Design patterns in Internet-Based Intervention Programs for various types of mental health issues

Master thesis in Information Science

Author:

Kari Raudstein

Advisor:

Yavuz Inal

June 2020

Acknowledgements

Abstract

Few studies have examined the role of visual design in Internet-Based Interventions (IBI). However, research from the field of Human-Computer Interaction (HCI) shows that visual design may improve user understanding and ease the cognitive load. This study seeks to identify and describe how IBIs in the mental health domain are designed in terms of visual dimensions. The study investigates both the design process as well as its resulting product. A content analysis of four IBI programs was conducted. The content analysis helped generate questions preceding interviews with healthcare experts and researchers. The results show that most of the interviewed experts are not directly involved in the design-decision on a structural and visual level. Thus, their knowledge of content and insights into how to best design IBIs for various user-groups might not be fully utilized. Moreover, collaboration among the interdisciplinary fields proved challenging, as difference in research interest and background varied. Nevertheless, experts' knowledge and experiences provided insightful descriptions of how IBIs can be designed. The findings of this study might aid researchers and domain experts in designing aesthetically pleasing interfaces that can improve comprehension and usability.

Table of Contents

List of Figures

List of Tables

Chapter 1

Introduction

Research from the Human-Computer Interaction (HCI) domain has recognized that visual design can influence the use of technology, and that user evaluations may impact the perceived usability of a given product (McCarthy & Wright, 2004). Mental health programs such as Internet-based interventions (IBI) have become increasingly popular due to the positive results from clinical research. Programs tailored towards various types of mental health issues are being thoroughly investigated. Research on IBIs mainly focus on how these programs should be developed in terms of the design process as a team, and what content to provide for particular user-groups. In addition, research showed a broader focus on the practical implementations of content in IBIs and less focus on visual design (Yardley et al, 2016; Kuosomanen et al, 2010).

To facilitate a good user experience, one should consider both pragmatic and hedonic qualities. These terms correlate to the practical implementations and how these implementations may evoke certain feelings when interacting with a service. The hedonic quality may be considered particularly important within this domain, as user-groups may feel the need to be competent and autonomous in their treatment (Yardley et al, 2016). In visual design research, a set of principles are identified to influence user evaluations. These principles are prototypicality, web aesthetics, and visual means (Lazard & Mackert, 2015). Prototypicality refers to users' mental models, and that the placement of elements in an interface is vital to maintain users' attention (Leder et al, 2004). Web aesthetics represents aspects known to influence user experience and may improve users' understanding of the information (Lavie & Tractinsky, 2004). Visual means involve graphical content, such as images and illustrations, as well as audio and video. Effective web design may be achieved if these principles are appropriately utilized. Besides, if IBIs are designed to be of good quality, reliability, and usability, the use of technologies as part of clinical practice may attract more users (Kuosmanen et al, 2010). At the same time, it is crucial to meet users on platforms they

already know, where the technology should make the treatment possible, rather than constituting a barrier.

This study aims to identify and describe design patterns in four different IBI programs to examine whether the designs align with evidence-based research guidelines supporting good user experience and users' evaluations. Using a qualitative approach to map the content of four IBI cases, more knowledge can be drawn from how IBIs may be designed. The theoretical framework was based on the Visual Aesthetics of Websites Inventory (VisAWI) (Lavie & Tractinsky, 2004; Moshagen & Tielsch, 2010) and identified dimensions of visual design (Lazard et al, 2017; Lazard & Mackert, 2015). The content analysis served as a subsidy for shaping the questions that were asked during interviews with experts responsible for the respective cases. From this, a supplementary content analysis was accomplished, providing a more grounded knowledge of experts way of working, challenges, and design rationale.

This thesis grants the following contributions to the mental health domain and visual design research; it identifies and maps design patterns in IBIs, presents what experts find important when designing IBIs, and strengthens the knowledge of current research of visual design in IBI programs.

1.1 Research Questions

This study examined how IBIs are designed and what influence experts' design process in terms of visual design. The research questions emerged through an iterative process while getting to know the research area, resulting in the following research questions:

RQ1: How were visual dimensions presented in the Internet-Based Interventions?

RQ2: How did the experts describe their choice of methods, experienced challenges, improvements to the programs, and role in the process when developing Internet-Based Interventions?

RQ3: What influenced the experts during the design process of Internet-Based Interventions in terms of visual dimensions?

The first research question correlates to the results from the content analysis of the IBI cases. The second and third research questions correlate to the data from the interviews with the experts.

1.2 Structure of the Thesis

Chapter 1: Introduces the main topics of the thesis, the domain, motivation for conducting the research, accompanied by research questions.

Chapter 2: Presents existing literature from HCI and the mental health domain concerning the topics introduced.

Chapter 3: Presents the methods used throughout the process; procedures and frameworks of content analysis, interviews, and IBI cases.

Chapter 4: Presents the results from the four cases analyzed, interview excerpts, and analysis.

Chapter 5: Discusses the methods and results concerning the research questions and previous research.

Chapter 6: Concludes the findings in the study.

Chapter 2

Background

This chapter presents the scope of the thesis and how user experience and visual design may influence user perceptions of IBIs.

2.1 Technology-use in mental healthcare

Traditional patient consultations have had a long practice of face-to-face sessions. Within the health and mental health domain, the physical presence is of importance. Physical presence can help establish support and trust for the patient, where the latter have been emphasized as essential aspects when designing IBIs (Yardley et al, 2016). Technology enhancement in recent years has made the use of technology possible when treating and supporting various mental health issues. IBI programs have been widely studied in the last decade through clinical and evidence-based research (Andersson, 2018). Online treatment and support programs may save treatment time for clinicians, reduce waiting-lists, cut travel time, and allow for privacy and consistency in the support (Andersson, 2018; Proudfoot et al., 2011). Moreover, IBI programs can help those who, for various reasons, cannot access traditional treatment forms, for instance, those coping with social anxiety, fear of stigma, and physical health-related issues, or other complex reasons such as pandemics.

The first forms of IBI programs mainly consisted of a variation of bibliotherapy accompanied by e-mail support (Andersson, 2018). The text-based interventions originated due to slow Internet access, where content such as graphics and videos were not achievable to implement at the time. Better Internet access has therefore made possible rich visual content in websites. Even though the foundations have changed, the text-based aspect still prevails (Andersson, 2018). Newer technologies like mobile phones or Virtual Reality (VR) have made a more readily available access to online treatments. VR and more game-like additions to treatment adds novel means to how treatment and support can be delivered in more immersive ways.

The more traditional way of delivering internet-based treatment or support is through an online portal where the user can securely log in and carry out the treatment individually with the support of asynchronous messaging or telephone dialogue. In VR treatment or cybertherapy, the user may meet with the therapist in an online environment. This type of treatment can be advantageous if the user is not able to leave home for various reasons, and it provides the user with an illusion of being in the VR environment interacting with avatars or objects. In exposure therapy, VR can be used to simulate a feared situation (Freedman et al, 2015), providing a safe but still exposed environment for the users to work with their fear.

While there are numerous ways to deliver treatment in an online setting, this study focused on the traditional Internet-based environment. Through a literature search in the healthcare domain, it was found that research on IBIs mostly focus on what content to provide to best meet the intended user groups and their specific needs (Yardley et al, 2015). There is also a need to supporting users' abilities to obtain the information, process it, and understand how to use it (Lazard et al, 2015). Facilitating user experience is particularly important to make sure there is a seamless journey throughout the treatment process. Given the treatment programs are to be designed for user groups with various needs, the experience must be appropriate for the heterogeneity among and within the groups. A theory-driven research of aspects from user experience can be beneficial for online health services such as IBIs. This may improve the experience, resulting in feelings of achievement when pursuing goals as part of the treatment. The ability to cognitively process and comprehend the information can be more easily achieved by considering the role of visual design (Lazard & Mackert, 2015).

A study on how visual complexity affects user evaluations in health websites found that websites with visual information according to design principles were rated as more appealing without impacting perceived usability (Lazard & King, 2020). Another study suggested that appearance-related perceptions of IBI programs are important to maintain engagement throughout the treatment (Essery et al, 2017). Furthermore, a study on visual preferences for online health education towards tobacco identified two subjects; aesthetics and functionality. The first subject constituted layout, font and text presentation, color and visual tone, imagery, and information visualization. The second aspect looked at navigation, desired interactivity,

and responsive design (Lazard et al., 2019). These aspects will be explained in detail in section 2.4.

2.2 User Experience

User experience is widely discussed in HCI research, and there are numerous frameworks and guidelines on how to design for an optimal experience. The ISO defines user experience as "user's perceptions and responses that result from the use and/or anticipated use of a system, product or service" (ISO 9241-210:2019) Here are both users' perceptions and responses valuable aspects to keep in mind when designing for user experience. From a philosophical perspective, Heidegger introduced an explanation of how technology is experienced, described as ready-to-hand (McCarthy & Wright, 2004). The description is explained with the pragmatic example of the hammer. One immediately knows what to do with the hammer; therefore, the hammer is experienced as ready-to-hand. This concept can be applied to digital products in that one may engage with a digital product effectively, without having to think about the product itself. This is the same for products and concepts familiar to us, and this notion may be achieved by designing for familiarity, or prototypicality, by placing recognizable concepts and elements in known places. A more in-depth explanation is presented in the upcoming section regarding prototypicality.

User experience from a more recent perspective can be said to be "a momentary, primarily evaluative feeling (good-bad) while interacting with a product or service" (Hassenzahl, 2008, p.2). Hassenzahl (2008) explains further that the definition should be two-fold and adds that what constitutes good user experience is the consequence of fulfilling human needs when interacting with an artifact. This interaction may result in a positive subjective experience, where the pragmatic qualities can be a facilitator for the fulfillment of human needs. Moreover, the pragmatic qualities refer to a product's affordances or the perceived abilities a product holds. "Do-goals," or pragmatic goals, such as making a call or finding a book in an online store, focus on the product and its potential tasks. On the other hand, "be-goals," or hedonic qualities focus more on the self and is a driver of experience. Be-goals relate to feelings such as being "autonomous, competent, related to other" (Hassenzahl, 2008), which are all basic human needs and arguably important in IBI programs. Hedonic qualities can, therefore, be seen in conjunction with what aesthetics and visual design may achieve.

Empirical studies of the aesthetics have found that it plays an important role when shaping users' attitudes towards a product or service (Lazard & Mackert, 2015). Some studies suggest that what looks beautiful is more usable (Katz et al, 2000; Tuch et al, 2012). However, this notion has been extensively discussed; some prove the relationship between aesthetics and usability, while others have found contradictory results (Hassenzahl, 2009; Van Shaick & Ling, 2009). Facilitation of aesthetic experiences revolve around the visual impression and how it makes users feel. It may therefore be advantageous to consider when designing IBI interfaces because of its hedonic properties.

2.3 Aesthetic experience

Experience alone, as well as the *aesthetic* experience, has had a long tradition as empirical disciplines. However, aesthetic experience as a field has traditionally been concerned with visual perception that focuses on visual properties of art. This has resulted in an abundant knowledge of visual properties that may affect aesthetic preferences. For example, research has shown that properties such as contrast, visual complexity, color, symmetry, and grouping and order, contribute to aesthetic preferences (Chatterjee & Vartanian, 2014; Leder et al., 2004). Contrasts, for example, are processed early when a stimulus is perceived, where small adjustments in contrast can affect aesthetic preferences. Clearer images are, for instance, more often preferred than less clear images. Visual complexity or pattern complexity involves the amount of elements or features in a perceived stimulus. It has often been found that the visual complexity level is preferred when at a medium level, whereas a high level of visual complexity may overstimulate the receiver. Color is processed early when presented with visual stimuli, and an additional variable affecting aesthetic preferences. Besides, symmetry has been recognized to be preferred over non-symmetry (Leder et al., 2004).

Based on these properties, evidence suggests there are beneficial effects of visual aesthetics in the context of learning environments that increase the ease and effectiveness of learning. Other benefits are enhancement in information transfer, as well as increase in motivation (Moshagen & Tielsch, 2010). Making use of such properties in IBI interfaces can therefore

influence users' evaluations of the treatment programs, which may in turn enhance user performance.

