Personality; Benefits, Costs and Risks of Posting with One's Real Name; Subject or Content Being Shared; and Maintaining an Online Reputation.

Broadly, the reasons for anonymous posting on Quora can be divided into two categories: reasons intrinsic or endogenous to users, affecting their regular posting decisions, and reasons that are more situation-specific and might only apply in situations or contexts. Examples of the first group are personality traits, motivations to post on Quora (including interest in reputation) and the perceived risks or effects of sharing. On the other hand, situation-specific reasons involve scenarios that are related to the content being shared. The findings of my analysis revealed that Quora users valued the anonymity option as a way to safeguard their online identity and reputation, especially when posting content that might be viewed as harmful or incompatible with their curated identity. Further, certain findings highlighted the distinct nature of Quora. I found that the interest in reputation building linked with real identities influenced how the anonymity feature was utilised.

4.2 Methodology

4.2.1 Data Set Characteristics

Keywords Selection Criteria

We searched Quora for questions with associated threads that strongly focused on reasons to post anonymously. First, we iteratively created a set of Quora search queries to extract potentially relevant threads. The formula used to generate the queries was:

```
("why" OR "reason") AND ("post" OR "ask" OR "answer") AND ("anonymous")
```

'Anonymous' was used instead of 'anonymously' as a stemmed keyword. For each query, we collected the 10 top results. After de-duplication, we arrived at a set of 58 unique threads.

Threads (Questions) Selection Criteria

Two coders (Liquan Chai and I) then independently applied the following inclusion criteria to the questions and their associated threads:

- **The question text:** questions not related to the research question were excluded. For example, some threads were about other platforms or discussed other non-posting aspects of the anonymity feature and thus were excluded.
- **Number of answers:** the question must have at least one answer originally posted to that question. Answers to related questions that appeared in the thread were excluded.
- **Answers:** Three of the five top-rated text answers mentioned either a reason or strategy to post anonymously.

Answers were verified to have been posted before the policy change based on their posting dates. Initially, the coders disagreed on six threads; the disagreements were resolved through discussion, resulting in a set of 18 threads.

Answers Selection Criteria

For each of the 18 threads, we extracted the top 10 text answers with the highest score as determined by Quora votes (fewer if there were less than 10 total answers), resulting in 143 answers. The same two coders (Liquan Chai and I) selected the answers that mentioned either a reason or a strategy to post anonymously, resulting in a final set of 127 answers. Figure 4.1 provides a summary chart of the data collection steps.

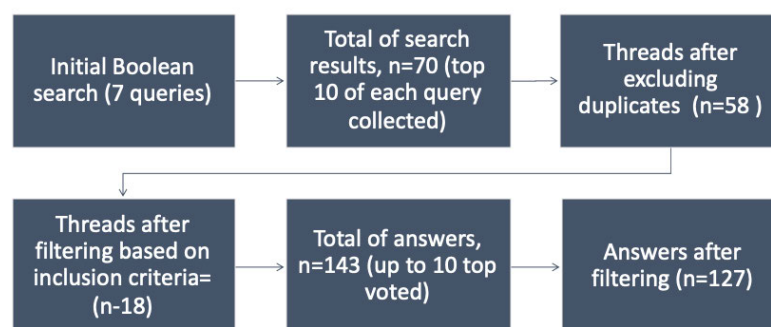


Figure 4.1: Overview of the Quora answer data collection process.

4.2.2 Qualitative Analysis

We used thematic analysis to extract and classify reasons for posting anonymously. I first coded the answers individually using in-vivo coding, which was checked by Dr Kami Vaniea. In-vivo coding was used to preserve the exact wording of the users, which would be beneficial for maintaining consistency in the survey that follows, using the same terminology that other Quora users might be familiar with. Next, a group of four HCI and privacy researchers from the TULiPS lab led by Dr Kami Vaniea, including me, used affinity diagramming [106] to generate the initial clusters. The resulting themes were reviewed in two follow-up meetings. Affinity diagramming allowed us to organize and cluster the in-vivo codes thematically, revealing relationships between different pieces of data visually and collaboratively. This method is effective for handling large volumes of data and helps synthesize complex information into a clear understanding of the reasons for anonymity on Quora. It reduces biases by enabling a diverse group of researchers to contribute and challenge perspectives, allowing a more comprehensive and collective interpretation. Figures 4.2 and 4.3 illustrate the initial process of sorting and grouping of the coded answers. We obtained ethical approval for this study from the University of Edinburgh, with reference number 386898. When presented in the findings section below, quotes were minimally modified to ensure that posters could not be identified. All quotes appear in italics with the answer number in superscript to refer to the individual answers to Quora discussions.



Figure 4.2: Affinity diagramming session - sorting and grouping the coded answers, step 1.

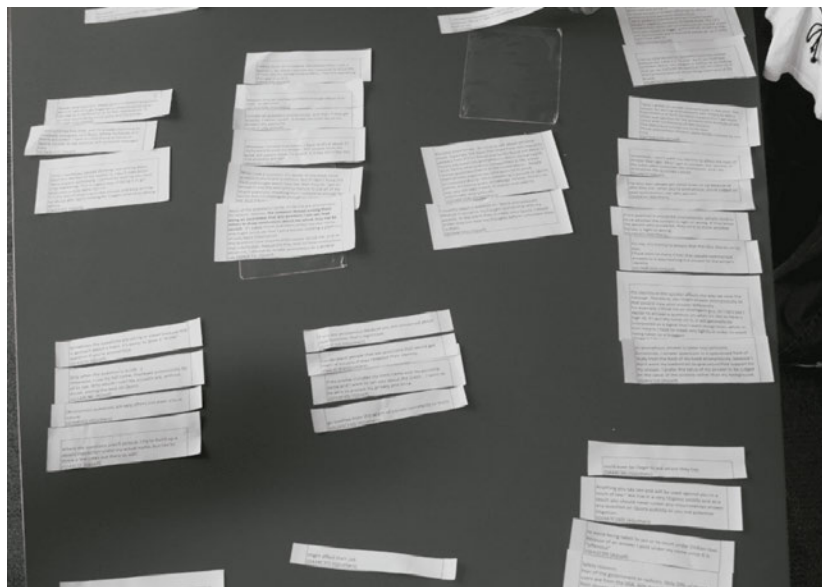


Figure 4.3: Affinity diagramming session - sorting and grouping the coded answers, step 2.

4.3 Findings

4.3.1 Themes

Personality

Personality was one of the key reasons users said they posted anonymously. Specifically, people talked about how their choices were based on self-identified personality traits such as being a naturally shy, introverted or private person. Those who listed reasons related to personality mentioned that they would post anonymously on a regular basis regardless of the content. One user wrote: *I post anonymously a lot. I am a very private person. Posting anonymously allows me to express myself without exposing myself.*^{A.14}

In contrast to other platforms that afford pseudonymous posting, respondents highlighted the social, reputation-building aspect of Quora, which might make introverted users more reluctant to post. Such posters desired to maintain a low profile and avoid the social and identity aspects of the platform: *I'm introverted and shy. On Stack-Overflow, identity doesn't matter so much, and people have random display names. But Quora is social, it's not just Q&A*^{A.22}. And: *Don't attract too much attention, maintain a low profile on Quora.*^{A.13}

Being new and unfamiliar with the platform sometimes resulted in an initial cautious approach to interacting with it; for example: *When I was new to Quora, even if the content was good, even if the writing was good, I used to write anonymously.*^{A.81}

Benefits, Costs and Risks of Posting with Known Identity

Users noted the benefits, costs and risks of posting with a known identity. The benefits mainly concerned the motivations to be on Quora and what users wanted to get from their participation, while the costs of posting with a known identity included having to spend time socialising, answering directed questions and providing further explanations. For the risks or consequences aspect, several people focused on online consequences on Quora, such as judgement by other users, harassment and biased interaction, while others emphasised the real-life consequences that involved legal, social and professional repercussions.

Starting with benefits, users questioned the advantages of a known identity. They stated that they had no interest in gaining social capital or status through upvotes, comments, or praise, which was a reason for them to post anonymously. Some stated

that knowing that their posts were insightful or helpful to others was as gratifying as any public recognition and was a sufficient motive for them to participate. This reasoning could also be linked to personality in some cases:

I believe that my answers are insightful and/or entertaining and/or not very run of the mill. I'm not here for the upvotes or the praises or the followers or internet fandom, even though I am acutely aware of the dopamine rush that these tend to give me. If my answer makes a difference to even one person, if it shifts the thought process of even one person, my job here is done. I don't care about much else. ^{A.89}

Along with the lack of interest in reputation, some users highlighted the intrinsic motivations to post on Quora, such as enjoying being part of the community:

I don't care about promoting myself as an expert so I'll gain clients. I've got nothing to sell. I just enjoy writing, I love reading good writing (so much of it here!) and I love being part of the ecosystem that makes Quora so life-enhancing. ^{A.106}

As stated above, avoiding later communication on Quora when posting with real names was also mentioned by some people, although not for reasons linked to personality or interest in social capital but rather to avoid dealing with the cost that comes with having a known identity and reputation. Interestingly, this often applied to users who already had a well-established reputation on the platform, such as being a Top Writer on Quora. Specific reasons include having limited time, no interest in providing further clarification or explanation to others when they reach out later, or simply due to having enough socializing and communication on other social platforms as shown in this statement: *I have limited free time, and I'm already socialising on the sites where my friends and family are added. I have no close friends or family on Quora, I don't want to socialize here.* ^{A.119}. Also: *The more answers you post on a topic, the more likely it is that you will be asked about it. Do you really have time to answer so many questions?* ^{A.13}

Regarding risks or consequences, users were worried about being judged by others. Judgement can be general assumptions made by others, for example, some reported that they wanted to avoid others' judgment about the quality of their posts: *I answer anonymously when I think the answer is not good enough. Why get slated for writing a dumb answer?* ^{A.34}. Another example for posting answers: *Whenever I answer a question, I have to think about if I really want to post my answer. Will people think it's good, will people think it's stupid, is it too short like this one probably will be?* ^{A.63}

Other users associated judgment with asking questions in general, as they might reveal their needs or struggle to others when asking questions: *For the questions I*

have posted Anon, I would say I don't want anyone at all to know that I struggle with these things, even though others have similar problems. Maybe just scared of being judged.^{A.93}. Moreover, people would commonly refrain from asking questions about things they are expected to know according to their interests, background or profile. For example: *I have a degree in physics and I ask anonymously because I'm embarrassed, I've got the degree, I should know the answer.*^{A.51}. Another user posted: *I am a coward: I hesitate to admit gaps in my background in public.*^{A.25}. In addition to judgement, users reported avoiding trolls or harassment within Quora as a reason to post anonymously.

Avoiding biased feedback was a prominent reason under the 'online consequences' category. Specifically, people sought to avoid biased attention or perception caused by their identity. Some users expressed that they expect to receive overly positive attention due to their reputation and, thus, they would post anonymously to make sure that the feedback and perception will be solely on the content as the following statements indicate:

I have ~150 of [anonymous answers]. After I made Top Writer back in 2012, I got uncomfortable with how much undeserved attention my answers received based solely on my status. So, in an effort to have my writing judged strictly on the merits, I started answering anonymously.^{A.138}

An anonymous answer is taken less seriously. Sometimes, I answer questions in a specialised field of study from the back of my head anonymously, because I don't want my credentials to give unjustified support for my answer. I prefer the value of my answer to be judged on the value of the content rather than my background.^{A.12}

Some users, on the other hand, mentioned that they had opted for anonymous posting to prevent negative bias and poor attention, as this statement says: *I've seen people get voted down or up because of who they are. When you're anonymous, you're judged on your contribution, not who you are.*^{A.3}. In some situations, posting might lead to being associated with certain content that would bias other interactions later on, as described by the following statement:

I answer some questions anonymously because sometimes I want to separate my personality and politics from a topic. Some of my anonymous answers have been the most upvoted and viewed of all. People learn to associate you with some political positions and then completely ignore you in any other context.^{A.67}

Under the category of real-life consequences, users highlighted legal, social and professional repercussions. For example: *To avoid being taken to jail or court under*

[Indian law] because of an answer I post under my name since it is 'offensive'.^{A.29} The following example reported social consequences when people they know in real life see their posts; most answers specified family members, friends or close ones in particular, such as: *When I am talking about my childhood abuse experiences because my parents do not know I was abused.*^{A.68} There are also professional consequences mentioned in some posts when discussing content that would cause negative professional impact if employers, clients or others at the workplace find out about it, such as in this example: *I frequently post anonymously. I work in education, and I don't want to filter my answers because students or coworkers might read them. I am a counselor, and in my profession, it is best if my personal opinions and experiences are not 'out there' in cyberspace. People need me to be an objective ear.*^{A.14}

Subject or Content Being Shared

Another group of people focused on the subject or content being shared when referring to reasons for anonymous posting. This view includes the nature of content: whether it was fact-based versus involving personal opinions, if it is less serious, like joking, or whether the topic or subject itself could be characterised as sensitive, controversial, taboo, involves personal or embarrassing details, or details about people known in real life.

Users who distinguished between factual and opinion-based content mentioned that they would only share facts with their real names and wrote anonymously when they shared an opinion, regardless of the topic. For example: *I guess I live giving answers anonymously. That way, unless the answer falls to be True/Rational, I can choose not to own anything.*^{A.82} Another user reported:

Topics I write anonymously are opinion-based; they are neither right or wrong. In fact, the only questions I write with my name are the ones that are about science. Biology, (organic) chemistry, evolution, climate, anatomy, ecology, botany, forestry, agriculture, etc., etc. These are the answers I can easily cite sources and have a very strong argument about how what I have written is factually accurate.^{A.69}

Others specified certain subjects where they would post anonymously, namely subjects that are controversial, such as politics and religion, in addition to those that are considered to be taboo subjects. For example:

I have VERY strong political opinions, and I don't want the world to be able to associate me with the political views (even though they AREN'T something I should be ashamed of).^{A.69} Also, posting about subjects that involve embarrassing, sensitive

or personal content was a common reason, where it might even be expected to be posted anonymously as a norm within the platform. Views were similar for content of a serious nature, as seen in the statements below: *some questions are very personal and penetrating ('your greatest secret' or something like that).*^{A.70}. Also: *Where the questions aren't serious. I try to build up a decent reputation under my actual name but like to throw a few jokes out there as well.*^{A.1}. One user reported:

There could be a situation where I want to give an answer, and it seems like, in most cases, someone giving that answer would do it anonymously. In that case, I might make the answer anonymous just to give it credibility or to stop people from being distracted by the strange signal of an anonymous-like answer with a name attached. [personal story]^{A.104}.

Protecting others was another salient content-related reason. Users indicated this as a main or common reason for them to use the anonymity feature when sharing content that involves others that might violate their privacy. For example: *I answer some things anonymously because they relate to experiences with friends or family members, and it wouldn't be right to identify them here*^{A.106}

Maintaining an Online Reputation

A group of users reported that they are cultivating an online image as being interested or experts in certain areas and thus would like to avoid any other content being associated with their names. Some mentioned that they already have an established online reputation or even use their names as a brand in well-defined areas of expertise; others described their existence on Quora as an extension to their professional roles. For example: *If the question or answer does not match my 'brand'.*^{A.76}. Another user reported:

I'm approaching the academic job market in my field. I'd like to cultivate an image (at least in my Google results) of someone who has a reasonably well-defined area of expertise. My answers are still a little scattershot, but they're mostly in a set of areas related to my professional work. I've written answers in a range of areas. But I don't necessarily want my search engine results to betray how all-over-the-map I am, given that the academic job market tends to reward focus^{A.111}

Users who were concerned about maintaining their online reputation also noted many of the issues discussed in the previous subsection. Anonymity was important when maintaining the online persona or building a certain reputation, as the following statements show: *I see my presence here as an extension of my professional roles – as*

a place for learning and teaching. But I do write personally at times.^{A.30}. Another example: *I like to keep my online reputation business-related because my name is a 'brand'. So if I am making a comment about, say, religion or politics or something that can be the least bit controversial, I'd rather do it anonymously because those things aren't part of my brand.*^{A.112}.

Some users were concerned about content appearing on their followers' feeds because it was not related to their normal topics and, therefore, possibly not interesting. For example: *I've also used anonymous answers to try and keep my feed focused, to avoid attaching my name to answers on a topic that is likely to be controversial, or because I am just offering a 'stub' answer.*^{A.111}. Also: *I do answer anonymously because sometimes the question (subject) is not related to my topics, but I want to give my suggestion/opinion; that's why I answer them* A.77. Another answer stated:

My answers here tend to be of a strongly technical nature, and I sometimes answer anonymously to avoid polluting my followers' feeds when there's nothing about the question or answer that would be interesting to readers other than the question asker. This often happens when the answer is well-known and consists of a single link to Wikipedia, or when it's trivial due to some kind of mistake in the question, or when the question is very specific in a boring sort of way.^{A.14}

People who were concerned about their online reputation also talked about avoiding controversial topics such as career-related matters, like sharing content about changing jobs, discussing workplace culture and environment or experiences that involve issues at the workplace. This type of information is potentially problematic if it is connected to their offline identity and could have professional repercussions.

4.4 Scenarios of Posting Decisions

This section presents a secondary outcome of my analysis. To better understand common reasons and to prepare for the survey presented in the next chapter, I extracted seven posting scenarios that represent common overarching themes identified in the thematic analysis of Quora's users' posts. As previously discussed, the qualitative findings revealed two main categories of reasons:

- User-related or intrinsic factors that regularly influence posting decisions.
- Situation-specific reasons that apply only in certain contexts.

I identified seven posting scenarios, as shown in Table 4.1, based on the situation-specific category of reasons. These scenarios were extracted from the three overarching themes of risk/consequences, content or subject being shared, and maintaining an online image. The details of these scenarios are elaborated below. The second theme, 'Benefits, Costs, and Risks of Posting with Known Identity' in Section 4.3, particularly, the benefits and costs aspects associated with the theme, aligns more closely with user-related factors. These aspects will be further explored in the next chapter.

Risk/Consequences The first two scenarios I identified, 'Feedback Concerns' and 'Background Questions,' were derived from this theme. These scenarios involve judgments that emerge from the specific consequences of posting on Quora. Namely, general judgments or biases linked to a user's identity as well as judgments associated with posting questions that are relevant to one's background. It's important to note that the level of perceived risk can also be a user-related factor. I will delve into this aspect in the next chapter.

Content or Subject From the theme of 'Content or Subject being Shared,' I identified three distinct scenarios. The first two, 'Others Affected' and 'Sensitive Content,' relate directly to the subject matter, reflecting their prominence as sub-themes. The third scenario, 'Opinions Given' addresses the nature of the content, distinguishing between factual information and opinion-based posts.

Online Reputation Regarding the theme of "Maintaining an Online Reputation", I derived two scenarios: 'Uninteresting Answer' and 'Different Topics.' These scenarios represent the typical posting situations frequently mentioned within this theme. All the

scenarios, along with their corresponding overarching themes and associated question wording are detailed in Table 4.1.

Abbreviation	Scenario Description	Overarching Theme
Feedback Concerns	If you expect that the feedback you receive (votes, comments) to an answer might be biased due to your identity, would you post the answer?	Risk/consequences
Background Q	Would you post a question to which you would be expected to know the answer, given your background, interest, or expertise as shown in your Quora profile?	Risk/consequences
Others Affected	Would you share information about other people in your life in your answers?	Content or subject (topic)
Sensitive Content	Would you post answers to topics that you deem to be sensitive?	Content or subject (topic)
Opinions Given	Would you post answers that reflect your views and opinions instead of verifiable facts?	Content or subject (nature)
Uninteresting A	Would you post an answer to a question if it is not interesting to readers or not sufficiently detailed, even if it could be potentially helpful to the asker?	Online image
Different Topics	Would you post answers to questions that do not reflect the topics about which you normally post on Quora?	Online image

Table 4.1: Scenarios and their corresponding overarching themes.

4.5 Conclusion and Discussion

4.5.1 Summary of Findings

In this chapter, I answered the third research question, which explored the reasons Quora users cited for posting anonymously. I adopted a qualitative approach to gain a comprehensive understanding of why the anonymity feature was utilised on the plat-

form. I drew directly from discussions Quora users have with each other to capture their perspectives. Specifically, I employed the affinity diagramming approach for a thematic analysis of a set of coded answers. My findings revealed four major themes that captured the common reasons for anonymous posting.

In summary, my qualitative analysis of the reasons for posting anonymously on Quora showed that the anonymity feature was used judiciously in a complex decision process weighing personal preferences, benefits, cost, risk, content and reputation. I found that reasons can be categorised into two major groups: those that are intrinsic or endemic to users, affecting their regular posting decisions, and those that are situational, applying only in certain scenarios or situations. Certain findings highlighted the specific context of Quora. I found that the aspect of reputation building associated with real identities plays a role in the use of the anonymity feature. Due to Quora's strong reputation and social dynamic, and because a person's Quora profile can be used for personal gain and social capital, people who post on certain topics can feel an obligation to interact and answer questions. Based on the emerging themes of this study, scenarios associated with anonymous posting on Quora were identified. These scenarios will be used to examine the relationship between identity and posting decisions in the next chapter.

4.5.2 Discussion

My findings revealed interesting insights into how the interest in reputation impacted the use of the anonymity feature. Users keen on reputation-building used the feature to manage what they reveal, while others, uninterested in building reputation, frequently opted for anonymity regardless of the content. Although some users would post anonymously to avoid negative or poor feedback from other members of the community, others with well-established reputations reported that they actually used the anonymity feature to prevent overly positive attention only because of their identities and perceived reputation. Several users who already developed a reputation on the platform reported that they use the feature to control not only disclosure but also later communication by people seeking more information. This observation is particularly relevant to Quora's feature of directing questions to suggested users who may possess the expertise to provide answers.

Regarding content, the common reasons people cited for posting anonymously align with findings from previous studies. For example, the prior study by Mathew

et al. [80] used a data-driven approach and found that sensitive topics related to health, jobs, careers and personal relationships, were often associated with anonymous posting on the platform. Additionally, I found that reasons related to content involve not only the topic itself but also the nature of the content, namely, being factual versus opinion-based.

