Body Image in the Age of Social Media -
Counteracting the Problematic Impact of the Instagram Body

Svenja Vieker

Master of Science

Design Informatics

School of Informatics

University of Edinburgh

2021

Abstract

Mental health and well-being are closely interwoven with the perception a person has about themselves and their body, the so-called "Body Image". Traditional media has negatively influenced society's idealised body image for decades by constantly promoting unattainable body and beauty standards, especially for women. In recent years, the rise of social media, in the form of Social Networking Sites (SNS) has taken its toll on the general body image once again. Instead of recognizing and celebrating the variety of human bodies, social media platforms like Instagram became a hot spot for the promotion of body trends only achievable through body modification in the form of photographic editing or plastic surgery, also known as the "Instagram Body".

Due to the increasing popularity of social media applications, an intervention addressing the problematic aspects of social media is necessary to reduce its negative impact on body image and mental health. Therefore, in this thesis a qualitative evaluation in the form of interviews with Instagram users was conducted to deepen the understanding of what type of content is perceived as harmful, and to investigate other aspects of social media that contribute to its negative impact.

The results indicated that particularly authentic and realistic content helps users to reduce negative self-perception and improve body image. Mixed results were found for the perception of fitness content. Participants indicated to follow fitness influencers for motivational purposes, but also stated that they do not apply exercise suggestions and instead perceive a feeling of pressure and insufficiency while seeing fitness content.

Based on these findings design suggestions for Instagram in the form of a clickable prototype were proposed to address the identified pain points. The results of a final user evaluation indicate that the design suggestions might be fruitful for the counteracting of the negative impact on body image caused by social media.

Acknowledgements

First of all, I would like to express my sincere gratitude to my supervisor Maria Wolters for her great support and patience in answering all my questions. Maria's expertise and great recommendations were invaluable for the development and realisation of my project.

Furthermore, I would like to thank all of my lovely friends who took the time to participate in my study and enriched my project with their invaluable feedback and great suggestions. Especially my flatmate Sally and my friend Lauren, who were always happy to participate in any new studies or evaluations I came up with, as well as keeping me sane by always listening to my complaints and providing the best emotional support in form of movie nights and affirming conversations.

Finally, I would like to thank my family for always having my back and letting me live my dreams, no matter where I want to go next. I am truly grateful to have you.

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.

(*Svenja Vieker*)

Table of Contents

List of Figures

Chapter 1

Introduction

1.1 Motivation

One technological achievement in recent years that has enormously shaped our daily lives and the way we communicate is the rise of social media in the form of social networking sites, short SNS [26]. Boyd [26] defines SNS as networks that emerge and grow through the construction of user profiles. Users of a SNS create profiles by entering personal information, like name, interests and a profile picture, which then can either be seen publicly or by other users. Through the connection with other people registered on the platform users establish a network, that also includes access to the network of their connections. This interwoven system allows users to connect with people they might have never met in real social settings [26]. Besides the ability to connect people from all over the world, social media platforms also hold an extensive amount of information and data about their users. They live and grow using the content users create and share with others, to consume and interact with [60].

Social media has become an indispensable part of many of our lives. According to a study conducted by the Pew Research Center in 2021 72% of all Americans in the United States indicate that they use social media [4]. Whereas in 2005 only 7% reported to use such applications, highlighting the rapid growth in their usage and influence [74]. In particular, younger adults between the age of 18 to 29 are highly dependent on social media, demonstrated by the fact that 81% indicate that they use social media applications in general, but with an emphasis on platforms like Instagram [50] with 76% and Snapchat[35] with 75% [4].

Image sharing platforms like Instagram quickly became the new medium for commercial marketing to promote a variety of products from home decor, fashion and

beauty to fitness and workout plans [51]. The conquering of social media for marketing purposes also increased the display and promotion of marketable bodies. Traditional media, such as magazines and television, have long propagated a body ideal that is unattainable for most adults, resulting in an increasing rate of personal body dissatisfaction, especially among women [90]. The space in which this promotion takes place has now mainly shifted to a different medium: Social Media.

This exclusive presentation of a very small sample of bodies (who are considered beautiful by society standards) is worrisome due to causing a lack of representation of bodies the majority of people can identify with. But what is even more troubling is that the increasing promotion of bodies which have been altered (either through digital modifications or surgical procedures) has taken the general perception of beauty even further away from what the average body looks like. The alteration of bodies with editing software like Photoshop [76] for marketing and aesthetic purposes has long been a common practice in the general media, especially in fashion and beauty magazines [59]. Magazines started to alter the bodies of their models to an almost unrecognizable state fueling the promotion of highly unrealistic bodies, under the cover of the general assumption that photography represents something real [59]. Another body modification phenomenon which has emerged in recent years with the increase of SNS platforms - as well as advances in machine learning and image recognition - is the use of filters to change a user's appearance. In particular, Snapchat [35] was one of the first SNS platforms that introduced the feature of putting live filters on a user's face while they look at themselves through the front camera, thus modifying or distorting their appearance [15]. Unrealistic beauty ideals are not only promoted through the manipulation of images, but also through the manipulation of bodies through plastic surgery [67]. According to the American Society of Plastic Surgeons, the number of cosmetic procedures conducted in the United States has increased from 10.2 million procedures in 2005, to 17.7 million in 2018, highlighting a growing interest in body modification [72].

Increasing SNS usage combined with the promotion of bodies altered in various ways to match the current beauty ideal of the western world is worrying, not least because studies have been able to identify a correlation between social media usage and body dissatisfaction and even body image disturbance [80, 44, 94, 92].

Body image is a term used in psychology and other related fields to describe how a person perceives their own body shape and appearance and also discusses the potential impacts on emotions and mental health [83]. How a person perceives their body

and how satisfied someone is with this perception can have a huge influence on mental well-being. Distorted body perception can lead to body image concerns, such as body dysmorphia [83]. In addition, research has shown that body dissatisfaction can also increase the risk of developing an eating disorder [96], as well as being positively correlated with depression, by showing that individuals with a negative body image were significantly more likely to report symptoms of depression [71]. Body dissatisfaction is a phenomenon which occurs in all genders. However, studies have shown that women are more concerned with their body image in general and are more likely than men to experience connected psychological effects [2].

Although, the representation of altered and unrealistic bodies in the media is not limited to one gender, the objectification of the female body has long been an issue causing mental struggles among women, such as anxiety and low self esteem [37]. The objectification theory introduced by Frederickson and Roberts in 1997 [37] highlights the ongoing problem of reducing women simply to their physical appearance and defining their value based on their looks. Closely connected to the objectification theory is the concept of the "male gaze" [66]. The male gaze describes the presentation of women in film and media with focus on their body and appearance to appeal to the male observer, disconnecting it from the actual person the body belongs to and reducing the purpose of its existence solely for male pleasure [66]. The vast majority of market-dominating social media applications like Instagram, Facebook, Snapchat or Tinder have been founded by men [50, 30, 35, 49] and were reportedly developed to allow men to consume and rate women's pictures and appearance [73]. Nowadays, the internet provides an almost unlimited amount of pictures of women's bodies, further fueling their sexualisation and objectification [73]. According to Oliver, [73] the easy access to imagery of female bodies through the rise of the internet and social media is a "fertile breeding ground for the male gaze". Furthermore, advanced photo editing software like "Photoshop" [76] allows even amateur users to alter images (and especially female body imagery) according to their own preferences with very realistic outcomes [73]. This might result in a distortion of what bodies really look like and elevates the beauty standard to an unattainable but still expected level.

Taking this development into consideration, as well as the fact that the general media sector is still dominantly controlled by men, [46] the essential need to include a more diverse perspective into the development and management of the media sector to tailor it towards the needs of all user groups becomes obvious. This need for so called "pluralism" is described in Bardzells paper covering the importance of a fem-

inist HCI perspective during the development of technological applications [6]. Not only do modern technological innovations miss the consideration of a female point of view, resulting in the neglect of female needs and preferences, but they also show a lack of consideration of other user groups besides white men. Pluralism as described by Bardzell aims to step away from the idea of one universal user that every application needs to be tailored to, and instead seeks to recognize the existing differences among a variety of users and incorporate their needs and expectations [6]. Social media applications like Instagram were clearly developed with and are still focused on one universal user type in mind, predominantly satisfying the needs and interest of white men, even though nowadays social media applications are used world wide with an equal distribution between male and female users [58].

Considering the constantly increasing usage of social media, its negative impact on body image and the implications of body image on mental health, the importance of adjusting these applications towards the needs of their actual users to improve the overall experience and reduce harmful characteristics as much as possible becomes indispensable.

1.2 Aim

The aim of this project is to accumulate a better understanding of social media usage and the influence which different types of content have on a user's perception of themselves and their body. As yet, the dominating research method to evaluate the influence of social media on body image has been quantitative research (e.g., [97, 105, 94, 92, 93]). Therefore, this project aims to fill the gap for qualitative research and collate insights from the user's point of view by conducting user interviews. To demonstrate how to practically apply the presented findings in a social media setting, design opportunities were identified and suggestions for improvement of SNS were developed that it is hoped will improve the general social media experience by counteracting the harmful impact these applications have on a person's body image.

This project primarily focused its evaluation and design suggestions on the social media platform Instagram [50]. Instagram is a widely used application [27] that has been addressed in a variety of studies and therefore offers an extensive body of research (e.g., [93, 13, 97]. The image sharing characteristics of Instagram and its high focus on appearance make it an ideal candidate for this evaluation.

1.2.1 Research Questions and Hypothesis

As already stated in my IPP [98] the following four research questions have been developed under consideration of existing literature and recent scientific discoveries and were taken verbatim from the report:

- RQ1: What influence does social media have on a person's body image?

- RQ2: Which content has which influence? What content has a positive impact and what content has a negative impact?

- RQ3: How do users perceive these kinds of content and how do they make them feel?

- RQ4: How can we intervene to counteract negative social media influences on body image and foster a positive impact on body satisfaction?

Based on existing literature, the following two components of social media (particularly Instagram) are hypothesised to be potentially harmful for body image perception:

1.2.1.1 Inappropriate recommendations

Recommendations, either on the main feed or the discovery page of Instagram, could show the user content that they are actively trying to avoid. The new Instagram feature of showing a variety of recommendations on the main feed instead of just on the discovery page minimizes the efficiency with which users can filter their main feed to avoid content that potentially triggers negative body image emotions. Instagram does not allow the user to blend out certain content right away. The user is only able to customize their recommendations by either liking the post or actively marking the content as "uncomfortable", making a prior exposure to disliked content a requirement.

1.2.1.2 Harming body positivity content

As further discussed in chapter 2 seeing body positive content can help users to develop a better body image and reduce negative emotions caused by the pressure to look a certain, often unreachable, way. However, body positive content is not exempt from society's pressure to look as perfect as possible. Images that are promoted and marked as body positive have often still been edited to make the presented body

more acceptable by society's standards, such as making a stomach appear smaller or smoothing out uneven skin. These images might be particularly harmful for users who actively seek body positive content to escape the constant presentation of unrealistic bodies. Implying to the viewers that the insecurities they might have, like uneven skin, do not even have a place in a movement claiming to accept all bodies and therefore fueling the idea that body acceptance only includes body features marked as desirable by society standards.

To identify if these aspects really cause negative emotions and are seen as problematic from a user's perspective, 15 semi-structured interviews were conducted. It is important to note that the interviews were not limited to the harmful aspects stated above, but were highly flexible and adjusted to what the participant decides to disclose. The interviews helped to address the problematic assumption of a universal user during the prototype design and offered an in depth way to understand how users perceive the influence of social media and what they experience as problematic and dangerous towards their own body image and the body image of others. Based on findings of related studies, as well as the outcome of the user interviews, a prototype was developed that offers design suggestions for existing platforms like Instagram to make users aware of the potential harm of certain kinds of content, as well as provoking critical thinking about the accounts they follow without patronizing the users by directing them on who to follow and who to not. It is hoped that these design suggestions will reduce the negative implications social media has on body image and mental health and make the overall user experience more inclusive and supportive.

1.3 Overview

In chapter 1 the project aims and the motivation will be introduced. Chapter 2 will give a overview of relevant literature, as well as applied theories and the current developments in the field of social media and body image. Afterwards, in chapter 3 the user research, including the design of the user interviews as well as the analysis approach, will be explained and findings of the study will be discussed. Based on these findings the prototype development will be explained and the design decisions will be justified in chapter 4. Finally, chapter 5 will provide an overall discussion of the project, including an evaluation of the prototype in a small user testing setting, as well as limitations and suggestions for future work.

Chapter 2

Literature Review

2.1 Social Comparison

2.1.1 Theory

Many issues caused by social media can be traced back to the concept of social comparison [32]. Social comparison describes the human need to compare ourselves to our peers or other social contacts to gather information or evaluate our environment [99]. Social comparison can be divided into three different directions: Upwards, lateral and downwards [87]. The direction of the comparison is considered in relation to how a person sees themselves and how they perceive the person they compare themselves to. Upwards comparison is directed towards people seen as superior in the space the comparison is happening, for example appearance. A comparison is lateral if the other person is perceived as equal. Downwards comparison is directed towards people who are seen as inferior [89]. Upwards comparison is generally associated with negative effects for the observer, due to feelings of jealousy and frustration. On the other hand, downwards comparison is assumed to positively effect the observer's well-being by feeling grateful for the better situation they are in [3]. However, research has also shown that not only the comparison direction, but also the intrinsic factors of a person determine the effect of the comparison. Factors like self-esteem can influence the impact of different directions of comparison, resulting in upwards comparison to be inspirational and motivating and downwards comparison to be frightening by demonstrating potential failures and consequences [3].

2.1.2 Social Comparison online

Due to the nature of social media usage to predominately upload the best and the most flattering image of oneself instead of a real snapshot of their life, many comparisons evoked by social media posts tend to be directed upwards [99]. Furthermore, following celebrities is a significant part of social media culture. Following the emergence of social media, the influence and intensity of para-social interaction increased [14]. Para-social interaction describes the social phenomenon of a one-sided relationship with either a fictional or a media character that is not aware of the other person's existence [41]. Depending on how much a media figure decides to disclose online or how much information is available, social media allows users to get insights into their idol's private life, which can result in the forming of strong attachments up to the level of celebrity worship [14, 65]. Most highly successful celebrities are a prime example of the unattainable concept of beauty in today's society. Especially on Instagram, many of the most-followed accounts are celebrities like Taylor Swift or Kylie Jenner who set the standard for either a very slim or an unnaturally curvy body shape [14], resulting in an upwards comparison towards an unreachable goal. Additionally, research has revealed that celebrity worship has a moderating effect and increases body dissatisfaction one feels after seeing celebrity images [12].

Additionally, most images uploaded on social media, especially those with a commercial focus, include some from of modification, either due to the use of filters or through manipulation with editing software [59]. Photographs have long been considered to be a more authentic and realistic medium compared to paintings for example, because of photography's nature to capture real moments. However, due to the rise of photo manipulation software this can no longer be assumed. [59].

This lack of awareness in combination with the increasing use of editing software to manipulate body shape and appearance is likely to lead to unrealistic expectations of what real bodies look like. A study conducted by Kleemans, Daalmans, Carbaat and Anschütz [62] not only showed that the exposure to manipulated images compared to non-edited images from peers significantly reduced body satisfaction in adolescent girls, but also that the participating girls did not realize that the bodies shown in the edited photos were reshaped. Instead, the photos were considered realistic and were rated more positively than the unedited control images.

This perception is worrisome, because it makes social media the ideal breeding ground for the development of unrealistic beauty ideals and body image concerns.

2.2 Social Media Trends

2.2.1 Thinspiration

As mentioned in chapter 1 the praise for extremely slim and toned bodies through traditional media has quickly spilled over into social media, inducing the emergence of two highly body-focused trends: Thinspiration and Fitspiration. As the name indicates, Thinspiration comprises images that promote a very slim body type, aiming to inspire people (predominately women) to lose body fat and settle at a weight usually below the average, which is often be found on websites glorifying disordered eating [40, 94]. These types of images also tend to present bodies in a very sexualised way [40] feeding into the objectification of the female body [37].

The negative implications which the consumption of media content portraying very thin bodies can have on a person's body image and appearance satisfaction has been shown in a variety of studies (e.g., [105, 48, 92]). A study conducted by Wyssen et al. [105] has found that exposure to media portraying thin ideal imagery increased body-related cognitive distortions, such as the internalization of the thin ideal as well as an altered body perception, within female participants. However, the study also showed that these effects are only evoked by the exposure to images of thin bodies, but not by the consumption of general media. The same effect has also been shown in a study by Tiggemann, Anderberg and Brown [92]. In contrast to participants who have been exposed to thin images on Instagram, participants who were shown images of average sized bodies did not show greater body dissatisfaction or lower body appreciation.

Furthermore, an analysis by Ghaznavi and Taylor [40] on thinspiration imagery found on different social media platforms discussed the effect that high exposure to content portraying and glorifying extremely slim bodies leads to assumptions by users that these body types represent the norm and are more common than they are. These findings indicate that it is not media consumption in general that is harmful towards body image and body satisfaction, but that negative implications are mainly caused by the exposure to specific body-related content.

2.2.2 Fitspiration

Another trend promoting the need to change your body and appearance is "Fitspiration". Fitspiration is a collective term for social media imagery that promotes exercise and diet content with a focus on fit and toned bodies. The trend is justified by posts

claiming to be motivating and inspiring for the consumer [94]. Fitspiration is portrayed to be the healthier version of thinspiration, by allegedly focusing on physical fitness and health, instead of promoting a strive to be as thin as possible. However, most fitness content, which can be found predominately on Instagram, still displays very thin, but also toned body types, which are unattainable for the vast majority of consumers [94]. The continuing focus on appearance of the fitspiration trend and the exclusion of differing body types conveys the impression that health only comes in one size and that only thin and toned bodies are healthy [94]. This focus on appearance is likely to encourage the user to set their goal as exercising to look good according to society's standards, rather than exercising to improve their health and well-being. Unfortunately, exercising with the goal to change your physical appearance has been found to be correlated to increased body dissatisfaction and lowered self-esteem. While on the other hand, exercising with the aim to improve physical and mental health and prioritise enjoyment of physical activity, has been shown to be connected to higher body satisfaction and self-esteem [88].

While the aim to increase one's fitness and health out of intrinsic motivation can have positive implications on body satisfaction, this positive effect can not be found in exposure to fitness content. Studies have revealed that exposure to fitspiration images increased participants body dissatisfaction, not only for women but also for men [94, 91]. Furthermore, research conducted by Robinson et al. [78] has shown that the exposure to photos portraying an athletic ideal that combines a slim but also toned physique, results in even higher body dissatisfaction than the exposure to thin ideal imagery. Robinson argues that this negative influence is evoked by the misleading message enclosed with these photos that with enough determination and endurance everyone can obtain this physique [78]. Not only do fitspiration images increase body dissatisfaction, research has also showed that seeing this type of content has no influence on actual exercise behaviour [78], therefore, nullifying its claim to be inspirational and motivational and instead emphasizing the hidden harm it can cause.

2.2.3 Body Positivity Movement

Another fairly new social media trend that tries to offer an antidote to the previously described trends of thinspiration and fitspiration and their negative implications is the "body positivity" trend [25]. What we know today as body positivity has its origin in the emerge of the fat liberation movement in the United States [25, 8]. The movement

demands the acceptance of marginalized body types and to abandon the perception that only a slim body can be healthy and beautiful and therefore worthy of respect and fair treatment [36]. Nowadays, the body positivity movement has shifted to a wider audience and is now widely seen as a body love and acceptance trend, no matter of the body shape and size. This has led to the inclusion of body shapes that fall into society's beauty ideals [36, 81].

The new aim of the body positivity movement focuses on normalizing "normal" human features like cellulite, body hair, acne and other "imperfections" that have long been considered a taboo within society, especially for women [25]. On the one hand, this movement provides a safe space for all types of body insecurities, and recognizes the fact that almost everyone experiences self-consciousness about their body. On the other hand, it is has been argued that this shift has only resulted in putting normal sized bodies, who are slightly bigger than the prevailing body portrayed in the media, into the focus of attention and continues to exclude bigger and marginalized bodies once more [81]. In particular, the recent involvement of companies seeking to profit from this emerging trend by using it for marketing purposes has further fueled a refocusing of the trend to more marketable and less diverse bodies, again feeding into the western beauty ideal [25].

Furthermore, the focus on body appreciation and body love inevitably puts a person's appearance in the center of attention. Body positive influencers are not immune to societal standards and expectations for women to be as attractive as possible in order to be valuable [37, 25]. This can result in the promotion of strongly edited body positive imagery, or with the model posing in hypersexualised positions to prove that even for example "fat" bodies can be attractive. However, this strive to be considered desirable only feeds into the objectification of the female body and the assumption that it merely exists for male consumption and pleasure [37, 73]. Studies have demonstrated that the exposure to sexualized as well as normal body positivity photos increased the viewer's self-objectification [97, 18].