2.4 Dimensions of visual design

This section presents identified dimensions that have been shown to influence and ease users' cognitive processing in obtaining information in websites. The identified dimensions are prototypicality, web aesthetics, images and illustrations, and video and audio.

2.4.1 Prototypicality

Prototypicality can be defined as the extent to which an object represents a class of objects and is created through experience (Leder et al, 2004). In addition, prototypicality is referred to as mental models and relates to users' selective attention. The placement of elements in an interface is key to maintain users' attention, where placement in expected locations is significant for users' evaluations to make the cognitive processing easier. If an element is not in line with a user's expectation, user-errors are more likely to occur (Lazard & Mackert, 2015; Roth et al, 2009). Since users tend to form internal mental models of objects interacted with, it has been found that users additionally make distinct mental models for different types of web pages. Studies of distinct models have established that the elements constituting a website's main area is always expected to be located in the center of the page. Furthermore, the logo was expected to extend across the top width of the page in all web categories that were tested. Other elements, such as search fields and login options, were consistently placed in the upper right corner (Roth et al, 2009).

Accounting for users' mental models can ease interaction and understanding of the information, resulting in improved usability. Moreover, novelty has been discovered to influence aesthetic preferences where users preferred novel designs as long as it did not affect prototypicality (Tuch et al, 2012). Sticking to conventions and familiar concepts is therefore beneficial to support users' cognitive processes.

2.4.2 Web Aesthetics in interfaces

Web aesthetics have been recognized as an influential aspect of user experience and may improve users' processing and understanding of the presented content (Lavie & Tractinsky, 2004; Lazard & Mackert, 2015). Interfaces varying in color, form, and value invite users to make and interpret the meaning of the information provided (Cyr et al, 2006). Web aesthetics can be divided into two dimensions; the classic aesthetics and the expressive aesthetics, initially identified by Lavie and Tractinsky (2004). Classic aesthetics relates to the orderliness of the design, involving aspects such as "aesthetic, pleasant, symmetric, clear, and clean" (Moshagen & Tielsch, 2010, p.5). These are also somewhat in line with properties from the aesthetic experience discipline from art (Leder et al, 2004). Expressive aesthetics refers to the designers' ability to promote creativity and originality, and involves the aspects "creative, fascinating, original, sophisticated, and uses special effects" (Moshagen & Tielsch, 2010, p.5).

These dimensions were part of constructing the VisAWI framework, resulting in four facets of objective properties in websites (Moshagen & Tielsch, 2010). The first facet, called simplicity, involves aspects related to unity, homogeneity, clarity, orderliness, and balance. This facet revolves around the notion that simple layouts can be processed easier and, in turn, aesthetically appreciated. The second facet, diversity, corresponds to the complexity component, earlier described as visual complexity, where diversity also involves dynamics, novelty, and creativity. The third facet concerns colorfulness, where there is a joint agreement on the effect colors have on the aesthetic appraisal. The final facet, called craftmanship, is the unifying aspect of all design dimensions. Craftmanship means that in order to achieve a harmonious design, website designers need to implement ideas with care and skill. Craftmanship also encompasses the aspect of being based on modern technologies (Moshagen & Tielsch, 2010), to avoid obsoletion in websites. By considering these four facets when designing websites, the websites may be experienced as more usable and aesthetically pleasing.

2.4.3 Images and illustrations

Text-based IBI programs require users to stay focused and follow longer segments of text. Images have been suggested to carry unique semantic qualities, which may lead to increased

communication efficiency due to the creation of cognitive connections and analogies. In addition, images may preserve comparisons, associations, and emotions, resulting in more favorably received and memorable information (King, 2015). Another aspect of visual information are the technical characteristics of an image. These characteristics can be useful when in need to classify the content in images for research purposes, for instance, content analyses. The technical characteristics may involve what content is present in the images, the location, and the stylistic features.

Image content and image composition are structural features that classify images in a theoretical manner. Image content refers to the attentional aspect within an image frame, where the classification of content might be people, objects, or data. Image composition refers to the classification of images being illustrated or photographic in nature (King, 2015). Social presence is an aspect of visual persuasion that lets users feel the presence of others in the online environment. Social presence may increase the possibility of a website being perceived as warm, personal, or create a sense of having human contact. This can be accomplished using social text content, personal greetings, human images, and human audio or video content (Cyr et al, 2009). Human images, for example, may express ideas that go beyond what textual content can provide. If the images include faces with direct eye gazes, it has been shown to be most engaging. When the visual means are used meaningfully, it can lead to trust in users (Lazard et al, 2017). Research shows that trust is particularly important in treatment (Yardley et al, 2016), and therefore just as important in IBIs due to the potential concerns users might have regarding their privacy online.

In addition to the technical characteristics, images carry different meanings and information. Some identified categories of information purposes in images are; demonstrative or modeling, explanatory or describing, statistical or numerical, and comparison or juxtaposition (King, 2015). The demonstrative or modeling purpose refers to people performing a type of action in the image. The explanatory or describing purpose, show models that can be part of the instructional content. The statistical or numerical purpose often presents tables or graphs of quantitative information. The comparison or juxtaposition purpose refers to the affordances of an image, resulting in comparisons or analogies (King, 2015). These categories can be used in frameworks to classify the information encompassed in images.

2.4.4 Video and audio

Videos have the same semantic qualities as images but holds more information due to the dynamic properties in a video such as moving frames, ambient sound, or music. In addition, videos convey various meanings in the same way images do, whether it is connected to demonstrating content, describing content, showing statistical or numerical content, or for comparison purposes. Videos often contain more of these categories than images since videos combine many elements simultaneously. As text-based content often require more cognitive processing, video and audio can be used to decrease some of the cognitive strain (Andersson, 2018). For some it can be challenging to retain the attention while reading the text. Therefore, video or audio content could be used standalone or as a substitute to communicate information more effectively.

2.5 Chapter summary

While there are numerous ways to deliver treatment online, this study focused on the traditional internet-based environment. Clinical and educational content in the IBI programs are necessities. Nevertheless, one should aim to support users in processing and to obtain the information efficiently, preventing users from making errors. Using concepts from user experience and visual design, more effective message delivery of IBI treatment can be generated.

Chapter 3

Method

This chapter presents the frameworks and methods used throughout the process to be able to answer the research questions. This study consists of a content analysis of four IBI programs, interviews with the creators of the programs, and lastly, an additional content analysis of the interview data.

3.1 Content Analysis of the cases

To identify what kind of mechanisms, elements, and other forms of content that are used when designing IBIs, there was a need to classify these variables to be able to analyze and explore them further. This was done by carrying out a content analysis, which is defined as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (Hsieh & Shannon, 2005, p.1278). Content analysis has been frequently used by health researchers, and particularly in terms of qualitative analyses of text data. Text data involves more than merely text, and content analysis can be performed on verbal, print, or electronic data. Data can be withdrawn from surveys, various types of interviews, or printed media such as articles or books. Because this research was done qualitatively, it was reasonable to conduct a qualitative content analysis, which in this case goes beyond counting words or classifying text into statistical representations. The main goal of a content analysis is to grant knowledge and understanding of the events to be studied (Hsieh & Shannon, 2005). In this study, the main goal was to gain deeper insights and understanding regarding design patterns and the use of design principles in IBIs.

There are several ways to perform a content analysis. In terms of qualitative content analysis, three approaches have been described; conventional, summative, and directed (Hsieh &

Shannon, 2005). A conventional content analysis is usually used if there exists little research on the events to be studied. The summative approach is generally used if the goal is to understand the context and use of words or content or identifying and quantifying words or content in the text data. The directed content analysis can be used if there is prior research on the events to be explored. This approach can aim to replicate previous research findings in a different setting, or to expand the application of existing theory. The most suitable approach in this research is the directed approach because of the abundant knowledge of user experience and implications for visual design. Nevertheless, there has been limited research on the use of visual design in IBI programs, which is the main aim of this study. The directed approach was chosen to validate the research, where the frameworks could provide named variables and categories to establish existence of and relationships between the categories (Hsieh & Shannon, 2005).

3.1.1 Procedure

One approach to a qualitative content analysis may include seven typical steps. According to Hsieh and Shannon's (2005) contribution to qualitative content analysis, these steps involve formulating the research questions, choosing which samples to analyze, outlining the coding process as well as coder training, conducting the coding process, determine the trustworthiness, and analyzing the results. Preliminary to the content analysis, a literature search was done by the author. There was a wide variety of research on IBI programs, where most concerned general usability guidelines and principles regarding visual design. Three articles focusing on visual design dimensions on treatment and online health information were used as a guide (King, 2015; Lazard et al, 2017; Lazard & Mackert, 2015). Additional frameworks from HCI-research on web aesthetics and visual design were combined (Kim & Moon, 1998; Ling & Van Schaik, 2002; Moshagen & Tielsch, 2010; Roth et al, 2010), forming the coding outline of the content analysis.

The author was given access to four IBI programs concerned with treatment and information support for various mental health issues. The IBI programs were carefully examined and described in accordance with the VisAWI facets of visual aesthetics in websites (Moshagen & Tielsch, 2010), as well as theoretical categories concerning visual design presented in the background chapter (King, 2015; Lazard et al, 2017; Lazard & Mackert, 2015). The

investigation included content related themes such as the use of text, images and illustrations, as well as audio and video. It also included interface-related content such as layout, color design, interactions, and navigation patterns.

3.1.2 Coding outline

Prior to the coding process, the coding outline was established through an iterative process of mapping out the framework's dimensions. The analysis was done in a qualitative manner, where the focus was to describe the information, rather than to quantify the information. The first dimension concerned prototypicality, and the objective was to look for whether the IBIs met the same design expectancies that people have of websites. Properties following the prototypicality dimension are listed in Table 1. In the second dimension, the objective was to describe the aesthetic properties of the IBIs using the four main aspects from the VisAWI; simplicity, diversity, colorfulness, and craftmanship (see Chapter 2). The third dimension included properties of images and illustrations with corresponding sub-properties from prior research on content analysis of health information and visual design. The fourth dimension involved audio and video content. The properties were borrowed from the third dimension, where the objective in both cases was to describe and identify the use of images, audio, and video content.

DIMENSIONS	PROPERTIES	AUTHORS
Prototypicality	Location of: Back to homepage (navigation) Logo Main area Navigation area Login / signin Buttons / links Text	(Roth et al., 2010) (Ling & Van Schaik, 2002)
Web aesthetics	Four facets: Simplicity: How the interface is structured reflecting aspects of a user's perception and processing of layout, clarity, orderliness, homogeneity, grouping and balance. Diversity: How the interface is varied, reflecting visual richness, dynamics, variety, creativity and novelty. Colorfulness: Describe the main color(s) that mostly define the websites' look and feel. Craftmanship: How the concept of the program looks, reflecting whether the site was designed with skill and by the use of modern technology.	(Moshagen & Tielsch, 2010) Elaborate details regarding the colorful facet: (Kim & Moon, 1998; Lazard et al., 2017)
Images & illustrations	Image composition: Photographic Illustrated Image composition: People / objects / data People in images: High-human condition Medium-human condition No-human condition Emotional tone in human images: Joy / happiness / sadness / surprise / fear / disgust / anger / contentment Objects in images: Medical / scientific objects Food / drink objects Forest / tree / plant objects Household objects Information conveyed in images: Demonstrative / modelling purpose Explanatory / describing purpose Statistical / numerical purpose Comparison / juxtaposition purpose Other	(King, 2015) (Lazard et al., 2017) (Lazard et al., 2017) (King, 2015) (King, 2015) Own identified categories (Lazard et al., 2017)
Video & audio	Video composition: Illustrated Real / photographic Video composition: People / objects / data Video / audio information conveyed: Demonstrative / modelling purpose Explanatory / describing purpose Statistical / numerical purpose Comparison / juxtaposition purpose Other	

Table 1: Coding outline of content analysis

All coding was done on a 13" Windows laptop. The process took on one intervention case at the time, mapping elements in the coding outline to the content in each case. The overarching goal of this content analysis was to understand what visual structures, elements, visual means, and colors were in use. Furthermore, the frequency of elements that are often seen in content analyses of a more quantified nature was not taken into account. The identified results from the content analysis helped shape the questions that were formed preceding the interviews.