Relevant to my key finding about posting information about others, a prior well-regarded work by Kang et al. on online anonymity categorised ‘known others’ mainly as a major theme of personal threats to the use of anonymity online [56]. My findings showed a multifaceted picture of content that involves people other than the poster. While people reported it as a potential threat and would post anonymously to avoid social or professional consequences, using anonymous posting primarily to protect others’ privacy was also a prominent finding. Relating to sharing information that involves others, research on interdependent or networked privacy, where the actions of individuals might affect the privacy of others, has mostly focused on comparing users’ attitudes regarding their own privacy to those of others, as indicated in prior research [108]. Notably, less attention has been given to understanding how anonymity impacts individuals’ attitudes towards others’ privacy.

A study that investigated the effect of anonymity on sharing information about others within the context of third-party apps on social networks by Pu and Grossklags [108] found that when anonymously sharing information about friends, individuals value their friends’ privacy significantly less than in scenarios where such sharing behaviour is identifiable. However, in that study, ‘anonymous sharing’ referred to situations where the friend did not know who released their information to apps. With regards to comparing self and others’ privacy, while some research has indicated that users value their own privacy more [78], it has also been suggested that a lower concern for the privacy of others might arise because the issue is insufficiently prominent in a writer’s mind when making decisions that could potentially affect others. As discussed above, in my study on Quora which presents a different context than the previously mentioned studies that looked at app permissions, I found that one of the key reasons users cited for using the anonymity feature was sharing information about others. This could be explained by users considering the visibility of Quora posts, particularly in Google search. Users are thus mindful that the Quora audience is not as limited or controlled as on other personal social media platforms. This finding will be quantitatively investigated in the next chapter.

Some reasons participants had for posting anonymously in this study were simi-

lar to the factors identified by Liu et al. [69] as obstacles for lurkers to post in Q&A platforms. Specifically, participants in their study indicated that the existence of comprehensive answers and high-voted posts can be quite intimidating as an obstacle to their motivation to become contributors to the platform, as the answer that they are about to post has to be comprehensive enough to be perceived as useful. This finding overlaps with concerns about bias and judgement that users expressed in my study under the Risks or Consequences theme, as well as the theme of maintaining an online reputation: some people reported using the feature when the answers they were posting anonymously were very specific or trivial and might not be very interesting to readers. Some participants also reported lurking in situations that involve a lack of confidence in a potential post or being new to and unfamiliar with the platform. These were also reasons for anonymous posting associated with the interplay between personality and online profile and avoiding such social and identity aspects of the platform. These observations suggest that the anonymity option provided users with opportunities to maintain their engagement and activity within collaborative knowledge platforms.

As highlighted in the Findings Section 4.3 above, personality traits emerged as a reason for frequent anonymous posting. However, it is worth noting that within behavioural sciences, personality is a complex and multifaceted concept. For example, certain studies differentiate between online and offline personalities, suggesting that individuals might exhibit varying traits in these distinct contexts [115, 151]. Moreover, scales measuring online and offline integration have been developed to gauge the extent of interconnection and consistency between an individual's online and offline personas [68]. In HCI research, some studies looked at the relationship between personality and behaviours related to security and privacy, for example, Halevi et al. [42] used the Big Five personality traits model. In employing the NEO Personality-Inventory Revised (PI-R) test, a widely used measure for the Big Five factors [23], they used a concise version of this test that consists of 60 questions. This highlights the depth of investigation required in personality research, even when employing condensed instruments.

Given the complex nature of personality and the extensive measures required to probe it, a dedicated investigation would be necessary to understand its relationship with anonymity. Also, it is important to acknowledge that in our sample, users' self-identified personality traits may not necessarily align with formal psychological assessments such as the Big Five. Thus, in the survey study presented in the next chapter, we focus on the interplay between personality and online profiles, involving aspects

of maintaining a low profile versus those actively interacting, as part of the overall engagement level.

4.5.3 Limitations

This study qualitatively explored the user perspective of anonymity feature usage on Quora. In doing so, I carefully followed data collection steps to ensure a comprehensive capture of diverse perspectives. However, while focusing on top-voted answers ensures the analysis of agreed-upon and high-quality content, it may also introduce a bias towards the views of more active or popular users. As previously mentioned, content posted by users with higher status is more likely to receive upvotes on Quora. This status-related feedback was mentioned as a reason for some users to opt for anonymity. Despite this limitation, the insights gained provide a valuable foundation for understanding user perspective of anonymity on Quora. In the next chapter, I incorporate additional viewpoints using survey data collection aimed to provide a more holistic view of anonymity and address the limitation.

Chapter 5

Survey Study on Identity and Posting Behaviour

5.1 Overview

In the previous chapter, I looked into why Quora users chose to post anonymously, using qualitative analysis. In this chapter, I examine the relationship between identity and posting decisions by focusing on what users do now that Quora has removed the option for anonymous posting and made changes to the real-name policy. Specifically, I answer the last research question (RQ4): ‘How does user profile type influence posting behaviours on Quora?’

To answer this question, I designed and conducted a user survey-based study, building on the qualitative insights from the previous chapter. I looked at the effect of profile type (whether users use their real names or pseudonyms) as well as the additional intrinsic user factors that emerged from my qualitative findings on posting decisions. I investigated the following research questions:

RQ4.1: How does the type of scenario (common situations where some Quora users previously chose to post anonymously) influence posting decisions on Quora while accounting for profile type (whether real name or pseudonym)?

RQ4.2: To what extent do the following, which emerged as user-related factors in Chapter 4, affect posting decisions? I’m interested in: the level of disclosure (the amount of personal information) about self shared in the profile, motivation for posting, engagement with Quora, views about anonymity and perceived effect of engaging with sensitive content.

Through iterative screening and testing, I recruited 300 users who reported being currently active on Quora. Participants were asked whether they would consider posting on Quora in each of the seven scenarios identified in Chapter 4. Users were asked about their profile type (real name, Quora-specific pseudonym, generic pseudonym), motivations for posting on Quora, views on anonymity and the effect of engaging with sensitive content. In addition, I asked users to provide optional free-text answers about their additional views on anonymity and pseudonymity on Quora.

The findings show that most users ($n=275$, 92%) only had a single Quora profile. I found that only one of the scenarios consistently affected the decision to post: users were significantly less willing to post to Quora if their posts might involve information about others. When considering user profile type, I found clear differences in the tendency of posting among profile name types; namely, users with Quora-specific pseudonyms were less willing to post across different scenarios. As such, I conducted a post-hoc analysis to further explore the potential differences between profile types. I found a common pattern where users with Quora-specific pseudonyms were less willing to post than users with generic pseudonyms (i.e., pseudonyms also used on other platforms) and real names. Specifically, they disclosed less information on their profile and reported lower motivational levels to post on Quora, as well as higher previous use of anonymity and a preference for anonymity.

In the supplementary analysis of the survey's optional text answers, participants provided additional insights regarding views on anonymity on Quora. Specifically, the qualitative analysis of these answers further highlighted the challenge of balancing credibility and privacy on Quora, as a space for both asking questions and sharing knowledge on diverse topics. Participants valued anonymity for sensitive or opinion-based content, especially for questions, and stressed the importance of verification and expertise in answers. This confirmed the quantitative findings where users expressed a higher positive preference towards anonymous posting of questions than answers. They also discussed how removing anonymity has affected their own posting behaviour and potential implications on Quora's content growth.

5.2 Methodology

5.2.1 Data Collection

5.2.1.1 Screening, Pilot and Survey Recruitment

I used a screening survey to identify current Quora users who met our requirements. I then conducted a small pilot survey using the identified pool, made minor adjustments and conducted the full survey again using users identified through the screening. We followed the University's ethics protocol in running and designing both the screening and main survey. We received ethical approval for this study from the University of Edinburgh, referenced under number 386898.

Screening Prolific was used in February 2023 to recruit 1141 participants for a screening survey. The survey was advertised as: 'Experience on Quora'. Prolific enables researchers to restrict the survey visibility based on a range of user traits, the survey was only advertised to users who were fluent in English and had a minimum approval rate of 95%. The study focuses on Western countries, so we used the top three such countries by Quora traffic according to the percentages at the time we collected our data [124]: ~30% of Quora users are in the USA, 6% in the UK and 4% in Canada. I balanced the resulting sample such that 75% USA, 15% UK, and 10% Canada.

The screening survey started with consent, followed by a question about the kind of content they post on Quora to test their familiarity with the platform, then a question to check if they have an account. People who provided wrong answers to the first question or do not have a Quora account were screened out. Then, I asked about their question-and-answer posting behaviour, namely, if they have posted before and how frequently they post. Also, I asked if they had used the anonymity feature before. Everyone who took the screening received £0.20 compensation. The screening survey is shared in Appendix A.

Of the 1141 people screened, approximately (92%, n=1045) passed the test question concerning familiarity with Quora. Of those who passed, approximately 55% (n=577) have accounts on the platform. Of people with Quora accounts, the largest subgroup (41%, n=236) reported that they have been on the platform for 3–4 years, about 28% (n=163) have been users for 1–2 years and 19% (n=110) for 5–9 years. In terms of posting experience, of the 557 people with Quora accounts, 58% (n=336) answered that they have posted content on Quora. Of those 336 active posters, ap-

proximately 28% (n=95) reported that they had used the anonymity feature on Quora. Detailed information about screening is provided in Table 5.1.

Pilot HCI and privacy researchers from the Catalytics and TULiPS labs, which are led by my supervisors Dr. Maria Wolters and Dr. Kami Vaniea, respectively, took the main survey and provided their feedback on the design and flow. I then randomly selected 10 people from the previously screened Prolific participants who reported that they had posted to take the main survey as a pilot to test for additional issues. All 10 participants completed the survey and were compensated with £2.50. Changes to the flow and requirement of questions related to user profiles were applied after the test. Specifically, in the pilot survey, all users were asked the same question regarding whether they use their real name or a pseudonym for their profile name. This approach was modified based on the response to a question about the number of profiles each participant had. Participants with only one profile were directed to a question with multiple options about the name they used on their profile, while those with multiple profiles were directed to a question that allowed multiple answers. The pilot results confirmed that not all participants have a single profile; it also revealed that some users maintain multiple pseudonymous profiles, none of them with a real name.

Main survey To recruit participants for the main study, 300 of the 336 individuals who reported having posting experience on Quora were randomly selected and invited to participate in the study. The participant distribution followed the Quora traffic distribution, with 225 participants from the USA, 45 from the UK, and 30 from Canada. They completed the survey with an average time of 11 minutes and received compensation of £2.50. Two participants did not pass the attention check; we decided to keep their answers and compensate them after reviewing their answers and determining that their mistakes were small and close to the correct answer, and their open-ended answers were also deemed to be meaningful.

Screening Questions		N	%	Total
Passed the familiarity test	Yes	1045	92%	1141
	No	96	8%	
Have accounts	Yes	577	55%	1045
	No	468	45%	
Length of being on Quora	< one year	56	10%	577
	1–2 years	163	28%	
	3–4 years	236	41%	
	5–9 years	110	19%	
	> 10 years	12	2%	
Have posting activity	Yes	336	58%	577
	No	241	42%	
Anonymous posting experience	Yes	95	28%	336
	No, but aware	63	19%	
	No, not aware	157	47%	
	New user	21	6%	

Table 5.1: Distribution of the screening survey question answers. Percentages are calculated based on the total number of answers for each question.

5.2.2 Survey Instrument

After informed consent, participants were asked demographic questions about their age, gender, education and employment status. The main survey was structured around the two sets of factors that emerged from the qualitative findings: user-related or intrinsic factors that might influence users' posting decisions and scenarios derived from common situations identified in Chapter 4. Figure 5.1 and Figure 5.2 illustrate the two main parts of the survey as implemented in the first model to answer RQ4.1 and the second model to answer RQ4.2. I briefly summarise the structure and then provide further details in the subsections below.

In the first section of the survey, we asked questions that covered the user's profile and characteristics, including how long they have been members of Quora, the number of profiles they have, what type of profile type(s) they used (real name, pseudonym used on other platforms or pseudonym specific to Quora) and how often they post. We also asked questions about other personal information they share in their profiles, their motivations to post on Quora, how they engage with the platform, as well as their views on anonymity and the perceived effect of engaging with sensitive content. Those who reported having more than one profile were asked to answer with regard to their most frequently used profile.

As illustrated in Figure 5.2, four of the independent variables in the first section of the survey are scale variables. All scale variables in this study used a 5-point Likert-type scale; a score of 1 indicates the lowest level of agreement, whereas a score of 5 indicates a strong agreement. For internal consistency reliability, Cronbach's alpha score was calculated for each scale using the `psych::alpha()` function in R software.

In the second section, users were provided with the seven scenarios identified in Table 4.1 in the previous Chapter 4 and asked about their likely posting decision, if they would consider posting or not and under what name if they have multiple profiles. The details of the first and second sections of the survey are provided below. The complete survey for this study is provided in Appendix B.

Personal Information in the Profile

We asked participants about the types of personal information they share in their profiles. We provided the following categories that Quora users can add to their profiles, as checked in January 2023: photo of themselves, professional experience or position, education or qualification, location, official or work website, personal website

and links to profiles on other platforms.

Motivation to Post on Quora

Items for this scale are shown in Table 5.2 We used a 9-item scale to gauge the motivational level of users to post on Quora and asked participants to rate them using a 5-point Likert-type scale. The list of motives was derived from a prior study on Quora by Paul et al. [100], whose findings align and overlap with the findings reported in Chapter 4. The list involves both intrinsic and extrinsic motivators. The intrinsic category includes personal satisfaction in answering questions, wanting to help others, enjoying writing and being part of the community. Extrinsic motivators include building a reputation and making contacts through receiving interaction and recognition. The final score for the overall motivation level has a Cronbach's alpha of 0.82 for internal consistency.

Engagement with Quora

As Table 5.3 shows, we provided a list of items to measure the level of engagement by focusing on certain aspects of behaviour that users engage in while being on Quora. Participants were asked to indicate to what extent statements described their behaviour using a Likert scale. We focused on the following aspects of engagement that concern posting and interaction behaviour that were derived from the literature of Q&A sites [100, 77] and our previous findings in Chapter 4: how active they are when posting questions and answers, if they engage mostly with content that is related to their offline reputation, that is, profession and studies, or if they engage across various topics and spaces, and if they are active in interacting with others or keep a low profile. The Cronbach's alpha of internal consistency was 0.64.

Views on Anonymity

Since anonymous posting was previously an integral feature to control disclosure on Quora, I wanted to explore what attitudes users with different profile types might have towards anonymity, and if posting behaviour could be affected in certain scenarios as anonymity is no longer an option. The study of Chapter 4 also found strong attitudes towards anonymity, making attitudes interesting to study. For participants who reported that they were aware of the feature, I first asked a question about their previous use of the anonymous feature for questions and answers, namely if they had used it before and how frequently. Then, to measure their views about Quora anonymity,

those users were provided with five statements that expressed both positive and negative attitudes regarding anonymous posting for both questions and answers on Quora as shown in Table 5.4. They responded using a 5-point Likert scale. The final Cronbach's alpha score of internal consistency reliability was 0.87. Additionally, participants who reported that they were not aware of the Quora anonymity feature, such as those who have not been on Quora long enough to experience the feature, were asked to optionally provide an open-text response about what they think of the anonymity option on Quora.

Perceived Effect of Interacting with Sensitive Content

In my qualitative findings of the previous chapter, visibly engaging with sensitive content and its potential repercussions were among the key reasons for users to control disclosure through anonymous posting. Nevertheless, users expressed different levels of concern about consequences. As seen in Table 5.5, participants were asked to rate a list of items that represent negative and positive effects of interacting with content that they deemed sensitive using a Likert-scale. The items involve social, professional and legal concerns that emerged from the previous qualitative analysis in Chapter 4. The Cronbach's alpha values for negative and positive effects are .72 and .79, respectively.

Scenarios Requiring Posting Decisions

In the second part of the survey that includes the dependent variables of posting decision, we provided the seven scenarios commonly related to anonymous posting as obtained from the exploratory qualitative findings and asked participants about their current posting decisions in each of these scenarios. Namely, we asked if they would post or not and using what profile type if they had multiple profiles. The scenarios were:

- Posting when expecting to receive biased feedback due to their identity.
- Sharing posts that do not reflect what they would normally share on Quora.
- Asking questions to which they would be expected to know the answer given their background or interests as shown in their profile.
- Sharing posts that might not be interesting to readers or sufficiently detailed.
- Sharing posts that would express opinions and views instead of verifiable facts.

- Posting to topics that they deem to be sensitive.
- Sharing a post that involves information about others.

Also, in recognition of the complex nature of the topic and to capture additional insights, participants were given the option of ‘it depends’ to provide open-text responses. More details about the scenarios are presented in Table 5.6.

Additional text answers on views on anonymity

To gain a comprehensive understanding of participants’ perspectives on anonymity, all participants were asked to provide optional text answers to three of the survey questions. The first question was directed at those who said that they were aware of the anonymity feature when it was available, allowing them to provide additional insights. It was placed immediately after the scale questions regarding views on anonymity. The second question followed right after participants reported that they were not aware of the feature, including users who joined after its removal. They were given the opportunity to share their thoughts, as they had not been presented with the required scale questions due to their lack of experience with the feature. Lastly, the third general question regarding any additional perspectives on anonymity and pseudonymity on Quora was presented to all participants at the end of the survey. More details about the open-ended questions are presented below in the qualitative analysis method Section 5.2.3.3.

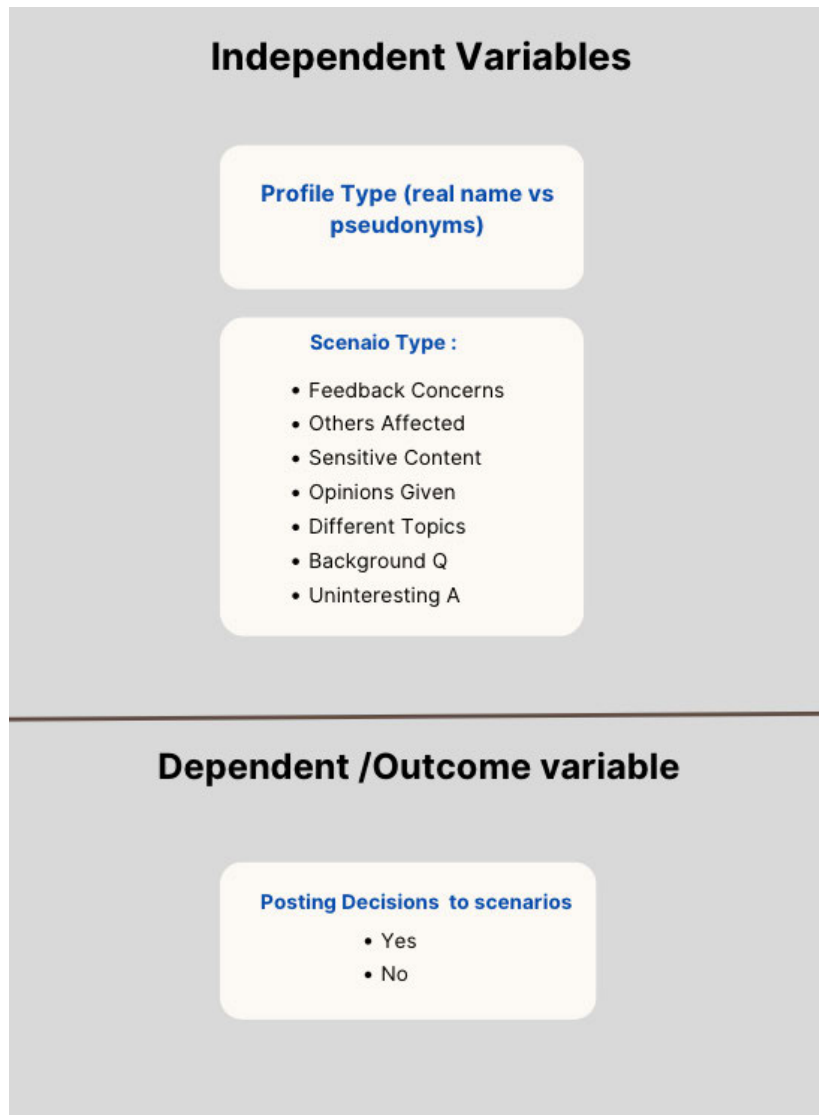


Figure 5.1: Survey instruments - Model 1 to answer RQ4.1.