Despite the increasing criticism the body positivity trend currently faces, the positive impact that these types of images bring its consumers can not be ignored. Several studies have shown that body positive content can have a positive impact on body image and overall body satisfaction [18, 104, 87]. Cohen et al. [18] were able to show that a brief exposure to body positive content increased the participants' body satisfaction and appreciation, as well as having a positive impact on their mood. Furthermore, Williamson and Karazsia [104] found that the exposure to images of models who do

not represent the current society standard of thinness improved the participant's overall body appreciation. Another study conducted by Stevens and Griffiths [87] found that students who reported seeing more body positivity content during their social media usage scored higher on body satisfaction and experienced better emotional well-being. These findings highlight the importance of body positive content in the fight against unrealistic beauty ideals portrayed in the media and its potential to reduce the harm social media causes to users' body image.

Another trend in the area of body appreciation has emerged over the last few years: "Body neutrality". Body neutrality attempts to shift the focus from the actual appearance of a body to its abilities [102]. This shift is aimed to counteract the acquisition of body positivity for marketing purposes and remind people that a body does not need to be considered beautiful for it to be valid and appreciated. Body neutrality also advocates that it is ok to not love every inch of your body every single day, and instead to recognize what your body allows you to do every day and appreciate its abilities [102]. This shift to a neutral position towards appearance and a focus on functionality also addresses the problematic oversexualisation and objectification of the female body. As discussed by Cohen, Newton-John and Slater [20] body neutrality offers a promising perspective for the future of body acceptance. However, in the current climate, which still places a high value on a person's appearance, the presentation of all kinds of bodies as beautiful and worthy of love and respect, as promoted by the body positivity trend, remains an important weapon against unrealistic media images and the body dissatisfaction they entail.

2.3 Existing Applications

2.3.1 Social Media Applications

As of 2021, the 7 most used SNS are Facebook [30], Whatsapp [103], Youtube [106], Instagram [50], Facebook Messenger [31], WeChat [101] and TikTok [86]. This project focused primarily on the impact of SNS whose main feature involves the broadcasting of visual content to a wide or selected range of other users, such as Facebook, Youtube, Instagram and TikTok. Although, messenger services like Whatsapp and Facebook Messenger also allow users to share images and videos, the focus of these platforms lies in its communication and messaging function. Research has shown that especially the engagement and consumption of visual content, such as images, is con-

nected to body-related concerns like thin-ideal internalization, but not to general SNS usage [19]. As already stated, this project mainly focused on the evaluation and improvement of the social media application Instagram [50]. Instagram was launched in 2010 by its founders Kevin Systrom and Mike Krieger with the aim to offer a platform that allows users to easily upload and share photographs [29]. The development of Instagram filled the gap for a platform that connected the social component of existing platforms like Facebook [30] with a focus on image sharing attributes, which was missing in the social media landscape at that time. Instagram quickly became one of the most used social media applications worldwide, with an astonishing one billion users in 2018 [29]. With the increasing popularity of Instagram, more and more celebrities joined the platform, resulting in a change of the way fans were able to interact with their idols [29, 14].

However, Instagram's primal component of simple photo sharing quickly resulted in a focus on appearance and generating likes by looking as good as possible in the uploaded pictures, making the platform all about comparison and self-objectification [28].

2.3.2 Body Image Support Applications

Successful Instagram alternatives that address the problematic impact of the promotion of an unattainable beauty ideal and focus on a more diverse and inclusive experience are difficult to find. In her paper regarding the emergence of body positivity websites, Sastre [81] reviews several platforms that surfaced in response to the rise of body positivity. One of these platforms, "My Body Gallery" [38], encourages women to upload images of their body and indicate their height, weight and clothing size. The aim of the website is to show "what real women look like" [38] by uploading authentic and unedited images of themselves and to help other women to gain a better understanding of their own proportions and appearance. Users have the option to insert their own measurements and receive results of similar body types. Although, the lack of editing and the display of a wide variety of body shapes generates a more inclusive atmosphere, the heavy focus on body comparison is likely to induce social comparison [32] and increase self-objectification [37]. Therefore, the true value and benefit websites like My Body Gallery offer its users in regard to body image improvements is questionable [81]. Furthermore, My Body Gallery, which was founded in 2009, is little used today and therefore does not offer an adequate alternative to Instagram.

Other applications have tried to address body image concerns in a different way. The mobile application "GGTude" [39] is a mental health platform that offers gamified and research-based daily exercises to improve a variety of metal health conditions, such as anxiety, depression or body image concerns [39, 1]. GGTude's approach is mainly based on cognitive-behavioural therapy (CBT), which is a therapy form used for the treatment of mental disorders, for instance body image disturbance. CBT uses techniques, such as self-monitoring or self-reflection to challenge irrational thoughts and maladaptive beliefs the patient has about themselves and their appearance and teaches them how to adapt emotions and behaviours accordingly [1, 63]. As one of the most empirically supported treatments for body image concerns [63] a widely accessible computerized version of CBT, as offered by GGTude, might be a promising direction for the intervention of body image concerns caused by social media. Research has shown that a short daily engagement with applications like GGtude over a period of several weeks can improve self-compassion, appearance esteem and reduces body image disturbance [79, 1].

2.4 Current Developments in Social Media and Body Image

The impacts social media has on body image and mental health has been an increasingly critically discussed topic within academia in recent years [40, 78, 19]. In addition, the sentiment of the general public around the exposure to perfect and flawless bodies has become progressively more critical and negative, with the call for a shift to a promotion of real and normal bodies (e.g., [20, 87]).

These demands led to several developments around social media imagery in recent years, highlighting the importance of the topic in today's climate. Earlier this year, Norway announced a law that requires influencers to declare if an image has been edited [45]. It is hoped that this law will help to reduce the appearance pressure social media puts on its users [45]. Furthermore, the image and information sharing platform Pinterest announced around the same time that they will no longer show advertisement that promotes any kind of weight loss, as well as content that shows an idealization or devaluation of any type of body [47]. Pinterest explained that this decision is aimed to place the mental well-being of its user into the focus and to address the impact of body image concerns and eating disorders [47]. This decision makes Pinterest the

only widely-used social media application that bans weight loss promotions altogether, providing the first milestone in the fight for the inclusion of a mental well-being perspective on social media and setting a promising example for the development of future applications.

Another major announcement in the landscape of social media was delivered by the head of Instagram, Adam Mosseri, this year. Instagram declared to be "no longer a photo-sharing app", but instead wants to focus on the expansion of its pre-existing video and shopping components [85]. In particular, the focus on video seems to be an attempt to stay relevant with the increase in popularity of video sharing platforms, such as TikTok [95]. In contrast to Pinterest's announcement, Instagram's focus on shopping and marketing might result in more body image concerns through the increasing display of products and services, with a potential appearance focus, if not regulated carefully.

Chapter 3

User Research

For the development of a highly user-centred prototype, a user interview study was necessary. Semi-structured interviews were conducted to obtain an initial idea about the interviewee's general social media usage and their thoughts about it. Based on the outcomes of the interviews and an early obtainment of feedback from an informal pilot user study, a social media prototype was developed.

3.1 Study Design

3.1.1 User Interviews

The fifteen semi-structured interviews were conducted to gather a better understanding of how people use social media, what kind of content users consume and how they perceive the content they see. The semi-structured interview approach [43] allows the researcher to ask predefined open questions regarding the research topic to explore a previously defined problem space, while simultaneously allowing the participant to guide the interview and report freely about their experiences and opinions. The literature research conducted in preparation for this project provided me with an solid understanding of the current research state in the field of social media and body image and helped to define specific research questions (see Chapter 1). Therefore, an exploration of the problem space through unstructured interviews was unnecessary. Furthermore, previous research primarily focused on exploring the impact and influence of social media by conducting quantitative research in which the user had been exposed to certain types of content and subsequently asked to fill in questionnaires (e.g., [97, 105, 94, 92, 93]) without actually consulting the user and asking their opin-

ion. Therefore, the structured interview approach was also not suitable for this project, due to its limitations in allowing the user to report freely about their subjective experience and potentially result in the missing out of new findings. Under consideration of these aspects the semi-structured approach was selected as the most suitable approach to address the research questions (see Chapter 1).

The interview questions covered four main topics in regards to social media usage (see Appendix A). The first topic introduced the participant to the topic by asking about their social media habits, including frequency and posting behaviour. The second batch of questions aimed to better understand what kind of content the participant is exposed to on social media, either based on the accounts they follow or content they are recommended when using an application. Additionally, users were asked how they perceive this content; whether they like it or not and how accurate the application's recommendations are based on their interests and user behaviour. The third topic focused on the negative aspects of social media by linking the questions to the previously mentioned disliked content and asking the participant about their reaction towards and handling of content they do not enjoy or approve of. Furthermore, participants were asked to report about situations in which they decided to take a break from social media and state the reason for their abandonment. Participants were also asked if they can think of aspects or functionalities of social media that they wish were different and that they would like to change. The last batch of questions followed up with the topic of the influence of social media the participants personally perceive. Participants were asked how social media posts have influenced their "offline" decision-making and how it influences their own perception of themselves and their body.

3.1.2 Participants

Fifteen participants were recruited for the semi-structured interviews via the text messenger WhatsApp [103]. This sample size was chosen based on the recommendation by Braun and Clark for a thematic analysis in a UK Master's dissertation [10]. Prior to the recruitment, candidates were asked if they regularly use social media applications, with a particular focus on Instagram, to ensure that the minimum participation requirements were met. Ten of the fifteen participants were female and five stated that they identify as male. All participants were between the ages of 18 to 29. Seven participants were between the ages of 18 - 24 and eight belonged to the 25 - 29 age group. Two participants were from the United Kingdom, the remaining 13 lived in Germany. Inter-

views with German participants were conducted in German. All participants indicated that Instagram is the social media platform they use the most, besides from messaging services like Whatsapp or Snapchat messaging. The participants noted that they open Instagram at least several times a day, and up to several times an hour. The majority of participants (73%) indicated that they post content once a month, two participants stated that they never post on Instagram and the remaining two reported that they post weekly. The length of the interviews varied between 13 and 35 minutes, although all participants were asked the same questions. The length of the interviews was highly dependent on the participants self motivated willingness to share stories and experiences instead of only providing yes and no answers or indicate that they could not think of a relevant situation or experience to share.

3.1.3 Ethical Consideration

Interviews with actual social media users were necessary to develop design improvements that are tailored to the users' needs. Studies with human participants require careful ethical consideration to minimize the chance of harming the participant. Body image is closely interwoven with a person's mental health and well-being and is therefore a topic that requires special care and consideration while addressing in an interview. Talking about one's own body perception or potential struggles with body image can cause stress and discomfort for the participant, which should be avoided as much as possible. Each participant was briefed before the interview about the topic, the data protection measurements and their right to stop the interview at any point as well the option to skip any question they did not feel comfortable answering. To ease the participant into the topic, general questions about their social media usage were asked. To end the interview on a positive note the participants were asked to state what they think makes social media valuable and what they liked best about it. All collected data, including the interview transcripts, demographic information such as age, gender, ethnicity, country of origin and social media usage was processed with accordance to the General Data Protection Regulation [23]. The general study design was reviewed and approved by the ethics committee, including the interview questions as well as the participant information sheet.

3.2   Data Analysis

To enable an anonymised and detailed evaluation of the collected data, each interview was transcribed, using the transcribe function of the browser-based Microsoft Word application. Following the automated transcription all interviews have been listened to again and checked for transcription errors or missing parts.

3.2.1   Reflexive Thematic Analysis

For the evaluation of the interview transcripts the reflexive thematic analysis approach by Braun and Clark [11] was selected. To ensure an effective and structured coding process the software NVivo version 20 was used [57]. Braun and Clark divide their approach into two different types of analysis: inductive and deductive. In this evaluation the deductive analysis was conducted, due to its nature to be used for the exploration of a previously formulated research question. The deductive approach is applied when the researcher has already defined a specific scope based on existing literature which they want to further explore. The deductive approach enables the researcher to focus on certain aspects of the data, which allowed this evaluation to pay special attention to all mentioned aspects regarding body image or mental health [11].

The analysis was conducted following the six iterative steps of a reflexive thematic analysis defined by Braun and Clark to generate methodically robust codes and themes. After an initial read through of the data, a first draft of codes was developed, including everything that seemed relevant and interesting. It is important to note that for this analysis, semantic as well as latent themes and codes were developed. Semantic codes only focus on what is actually stated by the participant, primarily forming a description of what has been said without further interpretation. Latent codes, however, try to understand the underlying meaning of what has been said and follow an interpretative approach to further analyse hidden meanings and backstories [11].

After the initial codes were developed, overarching themes were generated and subsequently reviewed. These themes sort and collate the constructed codes. As soon as the themes were reviewed and finalized, clear names and definitions for each theme were formulated. To ensure the construction of strong and comprehensible codes and themes, an applied code book was co-developed by two researchers. In alignment with Braun and Clark's [10] suggestions, no inter-rater reliability has been calculated. Instead two researchers coded the same 30% of interviews and afterwards discussed their findings and developed a collective code book, which has been used to code the

remaining interviews.

3.2.2 Themes and Codes

In accordance with Braun and Clark's guidelines and scope recommendations for a UK Master's dissertation [11, 10] four main themes with several subthemes were developed under consideration of the previously mentioned research questions (see Chapter 1) and with a focus on statements about body image implications and mental health. The themes and subthemes as well as the codes can be found in table 3.1. The following section will provide text examples from the user interviews for each subtheme to justify the theme development and illustrate its meaning. Due to the fact that the majority of interviews were conducted in German, most of the listed quotations are originally in German and were translated to English by the researcher as close as possible to the initial wording, but slight differences might appear. The German version can be found underneath the English translation.

3.2.2.1 Theme 1: Importance of Authenticity

The interviews and the developed themes helped to understand the raised research question asking what kind of content has a positive or a negative influence on a user and their body image. One characteristic that was mentioned by several participants in in various contexts was the importance of authenticity for the seen content as well as for content posted by the user. Therefore the theme has been divided into two subthemes: "Positive Impact" and "Own Posting Criteria".

3.2.2.1.1 Subtheme 1: Positive Impact

The subtheme "positive impact" was developed based on the participants mentions about the positive attributes they associate with posts they perceive as real and authentic, such as likeable and relatable:

> P8: *"So, this *account name* for example. She just had a child and she's constantly showing how she's eating. I actually find that quite likeable and of course she also shows clips of the hate messages she gets. She also says that she doesn't really care at the moment. 'I know when something is right for me.' I think that's actually quite good, for example, that she just continues to eat her bag of crisps. Or says: 'today we're having pizza again', so that's actually quite positive."*
> Interviewer: *"So just authentic?"*
> P8: *"Yes, exactly. She stands up for herself, right? She had just had a*

Table 3.1: *Themes, Subthemes and Codes developed during the qualitative analysis*

Interview Analysis Outcome		
Themes	**Subthemes**	**Codes**
Importance of Authenticity	Positive Impact	Enjoyment of Posts
		Positive Influence on Body Image
	Own Posting Criteria	Natural Setting
		Recognizable
Ambivalent Attitude towards Fitness & Health Content	Inspiration & Motivation	Recipes
		Transformations
		Exercises
	Non-implementation of Inspirations	Diet Plan
		Workout Plan
	Exertion of Pressure	to be fitter
		to eat healthier
Contradictory Attitude towards Recommendation Page	Reason for Visit/ Avoidance	Boredom
		done with Main Feed
		Harmful Content
	Accuracy of Recommendations	fits Interests and is liked
		fits Interests but is not liked
		does not fit Interests
Awareness of Harm	Harm to Others	Adolescence
		Other Users
		Younger Self
	Harm to Oneself	feeling insufficient
		Social Media Addiction

> *child, so you look a bit different and she says she does it at her own pace and I find that very likeable, yes."*
> **Original:**
> P8: *"Also was jetzt hier, diese *Accountname* zum Beispiel. Die hat ja gerade ein Kind bekommen und die zeigt halt andauernd, wie sie am Futtern ist. Das finde ich eigentlich ganz sympathisch und die zeigt natürlich dann auch mal so Ausschnitte, was sie für Hater Nachrichten bekommt. Sie sagt auch, dass ist ihr im Moment ziemlich egal. 'Ich weiß schon, wann was für mich richtig ist.' Das finde ich eigentlich zum Beispiel ganz gut, dass sie dann einfach weiter ihre Tüte Chips isst. Oder sagt: 'heute gibt es schon wieder Pizza' so, das ist dann schon ganz positiv eigentlich."*
> Interviewer: *"Also authentisch einfach?"*
> P8: *"Ja, genau. Die steht dann zur sich halt, ne? Sie hatte gerade ein Kind bekommen, dann sieht man nun mal ein bisschen anders aus und sie sagt sie macht das in ihrem Tempo und das finde ich irgendwie sehr sympathisch, ja."*

Especially posts in which people discuss their struggles or show parts of their body that are not considered beautiful according to societal standards are perceived as very positive and uplifting. These posts raise awareness that bodily characteristics which have been dubbed as flaws by society, like acne and large pores, are normal and nothing to be ashamed of:

> P5: *"I have a page that I follow with natural cosmetics and such things that also shows what the cosmetics industry actually does to your skin and how you can counteract it and that it's normal to have a pimple or something and also spots on your face that are really normal and everything else that you see is not normal and there are filters on it because everyone has pores."*
> **Original:**
> P5: *"Ich habe eine Seite der ich folge mit so Naturkosmetik und sowas die dann halt auch zeigen so was zum Beispiel die ganze Kosmetikindustrie quasi eigentlich mit deiner Haut macht und wie man dem quasi entgegenwirken kann und das ist halt auch mal normal ist einen Pickel zu haben oder sowas und auch so Flecken im Gesicht das halt wirklich normal ist und alles andere halt was man sieht quasi nicht normal ist und da irgendwelche Filter drauf sind, weil Poren hat halt irgendwie jeder ne."*

One participant mentioned that in particular, unposed images that show the person just "existing" help them to accept themselves and realize their own beauty even at times when they are not feeling their best:

> **Original:**
> P1: *"And so I think it's positive when I'm seeing people who look like me just existing in their skin and not necessarily being like 'I'm amazing', but*

> *just being and like sitting and they've got a role or like just normal people things but stuff that you don't see because it's so posed. So that definitely positively affects me. 'cause then if I can relate to it and go: 'oh my body looks like that and they look great.' So then I can remind myself when I have... 'cause like everyone you go through good days and bad days with your body image."*

This strive for authenticity and representation of real bodies is one of the main characteristics of the original agenda of the body positivity movement (see Chapter 2, section 2.2.3). The perception of body positivity content as positive and helpful for body satisfaction due to authentic representations was also found during the interviews. Participants mentioned that the exposure to body positive content helped them to establish a better relation to social media and improved their overall online experience:

> P6: *"But when I scroll through it and I see more posts like that... What I have a lot of now is that you shouldn't restrict yourself when you eat, and what you need in terms of food and also in terms of calories per day and what kind of diet myths and stuff like that go around. And when I see content like that and body positivity stuff like that, I tend to close the app with a good feeling."*
> **Original:**
> P6: *"Aber wenn ich halt irgendwie dann da durch scrolle und ich sehe halt mehr so Beiträge... Was ich jetzt auch ganz viel hab, ist von wegen so, dass man sich nicht restricten soll beim Essen, sondern was du halt alles an Nahrung halt brauchst und auch an Kalorien am Tag und was halt so für Diät- Mythen und so rumgehen. Und wenn ich dann solchen Content sehe und halt so mit Body positivity-Zeugs und so dann ist es eher so, dass ich die App mit einem guten Gefühl schließe."*

3.2.2.1.2 Subtheme 2: Own Posting Criteria

Authenticity is not only decisive if a post is liked and perceived as positive, but also an important criteria for images uploaded by the user. Several participants mentioned that, besides the fact that they want themselves to look good in the image, it also needs to be authentic. One participant explained that it is important for them to look normal and that the picture reflects the way they see themselves:

> P12: *"I always make sure that when I'm on it, I just look normal. The way I see myself, that is they way I want to come across."*
> **Original:**
> P12: *"Ich achte immer so, dass wenn ich drauf bin, dass ich halt einfach ganz normal aussehe. So wie ich mich selbst sehe, so soll ich rüber kommen so nach dem Motto."*

Another participant mentioned that they prefer snapshots of real moments that do not come across as too posed. The user's aim is to capture the atmosphere and the great time they had during that moment, not placing the focus purely on appearance:

> P5: *"So it's not always about looking particularly pretty, according to the standard criteria, but just snapshots where you're maybe not even really looking at the camera at that moment, but you can see on the photo what a good time you're having or how much fun you're having. So it's just authentic and not so posed."*
> **Original:**
> P5: *"Also es geht tatsächlich gar nicht immer darum, so dass es besonders hübsch aussieht, so nach den Standard Kriterien, sondern einfach so so Momentaufnahmen, wo man dann halt vielleicht in dem Moment auch gar nicht so in die Kamera quasi guckt, sondern halt einfach man sieht auf dem Foto was für eine schöne Zeit man hat oder wie viel Spaß man gerade hat so. Also das ist halt authentisch ist und nicht so gestellt."*

3.2.2.2 Theme 2: Ambivalent Attitude towards Fitness & Health Content

As already summarized in chapter 2, fitness content and particularly the display of an athletic ideal body can have a negative influence on a person's body image [78]. The general justification for the consume of fitness content is to get workout inspiration and motivation. However, research has shown that content classified as fitspirationf has no influence on actual exercise behaviour [78]. During the interviews an ambivalent attitude towards content concerning fitness and dieting was detected. Participants mentioned that they seek fitness content for inspiration, however they also stated that they barely implement any of these fitness recommendations into their daily life and instead feel a pressure to be fitter and healthier. This resulted in the development of Theme 2 with subdivision into positive mentions about inspirational and motivational attributes of fitness content, and negative mentions about non-integration of inspirations in the user's daily life and actual harm towards body image caused by the pressure exerted from exposure to toned bodies.