3.2 Interview

Interview as a research method can be considered a professional conversation, or as a method "where knowledge is constructed in the interaction between the interviewer and the interviewee" (Kvale & Brinkmann, 2009, p.2). A qualitative interview aims at covering qualitative knowledge as opposed to quantified knowledge. Further, it seeks to find detailed descriptions of differences and variations in a phenomenon under study. A qualitative interview also covers specific situations and happenings, rather than general opinions. At the same time, the qualitative interview is theme focused, and not entirely structured (Kvale & Brinkmann, 2009). An interview can take several forms, and a semi-structured approach is often defined as the qualitative interview. Semi-structured interviews allow for follow-ups on questions and let the interviewee speak more freely than in structured interviews. Compared to unstructured interviews, semi-structured interviews let the interviewer focus on specific themes throughout the interview, such that important research-related aspects are covered.

The semi-structured interview was a suitable option in this study where specific aspects of the IBI interfaces had already been identified, with the goal of exploring them further. Moreover, the interview as a method was done to gain deeper insights into experts' decision-making processes when designing IBI programs. Kvale & Brinkmann's (2018) seven-step approach was used as a guide. This approach involves thematizing, design, interview, transcription, analysis, verification, and reporting.

3.2.1 Interview guide

The dimensions identified through the content analysis framework were used as a backbone to ensure that the visual dimensions of the IBIs were covered. The questions were formed through an iterative process, revealing another potentially essential aspect to consider in the interviews, namely the design process in itself. The rationale behind this was to get a clearer picture of clinicians' way of working, their decision-process, and what was important content from their perspective. The second part of the interview guide corresponded to the prototypicality dimension and covered questions of the rationale behind the placement of logo, main area, navigation, login, and buttons. The third part was related to the web aesthetic dimension, covering questions of simplicity, diversity, craftmanship, and colorfulness. The fourth part involved questions related to images and illustrations, and the fifth part took on video and audio content. The final part asked whether the program was intended for use across platforms. The complete interview guide consisted of 33 questions and can be seen in Appendix A. Since the IBIs in this study varied in layout and design, the questions were somewhat altered prior to the interview sessions to fit each case.

3.2.2 Interview process

Five participants were recruited by convenience sampling. The sample consisted of both clinicians and researchers, who all participated profoundly in the IBI programs examined in this study. All participants approved the consent of sound recording and anonymous extracts from the gathered data, according to the standard application from Norwegian Centre for Research Data (NSD). The documentations were stored by paper, separate from the interview data. The consent form can be found in Appendix B. The interviews lasted from 40 minutes to an hour, providing valuable information about how IBIs are designed and the underlying reasons for the design choices made throughout the development process. The interviews followed a semi-structured approach to let the interviewees talk more freely and to get their views on important considerations to make when designing IBIs. During the interviews, the author showed images and illustrations, interface screenshots and snippets of elements from the IBI programs, to support the discussed subjects. The interviews were transcribed manually using the Transcribe software from Wreally to get familiar with the data, as suggested by Kvale and Brinkmann (2018).

3.3 Content analysis of interview data

In a directed content analysis, two strategies that can be used to code the interview data. The first approach can be used if the goal is to categorize specific instances of the phenomenon. The second approach can be used if the codes are predetermined (Hsieh & Shannon, 2005). As the codes were established in the first content analysis, the second strategy applies to this research.

3.3.1 Coding outline

The coding outline was based on the predetermined codes retrieved from the framework in the content analysis of the IBI cases. Adhering to the analytic procedure or coding scheme may increase the trustworthiness or validity of the study, as suggested by Hsieh and Shannon (2005). However, the codes were left at the general level, leaving out the subcategories from the framework. The goal of this analysis was to gain more knowledge about the experts' perspectives, rather than identifying web content all over again. The codes used were design process, prototypicality, web aesthetics, images and illustrations, and audio and video. The coding was done in all four samples and mapped to the questions from the semi-structured interview.

3.3.2 Process of coding and analyzing interview data

The content analysis sample was withdrawn from the four interview sessions. Each session was recorded and transcribed, giving a total of 3 hours and 35 minutes of recorded time. The data were based on mappings towards the identified dimensions from the content analysis of the four IBI cases. As suggested by Hsieh and Shannon (2005), an overarching goal that aids the analysis should be formed. The goal was described as: "What are clinicians' considerations when designing IBIs?" Since the coding outline was predetermined, the coding process could start immediately (Hsieh & Shannon, 2005).

Nevertheless, the coding process followed an iterative approach, where the author started by reading and rereading the data. This approach was utilized to get more familiar with the content, before forming the data into the established codes. Moreover, it was done to look for other potential codes throughout the data. All the data was coded in Nvivo12 and anonymized

according to the NSD consent of approval. The data was analyzed in Norwegian, whereas quotes were translated into English. The original quotes can be found in Appendix C. Noting that interviewees' experiences are complex and can carry different meanings (Hsieh & Shannon, 2005), the analysis was not seen in the light of other circumstances than what was present in the data.

The first code comprised aspects from the design process, the influence of methods, level of knowledge in terms of guidelines and standards from user experience and visual design, and potential challenges and difficulties when designing IBIs. The second code involved the prototypicality aspect, concerning knowledge of interaction and placement principles to support users' mental models. The third code involved web aesthetics regarding influence of structure and elements in the interface, and use of colors. The fourth code involved the use of images, purpose, content, and representations, while the fifth part involved audio and video and the elements' purpose, content, usage, and meaning.

3.4 IBI programs

This section provides an overview of the contributing IBI programs that were analyzed by the first content analysis framework, and later discussed in the interviews. The four programs are part of the larger research project INTROMAT. The project aims to bridge the gap between the burden of disease and unmet needs by developing and offering innovative psychological treatment online to improve public mental health (INTROMAT, n.d.)

3.4.1 Gynea

Gynea is a psychosocial support program for women recovering from gynecological cancer. It was realized that reduced follow-up appointments after ended treatment decreased physical contact with health personnel, and that coping with the disease and the bodily changes after the cancer treatment led to challenges. Psychosocial, educational, and counseling interventions have been shown to affect women recovering from gynecological cancer both in coping and improving quality of life. Gynea contains functionality and components such as information modules, mindfulness exercises, self-assessments, as well as self-management support (INTROMAT, n.d.), see Figure 1.
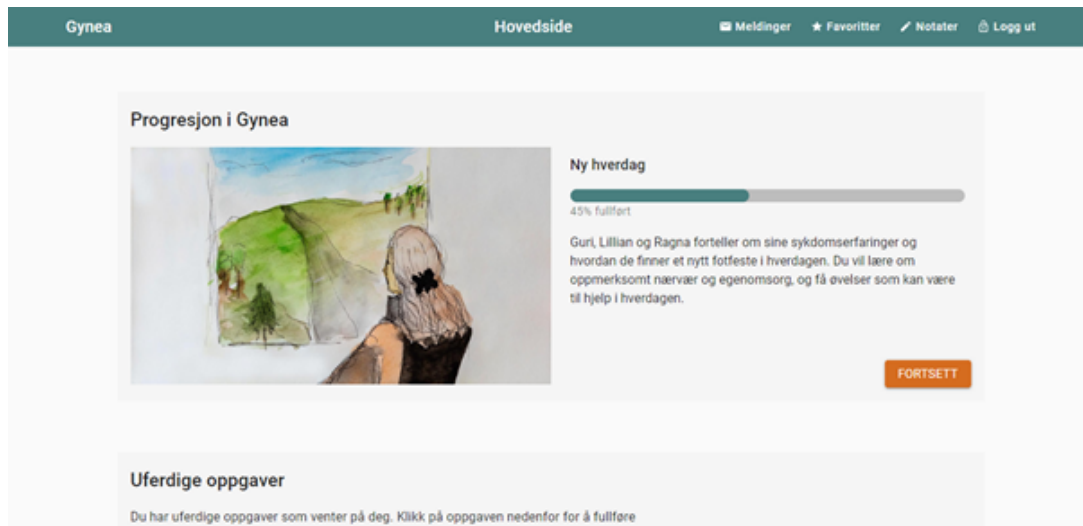
Figure 1: Landing page of the Gynea psychosocial support program.

3.4.2 RestDep

RestDep is a support and intervention program developed for people coping with residual symptoms post-depression. Residual cognitive deficit after depression can be troublesome, and few get the help and support they need. The program is module-based, consisting of information and various types of exercises where the participants will learn how to master the cognitive deficits. During the IBI treatment, each participant received a caretaker who supports and aids the participants through the work progression (RestDep, 2019), see Figure 2.

Figure 2: RestDep intervention program for coping with residual deficit symptoms.

3.4.3 Min ADHD

Min ADHD is a training program that takes on everyday challenges in adults with ADHD. Cognitive and emotional regulation problems tend to give rise to negative consequences for a large group of adults with ADHD. Still, they are given few treatment options by official health services. Medication may reduce symptoms and help the adults in specific situations. However, there is an increasing demand for non-pharmacological treatment options among adults with ADHD. The program holds components and functionality such as videos, and images, as well as information and exercises to strengthen the participants' emotional and cognitive challenges (INTROMAT, 2018a), see Figure 3.
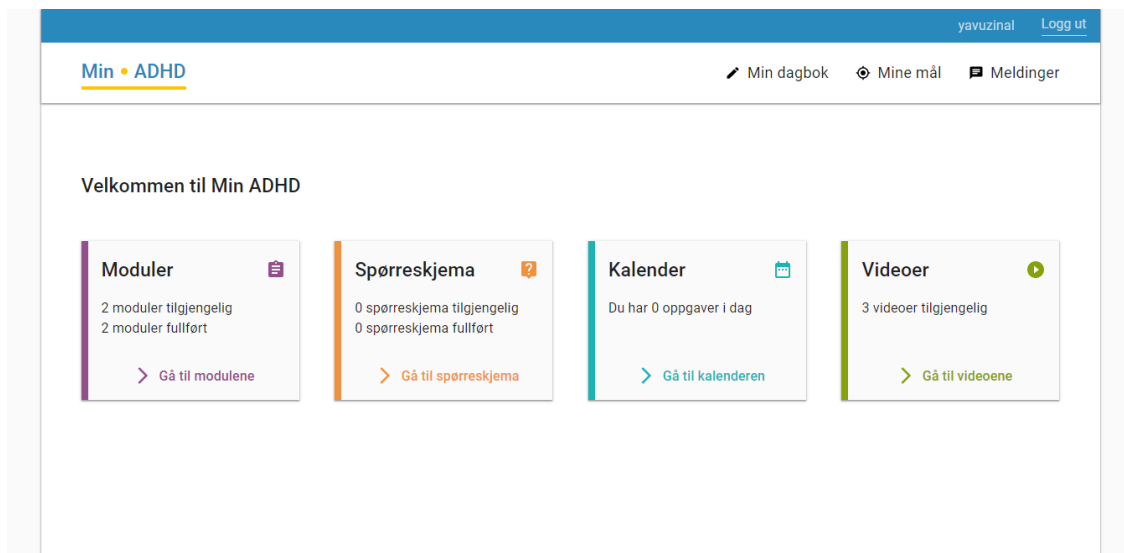
Figure 3: Min ADHD, program aimed at mastering everyday challenges for people with ADHD.