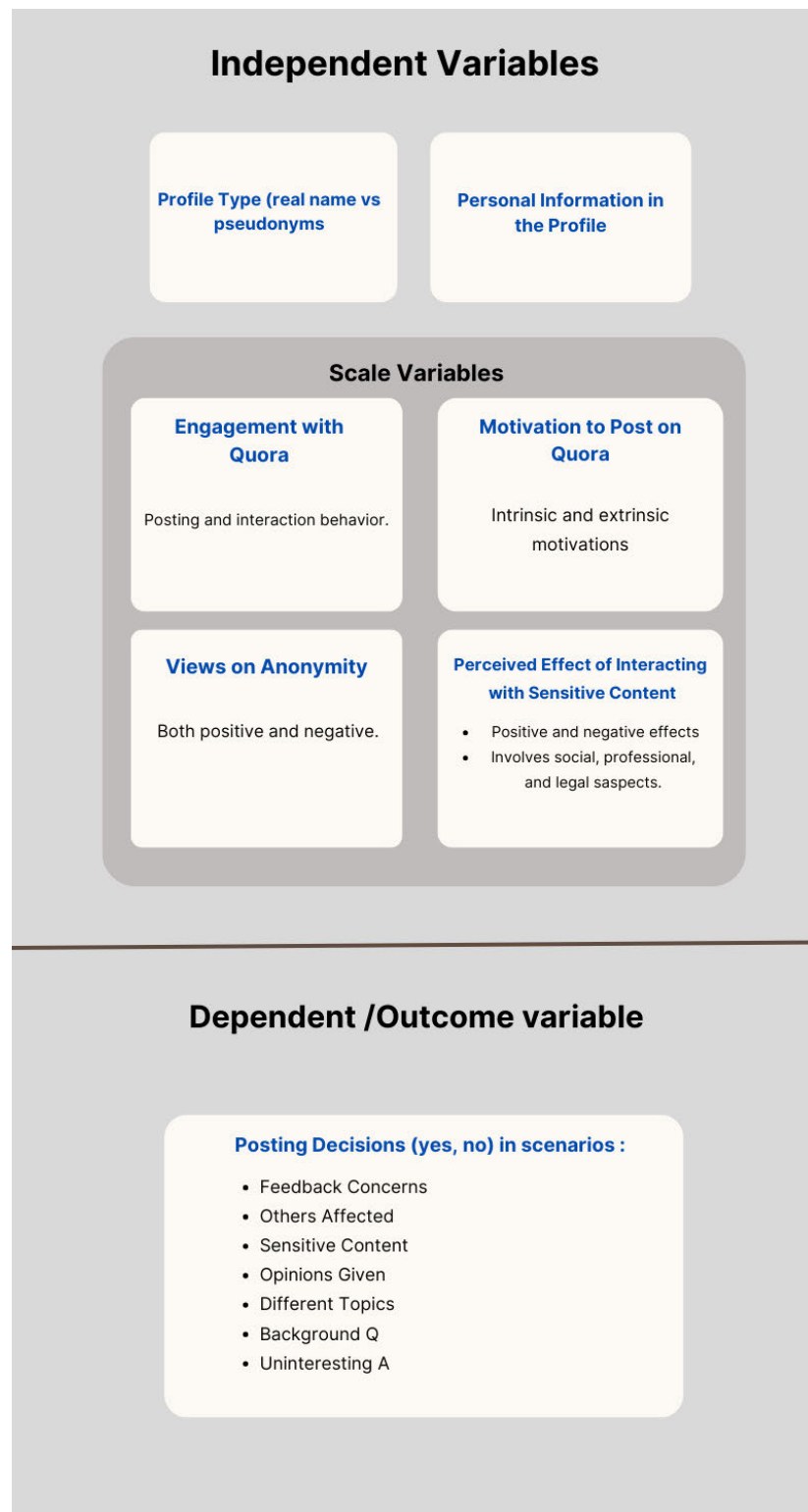


Figure 5.2: Survey instruments - Model 2 to answer RQ4.2

I post on Quora because:
I care about having a positive reputation on Quora.
My Quora reputation can help me succeed professionally.
Quora helps with making new contacts.
I like receiving upvotes and positive comments.
I get useful answers to my questions.
I like getting a lot of interaction when I post.
I like being able to help people by answering their questions.
I enjoy writing on Quora.
I enjoy being part of the Quora community.

Table 5.2: Items of motivations to post on Quora.

When I am on Quora:
I mainly ask questions if I post.
I mainly post answers to questions if I post.
I engage with spaces and topics that relate to my profession/studies.
I browse across different spaces and topics.
I maintain a low profile.
I enjoy interacting with others.
I like answering questions that are directed to me by other Quora users.

Table 5.3: Items of forms of engagement with Quora.

5.2.3 Survey Analysis

5.2.3.1 Statistical Analysis

R was used for the statistical analysis, the Arsenal package was used for statistical summaries and comparisons, and the psych package was used for assessing the reliability of scale variables. Generalized linear mixed models (GLMMs) (logistic) were used to answer RQ4.1 to examine the effect of profile type on posting decisions across the various scenarios while accounting for the individual-level variability in the outcome based on the different levels of the profile type variable, as shown in Figure 5.1.

I think that it should be possible to post answers/questions anonymously.

I think that allowing anonymous answers/questions improves the quality of discussion on Quora overall.

In my view, removing anonymous answers/questions makes Quora safer for everyone.

Removing anonymous answers/questions makes it more difficult for me to talk about sensitive topics.

I miss being able to post answers/questions anonymously.

Table 5.4: Items of opinions towards anonymity.

Overall, I would benefit in my professional life.

Overall, my professional life would become more difficult.

The questions or answers might lead to legal repercussions.

Overall, I would benefit in my social life.

Overall, my social life would suffer.

Overall, my image/reputation would improve.

Overall, my image/reputation would decline.

Table 5.5: Items of perceived effect of interacting with sensitive content.

To investigate the additional factors in RQ4.2, we used generalized linear models (GLMs), namely, logistic regression, to model the posting decisions of each scenario separately. Details about the variables of this model are provided in Figure 5.2.

5.2.3.2 Coding Text Answers for Posting Decisions

As mentioned earlier, all the scenario questions included the option of ‘it depends’ that allowed participants to provide additional free-text answers. Of the 2100 responses given by the 300 participants on posting decisions of the seven scenarios, $n=111$ (5%) responded with ‘it depends’ and gave additional explanations. Initial inspection suggests that the reasons given can be reliably mapped to yes/no. To code the answers for use in statistics, I examined the answers first, and then a second researcher reviewed them before we discussed the final coding together, where text answers were mapped into the binary decision of yes or no. As a general rule, unless the answer was

Scenarios	Abbreviation
If you expect that the feedback you receive (votes, comments) to an answer might be biased due to your identity, would you still post the answer?	Feedback Concerns
Would you share information about other people in your life in your answers?	Others Affected
Would you post answers to topics that you deem to be sensitive?	Sensitive Content
Would you post answers that reflect your views and opinions instead of verifiable facts?	Opinions Given
Would you post answers to questions that do not reflect the topics about which you normally post on Quora?	Different Topics
Would you post an answer to a question if it is not interesting to readers or not sufficiently detailed, even if it could be potentially helpful to the asker?	Uninteresting A
Would you post a question to which you would be expected to know the answer, given your background, interest or expertise it is shown in your Quora profile?	Background Q

Table 5.6: Scenarios of posting decisions.

explicitly positive about posting, it would be considered a negative decision because many answers only provided further details or special cases where they would consider posting.

5.2.3.3 Qualitative Analysis Method

We conducted a supplementary analysis of the optional text answers to add additional depth of understanding to the quantitative findings, as well as the previous qualitative analysis of Quora posts in Chapter 4. Details about the questions are provided in Table 5.7.

To analyse the open-ended questions, we used a combination of memoing fol-

Question No	Question Text	Saw Question		Gave Answer	
		N	%	N	%
1	Please share anything else you would like to tell us about anonymity on Quora	166	55	92	55
2	What are your views about anonymity on a platform such as Quora?	165	55	87	52
3	Please share with us any other thoughts you might have on anonymity or pseudonymity on Quora.	300	100	174	58

Table 5.7: Optional open-ended text questions in the survey, showing the number and percentage of participants who saw each question (based on the total of 300 participants) and those who provided answers (based on the number who saw each question).

lowed by identification of high-level themes. Memoing refers to the process where researchers make notes while exploring the data [118]. I started by reading through all 352 open-ended answers taking memo notes as I went. In alignment with the study goals, I was particularly looking for reasons and strategies for maintaining anonymity, opinions for and against anonymity, and pseudonymity. The brief nature of the responses (mean word count = 19.77, median = 16, SD = 10.19) helped guide our approach towards focusing on identifying concepts raised. After completing, I reviewed the memos and produced a list of interesting high-level concepts. These were reviewed by my first supervisor (Dr. Maria Wolters). I then converted the concept list into codes, went through all the answers again and applied these codes. My second supervisor (Dr. Kami Vaniea) reviewed the applied codes for 28% (n=100) and discussed any points where the codes might miss important concepts. The codes were then grouped into themes.

5.3 Findings

5.3.1 Participants

In total, 300 people completed the survey. Nearly 40% (n=121) of the participants were between 25–34 years old, followed by 29% (n=86) between 35–44 years old, 14% (n=43) between 18–24 years old and 10% (n=30) between 45–54 years old. Most participants (n=182, 61%) were male, and approximately 75% (n=226) were employed either full or part-time. With regards to education, approximately 42% (n=126) had a graduate degree, 27% (n=80) had a high school diploma or below, and 19% (n=57) had a postgraduate degree. Detailed demographic information is shown in Table 5.8.

Regarding the profile type, most users (n=275, 92%) have only one profile on Quora, and only n=25 (8%) have multiple profiles. Of those with one profile, a higher percentage of participants (41%, n=114) reported using a pseudonym that they also use in other social platforms compared to those who have their real name in their profiles (38%, n=103), and 21% (n=58) of participants with a single profile have a pseudonym that is specific to Quora.

Twenty-five participants indicated that they have more than one profile on Quora, 23 of them reported having two profiles, and only two participants had three or more profiles. Of those with multiple profiles, some participants specified that they use different profile types. Six have both profiles under pseudonyms; one person used a pseudonym that they also used on other social platforms and one person wrote under a pseudonym that was specific to Quora. Four people reported that they had one real name and one general pseudonym profile, and four had one real name and one Quora-specific pseudonym. Other participants only used one type of profile for their multiple accounts: four used Quora-only pseudonyms, three used general pseudonyms and three used real-name accounts.

5.3.2 Quantitative Analysis

As the research questions focused on factors influencing posting decisions on Quora, this section initially presents descriptive and inferential statistics to outline general trends in participant responses regarding their posting decisions.

When examining the posting decisions across the various scenarios, we found some differences in the level of willingness to post among users with a single profile. The

Category	(N/%)
Age	
18–24	43 (14.3%)
25–34	121 (40.3%)
35–44	86 (28.7%)
45–54	30 (10.0%)
55–64	13 (4.3%)
65 and older	6 (2.0%)
No answer	1 (0.3%)
Gender	
Female	108 (36.0%)
Male	182 (60.7%)
Other	7 (2.3%)
No Answer	3 (1.0%)
Education	
Graduate degree (e.g. Bachelor)	126 (42.0%)
Postgraduate degree (e.g. Masters/PhD)	57 (19.0%)
Secondary school or below	80 (26.7%)
Vocational qualification (e.g. in a trade)	24 (8.0%)
Other	5 (1.7%)
No answer	8 (2.7%)
Employment Status	
Employed full time	189 (63.0%)
Employed part time	37 (12.0%)
Self-employed	29 (10.0%)
Student	26 (9.0%)
Unemployed	21 (7.0%)
Retired	8 (3.0%)
Other	3 (1.0%)
No answer	5 (2.0%)

Table 5.8: Demographic information (n=300)

scenario that addressed sharing posts that involve information about others had the largest proportion of participants ($n=188$, 68%) who answered that they would refrain from posting. For the scenario of expecting to receive biased feedback due to identity, $n=124$ (45%) participants indicated that they would not post or consider sharing in such situations. Conversely, other scenarios exhibit a different pattern where most participants are more open to posting on Quora, including the scenarios of sharing posts that might not be interesting to readers or sufficiently detailed ($n=199$, 72%), sharing posts that do not reflect what they would normally share ($n=181$, 66%), posting about content that they deem to be sensitive ($n=179$, 65%), sharing posts that would express opinions and views instead of verifiable facts ($n=179$, 65%), and asking questions to which they would be expected to know the answer given their background or interest as shown in their profile ($n=170$, 62%).

We further looked at the decisions to post while taking the profile type into account. Sharing posts that involve information about others (Others Affected) was the scenario with significant differences between the three groups ($\chi^2 = 8.12$, $p = 0.017$). While most participants across the three groups provided negative responses, users of the Quora-pseudonym group were least likely to post, with $n=48$ (83%) expressing reluctance towards sharing information that involved others, compared to the other two groups of general pseudonym ($n=70$, 61%) and real-name ($n=70$, 68%) users. The Feedback Concerns scenario was a concern for more users with Quora-pseudonyms with $n=32$ (55%) answering that they would not post. In the general pseudonyms group, $n=54$ (47%) would opt not to post, and a much smaller percentage ($n=38$, 37%) of the real-name users opted not to post than the two other groups.

The remaining scenarios did not show significant differences and followed a consistent pattern where the majority of users in each group answered that they would consider posting in these cases. The group of real-name users had more people with positive answers, followed by the general pseudonyms and, lastly, the Quora-pseudonyms, while slightly more users with Quora-pseudonyms than those with general pseudonyms would post in the Opinions Given scenario. More details on this are provided in 5.9

We also explored the posting decisions reported by users with multiple profiles, and similar to the findings of users with a single profile, the Others Affected scenario had the highest proportion of participants who responded negatively, with almost half ($n=12$, 48%) reporting that they would not post in such cases. Conversely, in the Sensitive Content scenario, while a small percentage ($n=3$, 12%) said that they would avoid posting, the option of posting with a pseudonymous profile was the most com-

mon decision among participants (n=20, 80%), and the highest percentage associated with posting under pseudonyms compared to other scenarios. In all other scenarios, about half of the participants indicated that they would be comfortable sharing using their pseudonymous profile. Detailed information regarding posting decisions for users with multiple profiles is presented in Table 5.10

Scenario	Profile Name Type			Total	p-value
	General pseudonym	Quora pseudonym	Real name		
Feedback Concerns					0.067
No	54 (47.4%)	32 (55.2%)	38 (36.9%)	124 (45.1%)	
Yes	60 (52.6%)	26 (44.8%)	65 (63.1%)	151 (54.9%)	
Others Affected					0.017 *
No	70 (61.4%)	48 (82.8%)	70 (68.0%)	188 (68.4%)	
Yes	44 (38.6%)	10 (17.2%)	33 (32.0%)	87 (31.6%)	
Background Q					0.786
No	44 (38.6%)	24 (41.4%)	37 (35.9%)	105 (38.2%)	
Yes	70 (61.4%)	34 (58.6%)	66 (64.1%)	170 (61.8%)	
Opinions Given					0.350
No	45 (39.5%)	20 (34.5%)	31 (30.1%)	96 (34.9%)	
Yes	69 (60.5%)	38 (65.5%)	72 (69.9%)	179 (65.1%)	
Sensitive Content					0.337
No	41 (36.0%)	24 (41.4%)	31 (30.1%)	96 (34.9%)	
Yes	73 (64.0%)	34 (58.6%)	72 (69.9%)	179 (65.1%)	
Different Topics					0.794
No	38 (33.3%)	22 (37.9%)	34 (33.0%)	94 (34.2%)	
Yes	76 (66.7%)	36 (62.1%)	69 (67.0%)	181 (65.8%)	
Uninteresting A					0.190
No	35 (30.7%)	19 (32.8%)	22 (21.4%)	76 (27.6%)	
Yes	79 (69.3%)	39 (67.2%)	81 (78.6%)	199 (72.4%)	

Table 5.9: Posting decisions by scenario and profile type from users with a single profile (n=275). Statistical significance is indicated with '***', '**', '*', as ≤ 0.001 , ≤ 0.01 and ≤ 0.05 , respectively, and is measured by the chi-squared test. Effect size: Cramer's V = 0.172.

Scenario		N	%
Feedback Concerns	No	7	28.0
	With pseudonymous profile	13	52.0
	With real-name profile	5	20.0
Others Affected	No	12	48.0
	With pseudonymous profile	10	40.0
	With real-name profile	3	12.0
BackgroundQ	No	5	20.0
	With pseudonymous profile	13	52.0
	With real-name profile	7	28.0
Opinions Given	No	6	24.0
	Yes	2	8.0
	With pseudonymous profile	14	56.0
	With real-name profile	3	12.0
Sensitive Content	No	3	12.0
	With pseudonymous profile	20	80.0
	With real-name profile	2	8.0
Different Topics	No	7	28.0
	With pseudonymous profile	14	56.0
	With real-name profile	4	16.0
Uninteresting A	No	4	16.0
	With pseudonymous profile	14	56.0
	With real-name profile	7	28.0

Table 5.10: Posting decisions across scenarios by users with multiple accounts (n=25).

5.3.2.1 The Effect of Profile Type on Posting Decisions

In order to test the patterns described in Table 5.9 and to investigate RQ4.1: the effect of scenario and profile type on posting decisions, we used GLMM to fit logistic regression models for users with a single profile. Due to the low number of users with multiple profiles, we did not perform any significance tests with them.

The model fitted was of the form:

$$Posting \sim 1 + Scenario + (1|ProfileType) \quad (5.1)$$

Scenario was a group-level predictor assessed across all profile types, while profile type was an individual-level predictor associated with individual survey respondents. The effects of profile type that were extracted from the mixed effect model using the `raneff` function are shown in Table 5.11, indicating that users with pseudonyms specific to Quora show a lower tendency to post, whereas those with real names are more likely to post.

The scenario-specific coefficients (c.f. Table 5.12) illustrate how individual scenarios affect posting decisions. When modelling the effect of scenario type, each of the six scenarios that involved the decision to post an answer was modelled as a binary variable, while the seventh scenario, involving the decision to post a question, was used as a baseline and contributed to the overall intercept.

The significant effect seen in Table 5.9 for answers involving other people is replicated. There are two additional scenarios with significant coefficients: Uninteresting Answer and Feedback Concerns. This is due to the way the model was formulated. Compared to the baseline (i.e. posting a question one would be expected to know the answer to), respondents are far more likely to post answers even if these are not particularly interesting and less willing to post if there might be concerns about biased feedback.

Profile type	Intercept
Pseudonym used in other social platforms	0.002083726
Pseudonym specific to Quora	-0.164617484
Real name	0.161446637

Table 5.11: Effects of profile type of the model of overall posting decisions.

5.3.2.2 Factors Influencing Posting Decisions

We then examined RQ4.2, namely, the effect of individual characteristics on posting decisions. We looked at the impact of these factors on each of the scenarios to examine what factors might have an influence on specific scenarios. We fitted logistic regression models to do so. Each model included all the factors as independent variables and the binary decision of each scenario as the outcome variable. The model fitted for each scenario was of the form:

$$\begin{aligned} \textit{Posting} \sim 1 + \textit{ProfileType} + \textit{NoProfileInfo} + \textit{Motivation} + \textit{Engagement} \\ + \textit{PositiveEffect} + \textit{NegativeEffect} + \textit{OpinionQuestions} + \textit{OpinionAnswers} \end{aligned} \quad (5.2)$$

When we compared the models fitted for all scenarios (see Tables 5.13– 5.14 for details), we found that participant characteristics only affect the Others Affected scenario. The profile name is coded so that the baseline is posting with a generic pseudonym. Posters who used Quora pseudonyms show a lower tendency to post in this scenario, as we showed previously in Table 5.9, whereas posters who are highly motivated to be on Quora were more likely to do so.

<i>Dependent variable:</i>	
Decision to Post	
Different Topics	0.174 (-0.175, 0.523)
Feedback Concerns	-0.286* (-0.627, 0.055)
Opinions Given	0.142 (-0.206, 0.490)
Others Affected	-1.258*** (-1.611, -0.906)
Sensitive Topics	0.142 (-0.206, 0.490)
Uninteresting Answer	0.483*** (0.123, 0.843)
Constant	0.457*** (0.157, 0.757)
Observations	1,925
Log likelihood	-1,236.111
Akaike inf. crit.	2,488.222
Bayesian inf. crit.	2,532.723

Note: *, $p < 0.1$; **, $p < 0.05$; ***, $p < 0.01$

Table 5.12: Effects of scenarios on posting decisions.

	<i>Dependent variable:</i>			
	Decision to Post			
	Different Topics	Feedback	Opinion	Others
	(1)	(2)	(3)	(4)
Quora Pseudonym	−0.285 (−1.363, 0.793)	−0.345 (−1.344, 0.655)	0.840 (−0.232, 1.912)	−1.152* (−2.379, 0.075)
Real Name	0.066 (−1.011, 1.143)	−0.072 (−1.056, 0.912)	1.718 (0.446, 2.990)	−1.179** (−2.342, −0.015)
Amount of Information in Profile	−0.088 (−0.421, 0.245)	0.190 (−0.121, 0.501)	0.228 (−0.136, 0.591)	0.263 (−0.084, 0.610)
Motivation	0.340 (−0.467, 1.147)	0.134 (−0.608, 0.876)	0.271 (−0.599, 1.141)	1.080** (0.092, 2.068)
Engagement	−0.425 (−1.200, 0.350)	−0.088 (−0.790, 0.614)	0.199 (−0.615, 1.013)	−0.662 (−1.477, 0.153)
Positive Effect	−0.186 (−0.776, 0.405)	−0.299 (−0.833, 0.235)	0.030 (−0.586, 0.647)	0.213 (−0.397, 0.823)
Negative Effect	−0.527 (−1.103, 0.049)	−0.312 (−0.837, 0.212)	0.142 (−0.464, 0.747)	0.167 (−0.414, 0.748)
Opinion Answers	−0.414 (−1.163, 0.335)	−0.559 (−1.246, 0.127)	−0.372 (−1.109, 0.365)	−0.045 (−0.754, 0.663)
Opinion Questions	0.301 (−0.581, 1.184)	0.478 (−0.326, 1.283)	0.667 (−0.230, 1.565)	−0.151 (−1.041, 0.740)
Constant	3.612* (−0.986, 8.210)	1.736** (−2.474, 5.946)	−3.492*** (−8.440, 1.456)	−2.566 (−7.319, 2.187)
Observations	111	111	111	111
Log likelihood	−63.329	−72.025	−59.101	−60.037
Akaike inf. crit.	146.658	164.050	138.203	140.074

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 5.13: Effect of participant characteristics in posting scenarios (Part 1 of 2).