3.2.2.2.1 Subtheme 1: Inspiration and Motivation

Over half of the participants indicated that they follow or at least see fitness content regularly on their account, including transformations, exercise suggestions or recipes and food plans. Several participants mentioned that they view content of fitness influencers, like the German influencer Pamela Reif, [77] to get inspiration for workouts and to keep fit:

> Interviewer: *"So does social media influence your own body perception and if so, how? What would you say?"*
>
> P3: *"Definitely, that's for sure and I would also say rather negatively, that doesn't mean that I'm not grateful for my body etc., but it's like that, I also want to motivate myself by following people who eat healthy and do sport. And maybe even make fitness plans, like Pamela Reif and yes, and there are a lot of them on Instagram."*
>
> **Original:**
>
> Interviewer: *"Also hat Social Media Einfluss auf deine eigene Körper Wahrnehmung und wenn ja, wie, was würdest du da so sagen?"*
>
> P3: *"Auf jeden Fall, das ist schon mal klar und ich würde auch sagen eher negativ. Das heißt nicht, dass ich nicht alles in allem dankbar bin für meinen Körper usw, aber es ist so: Ich möchte mich halt auch motivieren, indem ich jetzt auch Menschen folge, die vernünftig essen und Sport machen. Und vielleicht sogar Fitness Pläne machen, so Pamela Reif mäßig ne und ja, und da gibt es ja ganz viele von auf Instagram und ja."*

Contradictory to what research has found [78] participants mentioned that they perceive the inspiration they see as positive and that people who share their fitness transformations keep them motivated:

> P4: *"Actually, these are rather positive things, so like food... it always makes you hungry or gives you ideas of what you could do. And yes, I usually find these sports things interesting. There are also these before and after pictures, I think they're great too."*
>
> **Original:**
>
> P4: *"Eigentlich sind das ja auch eher positive Dinge, also essen finde ich... da kriegt man halt auch immer Hunger bei oder Ideen, was man machen könnte. Und ja, diese Sportsachen finde ich meistens interessant. Sind auch diese vorher nachher Bilder, die finde ich auch super."*

3.2.2.2.2 Subtheme 2: Non-Implementation of Inspirations

However, participants also indicated that even though they follow influencers for their fitness content, or that they save many of the workout inspirations they see online, they rarely integrate any of the workouts or recommendations into their daily life, highlighted by the following two interview quotes:

> P8: *"I recently followed one person who had a lot of fitness and nutrition, but I noticed that I just don't implement any of that, so I unfollowed her again, because then it was also suggested to me: 'you follow such and such similar profiles', so I cleaned out a few times. Maybe you just subscribed and thought: 'oh, that could be quite interesting', but it's not at all."*
>
> **Original:**
>
> P8: *"Ich hatte jetzt neulich mal irgendwie so eine, die hatte viel Fitness*

und auch so Ernährung, aber ich habe für mich gemerkt ich setze davon einfach gar nichts um, deswegen habe ich ihr wieder entfolgt, weil dann wurde mir auch vorgeschlagen: 'so und so ähnlichen Profilen folgst du', Da hab ich auch ein paarmal ausgemistet. So wo man... die man vielleicht einfach mal so abonniert hat, wo man dachte: 'ach, das könnte ganz spannend sein' ist es aber überhaupt nicht."

P9: *"And I save a lot of things, especially when it comes to food, or when it comes to sports, some exercises that I would like to try out. I also have a huge collection that I haven't tried out all by a long shot, but when you scroll through, you think to yourself: 'you could try it out'."*
Original:
P9: *"Und speichern tue ich halt einiges gerade auch was Essen angeht, oder beim Sport irgendwelche Übungen, die ich dann mal ausprobieren möchte. Da habe ich auch eine riesen Sammlung, die ich längst nicht alle ausprobiert habe, aber wenn man durch scrollt denkt man sich ja mal: 'man könnte es ja mal ausprobieren'."*

3.2.2.2.3   Subtheme 3: Exertion of pressure

Although the majority of participants said that they actively follow fitness content, further into the interview many admitted that they frequently experience pressure to look and live a certain way when they see the seemingly perfect lifestyle and success portrayed by the influencers they follow, which often results in feelings of guilt and negative implications for their own body image:

P4: *"Yeah, so I think, I think it's just like, 'okay. Why does it work so well for them?' And then they just do... I don't know. I think it's just envy and jealousy and because I was lazy that day and annoyed about myself or something. So I think I get a bit carried away with it."*
Interviewer: *"It is because you compare yourself with them?"*
P4: *"Yes, because when I see what they have done and then they come out like this and I do everything and come out like this, and that is just stupid".*
Original:
P4: *"Ja, ich glaube also, ich glaube, das ist halt einfach so: 'okay. Warum klappt es bei denen so gut?' Und die machen dann nur... weiß nicht. Ich glaube, dass ist so gefühlt einfach nur Neid und Eifersucht und weil ich einfach dann selber an dem Tag faul war und genervt bin oder so. Also ich glaube, ich steigere mich dann so ein bisschen da rein."*
Interviewer: *"Ist dann so das Vergleichen auch mit denen?"*
P4: *"Ja, weil also wenn ich sehe, was die gemacht haben und dann kommen die so raus und ich mach das alles und komme so raus ist das halt dann blöd"*

It is worth noticing that the above statement was made by the same participant who said that they find 'Fitspiration' rather positive and that body transformations motivate

them. This highlights the torn sentiment many participants perceived while consuming fitness content and explains why users follow this type of content even though they know about its negative implications on their own well-being.

Most participants recognized the negative implications of comparing themselves to other people, especially internet personalities, where you can only see a small fraction of their actual life. However, even though participants are aware of the harm, they still catch themselves subconsciously comparing their bodies to others, especially to those of fitness influencers. This can lead to annoyance with themselves that their tendency to compare themselves to others is already so ingrained in their cognitive processes, as well as dissatisfaction about the results of the comparison due to upwards social comparison (see Chapter 2, section 2.1):

> P2: *"And sometimes I notice that if you're on the app for too long, you often end up comparing yourself, even though you wouldn't do it. In that sense, you're already influenced, because otherwise I wouldn't walk around all day and think: 'I really have to do some exercise'. Or in the evening when I've had a super strenuous day and have done a lot, and then I see that someone else has perhaps done the same, or a person who also does this professionally, who has a completely different working day, but who still does a workout and I haven't done one, then I sometimes catch myself saying, 'Oh, you could have done one as well.' So I would say that's the negative aspect."*
> **Original:**
> P2: *"Und manchmal finde ich merkt man auch wenn man zu lange auf der App ist, kommt man auch häufiger mal dazu, dass man sich einfach vergleicht, obwohl man es gar nicht tun würde. In dem Sinne ist man halt schon beeinflusst, weil sonst würde ich nicht den ganzen Tag durch die Gegend laufen und denken: 'ich muss jetzt auch noch mal wirklich Sport machen'. Oder wenn ich dann abends einen super anstrengenden Tag hatte und viel geschafft habe und dann aber sehe irgendwer hatte das vielleicht auch, oder eine Person, die auch das professionell betreibt, die einen ganz anderen Arbeitstag hat, die dann aber doch noch ein Workout macht und ich das nicht habe, dann erwische ich mich auch mal dabei, dass ich sage: 'Ach, das hättest du jetzt aber auch nochmal machen können'. Also das ist so würde ich sagen der negative Aspek."*

These findings led to the conclusion that fitness content can be deemed to have both a positive and a negative influence on body image. However, the negative implications of fitness content may overwhelm the few positive aspects it offers to consumers. An explanation for the contradictory influence of fitness content could be the varied repercussions of upwards comparison [3]. As explained in chapter 2, the effect upward comparison has on a person is determined not only by the type of comparison, but also

by intrinsic factors like low-self esteem [3]. It is therefore likely, that the impact of fitness content is highly dependent on the person's state of mind while being exposed to that type of content.

3.2.2.3   Theme 3: Contradictory Attitude towards Recommendation Page

As hypothesized in chapter 1 the recommendation function and explore page of social media applications like Instagram can expose users to content which they are actively trying to avoid. This assumption was supported by the interview outcomes. Many participants indicated that they regularly visit the recommendation page, also called "explore tab" [53], even though they do not enjoy the majority of the content they are recommended. These findings led to the development of the theme "Contradictory Attitude towards Recommendation Page" with the division into subthemes that comprise the reason for the visit or avoidance of the explore tab, as well as the classification of the recommended post according to the accuracy based on the user's interests and enjoyment of the posts.

3.2.2.3.1   Subtheme 1: Reason for Visit/ Avoidance

A few participants indicated that they actively avoid the explore section of Instagram, because they do not see the benefit in spending time looking through posts they do not follow and potentially seeing content that they dislike. One participant mentioned that they are very aware of the negative implications certain content has on their mood and personal perception and therefore tries to steer clear of the recommendation page altogether:

> **Original:**
> P1: *"So I purposely don't go on the recommended or like the Discovery page very much, because a lot of what comes up for me is like those transformation pictures and stuff. So like battle of weight loss and exercise routines, and I know that's really like not helpful for me to see. I just don't need that, so I try to really stay away from that and I really don't follow many celebrities or influencers anymore. So it's mainly people that I know."*

However, the majority of participants explained that they do visit the recommendation page of Instagram, merely out of boredom or because they have seen everything on their main feed:

> P9: *"I usually scroll through my news feed first. At the beginning there are often new pictures of friends. And then I subscribe to a lot of news sites,*

sports and football. That's where I see the news. And at some point, when that gets boring, I go over to the recommendations and just scroll through a bit, but there's also relatively much, Mhm relatively much football."
Original:
P9: *"Meist scrolle ich halt erst durch meinen News Feed. Da sind es meist zu anfangen irgendwie noch neue Bilder von Freunden. Und dann halt ganz viel irgendwelche Nachrichtenseiten, Sport, Fußball hab ich einige abonniert. Da sehe ich dann, also was News angeht. Und irgendwann, wenn das dann langweilig wird, dann geh ich rüber zu den Empfehlungen und scroll da einfach ein bisschen durch, aber da ist auch relativ viel, Mhm relativ viel Fußball."*

P10: *"That's mainly my feed. I don't look at the recommendations that often, I must be really bored."*
Original:
P10: *"Das ist vor allem mein Feed. Bei den Empfehlungen guck ich gar nicht so oft, da muss mir schon heftigst langweilig sein."*

The interviews illustrated that the explore function is rarely visited out of interest in the actual recommendations, but mainly due to boredom. This raises the question about the actual value of this feature and if the potential harm it might cause advocates for a removal of a page made up solely of recommendations.

3.2.2.3.2   Subtheme 2: Accuracy of Recommendations

Furthermore, the vast majority of participants reported that the recommendations match topics they are generally interested in and are similar to what they normally consume on social media platforms:

Interviewer: *"Okay and would you say that it fits your interests, so that it reflects them quite well?"*
P6: *"Yes, it's really amazing how the algorithm learns and adapts to you, because there's not much in between where I could say, 'No, that doesn't interest me at all'."*
Original:
Interviewer: *"Okay und würdest du sagen, das entspricht schon deinen Interessen, also das spiegelt das schon ganz gut wider"?*
P6: *"Ja, also das ist schon krass, wie der Algorithmus halt lernt und sich so an dich anpasst, weil also da ist halt wenig dazwischen wo ich sagen: 'Ne das interessiert mich halt gar nicht.' Na ja, von daher."*

However, after further questioning if they also like the recommended content almost all participants indicated that they do not enjoy the recommendations very much and at least over 50% of the recommended posts were insufficient. This is an interesting

finding concerning the previously mentioned perception that most of the recommendations are accurate. The following quote illustrates the contradictory impression of the recommendations:

> Interviewer: *"Would you say that this corresponds to your interests, so is what is suggested to you accurate or not so much?"*
>
> P9: *"Yes, for the most part it is. So every now and then there's something where you think to yourself: "ok, how does this get in here now?" But for the most part that's what I'm looking for and what I also... What I click on most of the time. I've also noticed that when I've searched for something and when you search for something once, it's suggested more often, especially on this suggestion page. You notice that. But what I've also noticed is that if you don't search for something for a long time, it will eventually get kicked out again."*
>
> Interviewer: *"Okay, and now regardless of whether that corresponds to what you're looking for. Do you like what you see or are there sometimes things that annoy you or something like that?"*
>
> P9: *"No, there's a lot of junk in there, too. That's true. There's a yodel now and then, but I'd say it's junk like 70%. And there are also some really strange sites that somehow have really, really strange names or come from somewhere in the East, from Russia. Yes, somehow it's very, very strange."*
>
> **Original:**
>
> Interviewer: *"Würdest du sagen, das entspricht schon deinen Interessen, also ist schon akkurat, was dir so vorgeschlagen wird oder eher weniger?"*
>
> P9: *"Doch großenteils passt das schon. Also hin und wieder ist mal was dabei, wo man sich denkt: ok, wie kommt das jetzt hier rein?" Aber überwiegend ist das schon das, wonach ich auch Suche und was ich halt auch... Was ich halt auch vermehrt anklicke. Also das habe ich auch gemerkt, wenn ich irgendwie mal nach irgendwas gesucht hab oder so und wenn du einmal nach was suchst, dann wird das direkte öfter vorgeschlagen, gerade auch in dieser Vorschlag-Seite. Das merkt man doch schon. Aber was ich auch gemerkt hab ist, wenn man da länger nicht nach sucht, dann fliegen das irgendwann auch wieder raus."*
>
> Interviewer: *"Und jetzt mal unabhängig davon, ob das dem entspricht, wo du nach suchst. Gefällt dir das auch was du siehst oder sind auch manchmal Sachen bei die dich irgendwie nerven oder sonst was?"*
>
> P9: *"Ne, da ist auch schon viel Schrott dabei. Also das stimmt. Also zwischendurch ist mal wieder ein Jodel dabei, aber ich würde echt bald sagen so zu 70% ist das, ist das Schrott. Und auch irgendwelche ganz komischen Seiten, die irgendwie ganz, ganz komische Namen haben oder irgendwo aus dem Osten kommen, aus Russland. Ja, irgendwie ist das ganz, ganz merkwürdig."*

This finding is particularly interesting, because even though the participants indicated that the recommended content is relevant to their interests and they understand where the recommendations come from, they still do not enjoy what they are shown.

3.2.2.4 Theme 4: Awareness of Harm

As previously mentioned, some participants indicated that they are aware of the negative impacts social media can have on their mood and their body image. However, during most interviews participants stated that they believe that social media has a negative impact, but not so much on themselves. Therefore the theme "Awareness of Harm" has been developed with the subdivision into "Harm to Others" and "Harm to Oneself".

3.2.2.4.1 Subtheme 1: Harm to Others

Several participants recognize a negative influence, but many dismissed the idea that social media might impact their own body image and instead mentioned concerns for younger users, predominantly adolescents:

> P14: *"I just wanted to say that it definitely influences you, I think. Especially for younger people, I think that's really problematic. So if they really only get this image, 'you should look like this and that's okay'. And I think that the direction is slowly changing a bit."*
> **Original:**
> P14: *"Ich wollte nur sagen, dass beeinflusst einen auf jeden Fall schon glaube ich. Vor allen Dingen auch für die jüngeren Leute, so ist das glaube ich echt problematisch. Also wenn die da echt nur dieses Bild vermittelt bekommen, 'so sollst du aussehen und das ist okay.' Und also ich finde schon, dass die Richtung sich langsam so ein bisschen verändert."*

Some participants justified the focus on adolescence by speaking from personal experience. They concluded that they were much more vulnerable to unhealthy comparison and unrealistic body expectations when they were younger. They believe that they are now more capable of distinguishing between doctored images that they see online and what is real, especially due to the increasing popularity of body positive and neutrality content on social media (see Chapter 2, section 2.2.3), as well as being less prone to unhealthy comparison behaviours:

> Interviewer: *"So I focus on body image and the next question would be if you feel that social media has an influence on your own body image and if so, how?"*
> P6: *"Yes, I would say definitely and I.... But I think it has changed a bit. I think that in the past, when people were still a bit more insecure in general and during puberty, everything was somehow strange and weird and so on. Then it's just that it tends to influence you negatively and you think to yourself: 'Wow, all these women and girls and how they all look and I'll never look like that' somehow. And now it's more like that... I think*

> *it's also because I've now slipped into this algorithm through Instagram,*
> *where I'm shown more body positivity things, that I say that still influences*
> *me, but now more in a positive way. So in the sense of 'Wow, everyone*
> *looks different and that's okay and that's good' and so I would say that it*
> *definitely has an influence, but it has changed somehow over the years."*
>
> **Original:**
>
> Interviewer: *"Also ich fokussiere mich ja auf Body Image und die nächste*
> *Frage wäre jetzt einfach, ob du das Gefühl hast, dass Social Media schon*
> *irgendwie einen Einfluss auf deine eigene Körper Wahrnehmung hat und*
> *wenn ja wie?"*
>
> P6: *"Doch, ich würde sagen auf jeden Fall und ich... Aber ich finde, das*
> *hat sich halt so ein bisschen verändert. Ich finde, also früher wo man*
> *noch generell irgendwie ein bisschen unsicherer ist und in der Pubertät*
> *und da ist sowieso alles irgendwie strange und weird und so. Dann ist es*
> *halt so, dass es dich eher negativ beeinflusst und du denkst dir so: 'boah,*
> *krass die ganzen Frauen und Mädels und wie die alle aussehen und so seh*
> *ich ja niemals aus' irgendwie. Und mittlerweile ist es halt eher so... Ich*
> *glaube, das ist halt auch, weil ich jetzt eben durch Instagram in diesen*
> *Algorithmus da gerutscht bin, wo ich halt eher so Body positivity Sachen*
> *angezeigt bekommen hab, dass ich sage das beeinflusst mich immer noch,*
> *aber jetzt halt eher im Positiven. So im Sinne von 'Boah es sehen halt alle*
> *anders aus und das ist schon okay so und gut so' und also ich würde sagen,*
> *dass es auf jeden Fall einen Einfluss hat nur der hat sich halt irgendwie so*
> *geändert mit den Jahren."*

The specific mention of harmful content and its implications suggests that the users do perceive the negative impact also for themselves, but either have good countermeasures of their own in place or are not aware of how negatively it affects their own body image and mental health.

3.2.2.4.2   Subtheme 2: Harm to Oneself

Although several participants reported that harm is predominately caused for others and less so towards their own body image, many participants also indicated that they perceive that social media content, especially content portraying conventionally attractive and slim women, has a negative and harmful impact on their body perception and mental health:

> P3: *"I remember in the early days, during the beginning of my social me-*
> *dia usage, that I actually printed out women's bodies from social media to*
> *point them out again and put them on my mirror because I wanted to look*
> *like that. And so that I have a guilty conscience every time I look in the*
> *mirror and adjust my food to it, which is of course completely misleading*
> *in the end. But in the end it's still like that, even if I don't have the picture*

in front of the mirror, it's always there somehow, because you're on Insta-gram every day."