3.4.4 UngSpotlight

UngSpotlight focuses on early intervention and treatment of public speaking in adolescents, to prevent social anxiety development. The intervention holds information about performance anxiety, as well as quizzes throughout the modules, see Figure 4. In addition to the IBI program, the project consists of an additional feature, namely VR, which is used to expose the participants to social stimuli in a safe environment (INTROMAT, 2018b). However, since this study has focused on traditional IBI programs, virtual reality was not taken into account.
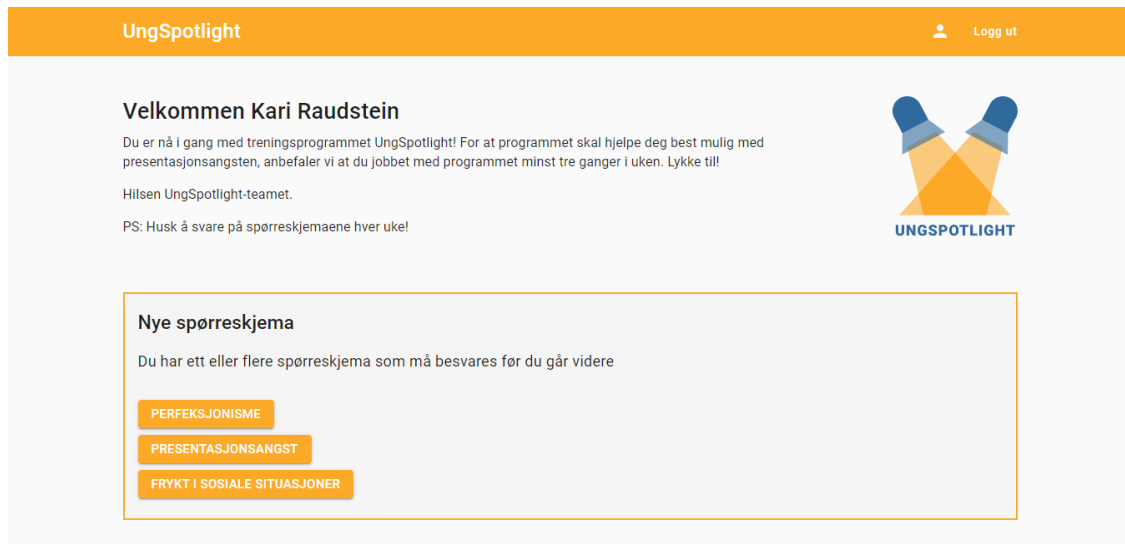
Figure 4: UngSpotlight, an intervention program about performance anxiety.

3.5 Chapter summary

The study followed a two-parted content analysis, presenting a content analysis of four IBI programs. The content analysis provided insight of identified elements and design principles from visual design and HCI-research in the IBI interfaces. From the findings in the content analysis, 33 questions were constructed to serve as a guide in four semi-structured interviews with the creators of the respective IBI cases. From here, a second content analysis was accomplished, revealing design patterns in the interview data.

Chapter 4

Results

4.1 Case studies of Internet-based intervention programs

In this chapter, the IBI programs are presented in terms of findings surrounding prototypicality, web aesthetics, images and illustrations, and video and audio. In the last section of the results from the case studies, there is a table summary showing similarities and differences in the programs. Each IBI program was coded according to the content analysis framework presented in Chapter 3 (see Table 1).

4.1.1 Gynea

Prototypicality

All codes identified in the content analysis correspond to users' mental models of most consistently placed elements found in Roth et al. (2010). Additional navigation in the modules is placed to the right, see Figure 5, showing a more atypical placement according to the same research. Buttons are placed at the end of each module page, and close to the associated content.
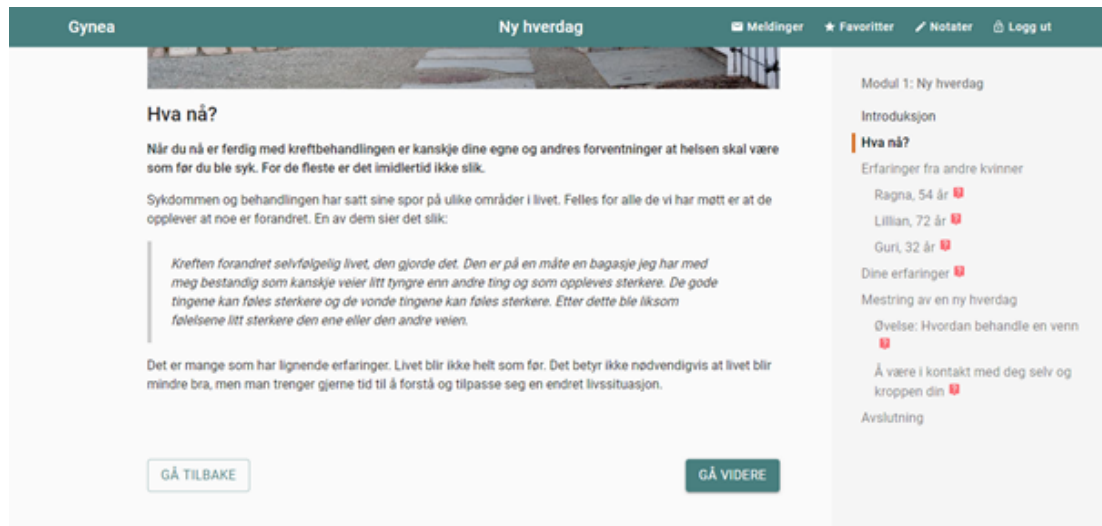
Figure 5: Module-based interface of Gynea, showing sub navigation and buttons.

Web aesthetics

The interface mainly consists of navigation elements, content such as text, images and illustrations, as well as audio and video. The structure of the program is following a module-based layout. The additional navigation holds small cues indicating the location in the module, such as highlighting text and a colored bar on the left side, as shown in Figure 5. All elements are placed such that white space is allocated between the elements. Within the main content area, there is a combination of images and text. Images are most often presented at the start of each module. The text within modules are varied in format, such as quotes, bold, and italic text. Videos provide a complementary option for viewing the content instead of mere text. This encompasses mainly the stories presented in the modules.

The color that most clearly defines the look and feel of the interface is a blue-green color. The color is repeated in elements such as top navigation bar, buttons, and progress bar. Content grouped together are highlighted with a light gray background color with a lower brightness than the main background color. The primary design color is comprised of a cool hue. Small details such as specific buttons and the navigation indicator to the right, holds an orange color with medium brightness and a warm hue. Headlines and text have the same black-toned colors on a light gray background.

Images and illustrations

Both photographs and illustrations are used in Gynea, encompassing objects or people and not data specifically. There is a high to medium-human condition in the photographs including people. High-human condition refers to human images including facial features, whereas medium-human condition involves people without including facial features (Lazard et al, 2017). Moreover, illustrations are in some cases used to represent people, seen in Figure 6.
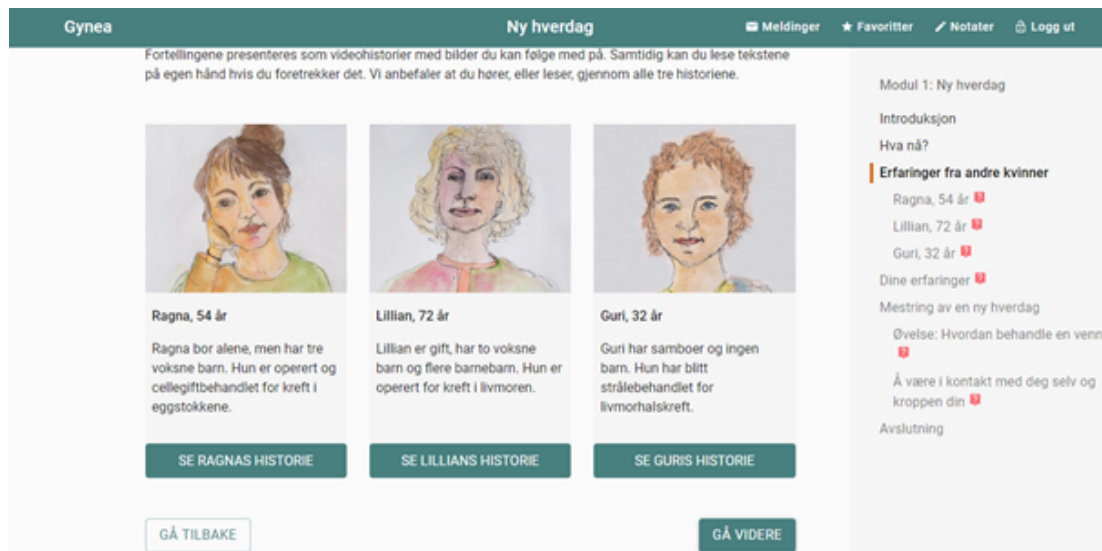
Figure 6: Illustrations of people in Gynea.

The images that contain a high-human condition, show emotions such as happiness and contentment, see Figure 7. Themes identified in the photographs of Gynea are food or drink related objects such as tea and fruit, and nature or landscape related objects such as trees, flowers, plants, mountains, paths, and ground, see Figure 8.

Figure 7: Photographs of people resembling certain emotions.

Figure 8: Photographs used in Gynea.

For the most part, the information conveyed in images can be said to be for demonstrative or comparison purposes, meaning people performing various kinds of actions, or allowing users to make comparisons or analogies to the content (King, 2015).

Video and audio

Gynea contains a combination of video and audio content but are delivered for various purposes. The videos are used to convey a story, while the audio files are used in exercises in the program. There is no use of real people in the videos, instead, illustrations have been used to convey stories from personas carrying similar stories as the intended user group. The information conveyed in the videos is primarily used for comparison or explanatory purposes and as a supplement to the text. Audio files are used for explanatory or describing purposes in the exercises.

4.1.2 RestDep

Prototypicality

Most of the codes identified in the content analysis correspond to users' mental models of most consistently placed elements (Roth et al, 2010). "Back to home page" or logo is placed mid-top in the navigation bar, whereas the research declares that most logos were placed slightly more to the left. However, this aligns with the rest of the content since the main content is aligned center with white space allocated around the edges, see Figure 2.

Web aesthetics

The interface primarily consists of elements such as a top navigation bar and a main area with a combination of text, images, audio, and video. The structure follows a module-based structure, where the user is presented with a linear design journey. The links are made inaccessible at first, to make restrictions in the program and to guide the user through it. The modules and exercises are designed in a dynamic way, where buttons glow upon hover (Figure 9), and where interactive exercises and questionnaires can be done directly in the interface.

Figure 9: Button indicating an action to be taken.

Colored elements are used to part chunks of text or group content. The primary design color holds a cool hue and a blue color varying in brightness. A dark blue color is induced on the navigation bar, and the top bar in the modules. Subsequent headlines within modules maintain a different brightness, which is also the case for the progression bar as shown in Figure 2.

Illustrations are comprised of various blue colors, ranging from a brighter blue to a darker blue, as presented in Figure 10.

Figure 10: Illustrations used in RestDep

The primary background color is light gray, while there are parts of white background color in the modules. Exercises are comprised of gray and white parts (Figure 11), with black-toned text color.
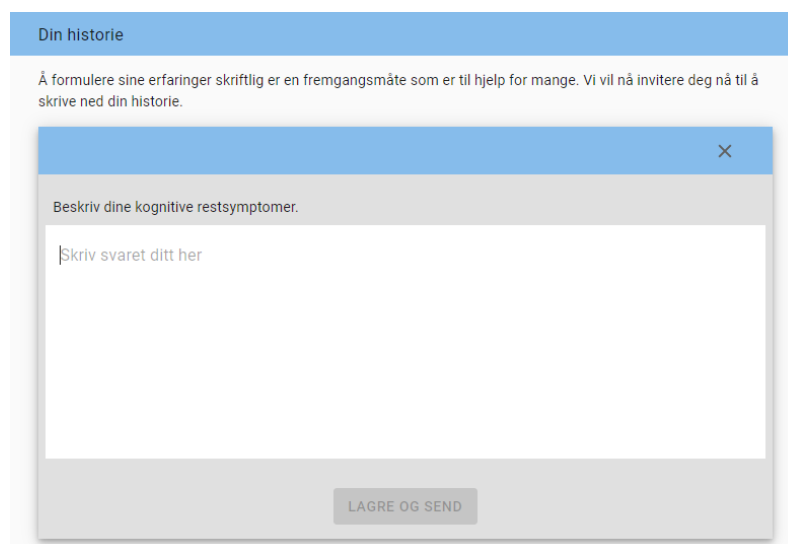
Figure 11: Exercise design in RestDep

Images and illustrations

Illustrations are used as part of the headlines in each module introduction (Figure 2). Photographic images are most often used at the top within each module page, or to break up

the text. Each welcome section in the modules contain images of landscape-related content such as paths or roads (Figure 12), while the finishing sections show images of air balloons.