	<i>Dependent variable:</i>		
	Decision to Post		
	Background	Sensitive Topics	Uninteresting Answers
	(1)	(2)	(3)
Quora Pseudonym	0.473 (-0.634, 1.581)	0.478 (-0.548, 1.503)	-0.169 (-1.293, 0.955)
Real Name	-0.047 (-1.167, 1.072)	0.720 (-0.310, 1.749)	1.375 (0.021, 2.729)
Amount of Information in Profile	0.420 (0.042, 0.798)	0.104 (-0.212, 0.419)	-0.116 (-0.481, 0.248)
Motivation	0.783 (-0.064, 1.630)	0.031 (-0.754, 0.817)	0.507 (-0.410, 1.425)
Engagement	0.446 (-0.360, 1.252)	0.429 (-0.276, 1.133)	0.309 (-0.495, 1.112)
Positive Effect	0.271 (-0.352, 0.893)	-0.094 (-0.652, 0.464)	-0.566 (-1.254, 0.121)
Negative Effect	-0.550 (-1.172, 0.073)	-0.270 (-0.818, 0.277)	-0.560 (-1.230, 0.109)
Opinion Answers	-0.278 (-1.051, 0.496)	-0.072 (-0.738, 0.593)	-0.342 (-1.155, 0.471)
Opinion Questions	0.252 (-0.659, 1.162)	0.147 (-0.659, 0.952)	0.475 (-0.502, 1.452)
Constant	-3.445* (-8.423, 1.534)	-0.759** (-5.105, 3.586)	0.805*** (-4.304, 5.913)
Observations	111	111	111
Log likelihood	-58.667	-68.512	-53.494
Akaike inf. crit.	137.334	157.024	126.988

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 5.14: Effect of participant characteristics in posting scenarios (Part 2 of 2).

5.3.2.3 Post-Hoc Exploration

5.3.2.3.1 Users with a Single Profile Given that most of the sample has only one profile and that I found clear differences in posting tendencies between different profile types, I conducted further statistical analyses to better understand the participants with the three types of profiles. In this section, I report the differences between these three user groups. I focus on the factors and characteristics of the participants that were used in the models for RQ4.2. Also, the distinction between anonymous posting for questions and answers was apparent in the text responses provided by participants, as will be discussed in the following section of qualitative analysis. Thus, I compared the overall opinion scores for both questions and answers across all users.

For identifying significant differences, I applied Chi-squared tests for comparing categorical variables and ANOVA for the scale (Likert) variables. To examine the difference between opinions for questions and answers, the Mann–Whitney U test was applied to compare the distributions of Likert scale scores for the two groups. After examining significant differences, effect sizes were measured using Cramer’s V for categorical variables and eta-squared for scale variables on the significance of the differences observed. Additionally, the rank-biserial correlation coefficient was used to calculate the effect sizes for the Mann–Whitney U test results.

Frequency of Posting As lurking has been linked to Q&A platforms in the literature [69, 94, 130], I started the exploration by examining the frequency of posting on Quora, and investigating whether lurking might account for lower tendency towards posting, which has been associated with the group having Quora-specific pseudonyms. In terms of how active the participants reported they are as posters, the results showed that there were no significant differences ($\chi^2 = 12.73, p = 0.121$) between the three groups of profiles when it comes to the frequency of posting (Table 5.15). The findings of the table suggest that a larger percentage of the users with pseudonyms specific to Quora group post on Quora monthly than the other two groups. However, a higher percentage of real-name users ($n=26, 25\%$) reported that they posted weekly than the other groups.

Amount of Personal Information in the Profile The analysis revealed a statistically significant difference in the number of personal information pieces shared across different profile types ($\chi^2 = 28.13, p = 0.0004$). Most users with Quora pseudonyms ($n=33, 57\%$) reported that they share nothing about themselves in their profiles, compared to 34% ($n=39$) of users with general pseudonyms and only 19% ($n=20$) of

Frequency	General	Quora specific	Real name	Total	p-value
Daily	2 (1.8%)	0	1 (1.0%)	3 (1.1%)	0.121
Weekly	18 (15.8%)	11 (19.0%)	26 (25.2%)	55 (20.0%)	
Monthly	38 (33.3%)	26 (44.8%)	24 (23.3%)	88 (32.0%)	
Rarely	54 (47.4%)	20 (34.5%)	47 (45.6%)	121 (44.0%)	
Never	2 (1.8%)	1 (1.7%)	5 (4.9%)	8 (2.9%)	
Total	114	58	103	275	

Table 5.15: Frequency of posting by profile type. The significance is measured by the chi-squared test.

real-name users. Additionally, while approximately 15% (n=15) and 7% (n=8) of the groups with real name and general pseudonyms, respectively, reported that they share more than three different categories of personal information in their profile, almost none of those with pseudonyms specific to Quora said that they share the same amount of personal information. Detailed numbers are presented in Table 5.16. Figure 5.3 compares the categories of personal information shared between profile types.

Experience and Opinions about Anonymous Posting Regarding the previous use of the anonymity feature, a statistically significant difference was observed in the use of the anonymous feature for posting questions ($\chi^2 = 7.81, p = 0.020$) between different profile types. Most users with pseudonyms (58%) said that they had used the anonymous feature when posting questions, compared to only 42% of users who use their real name. Within the pseudonym group, more of the users who have Quora-specific pseudonyms (n=37, 64%) have used the anonymous feature compared to 54% (n=62) of users with pseudonyms used on other platforms. A similar pattern was found for anonymous answer posting, where more people (n=33, 57%) from the group with Quora pseudonyms reported previous use of the feature for answers, compared to 50% (n=57) of users with general pseudonyms and 39% (n=40) of users with real-name profiles. Table 5.17 shows that the difference observed between the three groups was statistically significant for anonymous question asking, while the difference for anonymous answers had a low p-value but was not significant, suggesting that a larger sample might find a potential difference.

Regarding opinions about anonymity on Quora, in general, participants expressed more positive attitudes towards posting questions anonymously, with a mean score

No of personal info	General	Quora specific	Real name	Total	p-value
0	39 (34.2%)	33 (56.9%)	20 (19.4%)	92 (33.5%)	0.0004***
1	28 (24.6%)	11 (19.0%)	29 (28.2%)	68 (24.7%)	
2	24 (21.1%)	10 (17.2%)	24 (23.3%)	58 (21.1%)	
3	15 (13.2%)	3 (5.2%)	15 (14.6%)	33 (12.0%)	
4+	8 (7.0%)	1 (1.7%)	15 (14.6%)	24 (8.7%)	

Table 5.16: Number of pieces of personal information shared in the profile. The significance is measured by the chi-squared test and indicated with '***', '**', '*', as ≤ 0.001 , ≤ 0.01 and ≤ 0.05 , respectively. Effect size: Cramer's $V=0.226$.

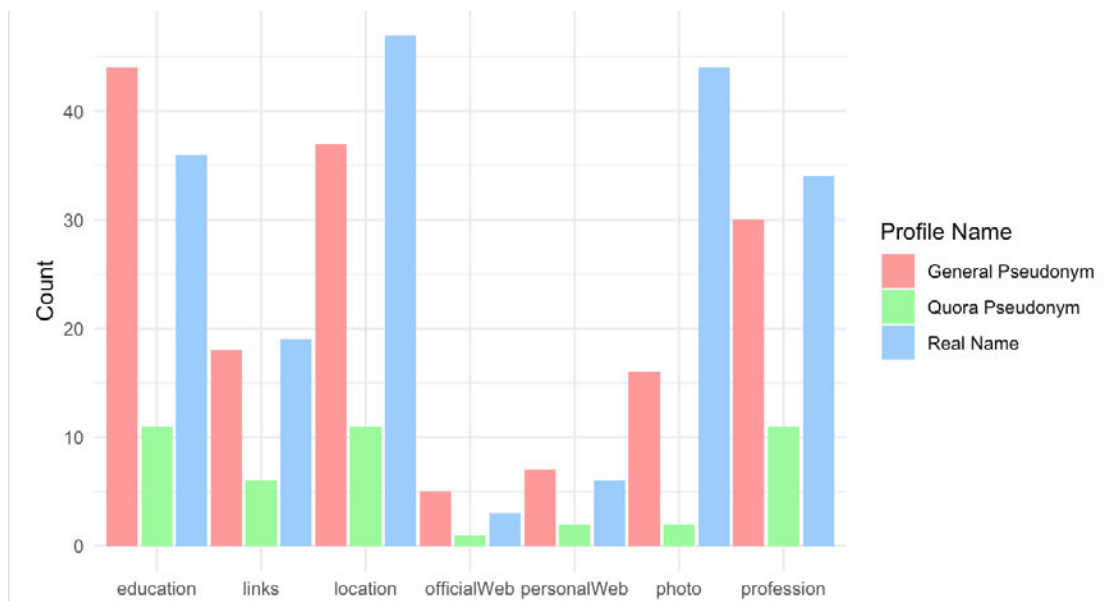


Figure 5.3: Comparison between profile types of information shown on the public Quora profile.

	General pseudonym	Quora pseudonym	Real name	Total (N=275)	p-value
Anonymous Q					
No	52 (45.6%)	21 (36.2%)	60 (58.3%)	133 (48.4%)	0.020 *
Yes	62 (54.4%)	37 (63.8%)	43 (41.7%)	142 (51.6%)	
Anonymous A					
No	57 (50.0%)	25 (43.1%)	63 (61.2%)	145 (52.7%)	0.066
Yes	57 (50.0%)	33 (56.9%)	40 (38.8%)	130 (47.3%)	

Table 5.17: Previous use of the anonymity feature. The significance is measured by the chi-squared test and indicated with '***', '**', '*', as ≤ 0.001 , ≤ 0.01 and ≤ 0.05 , respectively. Effect size: Cramer's $V = 0.169$.

of 3.9 and a median of 4, compared to 3.6 and 3.8 for posting anonymous answers, as shown in Table 5.18. The Mann–Whitney U test revealed a significant difference between the opinions for questions and answers ($W=14,417$, $p = 0.013$), indicating that the distribution of opinion scores differs significantly between the two groups. The effect size, as measured by the rank-biserial correlation coefficient, is $r=0.1483$. When looking at views according to the profile type, the mean and median scores that assess the overall agreement with the feature are quite similar across the three groups, and there were no significant differences. However, users who used their real names have slightly less preference than the other two groups for posting both questions and answers. Those who post using their real name have more variability and the lowest Q1 and Q3 values for both questions and answers, indicating that more real-name users gave lower ratings and had less positive assessments of the anonymous feature than the other two groups, especially for anonymous answers.

Motivation, Engagement and Perceived Effects of Interacting with Sensitive Content With regards to motivation to post on Quora, results in Table 5.18 show significant differences among the three groups of users ($F(2, 272) = 4.296$, $p = 0.015$). However, neither engagement level nor perceived effects reached statistically significant differences. In more detail, real-name users have the highest mean motivational level, followed by the general pseudonym group and then the group with a Quora pseudonym. The average scores for engagement with the platform across all three groups were relatively similar, with the mean score for the real-name group being slightly higher, suggesting that they might be more engaged with Quora than the other

two groups. Similar results were observed regarding the perceived effects of engaging with sensitive content, where users across the three groups were similar in their assessment of its negative impact, while real-name users reported a higher level of perceived positive effects. The box plot in Figure 5.4 illustrates the comparison of the scale variables between the profile types.

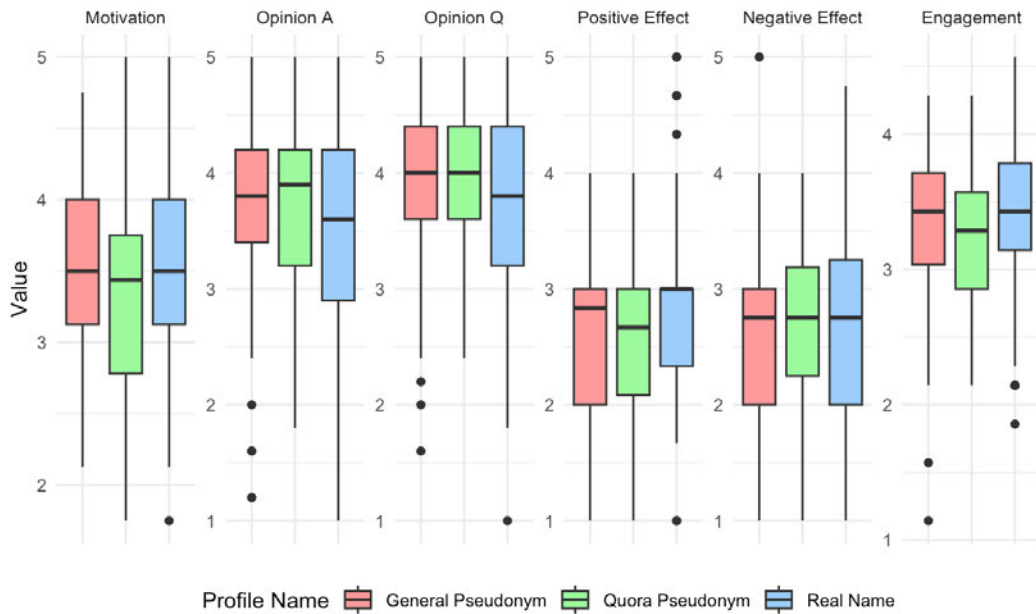


Figure 5.4: Box-plots of scale factors.

	General pseudonym	Quora-specific pseudonym	Real name	Total	p-value
Motivation					0.015*
Mean	3.5	3.3	3.6	3.5	
Median	3.5	3.4	3.5	3.5	
IQR	0.9	1.0	0.9	0.9	
Q1, Q3	3.1, 4.0	2.8, 3.8	3.1, 4.0	3.1, 4.0	
Engagement					0.203
Mean	3.3	3.3	3.4	3.4	
Median	3.4	3.3	3.4	3.4	
IQR	0.7	0.7	0.6	0.7	
Q1, Q3	3.0, 3.7	2.9, 3.6	3.1, 3.8	3.0, 3.7	
Opinion A					0.100
Mean	3.7	3.7	3.4	3.6	
Median	3.8	3.9	3.6	3.8	
IQR	0.8	1.0	1.3	1.0	
Q1, Q3	3.4, 4.2	3.2, 4.2	2.9, 4.2	3.2, 4.2	
Opinion Q					0.090
Mean	3.9	4.0	3.7	3.9	
Median	4.0	4.0	3.8	4.0	
IQR	0.8	0.8	1.2	0.9	
Q1, Q3	3.6, 4.4	3.6, 4.4	3.2, 4.4	3.6, 4.4	
P Effect					0.333
Mean	2.7	2.6	2.9	2.7	
Median	2.8	2.7	3.0	2.7	
IQR	1.0	0.9	0.7	1.0	
Q1, Q3	2.0, 3.0	2.1, 3.0	2.3, 3.0	2.0, 3.0	
N Effect					0.661
Mean	2.6	2.7	2.7	2.6	
Median	2.8	2.8	2.8	2.8	
IQR	1.0	0.9	1.2	1.0	
Q1, Q3	2.0, 3.0	2.2, 3.2	2.0, 3.2	2.0, 3.0	

Table 5.18: Scores on scale variables by profile type: users with a single profile. The significance is indicated with '****', '***', '*', as ≤ 0.001 , ≤ 0.01 and ≤ 0.05 , respectively.

Effect size: eta-squared (η^2): 0.031.

5.3.2.3.2 Users with Multiple Profiles Participants who reported that they have multiple profiles were asked to consider the profile that they used most frequently when answering questions about their motivations and engagement. Due to the limited number of participants with multiple profiles and because each case was unique with various combinations of profile names, including the profile used most frequently, we can not further compare the number of accounts or provide meaningful conclusions. Also, as some factors were directly related to the profile type, such as personal information shared in the profile, we limited the results to factors that could be associated with the user in general and not linked to the profile itself, including previous use and views about anonymity, as well as the dependent variable of posting decisions across scenarios as reported previously in Table 5.10.

Similar to users of only one profile, as Table 5.19 shows, participants with multiple profiles also demonstrated a stronger preference for the anonymous feature when posting questions than answers, with a median score of 4 compared to 3.6 and means of 4.1 and 3.7, respectively. Also, a slightly higher proportion of people reported previous use of anonymous question posting (n=15, 60%) as opposed to the proportion of people who had posted answers anonymously (n=14, 56%). However, due to the small number of users with multiple profiles, this finding does not provide a clear picture regarding the previous use compared to those with a single profile.

Variable	Total (n=25)
Opinion A	
Mean	3.7
Median	3.6
IQR	0.7
Q1, Q3	3.5, 4.2
Opinion Q	
Mean	4.1
Median	4.0
IQR	0.9
Q1, Q3	3.7, 4.6
Previous use of anon Q	
No	10 (40.0%)
Yes	15 (60.0%)
Previous use of anon A	
No	11 (44.0%)
Yes	14 (56.0%)

Table 5.19: Scores on scale variables: users with multiple profiles.

5.3.3 Qualitative Analysis

The free-text answers provided by participants revealed various aspects surrounding anonymity on Quora, grouped under four main themes: reasoning for views on anonymity, regulating anonymity by Quora, navigating anonymity by users and comparing anonymity across platforms. Quotes below appear in italics with the participant number in superscript.

Reasoning for Views on Anonymity

Reasons Behind Strong Opinions on Anonymity Several participants shared their attitudes towards anonymity on Quora, revealing clear and firm views and preferences by explicitly stating whether they supported or opposed it and sharing the underlying reasons that drive these opinionated views. Responses that supported anonymity highlighted its positives, emphasising its role in fostering open and genuine discussions and providing safety by protecting against potential consequences. Common benefits also included encouraging the posting of content on a variety of topics, particularly those of a personal or sensitive nature, and ensuring better overall privacy. Some participants approached the issue from an individual perspective, while others considered

its broader implications for the platform as a whole. For example:

“Being anonymous allowed me to answer questions about sensitive topics honestly”.^{P205}

P196, who mentioned the implications on Quora, reported: *“Posting anonymously on Quora can be beneficial because it allows users to express their opinions and ask questions without the fear of judgement or criticism, to be more honest in their answers. This can lead to more meaningful conversations and better collective understanding”.*

Further, aspects such as avoiding being judged, being contacted regarding previous opinions and receiving biased feedback were raised by participants as reasons to support anonymity as this answer shows: *“Users don’t have to worry about people constantly contacting them about their views on Quora.”*^{P223}

Concerning biased feedback, P167 said: *“Not everyone wants their identity or opinions out in the open, and [anonymity] could reduce the chances of receiving biased answers”.*

One participant mentioned the diversity of topics on Quora in their view as a reason to support anonymity in the platform, stating: *“Because this platform deals with representative subjects, I think it should be possible to post and answer anonymously only because it makes that person feel free to exactly explain the problem in detail without feeling as if they are compromising their integrity”.*^{P131}

The answer suggested that the platform’s extensive range of subjects creates an environment where individuals may feel compelled to share their experiences, opinions and questions. Anonymity, in this view, becomes crucial in allowing users to openly express themselves, share their knowledge and seek information on various topics, ultimately contributing to the richness and comprehensiveness of the Quora community’s collective knowledge.

On the other hand, another group of responses expressed opposition to anonymity on Quora specifically. These participants raised issues such as the potential for trolls, lack of accountability and the importance of maintaining credibility on a crowd-sourced knowledge platform, such as:

“There are other communities where one can post anonymously; Quora’s strength is in (somewhat) verifiable people backgrounds and experiences”.^{P161} Also, *“I think anonymity hurts a Q&A platform because you have no way of gauging/evaluating whether a person is qualified to answer the question”.*^{P82}

Some people mentioned trolling, such as P91: *“It’s bad. It encourages trolling and*

people being irresponsible. They need to be held responsible”.

In other answers, multiple participants emphasised the preference for giving users flexibility and options and that having both anonymous and non-anonymous options is essential to accommodate different comfort levels and preferences. The following participants reported:

“there should always be an option to stay anonymous on Quora”.^{P131} And: *“It should be available to anyone using Quora to have anonymity and it doesn’t matter if they use it or not”.*^{P111}

Mixed Views: Balancing Credibility and Privacy Several participants expressed mixed views on anonymity, considering both its advantages and disadvantages. They particularly highlighted the challenges of striking a balance between credibility and privacy on Quora, as well as the need to prevent negativity, such as trolling and misuse of anonymity, while ensuring the necessary privacy for sensitive content. They indicated that while anonymity allows users to freely express themselves without revealing their identities, it also presents challenges to maintaining credibility. These responses stressed the complex nature of Quora as a Q&A platform, where credibility plays a crucial role in some scenarios, while the scenarios that involve sharing personal and sensitive topics require more privacy. For example, *“It’s a very tricky topic when it comes to anonymity on query sites in general. On the one hand, being anonymous allows a person to feel safe asking questions they would much rather not be associated with; however, there is a certain degree of credibility that comes with putting your name behind it”.*^{P212}

Some responses mentioned the diversity of topics or subjects on Quora, whereas others highlighted the nature or the type of information being predominantly shared in some of these topics, namely, if opinion or fact-based, as these answers demonstrate:

“If someone is looking for a quick opinion on something subjective (like relationship advice), then I believe it is okay. However, if it’s a topic that needs factual evidence, I believe the person who answers should be more knowledgeable and have more ethos.”^{P78}

And: *“It is beneficial to see the person’s credentials and contributions to Quora when looking for certain answers, but sensitive topics can be addressed by non-professionals with experience and the loss of anonymity hinders that”.*^{P172}

Additionally, in discussing both sides of anonymity arguments, many responses highlighted the importance of seeking help through asking questions in particular and

associated it with anonymity, as these responses stated:

“I think it gives people the option to ask more personal questions or embarrassing questions and a safe space to get answers to those questions, but it may also allow people to discuss more perverse topics that might be more disturbing”.^{P63}, and “I know they have removed the anonymity feature on Quora to prevent trolls. But it was helpful for people who wanted to get insights into questions that they would be uncomfortable asking elsewhere”.^{P145}

Regulating Anonymity: Balancing Anonymity Restrictions

General Recommendations to Manage Anonymity Several answers suggested that Quora regulate anonymity while striking a balance in anonymity restrictions. Participants emphasised the need for Quora to maintain some level of control over anonymity while implementing measures to ensure the integrity of the platform and protect against misuse:

“I guess the option to post anonymously should remain available; however, at the same time controls should be in place to ensure the integrity of the platform and users”.^{P206}

Some answers offered general recommendations to manage the feature’s effects by doing things like implementing stricter moderation measures. These suggestions aimed to address concerns related to misuse and maintain a positive online environment. Examples of answers that specified certain policies that could be used to control anonymity:

“I understand why they got rid of it, to filter out bad content, but still, there is a better solution and that is having a moderator.”^{P158}

Differentiating Between Questions and Answers While expressing opinions towards anonymity, some participants provided suggestions about how the anonymity feature could be managed by differentiating between questions and answers, suggesting that they consider the role of anonymity to be different for the two actions. As discussed in some of the previous examples, several answers specified asking questions, particularly when discussing scenarios where anonymity is most needed. For example:

“Quora provides a platform to ask or read others’ questions on sensitive topics that we may not be able to ask our peers, and anonymity makes information sharing easier”.^{P7}

Also, P112 shared: *“I believe there are people who, while they may not feel comfortable seeking help/advice anywhere else, would post a question on Quora if they could do so anonymously. When I ponder on the types of issues/questions such a person might be struggling with, it saddens me”*.