Original:

P3: *"Also ich weiß noch früher, das ist so meine anfangs Zeit, da habe ich mir tatsächlich von Social Media auch Körper von Frauen ausgedruckt um da nochmal darauf hinzuweisen, die mir an den Spiegel gehängt, weil ich so aussehen möchte. Und damit ich auch ja ein schlechtes Gewissen kriegt, jedes Mal, wenn ich in Spiegel gucke und meine Essen daran an-passen, so ne ist natürlich völlig irreführend letzten Endes. Aber letzten Endes ist es trotzdem so, auch wenn ich das Bild nicht vorm Spiegel hab, ist es ja immer irgendwie präsent, da man jeden Tag Instagram unterwegs ist ne genau ja."*

Not only does social media lead users to question their appearance, but the constant exposure to perfectly arranged lifestyles and observing only the best moments in a friends' or infuencers' lives can result in feeling insufficient and that their life is not good enough compared to what they see online. Looking at a friend's vacation pictures or achievements that they have shared online erects an unrealistically perfect image of their life by leaving out everything that is not post-worthy, which quickly results in dissatisfaction with your own life as described by one participant:

Original:

P15: *" My feed is quite different now I think to how it used to be, but at the time seeing pictures that were overwhelmingly positive and colourful, and edited and... It became like I was escaping a little bit to that and I think the nature of Instagram is that it's aspirational. And people post like the best images of themselves and the best parts of their life and stuff like that. And that's just part of it. I understand that, but uhm, it made me think that there wasn't good enough things happening in my life or in order for me to post. If you know what I mean? And like I said in the beginning, I still feel a bit like that sometimes."*

3.2.3   Additional Findings

3.2.3.1   Gender Differences

During the interviews one clear difference between female and male participants emerged that is worth mentioning. When asking if they feel like social media has an influence on their own body image, all female participants without exception stated they think social media influences their current perception of themselves, or that it has in the past. However, the male participants did not agree with this sentiment. The answers of most female participants were quite similar and are well summarized by the following two quotes:

> P8: *"Yeah, crazily so. The, I don't know, all the fitness sites, right? Well, there is a lot about hula hoops on these sites as well. And yes, it's so trimmed on looking good, everything, it's a bit like that. Then maybe you start thinking: 'Oh, I should do more', and yes, that does influence you quite a bit, yes, in a negative sense. Actually, you're perfectly fine the way you are. It's just Instagram and all these sites that make you think that maybe it's not like that."*
>
> **Original:**
> P8: *"Ja, verrückterweise ja. Die, ja weiß ich auch nicht, die ganzen Fitnessseiten ne? Also auf diesen Seiten sind ja auch viele mit hula hoop tatsächlich. Und ja, das ist so auf Aussehen getrimmt, alles, das ist so ein bisschen schon. Dann denkt man vielleicht einfach: 'Ach, ich müsste mehr tun', und ja das beeinflusst einen schon ziemlich, ja im negativen Sinne. Eigentlich ist man ja völlig in Ordnung so wie man ist. Nur Instagram und diese ganzen Seiten lassen einen glauben, dass es vielleicht nicht so ist."*

Besides being very aware of the negative influence social media can have, some female participants also mentioned that because they are so aware of what triggers them or makes them feel uncomfortable, they already sort their following list very deliberately to avoid harmful content:

> **Original:**
> P15: *"Oh totally, absolutely, 100%. Yeah and. That's why I deliberately don't follow any fitness apps. I mean, that's not something that really interests me anyway. So that's not the kind of content that I would enjoy, but also I do think it would have a detrimental effect on my mental health and my body image if I was to be looking at some marketably, attractive people all day, I much prefer like I... I even don't follow and, I used to, I don't follow models like Gigi and Bella Hadid anymore. I think the only model like models I follow are like queer people or Ashley Graham or somebody like that. But yeah, absolutely. And so I like the... There are lots of. There's a bit more of a diversity on my Instagram where there are queer people and people of color and people of different body sizes and it... That diversity is nice because it makes me feel less conscious of what I look like. If everybody looked the same. If everybody looked like in this marketability, attractive way on my feed I definitely think it would enhance that comparison thing, whereas when there's so much diversity, I don't feel the need to do that."*

In contrast, all male participants stated that they do not think social media has a influence on how they perceive themselves. Two out of five male participants explicitly explained that they believe that they are effective at separating their own perceptions of their appearance from what they see online and that they do not tend to compare themselves:

> P12: *"Hmm, actually I would rather say no. I can actually separate what I see and how I see myself quite well. I don't feel the need to upload the best pictures and get the most likes and compare myself somehow or something like that. Or edit them myself and somehow, I don't know, make myself broader, make myself thinner or something - I definitely don't have the need for that."*
> **Original:**
> P12: *"Hmm eigentlich würde ich eher sagen: nö. Ich kann das eigentlich ganz gut trennen so was ich sehe und wie ich mich selber sehe. Ich habe jetzt nicht das Bedürfnis, da irgendwie die tollsten Bilder zu laden, und die meisten Likes zu bekommen und mich da irgendwie zu vergleichen oder so. Oder das irgendwie selber, das bearbeite und mich da irgendwie, keine Ahnung, breiter mache, dünner machen oder so. Das hab ich auf jeden Fall nicht das bedürfnis."*

Even male participants who stated that they are not fully satisfied with their current appearance assumed that it is not caused by what they see online:

> P13: *"I actually don't think so. When I look at my own body or something, I know I'm a bit fat, but I'm working on it, but otherwise there's not really much I would say makes me feel positive or negative. I think that's relatively neutral.*
> **Original:**
> P13: *"Ich glaube tatsächlich gar nicht. So wenn, wenn ich so gucke, mal mein eigener Körper oder so klar, ich weiß ich bin ein bisschen dick, aber da arbeite ich doch dran, aber sonst ist da nicht wirklich viel, wo ich sage das würde mich positiv oder auch negativ stimmen. Das ist glaube ich relativ neutral".*

They stated that being critical about their own appearance is more likely to be caused by other factors, rather than social media exposure, or if it is, it does not happen in a conscious way. However, this highlights the fact that the male participants were also not immune against body image concerns and body dissatisfaction:

> P10: *"Well, I haven't noticed it that way yet, in my opinion. I don't look at it like that and think: 'oh oh I'm way too fat'. Somehow, I don't know, so I would maybe say that for another reason, but not because of Instagram. Maybe that influences you subconsciously somehow, but just not consciously. Let's put it this way."*
> **Original:**
> P10: *"Also ich habs noch nicht so wahrgenommen meiner Meinung nach. Also ich gucke mir das nicht so an und denke mir: 'oh oh ich bin viel zu fett'. Irgendwie, keine Ahnung, also das würde ich dann höchstens aus einem anderen Grund vielleicht sagen, aber nicht wegen Instagram. Mag ja sein wenn das, wenn das unter bewusst irgendwie beeinflußt, aber halt nicht bewusst. Sagen wir so."*

One explanation for these differences might be that women are more aware of what effects their mood and body image. Men may experience a negative influence as well, but seem to be less aware of these implications. This corresponds to findings of another study addressing media influence on men's body image [61]. Another reason for the differences among men and women could be the constant objectification of the female body in popular media [73, 37]. The message conveyed by society for years is that a woman's value is highly dependent on how attractive she is based on a societal standard as described in chapter 1. These circumstances may lead to women being much more prone to internalizing certain beauty standards and feeling pressure to look a certain way, based on what perception of beauty is trending online at the moment. Men, however, are less frequently judged based on their appearance, resulting in less pressure exerted from body imagery.

3.2.3.2 Findings for Design Conceptualisation

During the interviews the participants mentioned several aspects about their navigation through social media sites, as well as what type of content they enjoy and what features they wish social media platforms like Instagram would include or remove. These comments often did not fit into one of the four main themes (see table 3.1), but are still relevant for the prototype design and have been used for the conceptualisation. Therefore, this section will provide a short overview of the four most relevant mentions that have been implemented into the prototype design.

3.2.3.2.1 Navigation through Instagram

Several participants mentioned that the first action they do after opening Instagram is to go through the story feature on top of the screen [54]. The colourful circle around the story image, which indicates if a story has not been watched yet, draws the attention of the user at first glance. After the participants have clicked through all the stories they are interested in, they tend scroll through their main feed until Instagram provides the notification that all new posts have been seen, which eventually lead to a migration to the explore feature or abandonment of the app:

> P8: *"Yes, so the first thing that jumps out at you is the stories. They're probably also colourfully framed and whatnot. Yes, so that's the first thing you look at, yes.*
> **Original:**
> P8: *"Ja so also so als erstes plingen einen ja sofort die Stories irgendwie*

> *an. Die sind dann wahrscheinlich auch noch bunt umrandet und was weiß*
> *ich. Ja also da guckt man als erstes drauf ja."*

Considering that the story element tends to be the first feature a user sees makes it a good place to store information that should be seen prior to a user's social media exposure.

3.2.3.2.2 Information posts and jokes are registered and liked

Although Instagram's main focus is the sharing of images, the interviews have shown that users also enjoy textual content like information posts or jokes:

> P10: *"Most of the time, I always find info posts quite interesting. They are posted by pages like "Funk" or something like that, if you know roughly what I mean, where it says: 'Here, (I don't know), some great fun facts.' I always read them, I always get stuck on something like that."*
> **Original:**
> P10: *"Meist, also ich finde eigentlich so Info Post immer ganz interessant. Also die gibt es auch glaube ich vom Funk oder sowas, wenn du so ungefähr weißt, was ich meine, wo dann hier steht: 'hier (keine Ahnung) irgendwelche tollen Fun Facts' Die lese ich mir eigentlich gefühlt immer durch, da bleib ich immer hängen auf sowas."*

This suggests that users would pay attention to and read posts which, for example, inform the reader about body image concerns or negative implications in a textual format.

3.2.3.2.3 Reduction of Advertisement

Instagram has quickly become a marketplace promoting all sorts of products [51] and the app recently announced that in the future it wants to shift from being a photo sharing platform to placing its focus on videos and shopping [85]. However, several participants mentioned that the advertisement and the shopping feature of Instagram is the most annoying and useless feature. Advertisements are often perceived as disrupting and every participant that mentioned the shopping feature said that they never use it:

> P2: *"Well, I was looking into the topic of finance the other day. And then the personalised advertising with 'become a millionaire the day after tomorrow' popped up. I think there should maybe be an ad-control. Something that just makes the app more thought-provoking, that the use is limited and above all that you get all this advertising under control."*
> **Original:**
> P2: *"Also ich hab mich letztens mehr mit dem Thema Finanzen beschäftigt.*

> *Und dann kann die personalisierte Werbung mit 'werde Millionär übermorgen'.*
> *ich finde es sollte vielleicht einfach so ne Ad-Control geben. Also irgend-*
> *was machen das die App einfach mehr zum Nachdenken anregt, dass die*
> *Benutzung begrenzt ist und vor Allem, dass man diese ganze Werbung*
> *unter Kontrolle kriegt."*

Products often try to sell a certain aesthetic, and infulencers, especially fitness influ-
encers, use their own body to sell workout or diet plans, transmitting the message that
you can change yourself simply by buying a product. This message makes adver-
tisements very harmful and contributes greatly to the dangerous impact social media
transfers onto its users.

3.2.3.2.4   Response to disliked content

Participants who stated to visit the explore tab of Instagram mentioned that they almost
never use the "report" or "not interested" option to filter the content they are recom-
mended. The most mentioned reaction to disliked or uninteresting content was to just
keep scrolling and waste no time on these kinds of posts, assuming that the algorithm
will recognize the behaviour and adapt the recommendations accordingly:

> Interviewer: *"OK. So if you don't like something, just keep scrolling?"*
> P12: *"Exactly if, then I would just ignore it. Yes, then it doesn't get any*
> *attention from me or anything. I don't take the trouble to somehow ... Yes,*
> *exactly, to set it to 'not interested' or something like that."*
> **Original:**
> Interviewer: *"OK. Also wenn dir was nicht gefällt, dann scrollst du halt*
> *einfach weiter?"*
> P12: *"Genau wenn, dann würde ich das halt ignorieren. Ja, dann kriegt*
> *das auch keine Aufmerksamkeit von mir oder so. Mache ich mir dann auch*
> *nicht die Mühe, das dann irgendwie zu ... Ja genau auf 'nicht Interesse'*
> *oder so zu setzen."*

This behaviour seems to be specific to Instagram, because participants indicated that
they do use the "not interested" feature to sort through content they get shown on
TikTok. Especially if a certain disliked content appears more frequently:

> P11: *"Not on Instagram. But I do have that on TikTok, that you get things*
> *that other people like. I assume that is probably form the people who are*
> *in my friend list, that you also get things that they like. But for myself, it*
> *really gets on my nerves and then I always click on 'Not interested'."*
> **Original:**
> P11: *"Auf Instagram nicht. Wenn hab ich das auf TikTok, dass man dort*
> *halt mal halt Sachen kriegt, die anderen Leuten gefällt. Per se jetzt denk*

> *ich mal wahrscheinlich die Leute, die bei mir in der Freundesliste sind,*
> *dass man dann auch Sachen kriegt, die denen gefallen. Aber mir selber*
> *halt, sag ich mal, wirklich total auf den Keks gehen und mich halt nerven*
> *und dann drück ich da halt immer auf 'Nicht interessiert'."*

This suggests that either certain content on TikTok is perceived more negatively than the content on Instgram's explore tab, or that it is more important for users to get relevant recommendations on TikTok. The latter might be explained by the fact that the main functionality of TikTok is to provide its users with video recommendations, however the explore tab on Instagram is just an additional feature extending the main focus of following prior selected accounts.

3.2.4 Conclusion

In summary, the interviews helped to understand the general usage of social media and what type of content has a particularly positive impact, and what content has a particularly negative impact on body image and satisfaction.

Content that is considered authentic is perceived to be the most positive, especially when the focus of the image is a persons body or lifestyle. Content that challenges the current beauty ideal and portrays body features not considered desirable by society, like cellulite or body fat, as normal and not to be hidden generally induce a positive feeling in the viewer and increases personal body satisfaction and appreciation. Furthermore, influencers who share struggles and imperfections with their followers, rather than constantly trying to maintain an unrealistic illusion of a perfect life, are seen as relatable and inspirational.

In contrast, content that is supposed to be motivational and inspirational, such as fitness and health content, often causes more harm than good. Participants stated that they follow these type of influencers to improve their own lifestyles and become healthier and more active and, although not stated explicitly, change their appearance to look more like the portrayed fitness influencers. However, the main purpose of these types of content is still to sell a product, such as a fitness program, using the influencer's appearance to promote the product. These types of advertisement feed on the insecurities of consumers and is fueled by unachievable beauty ideals promoted by the media. Many participants stated that the observation of perfect bodies exerts a lot of pressure to look the same way, activates conscious as well as subconscious comparison mechanisms and evokes feelings of envy and guilt. This makes fitness content an especially difficult issue to address. Users need to become aware of the negative implications, but

without being told who to follow and who not to follow.

Several female participants stated that they are well aware of what kind of content triggers negative emotions and evokes unhealthy comparison habits. These participants also explained that they very deliberately try to stay away from this type of content by thoroughly filtering their following list or by avoiding features like the explore page. However, other participants appear to be less aware of the potential harms certain types of content, such as fitness inspiration accounts, can bring. The risks social media bears were recognized by all participants, however many participants assumed that mainly younger users are in danger of being negatively influenced in their body image perception, but not themselves. These findings allow us to organise the participants into two categories: The ones who are very aware of the harm caused by social media and ones who are not.

Chapter 4

Design

In an attempt to find an answer to the fourth researcher question: "How can we intervene to counteract negative social media influences on body image and foster a positive impact on body satisfaction?" (see Chapter 1) the following design suggestions for social media applications have been developed. The proposed features are an integration of insights drawn from the existing literature in the field of social media and body image, and the findings that emerged from the user interviews and reflexive thematic analysis. The pain points that were addressed in the prototype design were primarily selected based on what was identified as potentially harmful during the interviews. However, the conceptualisation of potential solutions to these pain points was highly inspired by the existing literature and findings of previous studies.

A short pilot usability study with three students from the Design Informatics cohort was conducted half-way through the development to gather some first impressions. The resulting feedback and suggestions were included in the following design decisions.

4.1 Design Opportunity

The user interviews helped to better understand social media usage and what content users particularly enjoy or perceive as harmful. As hypothesized in chapter 1 the interviews illustrated that social media has a negative effect on its consumers (see Chapter 3, section 3.2.2). Especially the promotion of unrealistic and altered bodies as well as pressurising fitness content, such as diet promotions or workouts which were found to negatively impact users' body image. Considering that a negative body image and body dissatisfaction can have a harmful impact on a person's mental health and well-being [71] the improvement of social media applications towards a less harmful and

more positive experience is necessary.

During the analysis, two contrary trends within the participant behaviour and handling of social media content emerged that led to the development of two personas at different ends of the design scope.

4.2 Personas

Personas are a method used in product and service design to better understand the user and communicate their needs and expectations [64]. Personas were first described by Alan Cooper in 1999 as a method to compromise the most important attributes of different user types in accordance to the concerning design space [24]. Based on the results and findings of previous user research, often qualitative user interviews, one or more fictional characters are developed representing an example user condensed out of several user characteristics [64]. An evaluation conducted by Long [64] found that personas help to increase focus on the needs and motivations of the user and result in the development of designs with better usability characteristics. To extract the essence of the most important characteristics and to generate a lucid representation of the interview findings, two personas were developed (see Figure 4.1 & 4.2).

As already indicated in chapter 3, section 3.2.4 one interesting difference that was discovered during the interviews is the awareness of self harm and the actions users undertake to reduce the negative impact. Since the aim of this project is to develop countermeasures regarding body image concerns caused by social media, with a high focus on the user's needs, the awareness or unawareness of these harms appeared to be a well-suited starting point for the persona development.

4.2.1 Persona 1: Sam - Aware of Harm to Oneself

The persona of Sam (see Figure 4.1) represents users who are very aware of the negative impact of social media and their own struggles with body image and body satisfaction. These users adjust their online behaviour accordingly, by carefully selecting who they follow and by avoiding recommendation functionalities that might display triggering content (see Chapter 3, sections 3.2.2.4 & 3.2.2.3). Sam is based on participants who demonstrated a general criticism towards the societal beauty standard and the pressure it exerts to look a certain way in order to be considered beautiful. These participants enjoy following content creators who refute beauty and diet myths and
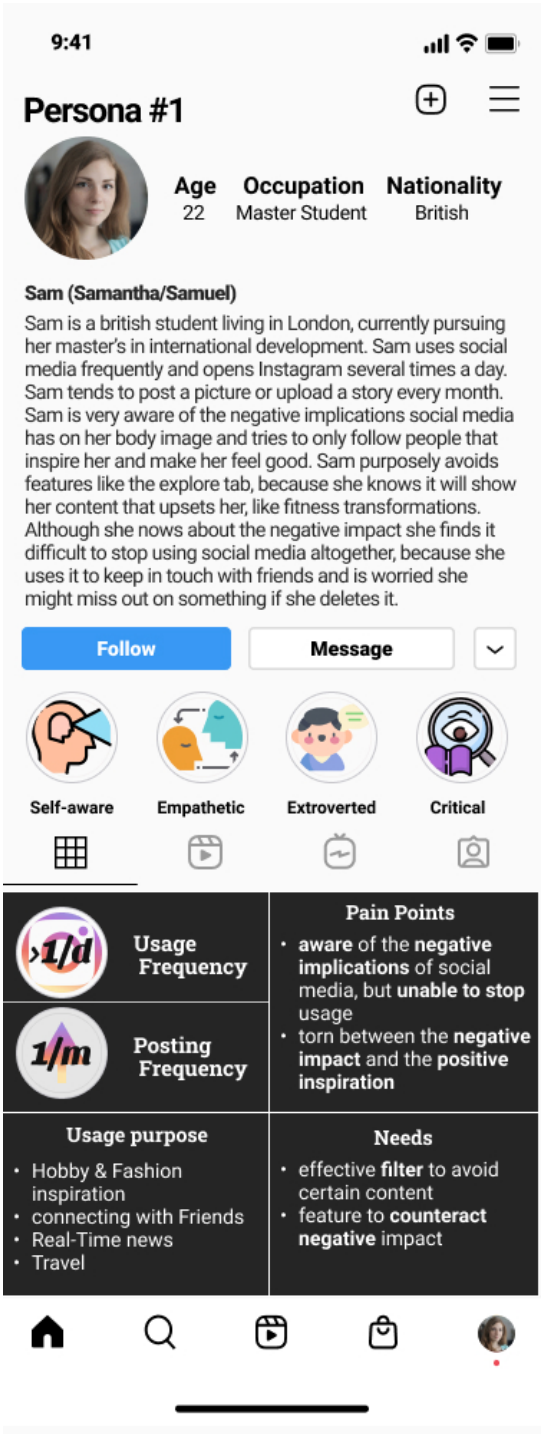
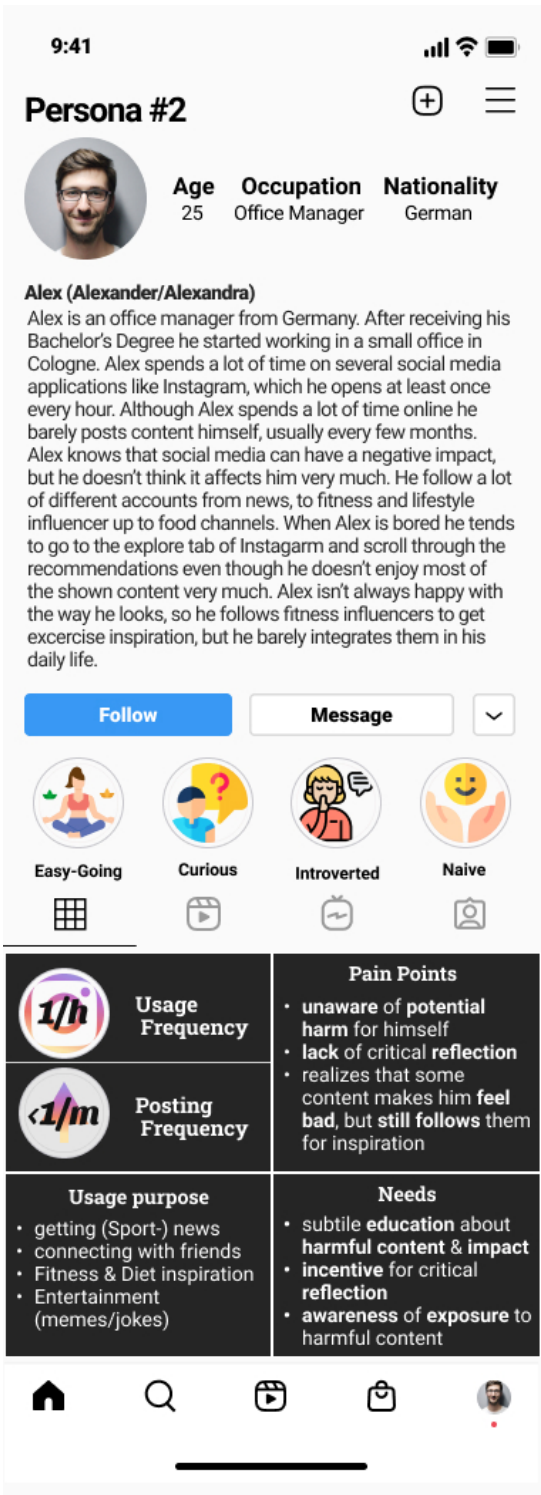Figure 4.1: Persona 1: Sam - Aware of Harm to Oneself

Figure 4.2: Persona 2: Alex - Unaware of Harm to Oneself

advocate for more diversity and acceptance (see Chapter 3, sections 3.2.2.1 & 3.2.2.4).