Figure 12: Snippets of photographs used in RestDep.

There is little to no use of real people in the photographs, but there are instead photographs of figures or animals to illustrate human-like attributes. Themes identified in the photographs are nature or landscape-related themes such as mountains, ground, roads, paths, trees, plants, flowers, fields, air balloons, and skies. Food and drink-related themes were also found, encompassing coffee cups or teacups, fruit, as well as household themes, maintaining objects such as keys, books, pens, and chairs. There is also a technology-related theme involving objects such as mobile phones, headphones, radio, and computers. The information conveyed in the images mainly encompasses demonstrative or comparison purposes. A small text is often associated with an image, where the image might strengthen the information conveyed in the modules or serve as an affording or affective purpose.

Audio and video

The intervention program uses both audio and video in addition to text and images to convey information. The video composition is comprised of real people, and no use of illustrations. The video is featuring a clinician with facial features present at all times. In this case, videos are used to inform and explain specific symptoms as an introduction to the intervention program. The video serves as a demonstrative and explanatory purpose, while audio is used for explanatory or describing purposes, such as giving instructions in an auditory exercise.

4.1.3 Min ADHD

Prototypicality

The codes regarding the prototypicality aspect correspond with aforementioned research. Navigation elements and logout option is placed top right, and logo to the very left. Key features in the program are presented as boxes on the front page, see Figure 3. Textual information within the modules are placed within the main area, often alongside an image (Figure 13).
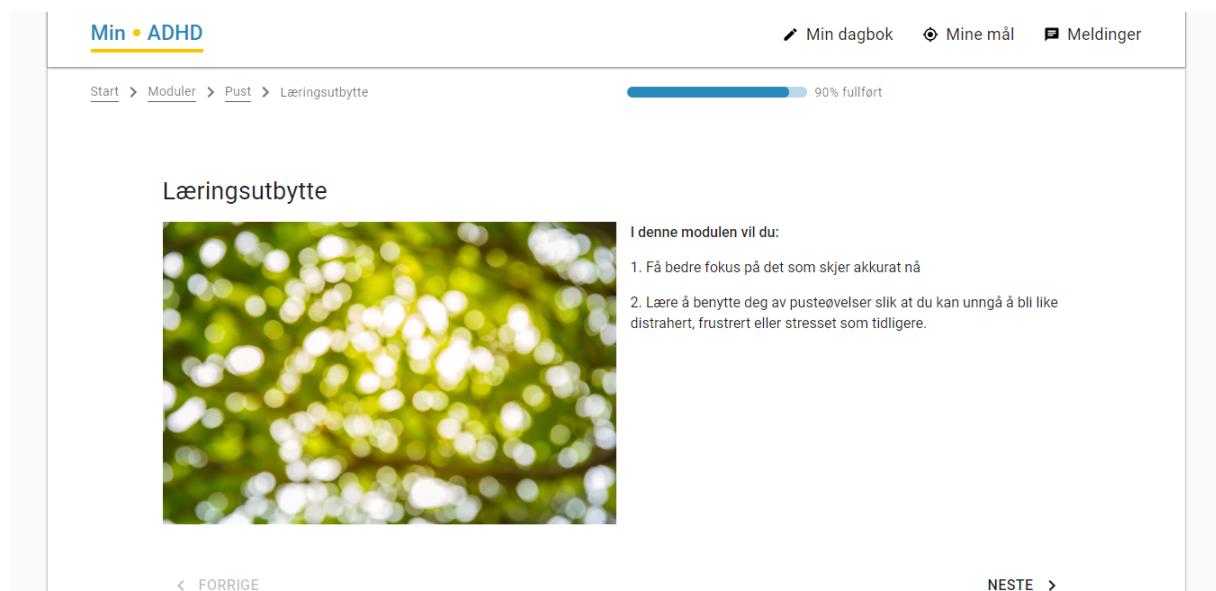
Figure 13: Layout structure within modules in Min ADHD.

Web aesthetics

The main page is composed of boxes showing highlighted features or actions in the program, in contrast to the IBIs analyzed. The main content in the modules consists of elements such as smaller parts of text, smaller images, some videos, as well as highlighted tip-sections (Figure 14).

Figure 14: Highlighted tip section in Min ADHD.

There is less textual content than in the other programs analyzed, with much breathing space around the content. Text, images, and colored elements are placed in various manners throughout the program, showing diversity to the interface.

The primary design color is blue, which holds a cool hue with a varying degree of brightness. Moreover, a warmer hue of yellow is used in particular elements such as the logo (Figure 13) and the tip section (Figure 14). The text mainly has a black tone on a white background, where some text elements are written in bold. The front page shows a colorful display of four boxes, in which colors of varying hue are induced on the bar to the left (Figure 3). Icons are colored in the same manner, accompanied by links that take the user to different locations in the interface.

Images and illustrations

The images used in Min ADHD mainly encompass a photographic composition. Images are most often displayed within the module as part of the design, or in coherence with what the textual content conveys. Furthermore, the photographic content involves objects and people, where images of people often are used to represent a persona in which the users may relate to. One illustration, however, serves as an illustrative purpose containing data (Figure 15).

Dato/tid	Øvelse	Tanker, følelser og reaksjoner mens du gjorde øvelsen
27.09, kl. 07.00	Oppmerksom pust	Jeg var urolig og trøtt, men bestemte meg for at jeg skulle gjennomføre dette. Kjente etterhvert at kroppen roet seg og at jeg ble mer avslappet
27.09, kl. 15.00	Oppmerksom pust	Jeg var utrolig ufokusert mot slutten av arbeidsdagen, så merket at jeg klarte å holde litt bedre fokus kanskje den siste timen på jobb, følte meg litt mer skjerpet
28.09, kl. 07.30	Oppmerksom gåing	Gikk til jobb og prøvde oppmerksom gåing, merket jeg var mer tilstede og mindre stressa da jeg kom til jobb
28.09, kl. 18.00	Oppmerksom pust	Var bare veldig rastløs og urolig denne gangen. Var helt umulig å sitte stille og bare puste.

Figure 15: Table illustration from Min ADHD.

The images of people, have a high-human condition, resembling emotions such as happiness, joy, or contentment (Figure 16). The objects identified in images used in Min ADHD are landscape-related themes such as flowers, trees, plants, sky, road, and grass, as well as household related themes involving notebooks or shoes.

Figure 16: Themes and objects in photographs used in Min ADHD.

The information conveyed in the images mainly encompasses the demonstrative purpose, where people perform some kind of action, or comparison purpose, which lets users make comparisons or analogies towards the information conveyed.

Audio and video

There are several videos in the program involving real people or actors that convey stories or experiences. In this case, videos are primarily used for demonstrative and comparison purposes in the videos showing people, while the video that shows how to conduct an exercise fits in the explanatory or describing purpose. There are no auditive content in Min ADHD.

4.1.4 UngSpotlight

Prototypicality

Most elements cohere with previous research regarding users' mental models. Logo and logout options are placed in the top bar. Text presented in modules are placed within the main area often accompanied by an illustration or an image (Figure 4), and buttons are placed at the end of each module page. Sub-navigation supporting navigation beyond going back and forth between pages is placed at the very right (Figure 17).

Figure 17: UngSpotlight inside a module.

Web aesthetics

The front page is composed of elements such as a welcome message, buttons leading to questionnaires, an active module presented in large, a calendar, and a summary of modules at

the bottom. The main content within a module consists of elements such as parts of text and a combination of illustrations and colored elements. The textual content, illustrations, and colored headline-bars are placed in various manners in the interface, corresponding to diversity in the design. The primary design color holds a warm hue and a yellow-orange color, whereas the colors red and blue acts as support colors in the main color scheme (Figure 18). The text mainly has a black tone on a white background, where some text elements are written in bold. Headlines are sometimes colored in a yellow or red tone.
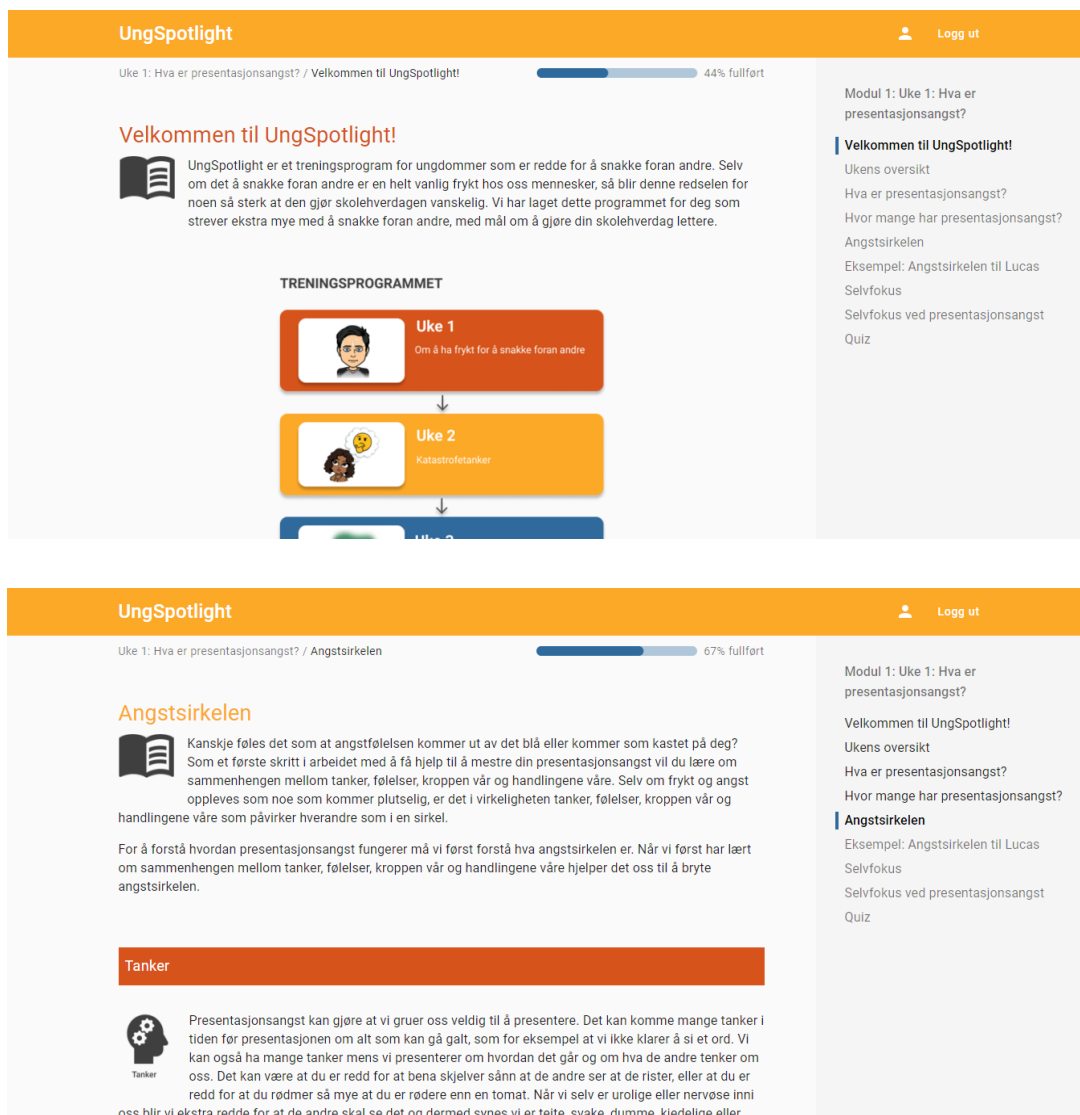
Figure 18: Interface snippets of UngSpotlight, showing color scheme.