While some responses focused on asking questions, others explicitly made a distinction between posting questions and providing answers. They stressed the importance of allowing anonymous posting for questions while emphasising the need for identification when providing answers to maintain the credibility and accountability of posted answers. As the following participants expressed:

“I don’t mind questions being anonymous, but answers should come from someone with a profile, so you know how established/trustworthy they are”.^{P55} P115 shared: *“I think it’s important to feel free to ask any questions, and sometimes that requires anonymity. The answers, though... I don’t mind there being safeguards in place to make sure there is some accountability for the information you put out”*.

Other answers proposed content-related suggestions that involved limiting anonymity for certain topics. Examples of responses that specified certain policies to control anonymity, such as limiting or restricting anonymity for controversial and dangerous topics: *“Anonymity should have been on a scale for dangerous topics but otherwise free reign”*.^{P141}

Navigating Anonymity: User Strategies and Views on Changes on Quora

Alternatives to Full Anonymity Multiple answers discussed some alternatives to the previous features or strategies that individuals employed to attain a level of anonymity. Some participants favoured these alternatives over the previous form of anonymity, while others listed them as common practices to protect their privacy. These practices include using a pseudonym that is unrelated to their real identity:

“Pseudonymity sounds like a better idea than anonymity.” P14. And: *“Having a pseudonym account is fun and allows me to feel completely uninhibited on Quora. However, I ensure that each answer is a quality answer”*.^{P128}.

P94 reported: *“Monitoring of names doesn’t seem to be strict, so you can technically still post under a pseudonym, and thus anonymously, if I’m not mistaken – at least my profile name isn’t my real name”*.

Some participants mentioned pseudonymity specifically, whereas others described it as having the content tied with one name and profile, highlighting that this form of visibility is sufficient for ensuring credibility, as this answer shows: *“I should be able*

to keep my personal information private but having a username which does not show my identity is okay with me. It makes people feel that they can believe what you are saying more if they can see a name”. P46

Similarly, other practices, such as creating multiple profiles as a way to achieve anonymity, were mentioned in several answers. The approaches were described in some answers as potential alternatives to removing the anonymity feature. However, other participants expressed advantages of one approach over the other, such as the ease of using the anonymity feature compared to having to manage multiple profiles. For example:

“I think if someone can make a profile using something that isn’t their real name, it’s a bit pointless. That said, it is definitely easier than running a ‘real’ and ‘burner’ account simultaneously”. P37 As well as: *“I prefer to have different accounts with Quora so I can keep some of my personal opinions semi-anonymous”.* P71

Additionally, limiting personal information shared in the profile was brought up in some answers as this answer stated: *“I’m a pretty private person, so I guess I already operate with anonymity (I don’t attach any personal info to my account)”.* P47.

Some participants proposed alternative methods to achieve anonymity, while others believe that the previous form of this feature offered a unique and user-friendly option. They argue that it enhances user engagement, encourages more people to join and contribute and, ultimately, fosters the growth of collective discussions and content on Quora. For example:

“It was a unique feature which allowed open discussion without being identified”. P219

P128 shared: *“Anonymity was a selling point. Some of my peers don’t want to sign up for Quora or anything along that line of thought, so they don’t answer questions on Quora. If they were allowed to be anonymous, they would answer questions. A lot of unanswered questions could be answered by anonymous people”.*

Views Regarding Policy Change Participants shared their attitudes toward anonymity on Quora in general in the answers discussed above. In addition, other responses referred to the recent policy change and expressed opinions about how it negatively impacts both users and the Quora platform. They primarily highlighted how the new policy affects users’ willingness to post, as the following answers reported:

“I never saw the harm in posting anonymously on Quora; there were often people with industry name recognition that would post on Quora anonymously but won’t any-

more because of the change. This hurts the service tremendously".^{P100}. And: "*Quora is throwing out the baby in the bath water since they removed anonymity. It's a total brain drain now that is dominated by idiotic clout chasers*". Another answer from P88 specified the effect on sharing sensitive content and questions in particular: "*I think it's important. Some of the most interesting and difficult questions are of a sensitive nature. Banning these questions makes Quora less interesting in general*".

Several responses addressing the policy change shared negative opinions towards it, with a few answers expressing satisfaction and the view that things are more peaceful now without it, as they feel that trolling has decreased. In the first group of answers, some participants expressed a desire for its return, as P158 stated: "*I wish they'd bring it back. I'd feel safer knowing I could interact with sensitive topics anonymously*".

Several other answers pointed out how their posting behaviour changed after Quora removed the feature, as these participants indicated:

"I post less now because I don't feel as safe with anonymity there now".^{P81} And: "*I enjoyed posting anonymously. This is partially the reason I cut down on my use of the platform*".^{P143}

Comparing Anonymity Across Platforms

Under this theme, participants addressed anonymity and identification issues more broadly. Some answers extended this discussion by comparing Quora to specific platforms, while others discussed it within the broader context of the internet. Several responses expressed concerns about visibility and searchability. One participant compared Facebook to Quora in terms of announcements for example, as this response illustrated:

*I've always been nervous about my privacy on Quora. It feels like Facebook used to years ago, when Facebook would announce everything that you did on Facebook. We should have the ability to be anonymous to talk about certain things we don't need others finding out about. Quora questions and answers *constantly* come up in Google searches, which is not okay to me*".^{P81}

Another participant referred to Twitter's then-current verification policy and suggested implementing a similar approach on Quora. They proposed that Quora could combine its verification system with the option to maintain anonymity. Namely, users who want to maintain their anonymity can do so while still having the option to be verified, if they choose to. This way, users who value their anonymity can maintain it, but those who want to establish the credibility of their identity or content can also

do so. The suggestion aims to provide users with flexibility and choice regarding their level of verification and anonymity, while also encouraging verification. Additionally, another answer referenced the example of 4chan to highlight the need to strike a balance between anonymity and accountability, avoiding the extreme anonymity observed on certain platforms like 4chan, as the following answers indicate:

“It’s important, but I prefer to remain anonymous; can have a super verified feature like Twitter”.^{P124} And: *“I like the anonymity but still be tied to a user account. Don’t need it to end up like 4chan”*.^{P15}

Several participants reflected on the changing online environment and the growing emphasis on identification for quantifying and marketing purposes and shared their preference for pseudonymous communication. For example:

“There’s no point to not allowing anonymity on the internet. Wanting to quantify everything and everyone does not serve to assist human beings when it comes to curiosity”.^{P151} Another answer pointed out: *“I preferred the internet when everyone used only nick names. Nothing was taken seriously. Now, because everyone is using their real identity, they are so invested in making sure everyone knows they are right regardless of whether they are or not”*.^{P18}

Qualitative Summary

To sum up, the qualitative analysis revealed several key takeaways. Participants with clear and strong opinions about anonymity provided specific reasons that shaped their views. Those in favour of anonymity particularly emphasised its role in encouraging not only general posting but also the sharing of sensitive content. In contrast, those opposing anonymity on Quora pointed out issues such as trolling and concerns over credibility and accountability. Participants with mixed views similarly highlighted the need for privacy when discussing sensitive content, while also recognising the importance of maintaining credibility on a knowledge platform. Furthermore, there was a notable emphasis on differentiating between the need for anonymity in asking questions versus providing answers. Participants stressed the importance of anonymity for posing questions due to privacy concerns, while suggesting that credibility is more crucial in answers. Additionally, some participants distinguished the value of anonymity in discussing sensitive topics, predominantly involving sharing advice, opinions and personal experiences, from its use in controversial topics, which they associated more with trolling and negativity. A key point among the responses that discussed the policy change of removing anonymity was its effect on reducing posting on Quora.

5.4 Conclusion and Discussion

5.4.1 Summary of Findings

In this chapter, I addressed the fourth research question, focusing on users' posting decisions in common scenarios where anonymity was preferred on Quora as a crowd-sourced knowledge community. I investigated the effect of profile types (whether users use their real names or pseudonyms) on these posting decisions, along with factors associated with identity and disclosure, including the number of personal details shared in profiles, motivation to post on Quora, engagement levels, opinions about anonymity and the perceived impact of engaging with sensitive content. To do so, I conducted a survey study with 300 participants to understand their profile characteristics and posting decisions, complemented by a qualitative analysis of 352 free-text responses. The findings show that, in general, users were less willing to post to Quora in two particular scenarios: when their post might contain information about others and when feedback might be biased due to their identity. Also, the findings revealed a common and consistent pattern across different factors and scenarios, indicating that users who use their real names on Quora were more willing to post, and people with Quora-specific pseudonyms were less willing to post and exhibit more inhibited decisions than people with generic pseudonyms.

The qualitative analysis further illustrated the complexity of balancing credibility and privacy on Quora. Participants highlighted the challenge of maintaining credibility via identification while ensuring privacy for more sensitive content, given the nature of the platform that incorporates both help-seeking represented by posting questions and sharing knowledge when posting answers. People supported limiting anonymity to questions in particular, as well as sensitive, subjective and opinion-based content, while emphasising the role of verification and expertise in answers and factual content as the strength of Quora. Also, their reasoning and the implications of the anonymity feature focused on its effect on posting on Quora, their own posting behaviour, as well as on the growth of content on the platform.

5.4.2 Discussion

As mentioned above, the survey's quantitative results revealed a consistent pattern where users with real names were more willing to post, whereas people with a Quora-specific pseudonym, in particular, showed the least tendency towards posting. Specifi-

cally, users with Quora-specific pseudonyms reported disclosing less info in their profile, using anonymity more, and having a stronger preference for anonymity and fewer positive posting decisions across scenarios. These findings were surprising and contrary to the assumptions of the online disinhibition effect by Suler [129] where prior literature addressed the effect and how the use of anonymity or pseudonymity enabled more disclosure [120, 5].

It could be argued that this consistency of behaviour across multiple variables could be attributed to a higher prevalence of lurking behaviour among users adopting Quora-specific pseudonyms, as previous literature has linked lurking behaviour with Q&A platforms [94, 69]. However, in my sample, this group of users reported active posting when being asked about the frequency of their behaviour, as indicated in the result Section 5.15 above. One possible explanation for this could be that users who opt for pseudonyms specific to a platform have less willingness or more selectivity towards posting compared to those who register with real names upon joining the platform. While privacy concerns might be a factor, the nuanced posting behavior of pseudonymous users, especially those with platform-specific pseudonyms, could be influenced by multiple factors. These include the interest in reputation building as a motivation to be on Quora and the expectations of the Quora community regarding the quality and authenticity of content. This is given the emphasis on these dimensions on the platform, as well as the social aspect. Further, my qualitative analysis revealed that while some users accepted pseudonymity as a potential alternative to anonymity, they perceived it as requiring more effort than the simpler feature they were accustomed to.

This explanation is further supported by the following statement by one of Quora users from my study in Chapter 4: *On StackOverflow, identity doesn't matter so much, and people have random display names. But Quora is social; it's not just Q&A.* This quotation suggests that pseudonymity is different depending on the platform, and Quora is clearly a special case being both a knowledge and social platform. Also, The role of motivation in our findings further indicates that posting decisions on Quora is not only about being pseudonymous or using real names from a privacy perspective but also about whether the user is interested in building a profile or reputation. This motivational factor was significantly associated with the type of profile chosen, with different profile types showing distinct levels of motivation.

A prior and notable interview study on anonymity by Kang et al. [56] has reported that users sometimes employed pseudonyms without realising they could be identified through consistent cross-site pseudonyms. In my survey study, I found that individuals

with Quora-specific pseudonyms tended to make more inhibited decisions than those with generic cross-platform pseudonyms. Our finding distinguished between platform-specific pseudonyms that people use to curate a platform-specific identity and cross-site pseudonyms that reflect a more general ‘internet identity’ and reputation. This highlights the nuanced nature of pseudonymous identity management on platforms like Quora.

In terms of the prevalence of certain reasons observed in my qualitative analysis in the previous Chapter 4 and their frequency among participants in this sample of the survey study, the quantitative findings showed that posting information about others was one of the most prominent reasons for using anonymity. These survey results confirmed the prominence of the Others Affected scenario among participants, with most participants across all profile types stating their reluctance to share posts involving information about others.

In the qualitative analysis of the survey open-ended text questions, participants also provided insights into some of the scenarios they saw in the survey. As mentioned earlier, these scenarios were drawn from the identified reasons for anonymous posting in discussions on Quora in Chapter 4. The scenario of sharing sensitive content was among the prominently mentioned ones by participants in their survey text answers. Some answers mentioned sensitive content in general, while others provided more specific details. Namely, several participants emphasised the need for anonymity, particularly for questions, where they consider it to be justified and essential, in contrast to answers. Additionally, participants pointed out that certain topics, especially sensitive ones, predominantly involve shared personal experiences and opinions rather than objective facts that require identification. This observation also aligns with the scenario of sharing opinions versus factual information, as previously noted in some of the quotations above where individuals expressed a preference for anonymous sharing of opinions on Quora in Chapter 4. Some participants also discussed the Others Affected scenario as part of sensitive content. Thus, they particularly valued allowing anonymity to such content.

Furthermore, the Feedback Concerns scenario was mentioned in some answers while presenting arguments in favour of anonymity and its advantages. Some answers also mentioned aspects related to reputation more generally, such as the posting behaviour of individuals with wider recognition, which could be affected after the removal of anonymity.

However, some scenarios reported in Table 4.1, such as Different Topics, Back-

ground Questions and Uninteresting Answers, were less common in the free-text survey answers. It is worth noting that our data collection in Chapter 4 from Quora discussions focused on top-voted answers, mostly associated with users of higher status. This collection approach may explain the prevalence of reputation-related scenarios compared to the responses provided by survey participants.

In addition, the previous qualitative findings presented in Chapter 4 revealed a diverse range of reasons for the anonymous posting of answers, leading to an initial impression that users might prefer anonymity more for answers than questions. However, upon conducting the survey, a clearer picture emerged from both the quantitative and qualitative findings. Our analysis revealed a significantly higher preference for anonymity in sharing questions compared to answers. Also, the qualitative analysis of survey text answers showed that participants stressed the need for anonymity, particularly in the context of questions as previously discussed, regardless of the reasons associated with answers being previously more diverse. It is noteworthy that when providing text answers to the survey, participants may have been influenced to some extent by the order of questions, especially when distinguishing between questions and answers, as they were asked separately about each. Nonetheless, participants frequently provided valid reasoning for this distinction, particularly when emphasising the balance between privacy and credibility.

In a related study on social question asking by Ma et al. [72], the authors used a randomised controlled experiment to examine the effect of anonymity on social image when asking questions. While anonymity seemed to reduce the social cost, defined as the potential negative consequences or losses in social standing and reputation associated with social image concerns, the effect was not statistically significant in their findings. The authors tried to simulate an environment similar to social network-based Q&A sites. Although it was described as being similar to Quora in that sense, participants' Facebook user profiles, including the friendship connections, were transferred into this Q&A platform for the experiment, and, thus, true anonymity might not be achieved while having friends and family connections from a platform that is mostly used for social purposes. Further research would benefit from a larger and more diverse sample in order to reach more conclusive findings on the relationship between anonymity and asking questions on Q&A sites.

5.4.3 Limitations

While I acknowledge the limitations of self-report methods, I took several measures to ensure that participants met our requirements. First, I only recruited Prolific users who are native English speakers and have a minimum approval rating of 95%. Also, as part of the pre-screening process, I assessed participants' familiarity with Quora and checked whether they had accounts. Among those who met the criteria, I only invited users with current posting activity.

It is important to note that we were unable to use validated scales specifically tailored for Quora. However, we still observed that the scale variables in our survey findings demonstrated decent internal consistency reliability. This could be an indicator of the quality of the self-reported measures used. However, it is worth noting that the engagement scale did not score as high as other scale variables and refining such scales further is a project in itself and outside the scope of this study. Given this finding, future research might consider examining specific items of engagement separately instead of the overall engagement level to overcome this limitation. Moreover, the consistency of survey findings across different factors, including both subjective variables such as opinions and non-subjective measures like the number of personal details in users' profiles, suggests an additional indication that our participants provided coherent responses throughout the survey.

Lastly, our sample was limited to people from Western countries, specifically the United States, the United Kingdom and Canada, but it is worth noting that countries like India have a significant number of Quora visitors [124]. Previous research by Xia et al. [146] and Kang et al. [55] have also reported differences between Indian and American Amazon MTurk workers regarding privacy preferences and anonymity.

Chapter 6

Discussion and Conclusion

Quora, the popular social question-and-answer platform, initially enforced a strict real-name policy from its launch in 2010 until 2021 to encourage users to demonstrate their expertise and build reputations. The platform also offered an option for anonymous posting of questions and answers, providing users with a way to protect their privacy while still contributing to their reputation. As the real-name policy was relaxed, Quora announced the removal of the anonymous feature and started allowing users to use pseudonyms as their identity on the platform.

In this thesis, I examined the interplay between identity and posting behaviour on Quora. This chapter first provides a summary of the key findings and outlines the main contributions of the thesis (Section 6.1). After that, Section 6.2 discusses the findings in relation to the existing literature on Quora and relevant theoretical frameworks for certain aspects of the behaviour observed in my findings, extending the comparison to similar social networks. I end this section by integrating and discussing my findings from the three various studies that relate to sensitive content, as well as the distinct patterns observed between questions and answers on Quora. Next, in Section 6.3, I discuss the broader implications of these findings on identity and posting behaviour within the context of social knowledge platforms. The chapter concludes with the limitations of the research and suggests potential directions for future work in Section 6.4.

6.1 Key Findings and Contributions

I answered the following research questions in this thesis:

RQ1: For anxiety-related questions as a special case of sensitive content on Quora, are questions posted by anonymous askers different than those posted by known

askers, in terms of linguistic features?

RQ2: How does the content of these questions differ between anonymous and known askers on Quora ?

RQ3: What are the common reasons that Quora users give for using anonymity features when posting questions or answers on the platform?

RQ4: How does user profile type influence posting behaviours on Quora?

6.1.1 Key Results for RQ1 and RQ2

The first and second research questions of this thesis, detailed in **Chapter 3**, investigated the content and language used when posing questions about sensitive topics on Quora. To answer these research questions, I conducted an in-depth study focusing on a topic frequently associated with the use of anonymity on the platform. To this end, I employed content analysis examining two aspects: the topic of the question and the language used, particularly in the framing of the question. Additionally, I analysed the type of support sought in the questions. Before applying content analysis to the data set of 7,087 questions about anxiety disorders, I examined the statistical significance of LIWC features between questions posted by anonymous and known askers. I found significant differences in the data set; specifically, anonymous askers were more likely to post longer questions and to use the pronoun 'I'. I then qualitatively analysed a random set of 520 questions from anonymous and known groups of askers. The results of the study revealed three primary themes among the question topics: 1) related to the pathological aspects of the condition, 2) focusing on personal aspects and 3) addressing social aspects of the condition. The three main topics were consistent across both groups, meaning that people generally asked about the same topics regardless of their identity. Regarding the pathological topics, no differences were observed between anonymous and known askers in the way they framed their questions, whether in a generic form or referring to themselves. However, when posting questions about other topics concerning personal and social aspects, anonymous askers were significantly more likely to frame their questions about themselves than known askers. Also, anonymous askers showed a higher tendency to ask for advice than known askers.

6.1.2 Key Results for RQ3

In the exploratory study discussed in **Chapter 4**, the investigation expanded beyond sensitive topics to address the third research question of this thesis, which shifted the focus to the user perspective on the broader relationship between anonymity and posting behaviour on Quora. Through analysing 127 answers posted by Quora users in their discussions about the topic of anonymous posting, I identified four major themes of common reasons people cited for valuing the anonymity feature during the time it was available on the platform. This analysis revealed that the anonymity feature was used judiciously as part of a decision process that involved personal preference rooted in personality; the benefits, costs and risks of posting with one's real name; subject or content; and online reputation management. In general, reasons for using the anonymity feature could be broadly divided into two categories: some were intrinsic to users, affecting regular decision-making processes like motivations for posting, engagement behaviour on the platform (such as maintaining a low profile or interacting with others) and perceptions of risks and consequences associated with sharing with known identities. The interest in reputation building, which is part of the motivational factor, also influenced the use of the anonymity feature. Other reasons were content-specific, primarily relating to the content being shared. It could be that the topic itself was sensitive or controversial, or it could be that the nature of the content was either fact-based or opinion. Based on the themes that emerged, seven posting scenarios were identified for further investigation in the survey study, as detailed in Table 4.1.

6.1.3 Key Results for RQ4

The user survey study discussed in **Chapter 5**, addressed the fourth research question that investigated the differences and relationships between profile types (whether real names or pseudonyms) and posting decisions on post-anonymity Quora. The previous qualitative findings in **Chapter 4** informed the design and structure of the survey. I recruited 300 participants to answer questions that involved their profiles on Quora, posting decisions and views on anonymity. My findings showed that, across multiple variables, users with pseudonyms reported less willingness to post on Quora than users with real names. Further, those who had Quora-specific pseudonyms showed the least tendency of posting among the three groups of users. The variables include the amount of personal information shared in the profile, previous use and preference for anonymity when asking or answering questions, motivations to post on Quora, and the

overall likelihood to post across the various scenarios. The qualitative analysis showed that as participants expressed their views and rationales about anonymity, they emphasised Quora's nature as a social knowledge platform. This perspective was a key element in their discussions about the positives and drawbacks of anonymity.