Although the persona of Sam was developed to be gender-neutral, the depiction of a female user to represent the persona has been selected deliberately. As stated in chapter 3, section 3.2.3.1 women tend to be aware of the negative impact social media has on their body image. In contrast, men tend to either be less aware of the harm it might cause to themselves or are less affected than women. A combination of both reasons might be applicable as well. Therefore, the persona of Sam is excursively crafted based on characteristics of female participants. This does not exclude the existence of men who belong to user groups represented by the persona Sam, however with regard to this study the participating men tend to fall into the category of the following persona:

4.2.2   Persona 2: Alex - Unaware of Harm to Oneself

The persona of Alex (see Figure 4.2) represents users who are less aware of the negative impact certain social media content can have on their own body image and perception (see Chapter 3, sections 3.2.2.4 & 3.2.3.1). Alex is based on participants whose social media usage is more naive and less critical compared to the usage of participants represented in the persona of Sam. These participants are not unaware of the harm social media can cause, but assume that it does not affect them significantly (see Chapter 3, section 3.2.2.4). Furthermore, these participants also appreciate authenticity and are rather critical towards strongly edited and posed content (see Chapter 3, section 3.2.2.1). However, fitness and health content is generally assumed to be positive and inspiring, even though participants reported to feel pressured by workout and body transformation content (see Chapter 3, section 3.2.2.2). Participants who were used as inspiration for the persona of Alex tend to consume and follow a wide variety of accounts. They even consume content that they do not particularly enjoy (see Chapter 3, section 3.2.2.3), but instead of filtering their recommendations by marking certain content as uninteresting, or by regularly sorting through their following list, these participants tend to just scroll past unliked content accepting the possibility that they will get similar recommendations again (see Chapter 3, section 3.2.3.2.4).

Unlike the persona of Sam, Alex is based on female and male participants. However, all five male participants are represented through the persona of Alex.

4.3   Prototype Design

The following prototype design suggestions were developed under considerations of the pain points identified during the user interviews and summarized in the previous introduced personas (see Figure 4.1 & 4.2). Due to the fact that Instagram was selected as the representative social media application in this project and that the interview questions paid special attention to participants' usage and perception of Instagram, the general layout of the prototype was highly inspired by the current Instagram design [56]. The aim of the prototype was to improve the identified aspects of Instagram that cause negative body image and dissatisfaction by introducing subtle changes to the current layout, without changing too much of the design. This aims to make the usage and navigation as intuitive as possible. To ensure a consistent and intuitive usability design, each design decision has been developed under consideration of Nielsens "10 Usability Heuristics for User Interface Design" [70].

For the development of the prototype, the web-based prototyping tool Figma was used [33]. Two templates, provided by Figma, were used to create the general Instagram layout, however the content of the templates was changed and adapted [9, 100]. All images used for the design of the persona profiles, as well as the creation of the fictional user accounts and posts in the prototype were taken from the free stock photo website Pexels, which offers a license free usage of its imagery for non-commercial purposes [75] or from the Creative Commons website under the licence CC BY-NC 2.0, which requires accreditation of the creator [21]. Icons used for the prototype design as well as the personas were taken from the free range of icons offered on the website Flaticon, which are free to use for non-commercial purposes [34]. Therefore, an extensive list of all images taken from the Creative Commons website as well as icons from Flaticon with accreditation can be found in the appendix (see Appendix C).

4.3.1   Educating Information

The main pain point for the persona of Alex was the unawareness of harm towards their own body image and what content might cause negative implications (see Figure 4.2). To prevent harm caused by unawareness, it is necessary to inform the user prior to the social media exposure about what type of content and aspects of social media might be damaging and for what reason. This aligns with recommendations made by Brown and Tiggemann [14] who advocate for the necessity to educate users about the negative implications social media exposure can bring, especially with focus on celebrity

images. Therefore, instead of forcing the user to review information before or immediately after opening the app, it was decided to place the awareness raising information in the story element of Instagram. In 2016 Instagram introduced the story feature, which has been an almost exact replication of the story element of the SNS Snapchat [68]. Stories are short videos or images users can upload, which can be accessed by others for a limited time of 24h. After this time the story disappears. Stories are represented as round images of the users profile picture on top of the screen. Unseen stories are marked with a pink circle around the profile picture, which disappears after the user has tapped on the picture and watched the story (see Figure 4.3).

As summarized in chapter 3, section 3.2.3.2.1 several users indicated that the first action they undertake when opening Instagram is to click through the stories prior to scrolling through their feed. This behaviour makes the story element an excellent position for the educational information about body image and harming content. The following Figure 4.3 displays the initial screen the user sees when opening the prototype. Based on the findings that highly body-focused images which portray unrealistic beauty ideals were seen as problematic (see Chapter 3, section 3.2.2.4) and that fitness content was shown to be potentially harmful by exerting pressure on the user (see Chapter 3, section 3.2.2.2) it was decided to focus the prototype design on these two topics. It is important to notice that imagery that portrays bodies out of the range of the current beauty ideal will also be marked as body-content when the focus of the images is clearly on the presentation of the person's body. This decision aims to include content into the feature that seems to be body positive or inclusive at first glance, but still portrays unrealistic beauty ideals, like extremely slim waists. Therefore, on the top of the initial screen (see Figure 4.3) two stories labeled as "Fitness-Content" and "Body-Content" can be found.

4.3.1.1 Icon Design

The icons shown in the story circles symbolize the content each story is about. The Fitness content is represented by a simple black figure lifting a barbell. The icon was chosen, because of its simple design and its easy detection as fitness related. Content with a high body and appearance focus is represented by a simple black figure showing a slightly more full body shape. This image was selected based on its simplicity and focus only on the figure itself without additional features.

Yellow and orange were used to represent the two icons and the associated informational stories. Both colours belong to the category of warm colours which are
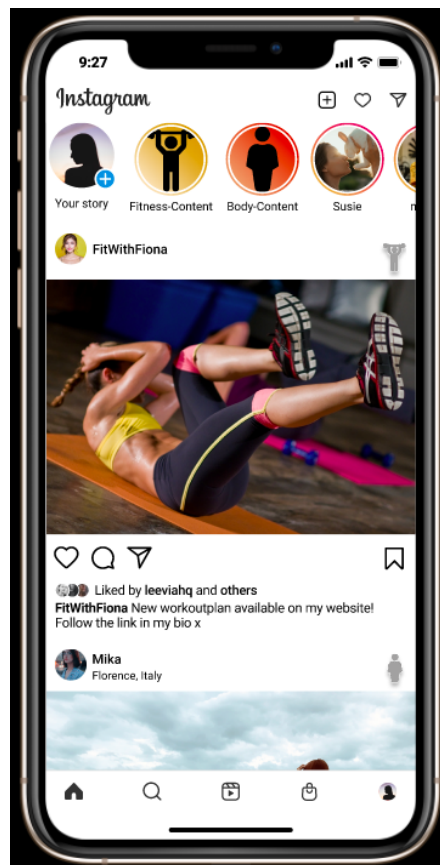
Figure 4.3: Initial Screen

considered to be positive and connected to feelings of enthusiasm and passion [16]. They are bright in order to immediately attract the user's attention and curiosity. Due to the nature of the represented content, no colours associated with calming attributes like green or blue were selected [16]. Orange, with its close resemblance to red as a signal colour indicates to the user its importance without being overly intense or dissuasive [16]. Yellow, which is generally considered a joyful and friendly colour has also been used as a warning and caution indicator in, for example, life vest design due to its high visibility [16].

4.3.1.2 Stories

Depending on which story icon a user clicks, the respective story appears. Each story consists of two pages, with the first displaying educational content and the second showing a critical example of the content type (see Figure 4.4 & 4.5). If the user clicks on the fitness-content story element an illustrated information page appears. The information includes three short passages with associated icons. The text highlights
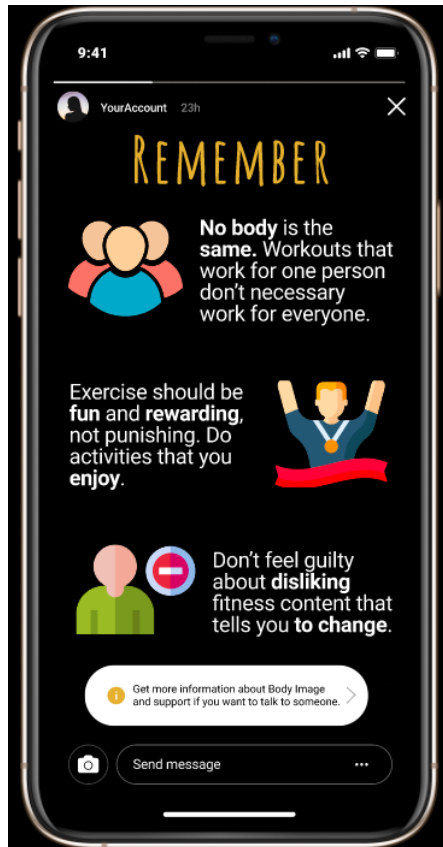
Figure 4.4: Story: Fitness Content Text
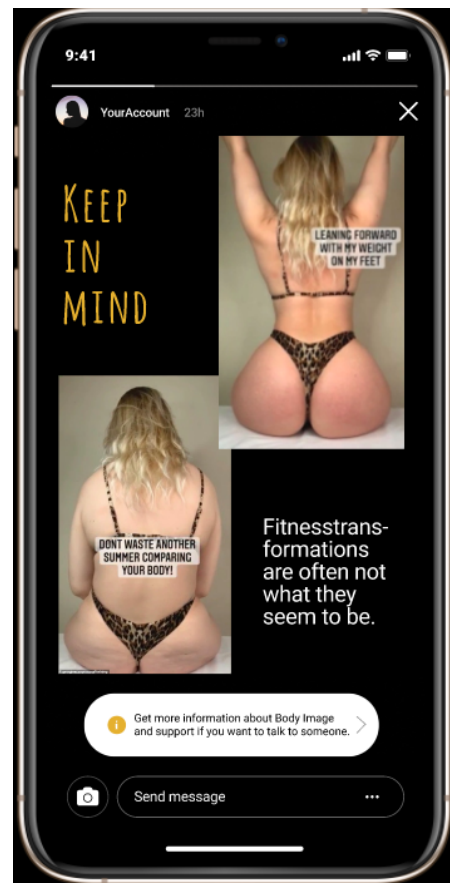
Figure 4.5: Story: Fitness Content Example

the importance of enjoyment of workouts and that not every workout gives the same result for everyone (see Figure 4.4). The second page gives an example of how easily a before and after image, allegedly portraying workout results, can be forged. The displayed images were taken from an article of the Daily Mail [82]. The image is aimed to help the user develop a critical perspective towards seen fitness content and progress imagery (see Figure 4.5).

If the user clicks on the body-content story element, a similar set of pages appears. The first page reminds the user that there is no right or wrong way to look and that a person's value is not defined by their appearance, counteracting the objectification of bodies (see Chapter 1). Furthermore, users are reminded of the purpose of showing idealized bodies as a marketing tool, and the profit companies generate from their consumers' insecurities (see Figure 4.6). The second page shows the user how lighting and angles can be used to change one's appearance in a photograph. The shown images were taken from an article of the digital storytelling platform Shorthand [7]. The image

Figure 4.6: Story: Body Content Text
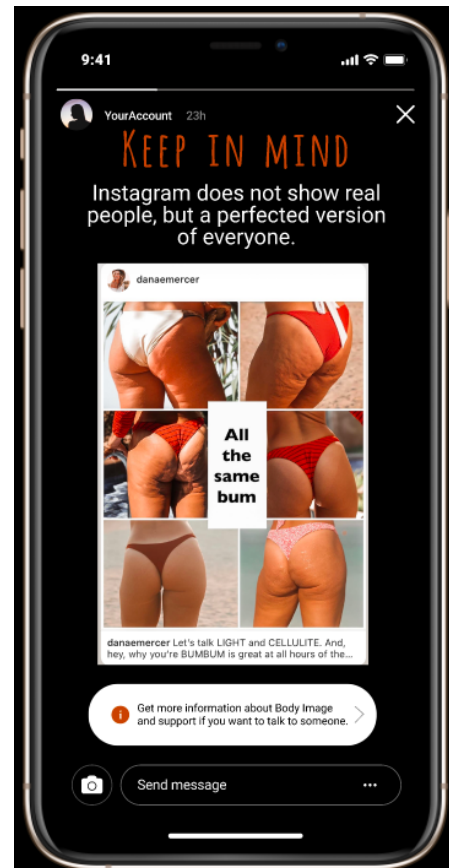
Figure 4.7: Story: Body Content Example

is aimed to remind the user that Instagram posts rarely reflect reality and that allegedly "flawless" influencers do have body features which are considered less desirable. They just do not upload the images in which you can see them (see Figure 4.7).

Furthermore, all pages have an information button at the bottom, which leads the user to further resources about body image and help providers. The design of this button is inspired by Instagram's recently introduced story and post feature that marks content which is about Covid-19 and offers access to further information [22]. This design decision is in accordance with Nielsens fourth usability heuristic: "Consistency and standards", which highlight the importance of reducing the users' cognitive load by using known standards and designs the user is familiar with [70]. Due to the high relevance of Covid-19 information over the last year, it is assumed that the user will recognize the button as a source of accurate and reliable information.

The content of the educational stories shown in the prototype is only an example of what the content could look like. For an actual implementation of the feature into the

Instagram flow, it would be important to regularly update the shown stories and display different information and examples regarding fitness and body content to ensure a solidification of the awareness for harm and to keep the user interested and engaged in the content. An extensive library of story examples could be produced and randomly shown to the user. Due to the frequent usage of Instagram (see Figure 4.1 & 4.2) an exchange of the content once a day may be appropriate.

4.3.2 Exposure Awareness

Users see a lot of content during their social media usage and might not be aware of the volume of body and fitness content they see every single day. Especially users who are like the persona Alex (see Figure 4.2) may not realize the dimension of the exposure and the conscious as well as subconscious impact it might have. Furthermore, research has shown that an increased exposure to body-focused images, for example with a focus on a slim figure, increases body dissatisfaction (e.g., [105, 92]). This highlights that an awareness about the seen content is important.

4.3.2.1 Post Count

To enhance exposure awareness, a count feature was developed that shows the user how many posts of a certain type of content they have already been exposed to and releases a warning when a certain threshold is reached. As seen in Figure 4.3 above the first and the second post in the right upper corner, two symbols were included. The symbols are replications of the previous mentioned icons used for the different story elements (see section 4.3.1.1). The repetition of the icon allows the user to connect the two elements and ensures an easy understanding of its meaning and purpose. The consistent design is in accordance with Nielsen previously mentioned heuristic about consistency and standards, but also refers to heuristic number 6 "Recognition rather than recall" which advertises for a design that allows the user to easily retrieve information by recognizing known or previously learned aspects [70].

For the initial exposure to fitness or body content the icon remains light grey. This colour merges subtly into the general design of Instagram without attracting much attention or acting as a distraction. However, if the user scrolls through their feed and sees more content that has been classified as portraying fitness content or being highly body and appearance focused, the icon on the right fills up in the previously justified colours yellow or orange (see section 4.3.1.1). The icons continue to fill up until the

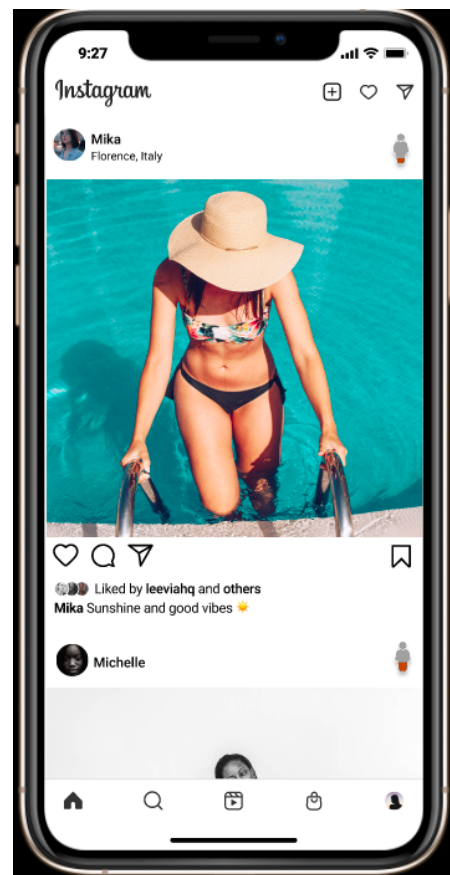Figure 4.8: Fitness Content with increased Post-Count

Figure 4.9: Body Content with increased Post-Count

threshold is reached. For presentation purposes and under consideration of the limited amount of time for the prototype development, a threshold of eight posts a day was set. Further research might be necessary to identify after what amount of seen posts a day or an hour the body image is negatively affected and set the threshold accordingly.

When the threshold is reached the user gets notified by the display of the related icon above the latest seen post until the user continues to scroll (see Figure 4.10 & 4.11). This presentation immediately attracts the user's attention and signals that something requires the user's action. An information button is placed in the middle of each figure which allows the user to find further information by tapping it. The button is characterised by the letter "i". In digital designs the letter "i" is often used to indicate that further information is available. Furthermore, the "i" symbol has also been used in the information button of the story element (see Figure 4.4), therefore fulfilling Nielsens fourth as well as sixth usability heuristic [70].

Figure 4.10: Fitness Content Warning

Figure 4.11: Body Content Warning

4.3.2.2 Filter

When the user decides to click on the information button of the warning icon above the post, a new screen will open up that offers the user information as well as different filter options (see Figure 4.12 & 4.13). In the upper right corner of the new screen the corresponding fitness or body icon is displayed to make it as easy as possible for the user to identify in which part of the app navigation they currently are. At the top of the screen a text is displayed that informs the user about the amount of fitness or body posts they have already seen today and prompts the user to take a break from these types of content.

The user can reach this setting page also by clicking on one of the icons above each post, no matter how far the icon is filled up. If the user opens the setting before the threshold is reached, the text at the top will appear different. For the fitness content: "Fitness content can be very motivating but also exerts a lot of pressure. How about a break?" will be displayed, and for the body content: "Seeing a lot of perfectly posed
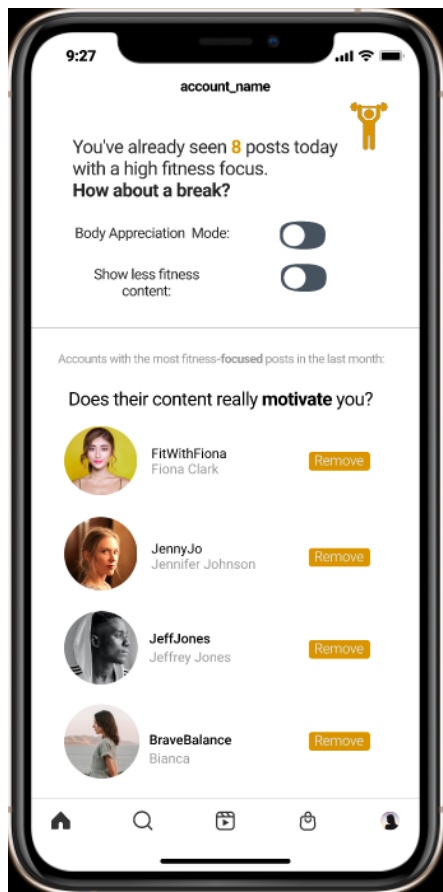
Figure 4.12: Fitness Content Setting
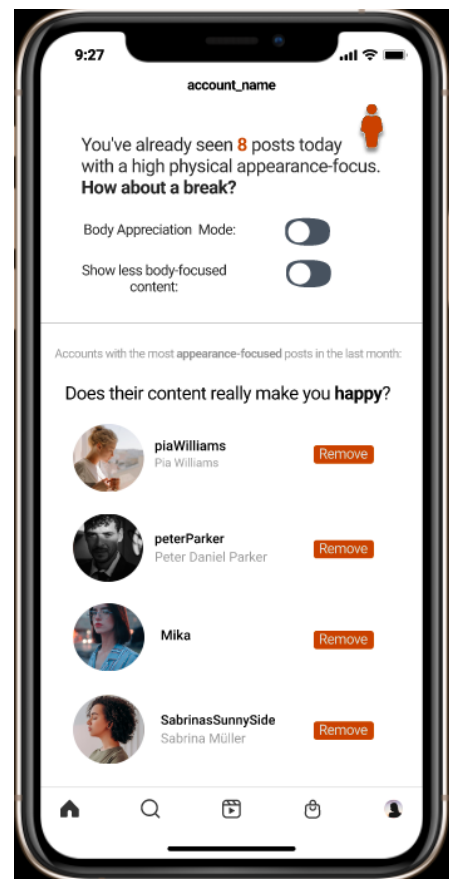
Figure 4.13: Body Content Setting

bodies can lead to unrealistic expectations about your own. How about a break?". Underneath the text the user has two options, selectable by slide buttons. This design is in accordance with other selection options in the Instagram design that uses slide buttons [52]. The user has the option to activate the "Body Appreciation Mode", which will be explained in the next section (see section 4.3.2.4), or to show less fitness or body-focused content, depending on which icon the user tapped before (see Figure 4.12 & 4.13). If the user selects one of the content reduction options the respective content will no longer be shown on the users main feed. The wording "less" instead of "no" was selected deliberately due to the fact that only content with a high fitness focus, like meal preparation or major transformations, or a high body focus, where the shape of the body is clearly the focus of the image, will be hidden instead of images where fitness or body appearance is only secondary. This distinction is important so that the user does not perceive the filtering as too invasive, which may lead to an abandonment of the filtering feature.