Images and illustrations

All images are of an illustrative composition and are displayed in the modules as part of the design. The illustrations mainly encompass figures resembling people or situations, as shown in Figure 18 (top). Nevertheless, there are some illustrations containing data or holding educative information (Figure 19), whereas smaller illustrations or icons are used to show types of content in the modules.
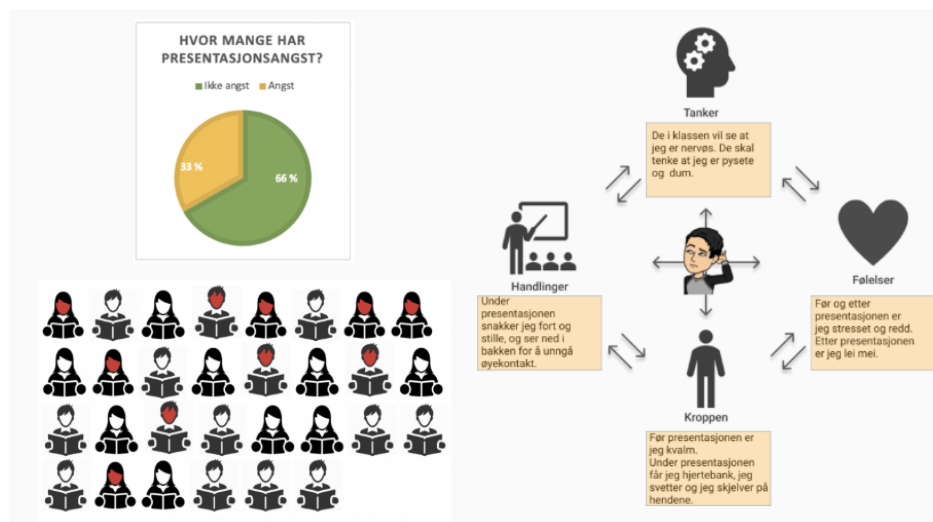
Figure 19: Illustrations demonstrating data and educative content.

The information conveyed in the illustrations mainly encompasses the demonstrative purpose where figures are performing some kind of action, or for comparison purposes, which lets users make comparisons or analogies of the information.

Audio and video

There is no use of videos in the IBI program. However, VR is used as an additional aspect of the treatment to simulate a real-life experience within the classroom environment.

4.1.5 Table summary of the IBI programs

This section presents a table summary of the analyzed dimensions of visual design for each case study. Here, similarities and differences are withdrawn from the data to highlight the key findings.

IBI programs / Design dimensions	Gynea	Restdep	MinADHD	UngSpotlight
Prototypicality	In line with research of most consistently placed elements. Use atypical subnavigation in modules.	In line with research of most consistently placed elements. Logo slightly placed towards the middle.	In line with research of most consistently placed elements.	In line with research of most consistently placed elements. Use atypical subnavigation in modules.
Web aesthetics	Simplistic look and feel. Interactive exercises. Blue-green main color. Module-based layout.	Simplistic look and feel. Interactive exercises. Blue main color in varying hues. Module-based layout.	Simplistic look and feel. Interactive exercises Blue main color with hints of yellow tones. Module-based layout, different landing page showing most important features	Simplistic look and feel. Interactive exercises/quizzes. Yellow-orange main color with hints of red and blue. Black-grey icons. Module-based layout.
Images & illustrations	Use both illustrations and photographic images. Nature / landscape images, some human images. Images as demonstrative or comparison purposes.	Use both illustrations and photographic images. Nature / landscape images, no human images. Images as demonstrative or comparison purposes.	Use both illustrations and photographic images. Fewer illustrations. Nature / landscape images, human images with faces. Images as demonstrative or comparison purposes.	Use only illustrations. Bitmojis for demonstrative or comparison purposes, other illustrations for educative means containing data.
Audio & video	Videos with illustrations. No human videos. Auditive exercises within modules. Used for demonstrating or describing purposes.	Video with real people. Auditive exercises within modules. Used for demonstrating or describing purposes.	Videos with people (actors). Used for demonstrative or comparison purposes, and explanatory or describing purposes.	No videos in the program. No auditive exercises or information in modules.

Table 2: Table summary of key findings in the case study.

4.2 Content Analysis of Interview Data

The following chapter presents the results from the content analysis of the transcribed interviews with the experts responsible for the IBI cases. The subjects discussed during the interviews concerned the development process of the project, as well as the design dimensions retrieved from the literature; prototypicality, web aesthetics, images and illustrations, and video and audio.

4.2.1 The Development Process

This subject involved questions regarding the IBI programs' aim and purpose, the essential qualities of the treatment programs, the experts' role in the process, challenges when developing these programs, if the experts were influenced by certain methods, and how they evaluated the potential changes to the programs. While all programs aimed at making users better equipped to cope with their problems, there were various approaches to achieve this goal.

Important qualities within IBI programs
Overall, the most established qualities that experts found valuable were ease of use, and that the information should be easy to understand. Experts reported that ease of use was considered to prevent users from opting out of the treatment and secure an obstacle-free experience of the program. Particularly, experts explained that a well-spoken text was essential to deliver the treatment in a way that was easy to grasp by users coping with various issues. "*So that it is easy to, easy to understand and that you both look after the person, or both look after the content and that it comes out clearly, but also look after the person sitting and reading about it, on their own*" (E4). Principles from traditional face-to-face sessions should also be considered in the online environment. Since the users are performing the treatment by themselves and not directly with a therapist, experts explained that considerations should be made to achieve a feeling of someone being present. "*That you have to maintain a language that reflects that someone is following you*" (E1). This aspect involved welcoming texts, encouraging or cheering texts, or implementing images or illustrations in which users could relate to.

Furthermore, experts reported that when working in the health domain, the focus did not lie in providing very technical or fancy layouts, but rather simple interfaces that were user friendly. At the same time, experts acknowledged that the visual presentation of the programs were not necessarily "amazing," emphasizing that the interface should not have too much going on to prevent users sensitive to stimuli from being overwhelmed. *"They have special needs, right, particularly after a depression and you struggle cognitively, then you are very sensitive to getting too much stimuli right"* (E1).

Having established that the textual content was of importance, the content itself served either as educative means or as an identificational aspect. Identifying with others and understanding that others are coping with the same issues was considered an important part of the treatment. *"The important thing about the content is identification and realizing that you are not alone, many of these women think that they are alone, that it is only I who experience it this way"* (E5). In terms of the educative content, experts also explained that it was vital to set goals for the treatment and that there should be a rationale behind the given tasks and the information provided. This was done to help maintain user motivation throughout the treatment, which could lead to a higher probability of the treatment being successful.

In terms of the program's technical solution, an expert (E1) explained that it beneficial to work in a program that provided an administrative solution. Here, one could add textual content and images without having to consult a third party. Furthermore, the interface should be user-friendly, particularly for those with less technical experience such that the implementation of the content could be done more efficiently. *"You are very dependent on a very close dialogue with those who have developed the solution, they have to make changes to the content, add new sentences, and I think for my part, it is very important to be able to do it on your own" (E1).*

Another technical aspect was that the programs should be developed with security in mind. In addition, one noted that the program should be presented in such a way that one trusts that the information is stored securely as users often do exercises that involves writing personal information. How to convey trust through the interface was not a straightforward process.

However, all cases used secure login solutions provided by BankID, which may lead to a more profound trust than with other login solutions. Moreover, experts explained that it was meaningful to present the information such that important material or actions were featured, to prevent confusion in the interface. Experts also found it useful to be able to consult with HCI-experts where possible, although not all had this kind of expertise available in their projects. All in all, experts explained that having access to HCI-experts as well as other domain-specific experts helped improve the quality of the programs' usability and design.

Role in the development process

The experts were responsible for each IBI case and had contributed profoundly to the development process. This contribution ranged from being quite alone with all the work, to be responsible for certain parts of the project. This involvement also meant explaining the needs to the developers and deliver feedback on the design based on the user tests. All had either a psychologist background or other health care background.

Challenges in the development process

A common problem when developing IBI programs concerned the expertise in the online environment. Experts first and foremost pertain a wide knowledge of what it takes of psycho-educative content to achieve the right treatment. It was therefore hard for healthcare experts to know what technical limitations but also the technical possibilities one may have in online interfaces. *"And you know you can make an order to those who make it (the program), but when you don't have the competence to know what the order should be it can be demanding" (E1)*. Experts also explained that it could be challenging when there is a gap between the domains, where developers do not have immediate knowledge about the needs from a therapeutic point of view, while the experts may not know how comprehensive small changes to the interface could be. *"What can be challenging is the technical part of it, that there are things we want, eh to be done, that takes very long to develop or that you just don't speak the same language" (E2)*.

Furthermore, experts reported that it could be difficult to know where to start with the design process, and how to design the interface in terms of appearance, structure, and functionality.

"Since I don't have the competence of interaction design in my core, it led to a long period where I was quite alone about – about all this" (E1). In addition, incidents of technical issues during user tests made it difficult to get the proper image of the users' experience when unpredicted errors occurred during the test. Lack of resources or few developers available in the project also made it hard to keep the phase of the development process. At the same time, an expert explained that it could be hard to develop the programs because the programs were not commercial in the starting phase. This led to limitations in terms of assets and resources. *"We make products in a way, but with the background we have, and those resources we have. They are quite limited."* (E4).

Moreover, experts reported that it could be challenging to meet the user groups on various platforms. It was considered important to understand whether the users would choose to work on their computer or their phone, and that optimizations should be done on all platforms. It was now always easy to make platform-specific adjustments, especially with less experience in the field. Important features such as screening schemes or questionnaires essential to measure the effect of the treatment, proved difficult in terms of the design. These schemes are often long, particularly on mobile phones, where experts acknowledged they were afraid to lose users' interest if the schemes pertained these long formats.

Sometimes challenges had to be accepted as they were, where experts explained they had to come to terms with the issues, and rather find workarounds to the problems. *"In the end you just have to accept that OK, this is what I have to deal with (laughter), so you have to make the best of it"* (E2).

Influence of methods

Most of the experts reported that they had been using the person-based approach by Yardley et al. (2016) in their development process. The person-based approach involves identifying user needs and involving users in the development process. User involvement was identified as an important aspect amongst the experts, which in addition made an impact on how they evaluated changes in the IBI programs. *"That we have in a way tried to identify what needs the users have and then made the intervention accordingly. And had regular evaluation*

meetings with them (the users) where we have shown what we have done, and then they have come up with input and such." (E2) While most reported to utilize the person-based approach, others approached the development process somewhat differently. One had past experience from prior IBI projects, building on this knowledge and implemented it into the process. One expert (E5) described how important user-involvement were to get users' input throughout the project. The same expert stated that a lot of the changes would never have been conducted if not for the users.

Evaluation of potential changes

Changes made in the programs were primarily based on feedback from the users involved in the project. Experts conducted focus group sessions or had expert panels to let users give feedback throughout the development phases. From here, experts reported that user feedback was essential, but that the experts had the last say in the actual changes. This was to make sure the program's main focus was preserved, and that the changes did not differ from the goals of the treatment. *"It has been an evaluation whether, yes, if the changes they suggest fits into the goal of the program, for example, there was one that talked about if we could have something about self-esteem right, but that is not exactly what we, the goal with this program" (E1).* Time constraints were also reported to influence how the evaluation of changes were made. For some experts, it was time-consuming to perform the clinical tests on top of everything else to ensure that users were properly followed up. This sometimes led to user feedback becoming deprioritized. *"And then there is something about that, you have a pressure to get the proper tests, not the proper but the clinical tests, so it (the feedback) is not all you can take into account either" (E2).*

4.2.2 Prototypicality

The prototypicality aspect involved what influenced experts in making decisions regarding the placement of elements such as logo, main content, navigation, and buttons. Overall, most experts were not directly involved in the decisions regarding placement of elements and explained that due to time constraints in the development process, as well as lack of domain experts, the structure of the interface and encompassing placement of elements were not necessarily their focus. *"It has been a very fast process or so it has not been a thoughtful process" (E2).* This also correlated with some of the topics that experts found challenging,

such as knowing what to design, and where developers were dependent on some guidelines in order to make a solution. In one case, this challenge led to a psychologist drawing the most significant features, which resulted in the initial design of the interface.