The main contributions of this thesis focused on understanding users in terms of the relationship between identity and posting behaviour on the social Q&A platform Quora. Specifically, the research examined what users post when asking about sensitive issues while being anonymous versus when their identity is known, their perspectives on why they valued the anonymity feature on the platform, and the relationship between current forms of identity and posting decisions. More details about contributions were provided in Chapter 1.

6.2 Discussion

My study in Chapter 3 on the content of questions about sensitive topics has expanded the existing literature on anonymity on Quora. Previous research primarily focused on identifying topics associated with anonymity and examining generic features using LIWC for broad analysis [80, 102]. My content analysis revealed that within a sensitive topic, askers sought information about similar issues regardless of whether they used their real identity or remained anonymous. Interestingly, questions concerning pathological aspects of anxiety, which often requested factual information, showed no significant difference in language framing between anonymous and non-anonymous askers. The anonymity feature was particularly beneficial for users seeking advice and inquiring about personal and social issues related to themselves. This finding suggests that certain aspects of sensitive topics are not necessarily tied to anonymity and might benefit more from the credibility that comes with being known. This aspect of credibility was deemed crucial by users when discussing their views on anonymity on Quora. These findings could have insightful implications for platform policy regarding anonymity and user identification.

My findings from the first study are in line with Palen and Dourish's theory [95] concerning privacy in a networked world, particularly the identity and disclosure aspects. Namely, the findings regarding the strategic and nuanced nature of privacy management on a platform like Quora, which places an emphasis on reputation and where personal experiences and advice are commonly shared as well. The consistent topics discussed by both anonymous and known users, along with the notable differences in

personal framing and the type of support sought in discussions of certain topics, reflect how users strategically utilised anonymity to manage their privacy boundaries. They did so by controlling the depth of personal disclosure, thus balancing their need for specific types of support with the potential risks of revealing sensitive personal information.

One of the interesting findings of this thesis is the role of interest in reputation building as a motivation to post on Quora, and how it influenced the use of the anonymity feature. While previous studies on Quora have primarily taken a privacy perspective in examining the anonymity feature by analysing content only, aiming to understand users' privacy preferences and potentially inform policy, my analysis that incorporated the user perspective revealed an unexpected insight. Surprisingly, it was not only users concerned with reputation who used anonymity for content control; users lacking interest in reputation building also often chose to post anonymously, regardless of the content. Additionally, while some users adopted anonymity to avoid negative feedback, those with an established reputation utilised it to avoid excessive interaction and positive responses based solely on their identity and perceived reputation within the community.

This behaviour aligns with the principles of contextual integrity by Nissenbaum [89], which suggests that privacy norms are shaped by the specific context and social settings. A particularly relevant example of this is Quora's feature of directing questions to suggested users who may possess the expertise to provide answers, highlighting how the platform's features and mechanisms influence user decisions around anonymity. When considering how decisions around anonymity reflect an adaptation to these social norms, users strategically managed their online identity and privacy. This management was not solely about controlling the information flow related to the content they shared but also took into account the platform's emphasis on reputation and the community's expectations. This illustrates how contextual integrity extends beyond the mere act of information control to include the broader dynamics of reputation management and social interaction within specific online environments. Furthermore, these findings about the role of reputation building in posting decisions on Quora extend previous work on Quora, which primarily focused on behavioural data, confirming what these studies have acknowledged: user-based approaches are essential, in addition to behavioural data-based approaches, to understand posting behaviours on the platform [102, 80]. My survey study (Chapter 5) further emphasised the impact of motivation, including reputation building, on posting decisions. Notably, users with

Quora-specific pseudonyms reported the lowest levels of motivation to post, challenging the implicit assumption that identity choices on Quora are primarily driven by privacy concerns.

As discussed above, the findings of this thesis suggest that user behaviours on Quora do not necessarily align with those documented in prior research about identity on other social platforms. The differences in affordances and norms across platforms highlight variations in user behaviour. As illustrated in the Background chapter, Reddit and X (Twitter) are among the popular social platforms that share similarities with Quora, specifically in their roles as spaces for posting personal content that can also be used for knowledge sharing and professional networking.

In a study about anonymity on X by Peddinti et al. [103], the authors touched on the differences between X and other platforms regarding identity policies. They argued that unlike the real-name policies enforced by Facebook and Google+, X's more relaxed approach allowed for a higher degree of anonymity, resulting in a mix of identifiable and anonymous users. They found a correlation between the sensitivity of content (such as topics considered taboo or dangerous) and a user's choice to remain anonymous, mirroring some of the Quora findings.

However, their study revealed that anonymous X users tended to be more active: they tweeted more frequently, lurked less, followed more accounts and were more open about their activities. This observation contrasts with our survey findings of users with real names reporting a higher willingness to post on Quora. These differences can be further understood by the findings of a related study on Quora by Patil and Lee [99]. That work aimed to identify experts by analysing features such as user activity, answer quality, linguistic styles and temporal patterns. The authors observed that approximately 60% of the sample included links to their X pages in their Quora profiles. However, incorporating X profile features into the Quora feature set did not improve the expert detection classifier's performance. This finding was attributed to the notable differences between the two platforms: Quora is used mainly for sharing detailed knowledge on specific topics, whereas X leans toward brief updates about personal opinions, news and sentiments. The authors argued that these differences in the nature and context of content between Quora and X likely influenced the ineffectiveness of incorporating X features into improving expert detection on Quora.

In the context of Reddit, these findings, particularly in Chapter 4 and Chapter 5, may be better aligned with or more relevant to professional or science-related subreddits. In these subreddits, the norm often leans towards real-life or offline identities,

even though the overall culture of the platform is predominantly pseudonymous. This contrast in the overall pseudonymous culture on Reddit and the real-name culture on Quora, highlighted in Chapter 3, becomes particularly apparent in the differences observed in user behaviour on sensitive topics when compared to my own findings, as discussed earlier in 3.4.

When looking at sensitive content in particular, by considering the findings from the various studies, this thesis revealed the nuanced role of anonymity in posting questions about such content, as demonstrated in Chapter 3 on questions about anxiety. When analysing reasons posted in Quora discussions in Chapter 4, users also discussed sensitive content and questions. However, the distinction between posting sensitive questions versus answers was not explicitly specified or pronounced. My survey study might not have identified a difference between sensitive questions and answers because the scenario was framed in terms of sensitive content in general, as scenarios were derived from previous qualitative findings, which generally described sensitive content without distinguishing between questions and answers. Nevertheless, the qualitative findings in Section 5.3.3 supported a higher perceived need or preference for anonymity in sharing sensitive questions compared to answers on Quora. When participants discussed their views on questions and answers, they specifically highlighted the privacy required for asking sensitive questions.

This can be further clarified by the findings of a prior study on Quora by Mathew et al. [80], which demonstrated that the sensitive health-related topics on the platform were more prevalent in questions than answers when associated with anonymity. In contrast, topics related to relationships, for example, were often viewed as more private, leading to a high use of anonymity for both questions and answers. These findings demonstrate that while sensitivity could be subjective, as suggested in previous literature [22], it also involves different general levels or classifications. For certain sensitive topics, such as health, anonymity was more commonly used for questions than answers. When participants highlighted sensitive topics in their text answers of the survey, anonymity was deemed more valuable, especially as these often involve sharing advice and experiences. This association between anonymity and advice was also evident in the findings of my study on questions about anxiety, as discussed in Chapter 3. Furthermore, one of the interesting findings in Chapter 4 regarding common reasons for using anonymity linked the use of the anonymity feature to sharing opinions rather than verifiable facts. This suggests that the preference for anonymity may also be influenced by the type of information shared and not only by the spe-

cific topic; these findings contribute to the literature on identity and posting on Q&A platforms.

In terms of distinguishing between questions and answers in general, my survey's quantitative results in Section 5.3.2.3 revealed a broad distinction in both the previous use of the anonymity feature and views on anonymity among all users. These results showed that more people reported previous use of anonymity for questions than for answers, and there was a higher overall preference for anonymous posting for questions compared to answers. As discussed above, more nuanced insights that supported this distinction were provided in the text responses to open-ended questions.

6.3 Implications

The policy change Quora made during the work on this thesis presented an interesting dimension, potentially mitigating a common challenge in privacy and security user research. Often, people do not thoroughly think about their privacy decisions until prompted or directly questioned during interviews or surveys [16]. In my survey study, Quora's policy shift to remove anonymity could be thought of as a natural experiment that might have led users to reflect more on their choices regarding anonymity, providing a more thoughtful and nuanced layer of understanding to this research.

A prior work that represents a relevant notable investigation into the impact of changing anonymity policies in professional and reputation-based online communities revealed interesting findings [62]. The study by Kilner and Hoadley examined the impact of changes in anonymity options on comment quality and participation in the PlatoonLeader community, an online community for US Army leaders. It was found that removing the anonymity option substantially reduced not only antisocial comments but also the overall number of comments, while it did not significantly affect peripheral participation (measured by logins and page views). The study also highlighted a pivotal aspect of user identification, emphasising the role of online reputation in influencing the quality of content as well as user actions. It was observed that some users were more driven by how they were perceived within the community than by potential real-world consequences. This tendency to preserve or enhance one's reputation in an online community encourages more positive and constructive participation.

In this thesis, the effect of removing the anonymity feature on posting was pronounced in multiple findings. Specifically, the effect of anonymity on encouraging people to post was a key point when participants discussed its positives in the survey

text responses in 5.3.3. Some users explicitly stated that the change was the reason they reduced their posting on Quora. Several others approached the overall effect on the growth of the platform by mentioning how people they know currently post less due to the change. Even though possible alternatives such as having multiple profiles and pseudonyms were sometimes mentioned, which was also stated by Quora in their announcement about the change [109], participants noted that the previous anonymity feature offered a more convenient option that encouraged posting compared to the hassle of managing multiple accounts with pseudonyms.

Nevertheless, it's also worth mentioning that reputation building associated with known identities, as part of the overall motivation factor, significantly affected posting decisions in my survey quantitative findings, and users with real identities reported the highest motivation level to post (Section 5.3.2). Additionally, another study by Ma et al. [72] that looked at the effects of anonymity on social cost in social question-asking systems suggested that known identities in these communities help reinforce the social norm of reciprocity, often enhancing people's sense of obligation to reciprocate and foster a culture of mutual exchange and posting.

These findings regarding the role of reputation on posting behaviour in social knowledge platforms, along with my findings mentioned above, confirm the importance of balancing anonymity regulations in these communities to facilitate and encourage posting while mitigating the negativity associated with anonymity, such as trolling, lack of credibility and accountability. Some findings of this thesis offer insight into how anonymity could be managed to potentially encourage user engagement while also striving to maintain respectful and constructive discourse. As suggested by responses from Quora users, the anonymous feature could be selectively available for topics where people would benefit from sharing personal information when requesting support or information. These topics are the sensitive ones that involve a great deal of sharing personal experiences and advice. For topics that include both factual and opinion-based sharing where credibility is crucial, a more controlled approach to anonymity might be necessary to ensure maintaining credibility and reciprocity. This could be achieved by implementing algorithms or moderation systems that detect the nature of the content, specifically answers, allowing anonymity in cases where offering advice based on personal experience is key and restricting it in discussions where factual accuracy and source credibility are crucial.

For topics that involve controversial, hot or dangerous content, where anonymity is associated with encouraging trolling and antisocial behaviour, it is more reason-

able to disallow anonymity. This suggestion aims to maintain a safer environment and ensure that discussions remain constructive and free from harmful activities. In the study by Kilner and Hoadley that examined the anonymity policy change in the professional settings of the US military [62], it was reported that the negativity resulting from anonymous posting led active users to stop posting altogether. Interestingly, the study suggested that pseudonymity was compatible with responsible online behaviour in that online setting, as there was no statistically significant change in comment quality when actual identities were linked to usernames. The authors argued that through pseudonymity, attribution matters in controlling negative behaviour while allowing some level of anonymity that fosters a more heated debate forum where genuine opinions can be expressed. This suggests that on Quora or in the general context of social knowledge platforms, maintaining pseudonymity as an option can serve as a balanced approach for these specific contexts or topics that involve controversy. It allows for heated discussions while maintaining stricter rules to control negative behaviour than full anonymity.

6.4 Limitations

There are some common limitations of the use-related studies conducted in this thesis, discussed in Chapter 4 regarding the focus on top-voted answers of Quora discussions and in Chapter 5 about general survey limitations. Combining these different data collection methods was one way to mitigate these limitations by investigating reasons and views from a more diverse sample in different settings. Also, while I screened potential participants to ensure that they were familiar with Quora, had accounts, and used them, I did not request their Quora profile names for verification. Combining self-report with verification and quantitative analysis was outside the scope of my research and may also have discouraged respondents who highly valued their privacy.

In recruiting survey participants, users were limited to being native English speakers from Western countries. This approach was aimed at representing the distribution of Quora users by Quora traffic at the time the data were collected. Additionally, the role of culture has been prominent in previous literature in Q&A platforms [60, 93, 148, 43], privacy and anonymity preferences in crowd-sourcing platforms [55, 146], and some of the findings when users mentioned the laws of certain countries. Given this role of culture, the analysis focused on a more homogeneous sample to minimise cultural variability, as investigating cultural differences was not among the primary

aims of this thesis. However, it is important to mention that some countries, including India, have a considerable proportion of Quora visitors, as discussed in 5.

In terms of representative to Quora users regarding other variables, the demographics of the survey participants from Prolific generally mirror the trends observed in the broader Quora user base statistics at the time we collected our data, with some differences in specific aspects [124]. In terms of gender distribution, the sample closely aligns with Quora's overall user base, with about 60% men and 36% women, compared to Quora's 56% men and 44% women. This similarity suggests a balanced representation in terms of gender. The largest age group in both the sample and Quora's user base is the 25–34 age group, with a significant representation of 40.3% in my sample compared to 30.47% in Quora's user base.

Regarding the first study on questions about anxiety discussed in Chapter 3 and the second study about reasons for anonymous posting discussed in Chapter 4, I was unable to interview users and had no personal information about them, especially with having questions posted by anonymous users. Thus, I was unable to relate demographics, nationality or culture to the analysis.

Relevant to the ethical considerations, I followed the University of Edinburgh's ethics protocol throughout the design and conducting of all studies, including data collection and storage. As mentioned above, I ensured not linking to or disclosing any personal information in the analysis where consent could not be obtained to protect users' privacy. Additionally, I used modified quotations in cases where users did not provide consent, as is the protocol in survey studies.

6.5 Future Work

In this thesis, I investigated different identity forms and their relationship to posting decisions on Quora. It is important to note that while identity (whether using real names or pseudonyms) might relate to privacy concerns, I did not specifically examine how these concerns might affect posting behaviour. The observed patterns regarding differences in the propensity to post between users with real names and those with pseudonyms could be attributed to several factors: these users might inherently have different levels of concern about privacy, their motivations may differ in terms of being driven by reputation building, or a combination of both factors might influence their behaviour. Findings in Chapters 4 and 5 revealed the role of motivation, including reputation building, in posting decisions. Future work can explore this area further,

examining the complex interplay between privacy concerns and interest in reputation building and their combined effect on posting decisions on social Q&A platforms like Quora.

In addition, future work can also delve into exploring posting behaviour from the perspective of before and after the policy change. Given that users with pseudonyms reported the highest prior use of, and preference for, anonymity, this factor might have influenced their current posting behaviour, particularly if they were accustomed to using the feature previously. For example, interview studies could be conducted to investigate how changing a long-standing and integral feature of a platform could influence users' perceptions and behaviours, especially among those who were active users and frequently used the previous feature.

Also, I investigated the prevalence of posting decisions across various scenarios in general and considering different identity forms in the survey study. Future research could build on this with a larger and more diverse sample to enhance the generalisability of the findings and provide a broader understanding of posting behaviour. As indicated above in Section 6.1, the scenario of sensitive content could be further specified into questions and answers. Relevant to that, the results showed that it was more pronounced that profile types (identity) accounted for notable differences, while most scenarios did not have an impact on posting across profiles. Also, most user characteristics did not have a direct effect on the posting decisions in some scenarios despite the significant differences between those characteristics among profile types. While these findings might indicate the complexity of posting decisions on Quora, especially when examining the scenarios separately, a larger sample could also provide better insight into the relationships between these scenarios and posting decisions.

Finally, based on the studies discussed above on anonymity on X and Quora users who linked their X profiles, an interesting direction for future research could be a cross-platform exploration. This direction could focus on individuals who actively use multiple platforms like X and Quora, examining how their behaviour, related to identity and posting, may vary across these different social media environments. Such work could reveal insights into how platform-specific policies and affordances influence user behaviour and posting decisions.

Bibliography

- [1] Adamic, L. A., Zhang, J., Bakshy, E., and Ackerman, M. S. (2008). Knowledge sharing and Yahoo Answers: everyone knows something. In *Proceedings of the 17th international conference on World Wide Web*, pages 665–674.
- [2] Altman, I. (1975). *The environment and social behavior: privacy, personal space, territory, and crowding*. ERIC.
- [3] Ammari, T. and Schoenebeck, S. (2015). Understanding and supporting fathers and fatherhood on social media sites. In *Proceedings of the 33rd annual ACM conference on human factors in computing systems*, pages 1905–1914.
- [4] Ammari, T., Schoenebeck, S., and Romero, D. (2019a). Self-declared throwaway accounts on Reddit: how platform affordances and shared norms enable parenting disclosure and support. *Proc. ACM Hum.-Comput. Interact.*, 3(CSCW):135:1–135:30.
- [5] Ammari, T., Schoenebeck, S., and Romero, D. M. (2018). Pseudonymous parents: comparing parenting roles and identities on the Mommit and Daddit subreddits. In *Conference on Human Factors in Computing Systems - Proceedings*, volume 2018-April. Association for Computing Machinery.
- [6] Ammari, T., Schoenebeck, S., and Romero, D. M. (2019b). Self-declared throwaway accounts on Reddit: how platform affordances and shared norms enable parenting disclosure and support. In *Proceedings of the ACM on Human-Computer Interaction*, volume 3. Association for Computing Machinery. ISSN: 25730142 Issue: CSCW.
- [7] Andalibi, N., Haimson, O. L., Choudhury, M. D., and Forte, A. (2018). Social support, reciprocity, and anonymity in responses to sexual abuse disclosures on social media. *ACM Transactions on Computer-Human Interaction*, 25(5). Publisher: Association for Computing Machinery.

- [8] Andalibi, N., Haimson, O. L., De Choudhury, M., and Forte, A. (2016). Understanding social media disclosures of sexual abuse through the lenses of support seeking and anonymity. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, CHI '16, pages 3906–3918, New York, NY, USA. ACM.
- [9] Andalibi, N., Ozturk, P., and Forte, A. (2017). Sensitive self-disclosures, responses, and social support on Instagram: The case of #depression. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*, CSCW '17, pages 1485–1500, New York, NY, USA. ACM.
- [10] Ashktorab, Z., Golbeck, J., Haber, E., and Vitak, J. (2017). Beyond cyberbullying: self-disclosure, harm and social support on ASKfm. In *Proceedings of the 2017 ACM on Web Science Conference*, pages 3–12. Association for Computing Machinery, Inc.
- [11] Bernstein, M. S., Monroy-Hernández, A., Harry, D., André, P., Panovich, K., and Vargas, G. (2011). 4chan and /b/: An analysis of anonymity and ephemerality in a large online community. In *Proceedings of the international AAAI conference on web and social media. Vol. 5. No. 1*, pages 50–57.
- [12] Binns, A. (2013). Facebook's ugly sisters: Anonymity and abuse on formspring and ask.fm. *Media Education Research Journal*. Publisher: Auteur Publishing.
- [13] Bosu, A., Corley, C. S., Heaton, D., Chatterji, D., Carver, J. C., and Kraft, N. A. (2013). Building reputation in Stackoverflow: an empirical investigation. In *2013 10th Working conference on mining software repositories (MSR)*, pages 89–92. IEEE.
- [14] Bouguessa, M., Dumoulin, B., and Wang, S. (2008). Identifying authoritative actors in question-answering forums: the case of Yahoo! Answers. In *Proceedings of the 14th ACM SIGKDD international conference on knowledge discovery and data mining*, pages 866–874.
- [15] Bowler, L., Oh, J. S., Mattern, E., and Jeng, W. (2012). Eating disorder questions in Yahoo! Answers: Information, conversation, or reflection? In *Proceedings of the American Society for Information Science and Technology*, pages 1–11.

- [16] Braunstein, A., Granka, L., and Staddon, J. (2011). Indirect content privacy surveys: measuring privacy without asking about it. In *Proceedings of the Seventh Symposium on Usable Privacy and Security*, pages 1–14.
- [17] Caplan, S. E. and Turner, J. S. (2007). Bringing theory to research on computer-mediated comforting communication. *Computers in Human Behavior*, 23(2):985–998.
- [18] Choi, E. and Shah, C. (2016). User motivations for asking questions in online q & a services. *Journal of the Association for Information Science and Technology*, 67(5):1182–1197.
- [19] Choudhury, M. D. and De, S. (2014). Mental health discourse on Reddit: Self-disclosure, social support, and anonymity. In *Proceedings of the international AAAI conference on web and social media*, volume 8, pages 71–80. Issue: 1.
- [20] Choudhury, M. D., Gamon, M., Counts, S., and Horvitz, E. (2013). Predicting depression via social media. In *Proceedings of the international AAAI conference on web and social media*, volume 7, pages 128–137. Issue: 1.
- [21] Choudhury, M. D., Morris, M. R., and White, R. W. (2014). Seeking and sharing health information online: comparing search engines and social media. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 1365–1376.
- [22] Correa, D., Silva, L. A., Mondal, M., Benevenuto, F., and Gummadi, K. P. (2015). The many shades of anonymity: characterizing anonymous social media content. In *Proceedings of the international AAAI conference on web and social media. Vol. 9. No. 1*, pages 71–80.
- [23] Costa, P. T. and McCrae, R. R. (1992). *Neo Pi-R*. Psychological assessment resources Odessa, FL.
- [24] Das, D. and Semaan, B. (2020). Quoras: A Python API for Quora data collection to increase multi-language social science research. In *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW*, pages 251–256. Association for Computing Machinery.
- [25] Dawes, E. C., Helman, M., Yajnik, C., Gribble, F. M., Edwards, C. M. B., Ashcroft, F. M., Rutter, G. A., Siddle, K., Färnholm, B., Virtue, S., Ashford, M.