4.3.2.3 Following Reflection

Underneath the two selection options the user can find a list of accounts they follow, which were identified as posting the highest amount of fitness or body-focused posts in the last few months (see Figure 4.12 & 4.13). This feature was developed with regard to users like Alex (see Figure 4.2) who tend to follow a great amount of accounts out of curiosity without regularly sorting through their following to delete accounts that do not bring any benefit. The displayed question "Does their content really motivate you/ make you happy?" is aimed to induce a critical reflection about the value these accounts offer and how they impact the user's mood. Next to each account's profile picture is a remove button to allow the user to immediately remove the account if they decide to unfollow them. The colour of each remove button was selected in accordance with the colour determined for the fitness or body content icon, to indicate in which category the account belongs.

4.3.2.4 Body Appreciation Mode

Another option the user can select is the "Body Appreciation Mode". As discussed in chapter 2 research has shown that even a brief daily interaction with an application using CBT techniques and positive affirmations can help to reduce body image-related concerns and increase body satisfaction [1]. If the user selects the mode, additional posts will be included into the user's feed, with the title "Body Appreciation" (see Figure 4.14).

The body appreciation posts all follow the same design and only the displayed text varies to allow the user to immediately identify these types of posts when shown, referring to Nielsen's fourth and sixth heuristic [70]. This function is especially valuable for users like Sam (see Figure 4.1) who are already aware of the negative impact social media has on their body image and who seek easy, but effective countermeasures that do not require a reduction in their social media consumption. The chosen affirmations are a compilation of phrases and questions asked during the interaction with the mental health application GGtude [39] and affirmation recommendations for body image from the website Beyond Body Image [42].

4.3.3 Alternative & Contrasting Content

Not only has research shown that content which promotes a body positive attitude and bodies outside of the beauty norm has a positive effect on a person's body image and

Figure 4.14: Body Appreciation Mode

body appreciation (eg., [87, 104], but also during the interviews participants mentioned the positive impact they perceive while seeing authentic and relatable content (see Chapter 3, section 3.2.2.1). This perception was identified across all interviews and is therefore relevant for users represented by the persona of Sam (see Figure 4.1) as well as Alex (see Figure 4.2).

To increase the user's exposure to authentic and body positive content, account recommendations were included in the user's feed underneath the threshold warning. The recommended accounts still belong to the same content type the user consumes frequently, for example fitness content, but offer a different perspective (see Figure 4.16 & 4.15). The inclusion of the reminder that fitness or beauty comes in many different shapes and sizes helps to expand the narrow image of fitness and beauty constructed by today's society and offers a more authentic content to the users. Furthermore, these recommendations may introduce new and inspiring accounts for users like Sam (see Figure 4.1) who already actively follow more diverse accounts.

The design of the shown recommendation was inspired by a feature Instagram

recently introduced to recommend videos, so-called Reels [55], in between a user's main feed in the form of three posts next to each other (see Figure 4.18).
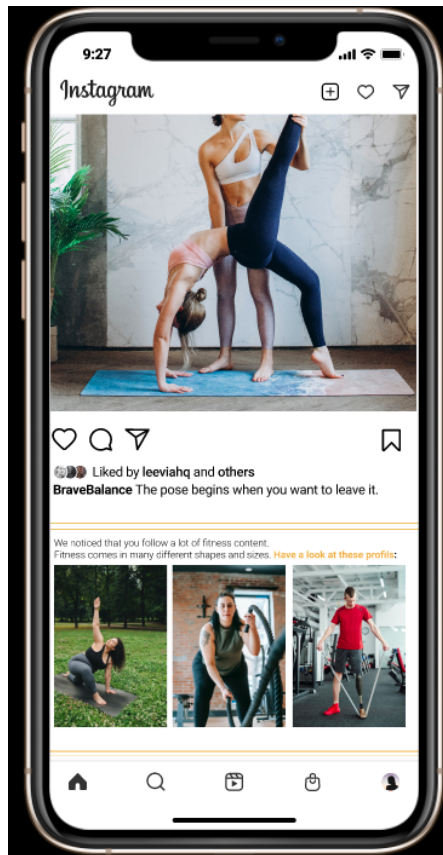

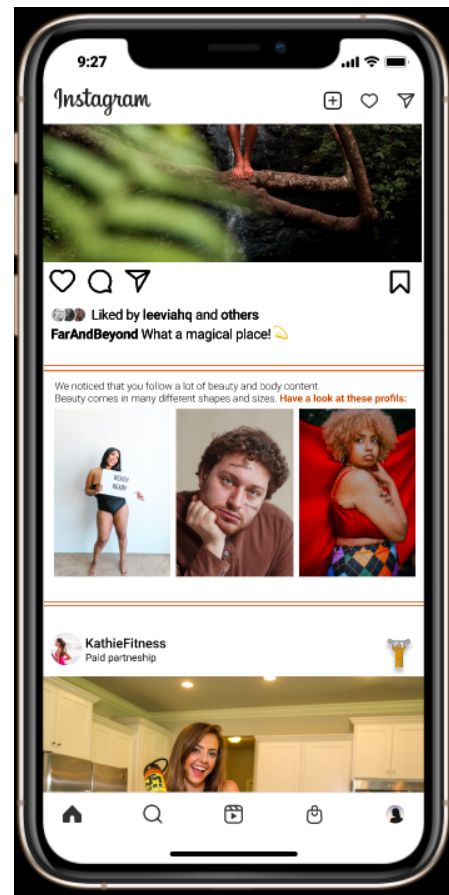Figure 4.15: Contrasting Fitness Account Recommendation

Figure 4.16: Contrasting Beauty/ Body Account Recommendation

4.3.4 Recommendation Page

As discussed in the introduction and supported by the findings of the user interviews, the explore page of Instagram bears a certain risk to expose the user to unwanted content. Especially users who inspired the persona of Alex (see Figure 4.2) tend to visit the recommendation page out of boredom. These users also indicated that most of the recommended content was content they do not enjoy, however they also do not use options like "not interested" to avoid a re-recommendation of similar posts (see Chapter 3, section 3.2.2.3). Therefore, the previously explained filtering option to reduce body or fitness content has also been implemented in the overview screen of the explore page (see Figure 4.17). By selecting the options, content with high fitness

or body focus will be excluded from the recommendations. If the user decides to click on a recommendation and scroll through the shown posts, the previously introduced count feature will be shown as well (see section 4.3.2.1). Furthermore, a third selection option was included. The third button allows the user to exclude all recommendations with product placement or other sale initiatives. This feature was developed based on statements of several participants that advertisements and product placements was content they dislike the most and wished would be blocked (see Chapter 3, section 3.2.3.2). This feature goes against Instagram's focus on being a marketplace for a variety of products and its recent aspiration to shift into becoming a video and shopping platform [85]. However, the feature has been included deliberately to provoke and criticise this new direction and emphasize that Instagram has clearly not taken its users interests and opinions into consideration while making this decision.
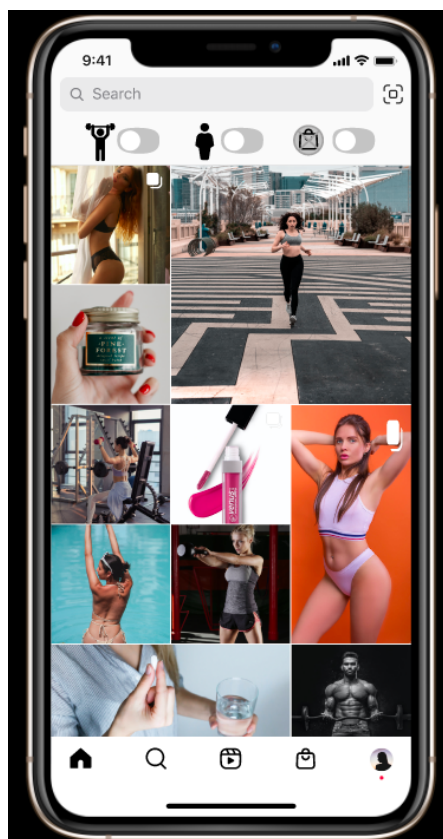
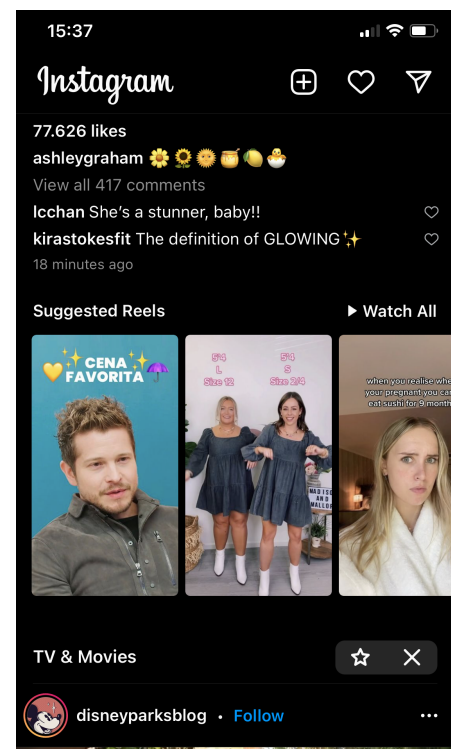Figure 4.17: Explore Tab with Filter-Option

Figure 4.18: New Reel Suggestion-Feature on Instagram. Screenshot was taken of the researchers private account.

A clickable demo version of the prototype can be found under the following Figma link: https://bit.ly/3je5KpJ

Chapter 5

Discussion

5.1 Evaluation

5.1.1 Study Design

To evaluate the prototype design and its usefulness a short usability test was conducted. Due to the finding of the initial interviews that particularly women perceive social media as dangerous and harming for their own body image (see Chapter 3, section 3.2.3.1) three women were asked through Whatsapp or Teams to participate in the evaluation. Two participants were already part of the interview study. All participants were between the ages of 18 and 29. Two participants were from the United Kingdom and identified as White, and one participant was from China and identified as Asian. Prior to the interaction, participants were asked to describe the beauty ideal they perceive as being presented in the media according to their culture and the society they grew up in. Following, participants were asked to state how they perceive themselves according to this standard and how they feel about the way they look. After the initial questions participants were asked to interact with the prototype while carrying out the following three tasks:

1. Instagram recently released a new feature designed to foster a better experience and incentivise a more aware and critical reflection of the content their users see. Please make yourself familiar with the new layout and scroll through your feed. Can you find any information about fitness or body related content?

2. Try to customize your feed and regulate what content you are shown. What options do you find?

3. Please have a closer look at your feed now. Is there anything that interests you? Any suggestions or recommendations that you notice?

While interacting with the prototype the participants were asked to verbalize everything that came to their mind, such as thoughts or impressions, through the thinkaloud method [84]. The thinkaloud method is an easy usability testing method that allows designers and researchers to collect fast and insightful feedback on products and designs, even in early development stages [69].

After the interaction, participants were asked to give general feedback about their experience, as well as report what they liked or disliked and if they think the prototype was useful. Finally, the participants were asked if they would use the features of the prototype themselves if they would be implemented on Instagram. All evaluations were conducted in English.

5.1.2 Results

Due to the limited amount of time provided for the completion of a Master's dissertation, a detailed content analysis was not carried out. Instead, the most important statements regarding the prototype design and its usability were summarized.

5.1.2.1 Navigation and Usability

All three participants immediately noticed the new icon above the fitness or body related posts. Two participants also realized the similarity of the icons with the icons displayed in the story elements, making the connection that posts where the fitness icon was included were marked as fitness related content and posts with the body icon were marked as body related:

> P1: *"Okay, so because I'm quite familiar with Instagram, I notice that this icon here and this icon down here are new. I can sort of see from the stories that it's the same icon here, and it's the same icon here, so I would maybe click on this first to see what pops up."*
> *...*
> *"I wouldn't have necessarily... In my head marked this as thinspiration (Body focused), unless I'd seen this little body icon at the top. So that does kind of changes how I think about it. I appreciate it as a nice image, but I'm also sort of recognising because of that icon."*

The reason for content to be categorised as fitness content was clear. However, the participants struggled to understand the exact meaning of the body icon and the criteria for a post to be categorized as body-focused:

> P3: *"I can see this content also comes with a little icon, which is similar with the earlier one, but as far as I see this picture of her body is not quite similar with the previous one. So I'm confused about this icon a little bit."*

All participants realised that they can click on the icon above each post and understood the filtering option provided on the next screen (see Figure 4.12 & 4.13). The meaning of the body appreciation mode feature was not immediately clear, however after selecting the mode and returning to the main feed the functionality became obvious:

> P1: *"What does that changes? Okay. Oh so it's added stuff. That's nice, so there's still Um, I'm still seeing content, but it's got almost like sponsored post. It's got some little posts in between. That's cute, I like that."*

In contrast to what other research has shown (cf. [1, 79] one participant indicated that they do not perceive the positive affirmations as helpful and they would not make a difference to their own perception:

> P2: *"Yeah, I thought I would find the sort of quotes not going to make much of a difference to my actual body image, but I think that this, this woman and that kind of content (diverse body representation) is going to be better. Interesting there because I think I opted to not see as much body content. But I've just got more quotes on my feed now. Yeah, I guess I feel like the quotes don't make me feel better about how skinny some of the people are."*

This different perception to what other studies discovered may be explained by the fact that participants of the mentioned studies used positive affirmations over a longer period of time and that a short exposure during the usability-test was not enough for the participant to perceive a positive impact.

Furthermore, all three participants mentioned that they liked the removal recommendation of highly fitness or body focused accounts (see Figure 4.12 & 4.13), including the prompted question if these accounts really motivated them or made them happy:

> P2: *"Yeah, I think it was good. I did like the element where is saying you know how you're following these people today. Like do they add anything to you kind of thing? I did think that was quite a good thing, just like having the app raises that to you and make you think about it."*

Especially the option to either choose between a less permanent reduction of the shown content without completely removing the account or make the more permanent decision to actually remove the account, was perceived as helpful:

> P3: *"Yeah, that sounds reasonable. I would want to reduce this, but not totally, unfollow them, yeah? But I'm glad that there is options. Maybe I would want to unfollow somebody if I constantly see one instagrammer posting a lot of similar stuff."*

Contradictory to what has been said in the interviews, only one participant tapped on the story element right at the beginning of the interaction (cf. Chapter 3, section 3.2.3.2) and one participant did not click on the story element on its own at all, but only after the interaction task was over and the researcher pointed the participant to the function. The stories were perceived as interesting and one participant mentioned that they would definitely pause to read the text and look at the example images:

> P1: *"I'm definitely... like I would read the information here, because it's large and there's not a lot of it, so I think I would definitely absorb this information."*
> ...
> *"This is definitely the sort of thing where if the story was timing out and if it was moving, I would pause on it and probably spend some time looking at the images."*

On participant also recognized the information button at the bottom of the story and immediately made the connection to the new Covid-19 information button of Instagram:

> P1: *"I know what this kind of pop up is, because of having seen it on like content in vaccination related stuff. So seeing that there, I would think that it is trusted information and that it will take me somewhere where I can get more trusted information. If I was concerned about that, so that's good to see."*

However, one participant perceived the content shown in the stories as unnecessary and not helpful, because they are already aware of this information and said that it does not offer any new perspectives:

> P2: *"Yeah, the stories. Again, it was the same issue like all of the stuff you see it all the time on social media. You, like, you know, the stuff and practice, but that doesn't mean anything really. You just see it like seeing a perfect body and then seeing a page again. It's fine, not everyone looks like that. Like it doesn't make a difference really. Or like, at least for myself, it doesn't help."*

All participants perceived the warning feature as soon as the fitness/ body threshold was reached. However, only one participant immediately realized that the icon above each post indicates how many posts of a certain type of content have already been seen.

They mentioned that they find this feature very interesting and would like to receive more information about how the threshold is set:

> P1: *" I'm noticing that the little, as I go on, the little icon is filling up. So I guess that's how much I'm absorbing, how much I'm looking at in my feed. That's good."*
> *...*
> *"I was thinking why is it eight post that I'm only allowed to see in one session. Is that like something that the people who created the app have decided? Is like they've done some, I don't know, some psychological peer review tests or something and they said like it causes enough in a one hour period or a 20 minute period?"*

Two out of the three participants found the contrasting account recommendations and stated that they enjoy this feature and would like to see more diversity within their feed:

> P1: *"The suggestions of the different user profiles to follow was worded where it said: 'we've noticed you're following a lot of this content. Bodies come in lots of different shapes and sizes, therefore have you seen these people...' like I felt that was a nice prompt done in a way that I found helpful."*

> P3: *"Oh, it looks great. I like what you put in here. I think it's great to see something else. Because it's focused on the fitness and where people are trying to get healthy, but without just meet some common requirements for women. Great, I love to see some variety in here."*

5.1.2.2 General Impression & Usefulness

Interestingly, the received feedback regarding the usability and usefulness of the prototype turned out very differently. The first and the last participant stated that they enjoyed the design of the prototype and that they perceived its features and options as helpful and educating, without being too patronizing:

> P1: *"I really like it. I think these sort of changes are additions. That it's changes made to the general Instagram app are minimal, which is nice. I still feel like I'm on Instagram, just with these little added things. They're not too obtrusive. Especially the icons on the post themselves that fill up. I think they look really good and they look like they're part of Instagram as well."*
> *...*
> *"I thought it was good as well, that it was in no way shaming the users or the pictures that I was seeing being: 'like this is harmful or something'."*

They stated that they would definitely use this feature and that it would help them to obtain a better body image and have a better social media experience. Especially the third participant mentioned that the display of perfect and slim bodies on social media affects them negatively and that the prototype would help them obtain a more diverse feed:

> P3: *"It is really good, I think what you are trying to build here and I really would love to see these features all get into the real Instagram because yeah, I really think of those perfect pictures."*
> ...
> *"I really love what you're trying to do and I think it would bring a great atmosphere to our social media because people are always trying to make big compliments for those skinny bodies and a lot of people like including me aware what kind of pictures would get most likes from people so it's really bad. And I think we need very loud and clear words in around the social media to remind us constantly, yeah. I think the filter and the recommendations are really good for me. I'm definitely going to use it if they are in the Instagram."*

The second participant, however, did not think that the prototype solves the actual problem of seeing unrealistic bodies and pressuring users to look a certain way:

> P2: *"Yeah I guess a lot of it is not actually dealing with the issue of comparing your body because it's not always about just having less fitness influencers, also just people looking effortlessly teeny tiny."*

This participant explained that if they do not want to see certain types of content they just do not follow these accounts. The educational information in the stories just additionally confronts users with content they might not want to see. Furthermore, the option to blend out certain context forces the user to constantly think about their body image and if this content make them feel bad, which is perceived as problematic by the participant:

> P2: *"Yeah because it's you have to make that conscious decision and then in a way it almost feels like a bigger deal because you're constantly having to decide it when you go on the app. Like, Okay, I feel like you almost affirming yourself: 'now I've got a bad body image today so I don't wanna see perfect bodies'. Like where is obviously if you don't follow them like you haven't, you don't have to have that conversation with yourself."*

This participant would not use the feature, because they do not see a benefit for their own social media usage, but think it may be helpful for others:

> *"I guess maybe, I think obviously depends on how you use Instagram or how use social media. So I think yeah, like it could be helpful for some*

> *people, but I know for myself it is much easier to just go offline rather than turn it on and off."*

In summary, the feedback towards the prototype was very diverse. In general, the navigation was clear and almost all features were found. As intended, the participants indicated that they perceive the prototype as very similar to Instagram and that this ensured an easy and intuitive navigation. The included features were not perceived as intrusive or patronizing. At the beginning of the evaluation, the meaning of the body count feature was slightly confusing for one participant, but after further interaction the meaning became clear. Furthermore, the sorting of what content falls into the category of body-focused was not clear and needs explanation prior to usage.

The feedback of the second participant during the usability-testing indicates that the prototype might not be helpful for users who are already very aware of what content triggers them and only follow accounts they know makes them feel good. This usage behaviour is very similar to the behaviour of users represented by the persona of Sam (see Figure 4.1). It is worth noticing that participant two did not find the contrasting account recommendations, which might be a useful addition even for users who already have a very reflective and selected following list. However, it appears that the prototype will be helpful for users like participant three, who sees a lot of body and appearance focused imagery and who struggles to avoid this content and find more diverse and inclusive accounts. Therefore, it is likely that the prototype may help users who are represented by the persona of Alex (see Figure 4.2) to avoid harmful content and create a more positive and inspiring social media atmosphere.