Another expert noted that the interface should be structured like a typical web page. *"The main main idea was that each page should look like a typical page it does in an online newspaper or some kind of magazine - a blog, some sort of thing" (E4)*. This can lead to improved ease of use according to prior research (Roth et al, 2010), and support the familiarity aspect.

4.2.3 Web aesthetics

The web aesthetics category took on subjects related to the presentation of the programs, concentrating on the use of colors, layout, and structure, rather than familiarity of elements. When mapping results from the prototypicality aspect it was discovered that experts often were not directly involved in the decision-making process regarding the visual presentation and structure of the programs. This led to experts primarily relying on developers, or in one case, where the expert acted and designed the most crucial components. Here, the expert (E2) reported that it was not an ideal process and due to constraints in resources, much of the work had to be done themselves. *"So it is, after all, she (the person responsible for the project) has also said that it is not ideal. This is not the way that this process should be at all. That the psychologist sits to design how the layout should look" (E2)*.

Structure and layout

The content analysis revealed that the programs most often were structured in a module-based layout. This became a natural topic to discuss during the interviews. Here, the experts were in joint agreement that the module-based construct was a favorable approach to categorize the information into for several reasons. One of the reasons was based on the notion that it was important to provide frames and structure in the program to avoid confusion in the environment. *"I think it's a little important that there won't be too much room for them (the users), because then it can quickly become a bit confusing too, that you don't quite know where to go in the program, and that you are not quite sure what to do" (E3)*.

If given total freedom in the interface, experts' experiences were that users often found it more confusing when not given a specific program. Some users also commented that they did not want that freedom and would instead prefer a definite program tailored for their specific needs. Some experts explained that their initial idea not necessarily involved a module-based layout. However, because of the user feedback where users did not want to choose the path for themselves, the experts changed the structure into a more linear journey. *"It may have been a discussion in the beginning that you could get many different topics and then choose from what is relevant, that it was not this - a tunnel design or linear design, and the result from the interview with the groups were that they did not want to get a lot of information and that they did not want to decide for themselves" (E1).*

Another reason to present the programs in a module-based layout was based on the similar notion; one had to *"take the user by the hand" (E5)*. As the treatment is performed at home, users might need to be led and motivated to accomplish the treatment. *"Even though it is home-based (the program) you cannot completely put away the control either, you have to push them a bit somehow. Because we know that guided Internet-based treatment is better than complete self-help, so here we try to do this counseling part more like automatic" (E3).*

Use of color
Experts choices of colors often came down to supporting the needs of the specific user groups. Other reported findings concerned utilizing colors to give a certain credibility to the program and to provide a calming space, as well as to highlight elements, to create a more engaging environment, or to make a more appealing visual impression. Most experts got aid from illustrators or designers that contributed with knowledge regarding color theory and rationale. In one of the cases, the experts wanted to connect the link between the health sector, which uses blue colors, to give the design a certain credibility. *"And by getting that link, that you carry out the colors it says something that it is health professionals who made it, what we think gives a different credibility than if you had used other colors" (E1).*

Others used colors to induce a calm space, often containing blue or blue-green elements, as well as adding colors to smaller elements to make the interface more engaging. Nevertheless, it was noted that one should be careful not to include too many colorful elements to the design, to avoid a cluttered space. *"So blue should probably be a little more soothing at least. Ehm, so I think try to avoid something like that (shows on paper) too much. But that it at least should be a little - something that happens on the screen I think that's what should be the idea"* (E2).

As stated, colors were primarily used to support specific user groups. By utilizing color theory, the color orange, for example, was said to be more appropriate for a young group, which was one of the primary reasons for choosing the colors in one of the cases. *"Yes, she (the designer) said at least that orange might be a little more colorful and a little more fun for a younger group"* (E3).

For another program, generally, what governed the design was that the content should be made clear, it should be easy to read, and the interactions in the program should be easy to understand. Inducing the right colors on these elements were considered significant, according to the experts. In another case, color codes were used to separate content from one another, and to recognize content from the same categories.

The content analysis of the IBI cases showed that most programs used a grey-black color on the text on a white or light gray background. Color tones and contrast can be useful to consider making sure the textual content meets the criteria for universal design. When experts were asked why they had chosen the specific format of text contrast and color, most reported that it came with the developed solution, and that it was not specifically taken into consideration. However, one noted that background color on the text should be used to highlight important text or to show that the content is related to something else. Here, the expert concluded that the modules containing much textual information was changed based on feedback from users who wanted the information delivered another way. This was accomplished by making videos as an additional distribution channel with less focus on the text. *"So it is rare that there is particular important text, but here is probably the longest text*

in the whole program with this gray background (shows on paper). But you really don't want them to read there, you want them to watch the video" (E4).

4.2.4 Images and illustrations

The topics concerning images and illustrations primarily involved the choice of photographic images as opposed to illustrations, choice of themes and objects in the images, whether the images contained people or where more abstract, and lastly the main purpose of implementing the images. Overall, experts made use of images and illustrations to support the textual content in the programs and to make connections and identification towards the information. The use of images showed to be a central aspect of the development process, where experts often spent much time in the image selection process. The interview sessions showed that all experts had their own take on imagery, and reports showed that the image selection process could be quite demanding. Because the experts were occupied with supporting users, taking user feedback seriously to achieve the right impressions that were neither offensive nor inappropriate, led to a particularly long process. Here, experts pointed out how vital the feedback from users was. If not for the feedback, the images in the programs might not be as well received.

Types of images

Images were often used in conjunction with text and were part of illustrating certain cases that could help strengthen the impression and better support memory-processes. "*And the reasons for thinking that it was important to include many images and that the images are this big is that many of us can remember images better than text and that images may support and learn the content and remembering it*" (E1).

For others, images needed to be suitable for the user group. UngSpotlight, for example, used Bitmojis to deliver familiar content to the adolescents. The expert responsible for this case explained that such illustrations could contribute to resemble the presence of someone cheering the users on, and at the same time, being quite neutral so that it could capture several users (E3).

Furthermore, illustrations were used in those cases where the content delivered could be hard to describe in text or by photographic imagery. Gynea contained information regarding sexual health. Such images could potentially be too intimate to represent by realistic images. In this case, experts reported that it became natural to deliver the content by illustrations instead. "*So maybe that's why there are so many drawings and such, it's in a way to describe things that are a little difficult to describe with photography for example*" (E4).

Experts reported that in terms of photographic or realistic images, realistic images were used such that the users may relate to them or feel connected to someone having experienced the same or coping with similar issues. Moreover, it was noted that the images should be appropriate for the age group, which resulted in the use of more realistic images rather than illustrative or cartoon-like images. "*… but it is for adults, so I think we thought it was just more realistic, or better suited for adults simply, and rather have real pictures there*" (E2).

Images of people

Experts evaluated target groups and purposes to meet user needs appropriately. Some reported that they did not want to use photographic images of people as they can be hard to apply for all users, or the style in the images might be outdated. Some experts also reported that it was a deliberate choice when using images of people for several reasons, such as having someone to relate to, but also because it was better suited for the intended target group. Others found it less appropriate to use images of people as it may evoke certain feelings for certain groups. "*There are almost no images of people, but that's because it can be interpreted in one way or another. Experienced strongly in one way or another*" (E4). In this case, illustrations were used to minimize the possibility of potential reactions or interpretations regarding images with people. Furthermore, it was essential to make careful considerations in cases where the experts used photographic images. Experts described this process as a demanding process, where user involvement was key to be able to make the right choices. Otherwise, images could have been interpreted in unexpected or unwanted ways. Moreover, the user involvement made it possible to identify and avert some situations that might have been overlooked if the users were not involved. Users' feedback was quite specific when it came to these images, that the images should not be too depressive and should instead "*give a certain light, give hope and are good to look at*" (E5).

Contents in the images

While some images were used to make users feel related, or to strengthen the information that are conveyed, some images were used as symbolism. For instance, images of nature and landscape was a continuous theme in nearly all IBI programs. Images of landscape forming roads or paths were used to illustrate that one is to set out for a journey, that one starts something. Furthermore, one of the programs uses for example air balloons to illustrate that something is finished. An air balloon can symbolize the sense of achievement, or that something in life has been completed. At the same time, one of the experts explained that the number of air balloons used correlated with how many modules the user had completed. Feedback from the users revealed that it was not always easy to immediately understand the symbolism in the images. This was resolved by adding a support text that connected the text to the image to make the presentation more explicit.

One of the experts explained that research has shown that people like photography of nature, and that this rationale made them implement this type of images in the program. *"Yes, like photography of nature and such, that is, that's actually a purpose in that there's research that shows this is what people like the best" (E2)*. Additional content in images related to objects such as coffee cups, tea, books, and other household objects. This type of use was reported to set a specific atmosphere that should be soothing, preferably with a filter or light that looked comfortable.

Information in images

The information in the images showed to primarily revolve around support of the textual content, but also to break up chunks of text and create a more intriguing visual impression. For groups struggling with attention deficits or other cognitive difficulties it was important for experts to make use of means such as images to provide a more engaging environment, which at the same time should not be overwhelming. Some of the images were used to present educational content in a more simplified way by showing figures to illustrate contexts and relationships between the subjects. While most images served as decorative means, and that one may not directly learn something from the images, it was for some more about creating a certain atmosphere with focus on not giving the wrong associations.

4.2.5 Video and audio

Videos and audio held topics that concerned the purpose of the videos, choice of specific video types in terms of being illustrative in nature or realistic, what purpose the audio files had, and for what purpose both audio and/or video were used in addition to text. Experts reported that videos were used to support those who struggle cognitively to let them more easily remember the information. In addition, use of videos could benefit the programs' effect on users making it a more intriguing space. *"To get that repetition and since you work with a group that struggle cognitively then there's that people like to get a bit variation in how the information is presented" (E1)*. One expert (E1) explained that videos were used to give the program a certain credibility, using a video that contained a psychologist providing information about the program. In other cases, videos were primarily used to deliver the content in another way than merely text. This choice was made based on feedback from users, where some wished for the possibility of having the content explained in another way. Illustrative videos focused on presenting strong stories by the purpose of creating identification towards the content which users could relate to. *"That's the way with the videos, too, that there is someone you can relate to. To reduce stigma and stuff like that." (E2)*.

Contents in video

The content in the videos variated from program to program. Some chose to present situations with humor, while others focused on the credibility aspect by presenting a domain expert explaining educative information regarding the specific case. "*And then it is about this credibility, trustworthiness, right, that this is made of people who have researched this topic for many years and have this competence and that they (the users) feel safe about that*" (E1). The content in the videos could also be part of creating a certain recognition by following people in similar situations that could serve as support while going through the program. *"But you are alone when you do this online, so it can in a way help to have some personas. Who you could have with you through the program" (E2)*.

Use of audio

Use of audio in the IBI programs were primarily used in conjunction with certain exercises, or to deliver the information in another way. Experts reported that this could be useful in cases where users could find it hard to read a lot of text. The exercises could contribute to making it

easier for those with reading and writing difficulties, or for those that struggle to maintain the attention over time. Some of the exercises used were based on mindfulness-techniques, and experts described that audio files could be more relaxing when the users could sit back and listen.

Experts acknowledged that many of the programs are quite text-heavy and contains a lot of information where text and images often are the main components. Here they explained that video and sound could create variation in the program, as well as provide more freedom to the users who may choose whether to follow the information by video and sound where possible or choosing text if that suits them better. Some experts reported that they got feedback from users wanting the information delivered as simple as possible, without too much effort. *"They found the text, the stories long, but they did not want us to cut it down since everything were good and meaningful, but they have trouble with concentration and thought it became, and wish- asked us to present things in a different way" (E5).*

4.3 Chapter summary

This chapter presented the results from the content analysis of the transcribed data from interviews with experts responsible for the IBI cases. It showed that there can be certain challenges when developing IBI programs in terms of communication, technical issues, time constraints, as well as lack of domain experts in the projects. Additionally, since experts did not have enough information regarding layout structure, interaction patterns, and interface related elements, the results were less clear and provided less information regarding these topics. Choices of images and illustrations proved a somewhat time-consuming process, involving users and theory, and careful considerations regarding the final decisions.