- L. J., Lang, C. L., Reimann, F., Hugill, A., and Herberg, H. J. (2006). Beta cell katp channel activity: A novel link between the glucokinase–glucose sensor and glucose-stimulated insulin secretion. *Proceedings of the National Academy of Sciences of the United States of America*, 103(11):4870–4875.
- [26] Dearman, D. and Truong, K. N. (2010). Why users of Yahoo! Answers do not answer questions. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 329–332.
- [27] DeVito, M. A., Birnholtz, J., and Hancock, J. T. (2017). Platforms, people, and perception: using affordances to understand self-presentation on social media. In *Proceedings of the 2017 ACM conference on computer supported cooperative work and social computing*, pages 740–754.
- [28] Dror, G., Koren, Y., Maarek, Y., and Szpektor, I. (2011). I want to answer; who has a question? Yahoo! Answers recommender system. In *Proceedings of the 17th ACM SIGKDD international conference on knowledge discovery and data mining*, pages 1109–1117.
- [29] Facebook (2020). Facebook advertising policies. <https://www.facebook.com/policies/ads/>. Accessed: 2020-07-07.
- [30] Facebook (2023). Community standards: Account integrity and authentic identity. <https://transparency.fb.com/en-gb/policies/community-standards/account-integrity-and-authentic-identity/>. Accessed: 2023-10-01.
- [31] Felim, P., Dimyati, D., and Shihab, M. (2018). Askfm: motives of self-disclosure to anonymous questions. *Jurnal Komunikasi*, 13(1):93–108.
- [32] Forte, A., Andalibi, N., and Greenstadt, R. (2017). Privacy, anonymity, and perceived risk in open collaboration: a study of Tor users and Wikipedians. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*, pages 1800–1811.
- [33] Fox, S. et al. (2011). The social life of health information, 2011.
- [34] Gagnon, T. (2013). The disinhibition of Reddit users. *Adele Richardson's Spring*.
- [35] Gauducheau, N. (2016). An exploratory study of the information-seeking activities of adolescents in a discussion forum. *Journal of the Association for Information Science and Technology*, 67(1):43–55.

- [36] Goffman, E. (2002). The presentation of self in everyday life. 1959. *Garden City, NY*, 259.
- [37] Goldstein, A. J. and Chambless, D. L. (1978). A reanalysis of agoraphobia. *Behavior Therapy*.
- [38] Google (2020). Google privacy policy. <https://policies.google.com/privacy>. Accessed: 2020-07-16.
- [39] Guha, M. (2014). Diagnostic and statistical manual of mental disorders: Dsm-5. *Reference Reviews*, 28(3):36–37.
- [40] Gui, X., Chen, Y., Kou, Y., Pine, K., and Chen, Y. (2017). Investigating support seeking from peers for pregnancy in online health communities. *Proceedings of the ACM on Human-Computer Interaction*, 1(CSCW):1–19.
- [41] Guo, C. and Caine, K. (2021). Anonymity, user engagement, quality, and trolling on q&a sites. In *Proceedings of the ACM on Human-Computer Interaction*, volume 5. Association for Computing Machinery. ISSN: 25730142 Issue: CSCW1.
- [42] Halevi, T., Lewis, J., and Memon, N. (2013). A pilot study of cyber security and privacy related behavior and personality traits. In *Proceedings of the 22nd international conference on world wide web*, pages 737–744.
- [43] Haq, E. u., Braud, T., and Hui, P. (2020). Community matters more than anonymity: analysis of user interactions on the Quora Q&A platform. In *2020 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, pages 94–98. IEEE.
- [44] Hirvonen, N. (2022). Nameless strangers, similar others: the affordances of a young people’s anonymous online forum for health information practices. *Journal of Documentation*, 78(7):506–527.
- [45] Hofstede, G. (1983). National cultures in four dimensions: a research-based theory of cultural differences among nations. *International studies of management & organization*, 13(1-2):46–74.
- [46] Hofstede, G., Hofstede, G. J., and Minkov, M. (2010). *Cultures and organizations: software of the mind: intercultural cooperation and its importance for survival*. McGraw-Hill.

- [47] Hogan, B. (2010). The presentation of self in the age of social media: distinguishing performances and exhibitions online. *Bulletin of Science, Technology & Society*, 30(6):377–386. Publisher: SAGE Publications.
- [48] Hogan, B. (2013). Pseudonyms and the rise of the real-name web. *A companion to New Media Dynamics*, pages 290–307. Publisher: Wiley Online Library.
- [49] Huang, X. and Vitak, J. (2022). “Finsta gets all my bad pictures”: Instagram users’ self-presentation across Finsta and Rinsta accounts. *Proceedings of the ACM on Human-Computer Interaction*, 6(CSCW1). Publisher: Association for Computing Machinery.
- [50] Huh, J. (2015). Clinical questions in online health communities: the case of “see your doctor” threads. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, pages 1488–1499. Association for Computing Machinery, Inc.
- [51] Jeon, G. Y. and Rieh, S. Y. (2013). The value of social search: Seeking collective personal experience in social q&a. *Proceedings of the American Society for Information Science and Technology*, 50(1):1–10.
- [52] Joinson, A. N. (2001). Self-disclosure in computer-mediated communication: the role of self-awareness and visual anonymity. *European Journal of Social Psychology*, 31(2):177–192.
- [53] Joinson, A. N., Paine, C. B., et al. (2007). Self-disclosure, privacy and the internet. *The Oxford Handbook of Internet Psychology*, 2374252:237–252.
- [54] Kairam, S., Brzozowski, M., Huffaker, D., and Chi, E. (2012). Talking in circles: selective sharing in Google+. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 1065–1074.
- [55] Kang, R., Brown, S., Dabbish, L., and Kiesler, S. (2014). Privacy attitudes of Mechanical Turk workers and the U.S. public. In *Proceedings of the Tenth USENIX Conference on Usable Privacy and Security*, SOUPS’14, pages 37–49, Berkeley, CA, USA. USENIX Association.
- [56] Kang, R., Brown, S., and Kiesler, S. (2013). Why Do People Seek Anonymity on the Internet?: Informing Policy and Design. In *Proceedings of the SIGCHI*

- conference on human factors in computing systems*, CHI '13, pages 2657–2666, New York, NY, USA. ACM.
- [57] Kang, R., Dabbish, L., and Sutton, K. (2016). Strangers on your phone: Why people use anonymous communication applications. In *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW*, volume 27, pages 359–370. Association for Computing Machinery.
- [58] Katzelnick, D. J. and Greist, J. H. (2001). Social anxiety disorder: an unrecognized problem in primary care. *Journal of Clinical Psychiatry*, 62:11–16.
- [59] Kayes, I., Kourtellis, N., Bonchi, F., and Iamnitchi, A. (2015a). Privacy concerns vs. user behavior in community question answering. In *Proceedings of the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining*, pages 681–688.
- [60] Kayes, I., Kourtellis, N., Quercia, D., Iamnitchi, A., and Bonchi, F. (2015b). Cultures in community question answering. In *Proceedings of the 26th ACM Conference on Hypertext & Social Media*, pages 175–184.
- [61] Kessler, R. C., Ruscio, A. M., Shear, K., and Wittchen, H.-U. (2010). Epidemiology of anxiety disorders. *Behavioral Neurobiology of Anxiety and its Treatment*, pages 21–35.
- [62] Kilner, P. G. and Hoadley, C. M. (2017). Anonymity options and professional participation in an online community of practice. In *Computer Supported Collaborative Learning 2005*, pages 272–280. Routledge.
- [63] Kucuktunc, O., Cambazoglu, B. B., Weber, I., and Ferhatosmanoglu, H. (2012). A large-scale sentiment analysis for Yahoo! answers. In *Proceedings of the fifth ACM international conference on Web search and data mining*, pages 633–642.
- [64] Kumar, S., Cheng, J., Leskovec, J., and Subrahmanian, V. (2017). An army of me: sockpuppets in online discussion communities. In *Proceedings of the 26th international conference on world wide web*, pages 857–866.
- [65] Leavitt, A. (2015). “this is a throwaway account” temporary technical identities and perceptions of anonymity in a massive online community. In *Proceedings of the 18th ACM conference on computer supported cooperative work & social computing*, pages 317–327.

- [66] Li, L., He, D., Jeng, W., Goodwin, S., and Zhang, C. (2015). Answer quality characteristics and prediction on an academic QandA site: a case study on ResearchGate. In *Proceedings of the 24th international conference on world wide web*, pages 1453–1458. Association for Computing Machinery, Inc.
- [67] Liao, Y. (2019). Sharing personal health information on social media: balancing self-presentation and privacy. In *Proceedings of the 10th international conference on social media and society*, pages 194–204.
- [68] Lin, X., Su, W., and Potenza, M. N. (2018). Development of an online and offline integration hypothesis for healthy internet use: theory and preliminary evidence. *Frontiers in Psychology*, 9:492.
- [69] Liu, C., Zhou, S., Liu, D., Li, J., Huang, Z., and Ma, X. (2023). CoArgue: Fostering lurkers' contribution to collective arguments in community-based QA platforms. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, pages 1–17. ACM.
- [70] Liu, Q., Agichtein, E., Dror, G., Maarek, Y., and Szpektor, I. (2012). When web search fails, searchers become askers: understanding the transition. In *Proceedings of the 35th international ACM SIGIR conference on research and development in information retrieval*, pages 801–810.
- [71] Liu, Z. and Jansen, B. J. (2017). ASK: a taxonomy of accuracy, social, and knowledge information seeking posts in social question and answering. In *Journal of the Association for Information Science and Technology*, volume 68, pages 333–347. Issue: 2.
- [72] Ma, H., Cheng, H. F., Yu, B., and Zhu, H. (2019). Effects of anonymity, ephemerality, and system routing on cost in social question asking. In *Proceedings of the ACM on Human-Computer Interaction*, volume 3. Association for Computing Machinery. ISSN: 25730142 Issue: GROUP.
- [73] Ma, X., Andalibi, N., Barkhuus, L., and Naaman, M. (2017). "People are either too fake or too real": Opportunities and challenges in tie-based anonymity. In *Conference on Human Factors in Computing Systems - Proceedings*, volume 2017-May, pages 1781–1793. Association for Computing Machinery.

- [74] Ma, X., Hancock, J., and Naaman, M. (2016). Anonymity, intimacy and self-disclosure in social media. In *Proceedings of the 2016 CHI conference on human factors in computing systems*, pages 3857–3869.
- [75] Maity, S. K., Kharb, A., and Mukherjee, A. (2018). Analyzing the linguistic structure of question texts to characterize answerability in Quora. *IEEE Transactions on Computational Social Systems*, 5(3):816–828. Publisher: Institute of Electrical and Electronics Engineers Inc.
- [76] Malinen, S. (2015). Understanding user participation in online communities: a systematic literature review of empirical studies. *Computers in Human Behavior*, 46:228–238.
- [77] Mamykina, L., Manoim, B., Mittal, M., Hripcsak, G., and Hartmann, B. (2011). Design lessons from the fastest q&a site in the west. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 2857–2866.
- [78] Marsch, M., Grossklags, J., and Patil, S. (2021). Won't you think of others?: Interdependent privacy in smartphone app permissions. *Proceedings of the ACM on Human-Computer Interaction*, 5(CSCW2):1–35.
- [79] Marx, G. T. (1999). What's in a name? some reflections on the sociology of anonymity. *The Information Society*, 15(2):99–112.
- [80] Mathew, B., Dutt, R., Maity, S. K., Goyal, P., and Mukherjee, A. (2019). Deep dive into anonymity: A large scale analysis of Quora questions. In *11th International Conference, SocInfo 2019, Doha, Qatar*, pages 35–49.
- [81] McDonald, N., Hill, B. M., Greenstadt, R., and Forte, A. (2019). Privacy, anonymity, and perceived risk in open collaboration: a study of service providers. In *Proceedings of the 2019 CHI conference on human factors in computing systems*, pages 1–12.
- [82] Mondal, M., Correa, D., and Benevenuto, F. (2020). Anonymity effects: A large-scale dataset from an anonymous social media platform. In *Proceedings of the 31st ACM Conference on Hypertext and Social Media, HT 2020*, pages 69–74. Association for Computing Machinery, Inc.

- [83] Moreland, J., French, T. L., Cumming, G. P., et al. (2015). The prevalence of online health information seeking among patients in Scotland: a cross-sectional exploratory study. *JMIR Research Protocols*, 4(3):e4010.
- [84] Morris, M. R., Teevan, J., and Panovich, K. (2010a). A comparison of information seeking using search engines and social networks. In *Proceedings of the International AAAI Conference on Web and Social Media*. Vol. 4, pages 291–294.
- [85] Morris, M. R., Teevan, J., and Panovich, K. (2010b). What do people ask their social networks, and why? a survey study of status message q&a behavior. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 1739–1748.
- [86] Movshovitz-Attias, D., Movshovitz-Attias, Y., Steenkiste, P., and Faloutsos, C. (2013). Analysis of the reputation system and user contributions on a question answering website: Stackoverflow. In *Proceedings of the 2013 IEEE/ACM international conference on advances in social networks analysis and mining*, pages 886–893.
- [87] Nam, K. K., Ackerman, M. S., and Adamic, L. A. (2009). Questions in, knowledge in? A study of Naver’s question answering community. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 779–788.
- [88] National Institute of Mental Health (2023). Anxiety disorders. <https://www.nimh.nih.gov/health/topics/anxiety-disorders>. Accessed: 2023-10-05.
- [89] Nissenbaum, H. (2004). Privacy as contextual integrity. *Wash. L. Rev.*, 79:119.
- [90] Oeldorf-Hirsch, A., Hecht, B., Morris, M. R., Teevan, J., and Gergle, D. (2014). To search or to ask: the routing of information needs between traditional search engines and social networks. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing*, pages 16–27.
- [91] Oh, J. S., He, D., Jeng, W., Mattern, E., and Bowler, L. (2013). Linguistic characteristics of eating disorder questions on Yahoo! Answers – content, style, and emotion. In *Proceedings of the ASIST Annual Meeting*, volume 50. John Wiley and Sons Inc. ISSN: 15508390 Issue: 1.

- [92] O’Leary, K., Bhattacharya, A., Munson, S. A., Wobbrock, J. O., and Pratt, W. (2017). Design opportunities for mental health peer support technologies. In *Proceedings of the 2017 ACM conference on computer supported cooperative work and social computing*, pages 1470–1484.
- [93] Oliveira, N., Andrade, N., and Reinecke, K. (2016). Participation differences in Q&A sites across countries: opportunities for cultural adaptation. In *Proceedings of the 9th Nordic conference on human-computer interaction*, volume 23-27-October-2016, pages 1–10. Association for Computing Machinery.
- [94] Oliveira, N., Muller, M., Andrade, N., and Reinecke, K. (2018). The exchange in StackExchange: Divergences between Stack Overflow and its culturally diverse participants. *Proceedings of the ACM on Human-Computer Interaction*, 2(CSCW). Publisher: Association for Computing Machinery.
- [95] Palen, L. and Dourish, P. (2003). Unpacking” privacy” for a networked world. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 129–136.
- [96] Park, K., Kwak, H., Song, H., and Cha, M. (2020). “Trust Me, I Have a Ph.D.”: A Propensity Score Analysis on the Halo Effect of Disclosing One’s Offline Social Status in Online Communities. In *Proceedings of the International AAAI Conference on Web and Social Media. Vol. 14*, volume 2020, pages 534–544.
- [97] Park, M., McDonald, D. W., and Cha, M. (2013). Perception Differences between the Depressed and Non-Depressed Users in Twitter. In *Proceedings of the international AAAI conference on web and social media. Vol. 7. No. 1*, pages 476–485.
- [98] Paskuda, M. and Lewkowicz, M. (2015). Anonymous quorans are still quorans, just anonymous. In *ACM International Conference Proceeding Series*, volume 27-30-June-2015, pages 9–18. Association for Computing Machinery.
- [99] Patil, S. and Lee, K. (2016). Detecting experts on Quora: by their activity, quality of answers, linguistic characteristics and temporal behaviors. In *Social Network Analysis and Mining*, volume 6, pages 1–11. Springer-Verlag Wien. ISSN: 18695469 Issue: 1.
- [100] Paul, S. A., Hong, L., and Chi, E. H. (2012). Who is authoritative? understanding reputation mechanisms in quora. *arXiv preprint arXiv:1204.3724*.

- [101] Pavalanathan, U. and Choudhury, M. D. (2015). Identity management and mental health discourse in social media. In *Proceedings of the 24th international conference on world wide*, pages 315–321. Association for Computing Machinery, Inc.
- [102] Peddinti, S. T., Korolova, A., Bursztein, E., and Sampemane, G. (2014a). Cloak and Swagger: Understanding Data Sensitivity Through the Lens of User Anonymity. In *2014 IEEE Symposium on Security and Privacy*, pages 493–508.
- [103] Peddinti, S. T., Ross, K. W., and Cappos, J. (2014b). "On the internet, nobody knows you're a dog": A twitter case study of anonymity in social networks. In *Proceedings of the second ACM conference on Online social networks*, pages 83–93. Association for Computing Machinery.
- [104] Peterson, C. S., Halavick, N. M., Saddler, J. A., and Sharif, B. (2019). A gaze-based exploratory study on the information seeking behavior of developers on stack overflow. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems*, pages 1–6. Association for Computing Machinery.
- [105] Pinsonneault, A. and Heppel, N. (1997). Anonymity in group support systems research: a new conceptualization, measure, and contingency framework. *Journal of Management Information Systems*, 14(3):89–108.
- [106] Plain, C. (2007). Build an affinity for kj method. *Quality Progress*, 40(3):88.
- [107] Pretorius, C., McCashin, D., Kavanagh, N., and Coyle, D. (2020). Searching for mental health: a mixed-methods study of young people's online help-seeking. In *Proceedings of the 2020 CHI conference on human factors in computing systems*, pages 1–13.
- [108] Pu, Y. and Grossklags, J. (2017). Valuating {Friends'} privacy: Does anonymity of sharing personal data matter? In *Thirteenth Symposium on Usable Privacy and Security (SOUPS 2017)*, pages 339–355.
- [109] QuoraAllowPseudonym (2021). Allowing everyone to contribute to quora. <https://quorablog.quora.com/Allowing-everyone-to-contribute-to-Quora>. Accessed: 2023-07-07.
- [110] QuoraAnonymousAnswer (2021). Removing anonymous answers. <https://productupdates.quora.com/Removing-anonymous-answers>. Accessed: 2023-07-06.

- [111] QuoraAnonymousQuestion (2021). Moving to pseudonymous from anonymous. <https://productupdates.quora.com/Moving-to-pseudonymous-from-anonymous>. Accessed: 2023-07-07.
- [112] QuoraCredentials (2023). What is quora's policy on credentials? <https://help.quora.com/hc/en-us/articles/360057638052-What-is-Quora-s-policy-on-credentials->. Accessed: 2023-10-01.
- [113] QuoraTopWriter (2019). Has quora discontinued top writer program from this year and why? <https://www.quora.com/Has-Quora-discontinued-Top-Writer-program-from-this-year-and-why>. Accessed: 2023-10-01.
- [114] QuoraVerification (2023). What does it mean to be verified on quora? what are verified profiles? how does quora verify accounts? <https://help.quora.com/hc/en-us/articles/360000480323-What-does-it-mean-to-be-verified-on-Quora-What-are-verified-profiles-How-does-Quora-verify-accounts->. Accessed: 2023-10-01.
- [115] Rachubińska, K., Cybulska, A., Szkup, M., and Grochans, E. (2021). Analysis of the relationship between personality traits and internet addiction. *European Review for Medical & Pharmacological Sciences*, 25(6).
- [116] Reagle, J. (2023). Even pseudonyms and throwaways delete their reddit posts. *First Monday*.
- [117] Ruthven, I., Buchanan, S., and Jardine, C. (2018). Isolated, overwhelmed, and worried: Young first-time mothers asking for information and support online. *Journal of the Association for Information Science and Technology*, 69(9):1073–1083.
- [118] Saldaña, J. (2021). *The coding manual for qualitative researchers*. sage.
- [119] Savolainen, R. (2011). Requesting and providing information in blogs and internet discussion forums. *Journal of Documentation*, 67(5):863–886.
- [120] Schoenebeck, S. Y. (2013). The Secret Life of Online Moms: Anonymity and Disinhibition on YouBeMom.com. In *Proceedings of the International AAAI Conference on Web and Social Media*. Vol. 7. No. 1, pages 555–562.
- [121] SeleniumHQ (2023). Selenium documentation. <https://www.selenium.dev/documentation/en/>. Accessed: 2022-10-05.