These very different perspectives highlight the importance of a pluralistic design approach [6] and the recognition of different user needs as discussed in chapter 1. Especially, the gender differences that emerged during the interview analysis (see Chapter 3, section 3.2.3.1) emphasize the importance of a feminist perspective during the development of services and products as explained by Bardzell [6]. This ensures the consideration of the needs of a variety of different users and not one generalized user type. Furthermore, the results highlight that also for social media applications a one-size-fits-all approach is not appropriate. Body image in particular is a highly subjective and complex phenomenon and every user is at a different part of their body image and mental health journey.

Therefore, an approach that combines the proposed social media features with the option to personalize what will be included on the user's social media feed, based on what is perceived as beneficial, may be fruitful.

5.2 Conclusion

The presented study and evaluation helped greatly to understand and answer the previously formulated research questions (see Chapter 1). In general, it can be said that social media platforms like Instagram offer a variety of advantages for their users, such as the ability to easy connect and share information with friends. Social media also gives a voice to marginalized and overlooked groups and offers a platform to promote their content and views, independent of traditional media channels like television. It was shown in the interview study that users especially enjoy these type of authentic content that portray real people and tells their stories, unlike the homogeneous beauty and lifestyle content that can be found in traditional media.

However, this content can be difficult to find, due to the fact that the most followed and successful influencers and Instagram accounts predominately post images that reflect the very narrow beauty ideal of today's society [14]. Furthermore, Instagram's strive to be a marketplace rather than an image sharing platform [85] favours beauty content that tries to sell products and preys on its users insecurities. However, as illustrated through the interviews, this type of content is perceived most negatively and is responsible for the development of body image issues and dissatisfaction (see Chapter 3, section 3.2.2.4). Furthermore, the ambivalent attitude towards fitness content (see Chapter 3, section 3.2.2.2) may bring the user in the dangerous situation of following accounts that have a negative influence and harmful impact on their body perception.

The outcome of the user study aligns with findings from previous research about the risks of the promotion of unrealistic and unattainable bodies on social media (e.g., [78, 48, 13]). The interviews also supported the finding that the exposure to fitness content does not have an impact on the consumer's actual exercise behaviour [78] (see Chapter 3, section 3.2.2.2). Furthermore, as hypothesized in chapter 1 the recommendation page does show content that the user does not enjoy and therefore bears the risk of exposing them to triggering content (see Chapter 3, section 3.2.2.3). On the contrary, the hypothesised negative impact of false body positivity has not been supported by the interviews (see Chapter 1). Statements made by the participants that mentioned body positivity content were wholly positive and were perceived as helpful for the user's own body satisfaction (see Chapter 3, section 3.2.2.1). One possible explanation for this finding might be the less critical evaluation of body positivity posts by the participants. The general claim to love your body and be positive about your appearance might be already enough for the interviewed users to perceive a post as less harming and instead

inspiring. Furthermore, all participants of the original interview study indicated to be white Europeans. Marginalized groups or cultures with different beauty ideals might have a different perspective on body positivity content that still displays the beauty ideal of the western society.

The prototype developed based on the above findings offers features that help users to become more aware of what type of posts might be harmful and provide some relieve from the exposure to content that is considered dangerous towards body image. For people suffering from the negative impact caused by social media content the prototype offers an alternative to a simple removal of the application. Many participants stated that especially the connection with friends, but also the fear of missing out keeps them on these platforms. Therefore, the prototype provides a balance that enables users to interact with social media applications in a less harmful way by avoiding potentially triggering content and by fostering a diverse and inspirational atmosphere. Furthermore, the usability evaluation showed that the proposed features are beneficial for some users and may provide support to overcome the negative body image evoked by social media.

5.3 Limitations

Due to the limited amount of time available for the execution of a Master's dissertation only a small sample size of user interviews was conducted. Furthermore, all participants of the initial interview study indicated to come from a white European background which offers very limited variability among the participants' cultural experiences. However, social media applications like Instagram are used worldwide in many different countries [27] and body image development is highly influenced by culture and the society a person grows up in [5]. Therefore, the user sample and the size of the presented study only reflect a small portion of the entirety of social media users. It is important to not generalize the findings of this study onto all types of social media users, but to recognize the findings as an inspiration for future research with users from different backgrounds.

Furthermore, the short time frame only allowed for a cross sectional usability evaluation. The focus of the usability test was directed towards the general impression and the understanding of the prototype features. Participants were asked to describe if they perceive the prototype as a useful intervention for body image issues caused by social media. However, to determine if the prototype actually helps to reduce or

overcome body image concerns connected to social media it needs to be evaluated in a longitudinal study with a regular prototype interaction. Especially the effectiveness of the "body appreciation" feature, which was implemented with regard to findings of longitudinal studies exposing participants to positive affirmations over the duration of several weeks [1, 79] requires additional evaluation to determine its usefulness.

Additionally, the proposed design improvements were only implemented in a social media prototype, but not in a real application like Instagram. Therefore, the posts the participants saw during the interaction were only examples and not taken from accounts the participants actually follow and see on a day to day basis. However, the impact social media has on body image is highly dependent on what the user consumes. An evaluation of the design suggestions implemented in a real social media platform and integrated in the user's daily life is therefore crucial to estimate their true value.

5.4 Future Work

In addition to the above mentioned longitudinal study, future work could evaluate the impact of the prototype on the user's body image by conducting quantitative analysis that uses questionnaires like the body image disturbance questionnaire [17] to get a better understanding of how the interaction with the prototype changes these variables.

Future work could also focus on the improvement and personalisation of the design suggestions. Especially, the body count feature which offers many possibilities for further research. As indicated by a participant during the prototype evaluation, a personalized post limit based on the users tolerance level or previous body image issues could be developed:

> P1: *"Some psychological peer review tests or something and they said like it courses enough in a one hour period or a 20 minute period. Whether there would be any Flexibility in that and I genuinely don't know what. Whether that's helpful, but like I said, as somebody who doesn't thankfully suffer from any kind of current active eating disorders, or like body confident stuff, could I have tolerated more than than somebody who is?"*

Previous research showed that factors such as internalization of the thin-ideal can lower the viewer's body appreciation when exposed to imagery of thin women [92]. Therefore, future research could evaluate after what amount of exposure to certain social media imagery the body image disturbance increases significantly under moderation of different characteristics like thin-ideal internalisation or eating disorders. Based on these findings, limit recommendations could be proposed and included in the prototype

to give users an indication of what limit might be appropriate based on their personal circumstances.

Lastly, the contradictory attitude towards fitness content is a phenomenon that requires further attention. In future research, qualitative analysis could be conducted with a clear focus on the consumption and following of fitness content. Interviews could be used to explore what benefit users perceive from following this content and why users also follow fitness influencers who make them feel insufficient. The investigation of cognitive processes involved in this conflict of being inspired and rewarded, versus feeling insufficient and envious, might offer interesting insights into the users' online behaviour and reasons for following certain accounts. These findings could help to further improve the online experience by disclosing ways to display ambivalent content in the least harmful way.

In summary, the present project contributes to the extension of the existing body of research in the field of social media influence on body image and mental health, by providing novel and insightful findings from the user research conducted. The study fills the gap of findings from qualitative research in this area by placing the perception and experience of the user in the center of attention. Furthermore, the developed design suggestions for social media applications to counteract the negative impact on body image were shown to be fruitful and are hoped to serve as an inspiration for future social media applications that aim to provide a positive and inspiring user experience.

Bibliography

[1] ABOODY, D., SIEV, J., AND DORON, G. Building resilience to body image triggers using brief cognitive training on a mobile application: A randomized controlled trial. *Behaviour Research and Therapy 134* (Nov. 2020), 103723.

[2] ANSARI, W. E., DIBBA, E., AND STOCK, C. Body image concerns: Levels, correlates and gender differences among students in the united kingdom. *Central European Journal of Public Health 22*, 2 (June 2014), 106–117.

[3] ASPINWALL, L. G., AND TAYLOR, S. E. Effects of social comparison direction, threat, and self-esteem on affect, self-evaluation, and expected success. *Journal of Personality and Social Psychology 64*, 5 (1993), 708–722.

[4] AUXIER, B., AND ANDERSON, M. Social media use in 2021. `https://www.pewresearch.org/internet/2021/04/07/social-media-use-in-2021/`, April 2021. Online; accessed 01 August, 2021.

[5] BAKHSHI, S. Women's body image and the role of culture: A review of the literature. *Europe's Journal of Psychology 7*, 2 (May 2011).

[6] BARDZELL, S. Feminist HCI. In *Proceedings of the 28th international conference on Human factors in computing systems - CHI '10* (2010), ACM Press.

[7] BENWELL, L. Body image and social media: The real impact "instagram vs. reality" posts have on our mental health. `https://bit.ly/3jlDy4l`. Online; accessed 21 August, 2021.

[8] BITESIZE, B. From new york to instagram: The history of the body positivity movement. `https://www.bbc.co.uk/bitesize/articles/z2w7dp3`. Online; accessed 14 August, 2021.

[9] BORGO, P. Instagram ui 2021 - ios. `https://www.figma.com/community/file/799600450213403328`, 2021. Online; accessed 21 August, 2021.

[10] BRAUN, V., AND CLARKE, V. Answers to frequently asked questions about thematic analysis. `https://cdn.auckland.ac.nz/assets/psych/about/our-research/documents/Answers%20to%20frequently%20asked%20questions%20about%20thematic%20analysis%20April%202019.pdf`. Online; accessed 27 July, 2021.

[11] BRAUN, V., AND CLARKE, V. Using thematic analysis in psychology. *Qualitative Research in Psychology 3*, 2 (Jan. 2006), 77–101.

[12] BROWN, Z., AND TIGGEMANN, M. Attractive celebrity and peer images on instagram: Effect on women's mood and body image. *Body Image 19* (Dec. 2016), 37–43.

[13] BROWN, Z., AND TIGGEMANN, M. A picture is worth a thousand words: The effect of viewing celebrity instagram images with disclaimer and body positive captions on women's body image. *Body Image 33* (June 2020), 190–198.

[14] BROWN, Z., AND TIGGEMANN, M. Celebrity influence on body image and eating disorders: A review. *Journal of Health Psychology* (Jan. 2021), 135910532098831.

[15] BURNELL, K., KURUP, A. R., AND UNDERWOOD, M. K. Snapchat lenses and body image concerns. *New Media & Society* (Feb. 2021), 146144482199303.

[16] CANVA. Color meaning and symbolism: How to use the power of color. `https://www.canva.com/learn/color-meanings-symbolism/#yellow`. Online; accessed 21 August, 2021.

[17] CASH, T. F., PHILLIPS, K. A., SANTOS, M. T., AND HRABOSKY, J. I. Measuring "negative body image": validation of the body image disturbance questionnaire in a nonclinical population. *Body Image 1*, 4 (Dec. 2004), 363–372.

[18] COHEN, R., FARDOULY, J., NEWTON-JOHN, T., AND SLATER, A. #BoPo on instagram: An experimental investigation of the effects of viewing body positive content on young women's mood and body image. *New Media & Society 21*, 7 (Feb. 2019), 1546–1564.

[19] COHEN, R., NEWTON-JOHN, T., AND SLATER, A. The relationship between facebook and instagram appearance-focused activities and body image concerns in young women. *Body Image 23* (Dec. 2017), 183–187.

[20] COHEN, R., NEWTON-JOHN, T., AND SLATER, A. The case for body positivity on social media: Perspectives on current advances and future directions. *Journal of Health Psychology* (Mar. 2020), 135910532091245.

[21] COMMONS, C. Creative commons. `https://creativecommons.org`. Online; accessed 21 August, 2021.

[22] CONKLIN, A. Instagram adds coronavirus cdc links to posts mentioning virus. `https://www.foxbusiness.com/technology/instagram-adds-coronavirus-cdc-links-to-posts-mentioning-the-virus`. Online; accessed 21 August, 2021.

[23] CONSULTING, I. General data protection regulation. `https://gdpr-info.eu`. Online; accessed 27 July, 2021.

[24] COOPER, A. *The inmates are running the asylum / Alan Cooper.* Sams, Indianapolis, Ind, 1999.

[25] CWYNAR-HORTA, J. The commodification of the body positive movement on instagram. *Stream: Interdisciplinary Journal of Communication 8*, 2 (Dec. 2016), 36–56.

[26] DANAH M. BOYD, AND ELLISON, N. B. Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication 13*, 1 (Oct. 2007), 210–230.

[27] DEGENHARD, J. Instagram user worldwide 2020, by country. `https://www.statista.com/forecasts/1174700/instagram-user-by-country`, July 2020. Online; accessed 24 August, 2021.

[28] ENGELN, R., LOACH, R., IMUNDO, M. N., AND ZOLA, A. Compared to facebook, instagram use causes more appearance comparison and lower body satisfaction in college women. *Body Image 34* (Sept. 2020), 38–45.

[29] EVANS, G. Instagram: The dog that launched a social media giant. `https://www.bbc.co.uk/news/technology-45640386`. Online; accessed 24 August, 2021.

[30] FACEBOOK. Facebook - company info. `https://about.fb.com/company-info/`. Online; accessed 2 August, 2021.

[31] FACEBOOK. Facebook messenger. `https://en.wikipedia.org/wiki/Facebook_Messenger`. Online; accessed 25 August, 2021.

[32] FESTINGER, L. A theory of social comparison processes. *Human Relations 7*, 2 (May 1954), 117–140.

[33] FIGMA. Creative tools meet the internet. `https://www.figma.com/about/`. Online; accessed 15 August, 2021.

[34] FLATICON. Flaticon. `https://www.flaticon.com/de/`. Online; accessed 21 August, 2021.

[35] FORBES. 197 evan spiegel. `https://www.forbes.com/profile/evan-spiegel/`. Online; accessed 2 August, 2021.

[36] FRAZIER, C., AND MEHDI, N. Forgetting fatness: The violent co-optation of the body positivity movement. *Debates in Aesthetics 16*, 1 (Mar. 2021), 13–28.

[37] FREDRICKSON, B. L., AND ROBERTS, T.-A. Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly 21*, 2 (June 1997), 173–206.

[38] GALLERY, M. B. My body gallery. `https://www.mybodygallery.com`. Online; accessed 25 August, 2021.

[39] GGTUDE. Discover the power of helpful thinking. `https://ggtude.com`. Online; accessed 22 August, 2021.

[40] GHAZNAVI, J., AND TAYLOR, L. D. Bones, body parts, and sex appeal: An analysis of #thinspiration images on popular social media. *Body Image 14* (June 2015), 54–61.

[41] GILES, D. C. Parasocial interaction: A review of the literature and a model for future research. *Media Psychology 4*, 3 (Aug. 2002), 279–305.

[42] GILLET, F. 40 affirmations for body acceptance. `https://www.beyondbodyimage.com/body-image/40-affirmations-for-body-acceptance/`, Nov. 2020. Online; accessed 22 August, 2021.

[43] GIVEN, L. *The SAGE Encyclopedia of Qualitative Research Methods*. SAGE Publications, Inc., 2008.

[44] GRABE, S., WARD, L. M., AND HYDE, J. S. The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin 134*, 3 (2008), 460–476.

[45] GRANT, K. Influencers react to norway photo edit law: 'welcome honesty' or a 'shortcut'? `https://www.bbc.co.uk/news/newsbeat-57721080`, June 2021. Online; accessed 24 August, 2021.

[46] GRAY, K. The status of women in the u.s. media 2014. `https://wmc.3cdn. net/6dd3de8ca65852dbd4_fjm6yck9o.pdf`, 2014. Online; accessed 20 August, 2021.

[47] GUARDIAN, T. Bye bye bmi: Pinterest bans weight loss ads in first for major social networks. `https://bit.ly/2WrQTPW`, July 2021. Online; accessed 25 August, 2021.

[48] HARPER, B., AND TIGGEMANN, M. The effect of thin ideal media images on women's self-objectification, mood, and body image. *Sex Roles 58*, 9-10 (Dec. 2007), 649–657.

[49] HARTMANS, A. The rise of sean rad, who served as tinder ceo twice and is now taking on match group and iac in a $2 billion lawsuit. `https://www.businessinsider.com/ sean-rad-tinder-founder-former-ceo-life-rise-2018-8?r=US& IR=T`, August 2018. Online; accessed 15 April, 2021.

[50] HARTMANS, A. The rise of kevin systrom, who founded instagram 10 years ago and built it into one of the most popular apps in the world. `https://www.businessinsider.com/ kevin-systrom-instagram-ceo-life-rise-2018-9?r=US&IR=T`, October 2020. Online; accessed 14 August, 2021.

[51] HEGGDE, G., AND SHAINESH, G., Eds. *Social Media Marketing*. Springer Singapore, 2018.

[52] INSTAGRAM. Controlling your visibility. `https://help.instagram.com/ 116024195217477`. Online; accessed 22 August, 2021.

[53] INSTAGRAM. Explore tab. `https://help.instagram.com/231704903690654/`. Online; accessed 18 August, 2021.

[54] INSTAGRAM. Stories. `https://help.instagram.com/1660923094227526`. Online; accessed 18 August, 2021.

[55] INSTAGRAM. Introducing instagram reels. `https://about.instagram.com/blog/announcements/introducing-instagram-reels-announcement`, Aug. 2020. Online; accessed 22 August, 2021.

[56] INSTAGRAM. Instagram. `https://www.instagram.com`, 2021. Online; accessed 21 August, 2021.

[57] INTERNATIONAL, Q. Nvivo - unlock insights in your data with powerful analysis. `https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home`. Online; accessed 11 August, 2021.

[58] IQBAL, M. Instagram revenue and usage statistics (2021). `https://www.businessofapps.com/data/instagram-statistics/5/`, Mar. 2021. Online; accessed 09 May, 2021.

[59] JONES, M. *Media-Bodies and Photoshop*. Palgrave Macmillan UK, London, 2013, pp. 19–35.

[60] KAPLAN, A. M., AND HAENLEIN, M. Users of the world, unite! the challenges and opportunities of social media. *Business Horizons 53*, 1 (Jan. 2010), 59–68.

[61] KENNEDY, B. P. *Masculinity, eating, and exercise: The relationship of men to their bodies*. PhD thesis, 2000. Copyright - Database copyright ProQuest LLC; ProQuest does not claim copyright in the individual underlying works; Zuletzt aktualisiert - 2021-05-13.

[62] KLEEMANS, M., DAALMANS, S., CARBAAT, I., AND ANSCHÜTZ, D. Picture perfect: The direct effect of manipulated instagram photos on body image in adolescent girls. *Media Psychology 21*, 1 (Dec. 2016), 93–110.

[63] LEWIS-SMITH, H., DIEDRICHS, P. C., AND HALLIWELL, E. Cognitive-behavioral roots of body image therapy and prevention. *Body Image 31* (Dec. 2019), 309–320.

[64] LONG, F. The effectiveness of using personas in product design. *Irish Ergonomics Review, Proceedings of the IES Conference 2009*, 2007 (2009), 1–9.

[65] MALTBY, J., GILES, D. C., BARBER, L., AND MCCUTCHEON, L. E. Intense-personal celebrity worship and body image: Evidence of a link among female adolescents. *British Journal of Health Psychology 10*, 1 (Feb. 2005), 17–32.

[66] MULVEY, L. Visual pleasure and narrative cinema. *Screen 16*, 3 (Sept. 1975), 6–18.

[67] NEAGU, A., AND RAINER, F. I. Body image: A theoretical framework.

[68] NEWTON, C. Instagram's new stories are a near-perfect copy of snapchat stories. `https://www.theverge.com/2016/8/2/12348354/instagram-stories-announced-snapchat-kevin-systrom-interview`, Aug. 2014. Online; accessed 21 August, 2021.

[69] NIELSEN, J. Thinking aloud: The 1 usability tool. `https://www.nngroup.com/articles/thinking-aloud-the-1-usability-tool/`, Jan. 2012. Online; accessed 21 August, 2021.

[70] NIELSEN, J. 10 usability heuristics for user interface design. `https://www.nngroup.com/articles/ten-usability-heuristics/`, Nov. 2020. Online; accessed 21 August, 2021.

[71] NOLES, S. W., CASH, T. F., AND WINSTEAD, B. A. Body image, physical attractiveness, and depression. *Journal of Consulting and Clinical Psychology 53*, 1 (1985), 88–94.

[72] OF PLASTIC SURGEONS, A. S. Plastic surgery statistics. `https://www.plasticsurgery.org/news/plastic-surgery-statistics`. Online; accessed 10 August, 2021.

[73] OLIVER, K. The male gaze is more relevant, and more dangerous, than ever. *New Review of Film and Television Studies 15*, 4 (Oct. 2017), 451–455.

[74] PERRI, A. Social media usage: 2005-2015. `https://www.pewresearch.org/internet/2015/10/08/social-networking-usage-2005-2015/`, Oct. 2015. Online; accessed 12 August, 2021.

[75] PEXEL. Legal simplicity. `https://www.pexels.com/license/`. Online; accessed 21 August, 2021.

[76] PHOTOSHOP. Make. believe. photoshop. `https://www.adobe.com/uk/products/photoshop.html`. Online; accessed 5 August, 2021.

[77] REIF, P. Pamela reif. `https://www.pamelareif.com/#/`. Online; accessed 17 August, 2021.

[78] ROBINSON, L., PRICHARD, I., NIKOLAIDIS, A., DRUMMOND, C., DRUMMOND, M., AND TIGGEMANN, M. Idealised media images: The effect of fitspiration imagery on body satisfaction and exercise behaviour. *Body Image 22* (Sept. 2017), 65–71.

[79] RODGERS, R. F., DONOVAN, E., COUSINEAU, T., YATES, K., MCGOWAN, K., COOK, E., LOWY, A. S., AND FRANKO, D. L. BodiMojo: Efficacy of a mobile-based intervention in improving body image and self-compassion among adolescents. *Journal of Youth and Adolescence 47*, 7 (Jan. 2018), 1363–1372.

[80] SAIPHOO, A. N., AND VAHEDI, Z. A meta-analytic review of the relationship between social media use and body image disturbance. *Computers in Human Behavior 101* (Dec. 2019), 259–275.

[81] SASTRE, A. Towards a radical body positive. *Feminist Media Studies 14*, 6 (Feb. 2014), 929–943.

[82] SIMCOX, G. How to get an insta-worthy booty shot without going to the gym: Personal trainer reveals how tweaks like lifting your underwear and pulling back your shoulders create the illusion of a pert derrière. `https://www.dailymail.co.uk/femail/article-9449107/Personal-trainer-exposes-fake-Instagram-transformations.html`, Apr. 2021. Online; accessed 21 August, 2021.

[83] SLADE, P. D. What is body image? *Behaviour Research and Therapy 32*, 5 (June 1994), 497–502.

[84] SOMEREN, M. V. The think aloud method: A practical guide to modelling cognitive processes.

[85] SOUTHERN, M. Instagram: "we're no longer a photo sharing app. `https://www.searchenginejournal.com/instagram-were-no-longer-a-photo-sharing-app/412194/`, July 2021. Online; accessed 10 August, 2021.

[86] STATISTA. Most popular social networks worldwide as of july 2021, ranked by number of active users. `https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/`, Aug. 2021. Online; accessed 24 August, 2021.

[87] STEVENS, A., AND GRIFFITHS, S. Body positivity (#BoPo) in everyday life: An ecological momentary assessment study showing potential benefits to individuals' body image and emotional wellbeing. *Body Image 35* (Dec. 2020), 181–191.

[88] STRELAN, P., MEHAFFEY, S. J., AND TIGGEMANN, M. *Sex Roles 48*, 1/2 (2003), 89–95.

[89] SULS, J., COLLINS, R. L., AND WHEELER, L., Eds. *Social Comparison, Judgment, and Behavior*. Oxford University Press, Dec. 2019.

[90] TIGGEMANN, M. Media exposure, body dissatisfaction and disordered eating: television and magazines are not the same! *European Eating Disorders Review 11*, 5 (2003), 418–430.

[91] TIGGEMANN, M., AND ANDERBERG, I. Muscles and bare chests on instagram: The effect of influencers' fashion and fitspiration images on men's body image. *Body Image 35* (Dec. 2020), 237–244.

[92] TIGGEMANN, M., ANDERBERG, I., AND BROWN, Z. #loveyourbody: The effect of body positive instagram captions on women's body image. *Body Image 33* (June 2020), 129–136.

[93] TIGGEMANN, M., AND VELISSARIS, V. G. The effect of viewing challenging "reality check" instagram comments on women's body image. *Body Image 33* (June 2020), 257–263.

[94] TIGGEMANN, M., AND ZACCARDO, M. "exercise to be fit, not skinny": The effect of fitspiration imagery on women's body image. *Body Image 15* (Sept. 2015), 61–67.

[95] TikTok. Tiktok - our mission. `https://www.tiktok.com/about?lang=en`. Online; accessed 25 August, 2021.

[96] Uchôa, F. N. M., Uchôa, N. M., da Costa Daniele, T. M., Lustosa, R. P., Garrido, N. D., Deana, N. F., Aranha, Á. C. M., and Alves, N. Influence of the mass media and body dissatisfaction on the risk in adolescents of developing eating disorders. *International Journal of Environmental Research and Public Health 16*, 9 (Apr. 2019), 1508.

[97] Vendemia, M. A., DeAndrea, D. C., and Brathwaite, K. N. Objectifying the body positive movement: The effects of sexualizing and digitally modifying body-positive images on instagram. *Body Image 38* (Sept. 2021), 137–147.

[98] Vieker, S. Informatics project proposal counteracting the problematic impact of the instagram body.

[99] Vogel, E. A., Rose, J. P., Roberts, L. R., and Eckles, K. Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture 3*, 4 (Oct. 2014), 206–222.

[100] Ward, C. Instagram avatar preview. `https://www.figma.com/community/file/817200983887392131`. Online; accessed 21 August, 2021.

[101] WeChat. Wechat. `https://en.wikipedia.org/wiki/WeChat`. Online; accessed 25 August, 2021.

[102] Weingus, L. Body neutrality is a body image movement that doesn't focus on your appearance. `https://www.huffpost.com/entry/what-is-body-neutrality_n_5b61d8f9e4b0de86f49d31b43`. Online; accessed 15 August, 2021.

[103] Whatsapp. Whatsapp. `https://www.whatsapp.com/?lang=de`. Online; accessed 27 July, 2021.

[104] Williamson, G., and Karazsia, B. T. The effect of functionality-focused and appearance-focused images of models of mixed body sizes on women's state-oriented body appreciation. *Body Image 24* (Mar. 2018), 95–101.

[105] WYSSEN, A., LEINS, J., REICHENBERGER, J., BLECHERT, J., MUNSCH, S., AND STEINS-LOEBER, S. Body-related cognitive distortions (thought–shape fusion body) associated with thin-ideal exposure in female students—an ecological momentary assessment study. *Clinical Psychology & Psychotherapy 27*, 2 (Mar. 2020), 220–227.

[106] YOUTUBE. Ever wonder how youtube works? `https://www.youtube.com/howyoutubeworks/`. Online; accessed 27 July, 2021.

Appendix A

Appendix - User Interviews

A.1 Participant Information Sheet

Consent Form

Demographic Questionnaire

Participant Information Sheet

Project title: Counteracting the Problematic Impact of the Instagram Body
Principal Investigator: Maria Wolters
Researcher: Svenja Vieker

This study was certified according to the Informatics Research Ethics Process, RT number 5783. Please take time to read the following information carefully. If you wish to receive a copy of this form for your records, please ask the researcher.

* Erforderlich

Who are the researchers?

Svenja Vieker (MSc Design Informatics), Maria Wolters (Supervisor)

What is the purpose of the study?

The goal of this study is to investigate and understand how social media influences users and what impact the shown content has on a person's own perception of themselves and their body. The participant will be asked to report about frequently used social media applications and how the content influences their emotions and perception.

Why have I been asked to take part?

This study focuses on active users of social media platforms, who frequently consume different types of posted content.

Do I have to take part?

No – participation in this study is entirely up to you. You can withdraw from the study at any time, without giving a reason. After this point, personal data will be deleted and anonymised data will be combined such that it is impossible to remove individual information from the analysis. Your rights will not be affected. If you wish to withdraw, contact the PI. We will keep copies of your original consent, and of your withdrawal request.

What will happen if I decide to take part?

The study will be conducted as a semi-structured interview, which means you will get asked open questions. Please remember; there are no right or wrong answers. Our goal is to understand how social media influences people. During the interview, you will be asked to report about different social media platforms you use and elaborate on what kind of content you get shown, as well as how this content influences your perception of your body, your attitude towards your body, and your emotions. The interview will be held on Teams and will be recorded, so a transcription of the interview can be created afterwards. Talking about body image can be stressful. If you would like to move on to a different question, need to take a quick break, or stop the interview, just let me know.

Are there any risks associated with taking part?

Reflecting on body image, and the effect that social media has on body image can be distressing for some people. We will take care to minimise distress, and you are in complete control of what you tell me throughout the interview. I will end the interview by asking you to share a positive story or experience that is not related to body image or social media.

Are there any benefits associated with taking part?

No.

What will happen to the results of this study?

The results of this study may be summarised in published articles, reports and presentations. Quotes or key findings will be anonymized: We will remove any information that could, in our assessment, allow anyone to identify you. With your consent, information can also be used for future research. Your data may be archived for a maximum of four years. All potentially identifiable data will be deleted within this timeframe if it has not already been deleted as part of anonymization.

Data protection and confidentiality.

Your data will be processed in accordance with Data Protection Law. All information collected about you will be kept strictly confidential. Your data will be referred to by a unique participant number rather than by name. Your data will only be viewed by the researcher/research team (Svenja Vieker, Maria Wolters,1-2 co-analysts from the 2020/21 MSc in Design Informatics cohort).
All electronic data will be stored on a password-protected encrypted computer, on the School of Informatics' secure file servers, or on the University's secure encrypted cloud storage services (DataShare, ownCloud, or Sharepoint) and all paper records will be stored in a locked filing cabinet in the PI's office. Your consent information will be kept separately from your responses in order to minimise risk.

What are my data protection rights?

The University of Edinburgh is a Data Controller for the information you provide You have the right to access information held about you. Your right of access can be exercised in accordance with the Data Protection Law. You also have other rights including rights of correction, erasure and objection. For more details, including the right to lodge a complaint with the Information Commissioner's Office, please visit www.ico.org.uk (http://www.ico.org.uk). Questions, comments and requests about your personal data can also be sent to the University Data Protection Officer at dpo@ed.ac.uk (mailto:dpo@ed.ac.uk).

Who can I contact?

If you have any further questions about the study, please contact the lead researcher, Svenja Vieker s.j.vieker@sms.ed.ac.uk.
If you wish to make a complaint about the study, please contact inf-ethics@inf.ed.ac.uk (mailto:inf-ethics@inf.ed.ac.uk). When you contact us, please provide the study title and detail the nature of your complaint.

Updated information.

If the research project changes in any way, an updated Participant Information Sheet will be made available on http://web.inf.ed.ac.uk/infweb/research/study-updates (http://web.inf.ed.ac.uk/infweb/research/study-updates).

Alternative formats.

To request this document in an alternative format, such as large print or on coloured paper, please contact: Svenja Vieker, s.j.vieker@sms.ed.ac.uk.

General information.

For general information about how we use your data, go to: edin.ac/privacy-research (http://edin.ac/privacy-research).

Consent.

By proceeding with the study, I agree to all of the following statements:
- I have read and understood the above information.
- I understand that my participation is voluntary, and I can withdraw at any time.
- I consent to my anonymised data being used in academic publications and presentations.
- I allow my data to be used in future ethically approved research.

Please tick yes or no for each of these statements.

1. I agree to being audio recorded. *

   ○ Yes

   ○ No

2. I agree to being video recorded. *

   ○ Yes

   ○ No

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

   ○ Yes

   ○ No

4. I agree to take part in this study. *

   ○ Yes

   ○ No

5. Name of person giving consent: *

   [   ]

Demographic Questionnaire

* Erforderlich

1. Which category below includes your age? *

   ◯ 18-24

   ◯ 25-29

   ◯ 30-34

2. Which country are you from? *

   _____

3. What is your gender? *

   ◯ Woman

   ◯ Man

   ◯ Non-binary

   ◯ Prefer not to say

4. Please select the ethnic group with which you identify: *

○ White

○ Black

○ Asian

○ Mixed

○ Other ethnic group

○ Prefer not to say

5. Please select which of the following social media applications you use and how often you interact with them: *

	Never	Monthly	Weekly	Once a day	Several times a day	Once an hour	Several times an hour
Instagram	○	○	○	○	○	○	○
Facebook	○	○	○	○	○	○	○
TikTok	○	○	○	○	○	○	○
Youtube	○	○	○	○	○	○	○
WeChat	○	○	○	○	○	○	○
Snapchat	○	○	○	○	○	○	○
Twitter	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○

6. If you selected "other", please specify:

7. Please indicate how often you post content on the following platforms: *

	Never	Monthly	Weekly	Once a day	Several times a day	Once an hour	Several times an hour
Instagram	○	○	○	○	○	○	○
Facebook	○	○	○	○	○	○	○
TikTok	○	○	○	○	○	○	○
Youtube	○	○	○	○	○	○	○
WeChat	○	○	○	○	○	○	○
Twitter	○	○	○	○	○	○	○
Snapchat	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○

8. If you selected "other", please specify:

A.2 Interview Questions

Introduction

Hello xx, thank you very much for your participation in this interview study. I am conducting the study as part of my Master's thesis in Design Informatics at the University of Edinburgh. As I already explained during the recruitment, I'm trying to understand how users perceive the content they see on Instagram and how the content influences a users perception of themselves. As stated in the PIS every interview will be transcribed and anonymised. During he interview, please let me know if you want to skip a question, if you need more time to think or if you would like to take a break. You can also stop the interview at anytime if you want.

Warm-up Questions & Social Media Behaviour

1. What social media platforms do you use?

2. Which one do you use the most and how often?

3. Do you post content yourself?
   If yes -

   (a) When?

   (b) About what?

   (c) Think about your last post: What kind of criteria does a photo/video/post have to meet for you to post it?

   (d) Can you think of a situation where a photo/video/post met all these criteria but you still decided not to post it and why?

   If No -

   (a) Why not? What is stopping you?

Exposure to Social Media Content

1. Think about the last time you opened Instagram. What kind of content do you get shown the most? From friends, people you follow and recommendations? (Fashion, sport, food, travel, photos of friends etc.)

2. What kind of people/ accounts do you follow?

3. How do you feel/what do you think when you are shown this content?

4. Do you like what you see?

5. Does the content match your interests? How accurate/appropriate are the recommendations?

Perception of of Social Media

1. Can you think of a situation where you got angry/upset about what you were shown?

2. Did you ever "reported" content or marked it as "not interested"?

    (a) What kind of content was it?

    (b) How did it make you feel?

    (c) Why did it upset/ annoy you?

3. Have you ever deleted a social media app or taken a few days "off"? And why?

4. Can you think of something that you would like to change about the content/ the app in general that would make you feel more comfortable while using it or that would improve the experience? (Include a feature, Delete a feature, etc.)

5. Now think of posts and content that you enjoy. What kind of content do you like?

6. Can you think of a certain type of content you would like to see more often?

    (a) What do you like about this content?

    (b) How does it make you feel?

Influence of Social Media

1. Can you think of a situation where you thought about a post after you closed the app? A post that influenced one of your decisions during your everyday life? (positive as well as negative)

    (a) Please describe the situation and the post

2. Do you think social media has an influence on your own perception of yourself
   and your body?

   If yes -

   (a) Which posts have a positive influence?

      i. Why? What about the content evokes the positive influence?

   (b) Which posts have a negative influence?

      i. Why? What about the content evokes the negative influence?

3. **Final Question:** What do you think is the best thing about social media? What
   makes it valuable?

Appendix B

Appendix - Usability Evaluation

B.1   Participant Information Sheet

Consent Form

Demographic Questionnaire

Participant Information Sheet

Project title: Counteracting the Problematic Impact of the Instagram Body
Principal Investigator: Maria Wolters
Researcher: Svenja Vieker

This study was certified according to the Informatics Research Ethics Process, RT number 5783. Please take time to read the following information carefully. If you wish to receive a copy of this form for your records, please ask the researcher.

* Erforderlich

Who are the researchers?

Svenja Vieker (MSc Design Informatics), Maria Wolters (Supervisor)

What is the purpose of the study?

The goal of this study is to evaluate a social media prototype, which has been developed to counteract the negative impact social media applications have on body image. The participant will be asked to interact with the prototype and afterwards give feedback.

Why have I been asked to take part?

This study focuses on active users of social media platforms, who frequently consume different types of posted content.

Do I have to take part?

No – participation in this study is entirely up to you. You can withdraw from the study at any time, without giving a reason. After this point, personal data will be deleted and anonymised data will be combined such that it is impossible to remove individual information from the analysis. Your rights will not be affected. If you wish to withdraw, contact the PI. We will keep copies of your original consent, and of your withdrawal request.

What will happen if I decide to take part?

After filling in a short demographic questionnaire and answering a few open questions regarding your body image you will be asked to interact with the prototype by doing three small tasks. While interacting with the application you will be asked to verbalize your thoughts using the think aloud method. Afterwards I will ask you to to give general feedback about your impression of the prototype. The study will be held on Teams and will be recorded and transcribed afterwards. Furthermore, during the interaction I will ask you to share your screen, so that the navigation through the prototype can be analysed.

Are there any risks associated with taking part?

There are no risks associated with taking part. However, reflecting on your own body image can be distressing for some people. We will take care to minimize distress, and you are in complete control of what you tell me throughout the interview.

Are there any benefits associated with taking part?

No.

What will happen to the results of this study?

The results of this study may be summarised in published articles, reports and presentations. Quotes or key findings will be anonymized: We will remove any information that could, in our assessment, allow anyone to identify you. With your consent, information can also be used for future research. Your data may be archived for a maximum of four years. All potentially identifiable data will be deleted within this timeframe if it has not already been deleted as part of anonymization.

Data protection and confidentiality.

Your data will be processed in accordance with Data Protection Law. All information collected about you will be kept strictly confidential. Your data will be referred to by a unique participant number rather than by name. Your data will only be viewed by the researcher/research team (Svenja Vieker, Maria Wolters,1-2 co-analysts from the 2020/21 MSc in Design Informatics cohort).

All electronic data will be stored on a password-protected encrypted computer, on the School of Informatics' secure file servers, or on the University's secure encrypted cloud storage services (DataShare, ownCloud, or Sharepoint) and all paper records will be stored in a locked filing cabinet in the PI's office. Your consent information will be kept separately from your responses in order to minimise risk.

What are my data protection rights?

The University of Edinburgh is a Data Controller for the information you provide You have the right to access information held about you. Your right of access can be exercised in accordance with the Data Protection Law. You also have other rights including rights of correction, erasure and objection. For more details, including the right to lodge a complaint with the Information Commissioner's Office, please visit www.ico.org.uk (http://www.ico.org.uk). Questions, comments and requests about your personal data can also be sent to the University Data Protection Officer at dpo@ed.ac.uk (mailto:dpo@ed.ac.uk).

Who can I contact?

If you have any further questions about the study, please contact the lead researcher, Svenja Vieker s.j.vieker@sms.ed.ac.uk.
If you wish to make a complaint about the study, please contact inf-ethics@inf.ed.ac.uk (mailto:inf-ethics@inf.ed.ac.uk). When you contact us, please provide the study title and detail the nature of your complaint.

Updated information.

If the research project changes in any way, an updated Participant Information Sheet will be made available on http://web.inf.ed.ac.uk/infweb/research/study-updates (http://web.inf.ed.ac.uk/infweb/research/study-updates).

Alternative formats.

To request this document in an alternative format, such as large print or on coloured paper, please contact: Svenja Vieker, s.j.vieker@sms.ed.ac.uk.

General information.

For general information about how we use your data, go to: edin.ac/privacy-research (http://edin.ac/privacy-research).

Consent.

By proceeding with the study, I agree to all of the following statements:
- I have read and understood the above information.
- I understand that my participation is voluntary, and I can withdraw at any time.
- I consent to my anonymised data being used in academic publications and presentations.
- I allow my data to be used in future ethically approved research.

Please tick yes or no for each of these statements.

1. I agree to being audio recorded. *

   ○ Yes

   ○ No

2. I agree to being video recorded. *

   ○ Yes

   ○ No

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

   ○ Yes

   ○ No

4. I agree to take part in this study. *

   ○ Yes

   ○ No

5. Name of person giving consent: *

   [   ]

Demographic Questionnaire - Evaluation Study

* Erforderlich

1. Which category below includes your age? *

   ◯ 18-24

   ◯ 25-29

   ◯ 30-34

2. Which country are you from? *

   [   ]

3. What is your gender? *

   ◯ Woman

   ◯ Man

   ◯ Non-binary

   ◯ Prefer not to say

4. Please select the ethnic group with which you identify: *

○ White

○ Black

○ Asian

○ Mixed

○ Other ethnic group

○ Prefer not to say

5. Please select which of the following social media applications you use and how often you interact with them: *

	Never	Monthly	Weekly	Once a day	Several times a day	Once an hour	Several times an hour
Instagram	○	○	○	○	○	○	○
Facebook	○	○	○	○	○	○	○
TikTok	○	○	○	○	○	○	○
Youtube	○	○	○	○	○	○	○
WeChat	○	○	○	○	○	○	○
Snapchat	○	○	○	○	○	○	○
Twitter	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○

6. If you selected "other", please specify:

8/26/2021

Microsoft Forms

Appendix C

Appendix - Image Sources: Prototype Design

Creative Common

- ''Miami Fitness TV-46'' by MiamiFitnessTV is licensed with CC BY-NC 2.0.
  url: https://search.creativecommons.org/photos/5e74784b-6dcd-4b39-b1db-ef2ac5fdcdd7

Pexels

- Besides the image stated above, all images for the prototype were taken from Pexels
  License: Free for non-commercial use
  url: https://www.pexels.com

Flaticon

- All icons used in the prototype design were taken from Flaticon
  License: Free for non-commercial use
  url: https://www.flaticon.com