- [122] Sharon, T. and John, N. A. (2018). Unpacking (the) secret: Anonymous social media and the impossibility of networked anonymity. *New Media and Society*, 20(11):4177–4194. Publisher: SAGE Publications Ltd.
- [123] Shen, J. H. and Rudzicz, F. (2017). Detecting anxiety through reddit. In *Proceedings of the Fourth Workshop on Computational Linguistics and Clinical Psychology—From Linguistic Signal to Clinical Reality*, pages 58–65.
- [124] SimilarWeb (2023). Quora.com market share, revenue and traffic analytics. <https://www.similarweb.com/website/quora.com/#ranking>. Accessed: 2023-07-06.
- [125] Sleeper, M., Balebako, R., Das, S., McConahy, A. L., Wiese, J., and Cranor, L. F. (2013). The Post That Wasn't: Exploring Self-censorship on Facebook. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work, CSCW '13*, pages 793–802, New York, NY, USA. ACM.
- [126] Spielman, R. M., Jenkins, W. J., and Lovett, M. D. (2020). *Psychology 2e*. OpenStax, Houston, Texas.
- [127] StackExchange (2023). What is serial voting and how does it affect me? <https://meta.stackexchange.com/questions/126829/what-is-serial-voting-and-how-does-it-affect-me>. Accessed: 2023-10-01.
- [128] Stein, M. B. and Kean, Y. M. (2000). Disability and quality of life in social phobia: epidemiologic findings. *American Journal of Psychiatry*, 157(10):1606–1613.
- [129] Suler, J. (2004). The online disinhibition effect. *Cyberpsychology & Behavior*, 7(3):321–326.
- [130] Sun, N., Rau, P. P. L., and Ma, L. (2014). Understanding lurkers in online communities: a literature review. *Computers in Human Behavior*, 38:110–117. Publisher: Elsevier Ltd.
- [131] Taber, L. and Whittaker, S. (2018). Personality depends on the medium: differences in self-perception on Snapchat, Facebook and offline. In *Proceedings of the 2018 CHI conference on human factors in computing systems*, pages 1–13.

- [132] Taber, L. and Whittaker, S. (2020). “on Finsta, i can say ‘Hail Satan’”: being authentic but disagreeable on Instagram. In *Proceedings of the 2020 CHI conference on human factors in computing systems*, pages 1–14.
- [133] Tahaei, M., Vaniea, K., and Saphra, N. (2020). Understanding privacy-related questions on Stack Overflow. In *Proceedings of the SIGCHI conference on human factors in computing systems*. ACM.
- [134] Tausczik, Y. R. and Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology*, 29(1):24–54.
- [135] Tausczik, Y. R. and Pennebaker, J. W. (2011). Predicting the perceived quality of online mathematics contributions from users’ reputations. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 1885–1888.
- [136] The Pandas Development Team (2023). Pandas documentation. <https://pandas.pydata.org/pandas-docs/stable/>. Accessed: 2022-10-05.
- [137] Tran, C., Champion, K., Forte, A., Hill, B. M., and Greenstadt, R. (2020). Are anonymity-seekers just like everybody else? an analysis of contributions to Wikipedia from Tor. In *2020 IEEE symposium on security and privacy (SP)*, pages 186–202. IEEE.
- [138] Van der Nagel, E. (2017). *Social media pseudonymity: affordances, practices, disruptions*. PhD thesis, Swinburne University of Technology.
- [139] Vincent, J. (2021). Yahoo Answers shutting down: Everything you need to know. <https://www.independent.co.uk/tech/yahoo-answers-shutting-down-when-b1827172.html>. Accessed: 2023-12-19.
- [140] Vitak, J. and Kim, J. (2014). “You can’t block people offline”: examining how Facebook’s affordances shape the disclosure process. In *Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW*, pages 461–474. Association for Computing Machinery.
- [141] Wang, G., Gill, K., Mohanlal, M., Zheng, H., and Zhao, B. Y. (2013a). Wisdom in the Social Crowd: an Analysis of Quora. In *International World Wide Web Conference Committee (IW3C2)*, page 1596. International World Wide Web Conferences Steering Committee.

- [142] Wang, G., Konolige, T., Wilson, C., Wang, X., Zheng, H., and Zhao, B. Y. (2013b). You are how you click: clickstream analysis for Sybil detection. In *22nd USENIX Security Symposium (USENIX Security 13)*, pages 241–256.
- [143] Wang, G., Wang, B., Wang, T., Nika, A., Zheng, H., and Zhao, B. Y. (2014). Whispers in the dark: analysis of an anonymous social network. In *Proceedings of the ACM SIGCOMM Internet Measurement Conference, IMC*, pages 137–149. Association for Computing Machinery.
- [144] Wang, S., German, D. M., Chen, T.-H., Tian, Y., and Hassan, A. E. (2021). Is reputation on Stack Overflow always a good indicator for users’ expertise? no! In *2021 IEEE international conference on software maintenance and evolution (IC-SME)*, pages 614–618. IEEE.
- [145] Wang, Y. (2018). Understanding the reputation differences between women and men on Stack Overflow. In *2018 25th Asia-Pacific Software Engineering Conference (APSEC)*, pages 436–444. IEEE Computer Society.
- [146] Xia, H., Wang, Y., Huang, Y., and Shah, A. (2017). “Our privacy needs to be protected at all costs”: Crowd workers’ privacy experiences on Amazon Mechanical Turk. *Proc. ACM Hum.-Comput. Interact.*, 1(CSCW):113:1–113:22.
- [147] Yamak, Z., Saunier, J., and Vercouter, L. (2016). Detection of multiple identity manipulation in collaborative projects. In *Proceedings of the 25th international conference companion on world wide web*, pages 955–960.
- [148] Yang, J., Morris, M., Teevan, J., Adamic, L., and Ackerman, M. (2011). Culture matters: a survey study of social q&a behavior. In *Proceedings of the international AAAI conference on web and social media*, pages 409–416.
- [149] Yu, J., Jiang, Z., and Chan, H. C. (2007). Knowledge contribution in problem solving virtual communities: the mediating role of individual motivations. In *Proceedings of the 2007 ACM SIGMIS CPR conference on Computer personnel research: The global information technology workforce*, pages 144–152.
- [150] Zhang, J., Kong, X., Jie, L., Chang, Y., and Yu, P. S. (2014). NCR: A scalable network-based approach to co-ranking in question-and-answer sites. In *Proceedings of the 23rd ACM International Conference on Information and Knowledge Management*, pages 709–718. Association for Computing Machinery.

- [151] Zhang, S., Su, W., Han, X., and Potenza, M. N. (2022). Rich get richer: extraversion statistically predicts reduced internet addiction through less online anonymity preference and extraversion compensation. *Behavioral Sciences*, 12(6):193.
- [152] Zhang, Y. (2010). Contextualizing consumer health information searching: an analysis of questions in a social Q&A community. In *Proceedings of the 1st ACM international health informatics symposium*, pages 210–219.
- [153] Zhang, Y. (2013). Toward a layered model of context for health information searching: an analysis of consumer-generated questions. *Journal of the American Society for Information Science and Technology*, 64(6):1158–1172.
- [154] Zhao, X., Salehi, N., Naranjit, S., Alwaalan, S., Voids, S., and Cosley, D. (2013). The many faces of Facebook: experiencing social media as performance, exhibition, and personal archive. In *Proceedings of the SIGCHI conference on human factors in computing systems*, pages 1–10.
- [155] Zolduoarrati, E., Licorish, S. A., and Stanger, N. (2022). Impact of individualism and collectivism cultural profiles on the behaviour of software developers: a study of Stack Overflow. *Journal of Systems and Software*, 192. Publisher: Elsevier Inc.

Appendix A

Screening Survey

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Qualtrics Survey Software

Consent

Recruiting Quora Users for Studies of Posting Behaviours

We are looking for people who want to participate in a study of posting behaviours and identity on Quora. The aim of this survey is to learn a little more about you and your experience with Quora. If you would like to take part in further studies, we will ask you to provide us with your your Prolific Academic ID.

We expect that the survey will take about 2 minutes to complete.

Who are the researchers?

The research team consists of Ms Amirah Alshamrani, Dr Kami Vaniea, and Dr Maria Wolters, from School of Informatics, University of Edinburgh. The survey study is part of Ms Alshamrani's PhD thesis.

What are the risks and benefits?

There are no known risks - we will not ask any sensitive questions. You will receive £0.20 for completing this survey.

Do I have to take part?

Whether you take part in this study is entirely up to you. If you do decide to withdraw from the study, your data will be no longer be used for new analyses; however, publications that occur before you have withdrawn will not be amended. If you wish to withdraw, send a message to the study team through Amazon Mechanical Turk.

What will happen to my data?

All survey results collected through this form are stored on a Qualtrics server located in the UK. Your data will be processed in accordance with UK data protection laws. All electronic data will be stored on a password-protected encrypted computer, or on the University's secure encrypted cloud storage services (DataSync / Sharepoint). Your data,

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Qualtrics Survey Software

including any free text, will be fully anonymised before it is analysed.

We will only share the fully anonymised form of any data collected using Qualtrics with our collaborators, and you will be referred to by a unique participant number, not by name. With your permission, we may also share your fully anonymised responses with other researchers. All information will be kept strictly confidential. All collaborators are committed to following best practice in data management. For general information about how we use your data, please go to <https://edin.ac/privacyresearch>

What will happen to the results of the study?

The results of this study may be summarised in published articles, reports and presentations. Quotes or key findings will always be anonymous. With your consent, information can also be used for future research. Your data may be archived for a minimum of two years.

Who can I contact?

If you have any further questions about the study, please contact the lead researcher, _____, or her supervisor, _____. If you wish to make a complaint about the study, please contact inf-ethics@inf.ed.ac.uk. When you contact us, please provide the study title and detail the nature of your complaint.

I confirm that I have read and understood the participant information about this study. I understand that my participation is voluntary, and that I can withdraw at any time, without giving any reason, and that withdrawing will not affect any of my rights. I agree to take part in this study.

- Yes
 No

Additional Consent

I consent to my anonymised data being used in academic publications and presentations, and I understand that my anonymised data can be stored for a minimum of two years.

- Yes

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Qualtrics Survey Software

 No

I allow my data to be used in future ethically approved research.

 Yes No

Questions

What type of content can you post on Quora? Please select all options that apply.

 Short messages, like Twitter or Mastodon Long essays, like Medium or Substack Questions and answers, like Yahoo Answers or Stack Overflow

Do you have a Quora account?

 Yes No

For how long have you had a Quora account?

 Less than a year 1-2 years 3-4 years 5-9 years 10 years or longer

Have you ever posted a question on Quora ?

 Yes No Can't remember

How often do you post questions on Quora?

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Qualtrics Survey Software

- Daily
- Weekly
- Monthly
- Rarely

Have you ever posted an answer on Quora?

- Yes
- No
- Can't remember

How often do you post answers on Quora?

- Daily
- Weekly
- Monthly
- Rarely

You have indicated that you have been on Quora for more than a year. Have you ever posted anonymously on Quora?

- No, and I wasn't aware of the option
- No, but I was aware of the option
- Yes, I have posted anonymous questions
- Yes, I have posted anonymous answers
- Yes, I have posted anonymous questions and answers.

Would you be interested in being contacted about further studies on Quora?

- Yes, via Prolific Academic
- Yes, via Amazon Mechanical Turk
- No

Please enter your Prolific Academic ID here

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Qualtrics Survey Software

Please enter your Amazon Mechanical Turk Worker ID here

Thank you for completing the survey! You will be redirected to Prolific Academic.

Powered by Qualtrics

Appendix B

Posting Decisions Survey

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Qualtrics Survey Software

Introduction

How do People Decide Whether to Post on Quora?

The aim of this survey is to investigate how people decide whether to post on Quora, and how they choose between different Quora profiles if they have them.

You have been invited to take part because you have indicated in response to an earlier brief survey that you are a Quora user and would be interested in taking part in further studies.

We expect that the survey will take not longer than 15 minutes to complete.

Who are the researchers?

The research team consists of Ms Amirah Alshamrani, Dr Kami Vaniea, and Dr Maria Wolters, from School of Informatics, University of Edinburgh. The survey study is part of Ms Alshamrani's PhD thesis.

What are the risks?

As part of the survey, we will ask you whether you have posted about sensitive topics on Quora before. This question is framed as neutrally as possible.

What are the benefits?

You will receive \$3 / £2.50 for completing this survey.

Do I have to take part?

Whether you take part in this study is entirely up to you. If you do decide to withdraw from the study, your data will be no longer be used for new analyses; however, publications that occur before you have withdrawn will not be amended. If you wish to withdraw, send a message to the study team via the crowdsourcing platform through which you were recruited to the survey.

What will happen to my data?

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Qualtrics Survey Software

All survey results collected through this form are stored on a Qualtrics server located in the UK. Your data will be processed in accordance with UK data protection laws. All electronic data will be stored on a password-protected encrypted computer, or on the University's secure encrypted cloud storage services (DataSync / Sharepoint). Your data, including any free text, will be fully anonymised before it is analysed. We will only share the fully anonymised form of any data collected using Qualtrics with our collaborators, and you will be referred to by a unique participant number, not by name. With your permission, we may also share your fully anonymised responses with other researchers. All information will be kept strictly confidential. All collaborators are committed to following best practice in data management. For general information about how we use your data, please go to <https://edin.ac/privacyresearch>

What will happen to the results of the study?

The results of this study may be summarised in published articles, reports and presentations. Quotes or key findings will always be anonymous. With your consent, information can also be used for future research. Your data may be archived for a minimum of two years.

Who can I contact?

If you have any further questions about the study, please contact the lead researcher, _____, or her supervisor, _____. If you wish to make a complaint about the study, please contact inf-ethics@inf.ed.ac.uk. When you contact us, please provide the study title and detail the nature of your complaint.

I confirm that I have read and understood the participation information about this study. I understand that my participation is voluntary, and that I can withdraw at any time, without giving any reason, and that withdrawing will not affect any of my rights.

I agree to take part in this study.

- Yes
 No

I consent to my anonymised data being used in academic publications and presentations, and I understand that my anonymised data can be stored for a minimum of two years.

- Yes

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Qualtrics Survey Software

 No

I allow my data to be used in future ethically approved research.

 Yes No

Demographics

About Yourself

We will now ask you some questions about yourself and your background.

What is your gender ?

 Male Female Prefer to self describe Prefer not to say

What is your age group?

 18-24 25-34 35-44 45-54 55-64 65 and older Prefer not to say

What is your current employment status?

Please tick all that apply.

 Employed full time (35 hours or more) Employed part time

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Qualtrics Survey Software

- Self-employed
- Unemployed
- Student
- Retired
- Other, please specify
- Prefer not to say

What is the highest level of education you have obtained?

- Secondary school or below (e.g., GED, A-Levels, Highers, GCSEs, Leaving Cert, Grade 10 examination)
- Vocational qualification (e.g., in a trade)
- Graduate degree from College / University (e.g., Bachelor)
- Postgraduate degree from College / University (e.g., Masters / PhD)
- Other, please specify
- Prefer not to say

In which of the following countries have you spent at least 10 years of your life?

Please tick all that apply.

- India
- United States
- United Kingdom
- Other, please specify
- Prefer not to say

User Profile

Use of Quora

We will now ask you some questions about your use of Quora.

How long have you been a member of Quora?

- Less than a year

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Qualtrics Survey Software

- 1-2 years
- 3-5 years
- 6-9 years
- More than 9 years

How many Quora profiles do you have?

- One profile
- Two profiles
- Three or more profiles

What name do you use in your Quora profile?

- I have a profile under my real name (i.e., a variant of the name in my passport)
- I have a profile under a pseudonym that I also use in other social platforms
- I have a profile under a pseudonym that is specific to Quora

What name do you use in your Quora profile? If you have multiple profiles, please tick all options that apply to those profiles.

- I have a profile under my real name (i.e., a variant of the name in my passport)
- I have a profile under a pseudonym that I also use in other social platforms
- I have a profile under a pseudonym that is specific to Quora
- Other, please explain

Which Quora profile do you use most frequently?

From now on, please think about this profile when answering the questions of this survey.

- I use my real name most frequently
- I use a pseudonym that is also used for other social platforms most frequently
- I use a pseudonym that is specific to Quora most frequently
- Other, please explain

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Which of the following information do you provide in your Quora profile?

Please tick all that apply.

- A photo of me
- Professional experience / Current position
- Education / Qualifications
- Location
- Official / work website
- Personal website
- Links to my profile in other platforms (LinkedIn, Twitter, Facebook)
- None of the Above
- Other, please explain

Please tell us what kinds of topics and spaces you mainly interact with on Quora across all of your profiles.

How often do you post on Quora at the moment? Posts can be questions or answers.

- Daily
- Weekly
- Monthly
- Rarely
- Never

When this was still possible, did you ever post questions anonymously on Quora?

- No, I wasn't aware that there was a time when this was possible.
- No, never.
- Yes, rarely
- Yes, sometimes
- Yes, regularly
- Yes, always

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People have different opinions about the decision to remove the option of anonymous questions from Quora.

Please indicate the extent to which you agree or disagree with the following opinions.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think that allowing anonymous questions improved the quality of discussion on Quora overall.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In my view, removing anonymous questions makes Quora better for everyone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I miss being able to post questions anonymously.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that it should be possible to post questions anonymously	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Removing anonymous questions makes it more difficult for me to ask questions about sensitive topics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

When this was still possible, did you ever post answers anonymously on Quora?

- No, I wasn't aware that there was a time when this was possible.
- No, never.
- Yes, rarely
- Yes, sometimes
- Yes, regularly
- Yes, always

People have different opinions about the decision to remove the option of anonymous **answers** from Quora.

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Please indicate the extent to which you agree or disagree with the following opinions.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Removing anonymous answers makes it more difficult for me to talk about sensitive topics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that allowing anonymous answers improves the quality of discussion on Quora overall.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that it should be possible to post answers anonymously	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I miss being able to post answers anonymously.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In my view, removing anonymous answers makes Quora safer for everyone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please share anything else you would like to tell us about anonymity on Quora

What are your views about anonymity on a platform such as Quora?

Are you or have you been a Top Writer on Quora?

- Yes
- No
- I don't know what a Top Writer is

The following statements describe aspects that motivate people to **post** on Quora. This includes posting questions, answers, or comments.

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Please indicate to what extent you agree or disagree with each statement.

I post on Quora because ...

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
... I get useful answers to my questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... my Quora reputation can help me succeed professionally.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I enjoy writing on Quora	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I care about having a positive reputation on Quora.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I enjoy being part of the Quora community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I like being able to help people by answering their questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Quora is great for making new contacts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I like getting a lot of interaction when I post	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... Please tick the option "strongly agree"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I like receiving upvotes and positive comments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following statements describe how people **engage** with Quora. This includes browsing, following people, following topics, joining spaces, or posting.

Please indicate to what extent you agree or disagree with each statement.

When I am on Quora, ...

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	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
... I browse across different spaces and topics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I like answering questions that are directed to me by other Quora users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I mainly post answers to questions if I post	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I mainly ask questions if I post	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I engage with spaces and topics that relate to my profession/studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I maintain a low profile	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... I enjoy interacting with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Sensitive Topics

Do you interact with topics on Quora that you deem to be sensitive?

Please tick all that apply

- No, not at all
- Yes, I read posts (questions and answers) on sensitive topics
- Yes, I ask questions about sensitive topics
- Yes, I give answers to questions about sensitive topics

Do you think that your questions or answers about sensitive topics on Quora could affect you personally?

- No
- Maybe
- Yes

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How do you think that your questions or answers about sensitive topics on Quora could affect your life?

Please tick all that apply.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Overall, my professional life would become more difficult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, my social life would suffer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, I would benefit in my professional life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, my image / reputation would decline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, my image / reputation would improve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The questions or answers might lead to legal repercussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, I would benefit in my social life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please tell us more about the kinds of topics or spaces on Quora that you interact with and that you deem sensitive. You can be vague if you wish.

Anonymity usage - Multiple accounts

Making decisions about posting

We now present you with a few general situations. We would like to know whether you would post on Quora in those situations, and what profile you would use if you post.

If you expect that the feedback you receive (votes, comments) to an answer might be biased due to your identity, would you still post the answer?

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- Yes, using the account associated with my real name
- Yes, using a pseudonymous account
- No
- It depends (please explain)

Would you share information about other people in your life in your answers?

- Yes, using the account associated with my real name
- Yes, using a pseudonymous account
- No
- It depends (please explain)

Would you post answers to topics that you deem to be sensitive?

- Yes, using the account associated with my real name
- Yes, using a pseudonymous account
- No
- It depends (please explain)

Would you post answers that reflect your views and opinions instead of verifiable facts?

- Yes, using the account associated with my real name
- Yes, using a pseudonymous account
- No
- It depends (please explain)

Would you post answers to questions that do not reflect the topics about which you normally post on Quora?

- Yes, using the account associated with my real name
- Yes, using a pseudonymous account
- No
- It depends (please explain)

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Would you post an answer to a question if it is not interesting to readers or not sufficiently detailed, even if it could be potentially helpful to the asker?

- Yes, using the account associated with my real name
- Yes, using a pseudonymous account
- No
- It depends (please explain)

Would you post a question to which you would be expected to know the answer, given your background, interest or expertise it is shown in your Quora profile?

- Yes, using the account associated with my real name
- Yes, using a pseudonymous account
- No
- It depends (please explain)

Anonymity usage - One Account

Making decisions about posting

We now present you with a few general situations. We would like to know whether you would post on Quora in those situations.

If you expect that the feedback you receive (votes, comments) to an answer might be biased due to your identity, would you still post the answer?

- Yes
- No
- It depends (please explain)

Would you share information about other people in your life in your answers?

- Yes
- No
- It depends (please explain)

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Would you post answers to topics that you deem to be sensitive?

- Yes
- No
- It depends (please explain)

Would you post answers that reflect your views and opinions instead of verifiable facts?

- Yes
- No
- It depends (please explain)

Would you post answers to questions that do not reflect the topics about which you normally post on Quora?

- Yes
- No
- It depends (please explain)

Would you post an answer to a question if it is not interesting to readers or sufficiently detailed, even if it could be potentially helpful to the asker?

- Yes
- No
- It depends (please explain)

Would you post a question to which you would be expected to know the answer, given your background, interest or expertise it is shown in your Quora profile?

- Yes
- No
- It depends (please explain)

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Block 7

Please share with us any other thoughts you might have on anonymity or pseudonymity on Quora.

Please share with us anything else about your use of Quora that you would like to mention.

If you have any comments on the survey, please share them here.

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