Chapter 5

Discussion

To be able to answer the research questions, a content analysis was conducted on four IBI programs aimed at different user groups. While the content analysis mapped the visual dimensions, there was still a need to look further into how and why these visual elements were used. Further investigations were done by conducting interviews with five experts, to gain the experts perspectives on how the IBI interfaces were designed. The research questions are discussed in regard to the results obtained through the content analysis of the cases (RQ1) and the interviews documented in Chapter 4 (RQ2 and RQ3).

5.1 RQ1: How were visual dimensions presented in the Internet-Based Interventions?

Prototypicality

The programs seemed to meet the prototypicality aspect and subcategories in most cases. Divergences mainly concerned the placement of navigation and additional sub-navigation in the modules. The framework of the prototypicality aspect was based on websites resembling a news portal, a company's website, and an online shop, and the web objects are listed in table 1. These general web objects and corresponding results of placement may not support the interface structure of how a module-based layout should be presented. The choice of including an additional navigation in the modules should therefore not be considered an unconventional approach. Instead, it may give more freedom to the users having several navigation options, including buttons to switch between pages, breadcrumbs, and additional navigation.

Web aesthetics

The findings of the web aesthetic aspect showed that all IBI programs in this study followed a somewhat linear design encompassing the module-based layout. The module-based principle lets users follow a predetermined journey where the content is unlocked as progress in the program continues. Some of the programs presented the modules as the most important feature, while another featured necessary actions on the landing page. The simplicity facet in web aesthetics revolved around the notion that simple layouts could be processed easier, thus more aesthetically appreciated (Moshagen & Tielsch, 2010). Providing a clear and simple layout may improve the user experience in that comprehension is made easier.

The main content identified in the programs was constituted of navigation bars and menus, progress-bars, modules providing information in various text formats, images, exercises or quizzes, auditive content, and videos. This correlates to the diversity facet, which involves the complexity of the interface, as well as the novelty and creativity aspect. All programs induce various elements that make a more exciting and dynamic interface. The novelty aspect, however, should be carefully considered due to potential risks of confusion if it breaks with conventions of the prototypicality or the simplicity aspect.

Research aiming to deliver health information to adolescents showed that adolescents preferred content delivered by videos, images, audio, and animations (Reen et al, 2019). Moreover, websites with excessive text were considered less visually appealing. Interactive features such as games and quizzes, journals, goal-setting, and the possibility to personalize the interface (Reen et al, 2019) were favored among the adolescents. UngSpotlight, for instance, used images, animations, and quizzes, which meet the users in some of the parts of what adolescents found visually appealing. Nevertheless, findings from one research do not have to cohere with the needs of the adolescents in another research. User needs may vary based on in-group variations, such as cross-cultural factors, age, or other factors that may lead to varying results.

The use of colors differed in all the analyzed programs. The program aiming at people with depression deficits used blue colors with hue variations in the illustrations. Gynea was made

of colors such as a blue-green main color, with elements of orange in featured buttons and indicators in the sub-navigation. The illustrations held colors such as orange, red, pink, and blue, varying in brightness. Min ADHD, aiming at adults with ADHD, used blue as the main color, along with yellow tones on tip sections and logo. Lastly, Ungspotlight, which targeted adolescents, used a yellow-orange color as the main color, with red and blue as support colors. The icons were induced with a gray-black tone.

Prior research showed that websites using bright colors were appreciated by adolescents both in the group having medical conditions as well as in the control group of nonclinical adolescents (Reen et al, 2019). Furthermore, there has been relatively little research on use of color in IBI environments. Nevertheless, looking at research from HCI and psychology, several studies have explored the subject. For instance, one study found there are differences in color preferences across cultures. Moreover, long-wavelength colors such as red and yellow were found to be more negatively arousing than short-wavelength colors such as blue and green (Cyr et al, 2008). HCI research have also made discoveries about the importance of the hedonic or the emotional elements in websites, which may relate to both enjoyment and loyalty (Cyr et al, 2009). These two keywords are often emphasized in IBI research (Baltierra et al, 2016; Crutzen, Cyr, de Vries, 2011), and colors can contribute to influence emotional reactions by setting a certain atmosphere in the interface.

Images and illustrations
Images and illustrations were found in all of the programs, where prominent use of photographic images versus illustrations varied among them. Gynea, for instance, showed a combination of both photographic images and illustrations. Here, illustrations were mainly used to illustrate personas or situations. In contrast, photographic images were used to show emotions in images of people or as support to the informative content in the modules. The photographic images were composed of nature or landscape-related information. RestDep, on the other hand, showed, for the most part, photographic images throughout the program. Illustrations were primarily used at the start of the modules relating to the content in each module. Here, a pattern was discovered in the photographic images. The themes were nature or landscape related composition showing paths or roads, located at the start in each module, and ending with images of air balloons. The images used in UngSpotlight encompassed

illustrations only, with no photographic images. Bitmojis were, in this case, used to illustrate situations or emotions. Min ADHD, used for the most part photographic images of nature or landscape-related themes, or photographic images with people.

Research on the use of images in websites stated that images with people have shown to be the most engaging, particularly if there are direct eye gazes (Lazard 2017; Cyr 2008). Min ADHD and Gynea were the two programs that showed people, whereas only Min ADHD showed images with direct eye gazes. Prior research on web features such as images, showed that adolescents did not like "cheesy" images and that the content should be easy to understand. If the images were too difficult to comprehend, the adolescents wanted labels on the images to improve clarity (Reen et al, 2019). RestDep was unique in adding support labels to the images. Even though the announced research was aiming at adolescents, the information could be generalized to other user groups. Usability guidelines often state that the content should be clear and easy to understand, which is also in line with the VisAWI framework (Moshagen & Tielsch, 2004). Facilitating for comprehensible content should therefore be valued.

Audio and video
Discoveries regarding audio and video showed that audio was used to explain exercises, more specifically exercises containing information about conducting certain techniques, such as mindfulness or focus exercises. Human voices was recognized as part of the social presence aspect (Lazard et al, 2017). Making users feel the presence of other people can be an important aspect in IBIs. Resembling situations or elements that correlate to traditional face-to-face sessions, was found to be an important aspect in IBIs (Kilde).

Three out of the four programs used videos to deliver the information. RestDep, for example, used a video with a domain expert to provide information about residual symptoms. Min ADHD, on the other hand, used videos with actors to show typical situations for those struggling with ADHD. Gynea used illustrative videos to convey stories from women having experienced gynecological cancer, whereas UngSpotlight did not use any videos. According to research on health delivered information, adolescents expressed preferences towards

content being delivered by videos. Here, the adolescents noted that they did not like long videos, videos without sound controls, images that showed unlikable cartoon characters, or graphics that were hard to understand (Reen et al, 2019). In terms of distinct user groups, research has been rather scarce. Nevertheless, as videos carry more information than text alone, it could help users obtain the information in more effortless ways.

5.2 RQ2: How did the experts describe their choice of methods, experienced challenges, improvements to the programs, and role in the process when developing Internet-Based Interventions?

An aspect highlighted by one of the experts was to have a program that may support both the user side, as well as the administrative side. The expert explained that being able to change and add content without having to notify the developers was valuable. CMS solutions where experts can add small changes to the text or images without having to consult a third party could be a time-efficient solution. Nevertheless, such solutions may be costly, and developers will still be needed in the development phase (Pagliari, 2007).

Three out of the four programs studied either followed the person-based approach (Yardley et al, 2016) entirely or used the approach as a guideline. The person-based approach is a systematic way of addressing the user experience in IBI programs by utilizing methods such as focus groups and interviews to gain deeper insights into user needs. In light of the person-based approach, IBI design should facilitate experiences such as autonomy, competence, and credibility, in order to increase motivation. These overarching features may also be grounded in Hassenzahl's theory of user experience, and relate to the hedonic properties he describes as constituents of user experience. Moreover, some studies provide guidelines on credibility and trust (Yardley et al, 2016; Breitenstein et al, 2010), whereas one expressed that trust is influenced by visual design factors (Breitenstein et al, 2010). Many of these guidelines do not provide detailed information about what these visual design factors encompass, and are more general than specific.

Nevertheless, the guidelines involve aspects such as that the website's purpose should be clear, the experience should be tailored, and that markers of social identity should be included (Breitenstein et al, 2010). Moreover, small errors in terms of functionality and in the textual content should be eliminated, and there should be a focus on usability, which was shown to impact credibility (Breitenstein et al, 2010). Experts interviewed in this study were concerned with the program's feasibility and ease of use. User involvement was, therefore, crucial both to identify user needs, but also to test the programs for usability issues. It was also emphasized by an expert how valuable the user involvement was. To get users input throughout the project was essential, and stressed if the users had not been included, many changes would never have been made.

Within the interdisciplinary fields, there has been lack of mutual awareness of each others' theoretical stance and research motivation, often caused by differences in language and epistemology (Pagliari, 2007). In addition, it has been advised that design teams should include both HCI and healthcare experts to make sure there is an even balance between input from the members in the design team. Healthcare experts might have limited experience with technology in their work, whereas HCI-experts should be aware of the healthcarers' theoretical background and concerns (Coyle et al, 2010).

Moreover, a systematic review of usability in mHealth apps discovered there were limited collaboration between computer science professionals and health care professionals (Inal et al, 2020). This showed to be the case for traditional internet-based programs also, as reported by the experts in this study. The difference in language and communication between fields were challenging at times. One experts explained that continuous communication with developers were key to prevent misunderstandings regarding the design decisions. In addition, experts acknowledged it was troublesome to know the technical limitations in the IBI programs, but also the technical possibilities. Sometimes it could be difficult to know where to start, as the experts did not have profound knowledge of how interfaces of IBIs should look, and that the gap in communication of interests between disciplines could be hard to overcome. Time can be neglected to be able to save money, whereas design iterations are costly and may be overlooked to some extent (Yardley et al, 2016).

Technical issues emerging during user tests made it difficult to get the proper image of the users' experience and results when unpredicted errors occurred during testing. Lack of resources and few developers available in the project made it hard to keep up the parallel design phase. Limitations in assets and resources also made the development process challenging. Some of the experts had to utilize the development process with the background and resources available in the project. One of the experts explained that they are first and foremost researchers, and not used to make commercial products.

Meeting users on platforms they know was substantial for the experts. The same was also described by Coyle et al. (2010), where users should be met on devices they already know to minimize the barrier of needing assistance in acquiring new knowledge. On mobile screens, it was particularly challenging to adapt screening schemes or questionnaires that were essential to measure the effect of the treatment. Here, one expert noted that they were afraid to lose the users' engagement if the questionnaires were too long. The technology should be made readily available and should not require too long intervals of deep focus (Coyle et al, 2010).

Improvements and changes made in the programs were primarily based on user feedback. By conducting focus group sessions or expert panels let the users give feedback throughout the development process. Experts particularly highlighted how fundamental the user feedback was. Evaluations of whether to make changes or not were based on if the programs' main focus was preserved, and if that the changes did not differ from the goal of the treatment.

5.3 RQ3: What influenced the experts during the design process of Internet-Based Interventions in terms of visual dimensions?

Prototypicality

In terms of prototypicality, most experts were not directly involved in the decisions regarding interface structure. Due to time constraints and lack of resources such as HCI-experts, less focus was given to the location of elements and was primarily left to developers. In one of the cases, it was explained that because of little knowledge of technical and HCI-related principles, it led to difficulties in knowing what to ask of the developers. At the same time, the developers were dependent on some guidelines or feedback to be able to make the program. This gap between the fields show the importance of additional expertise in the projects, where HCI-experts may serve as mediators and provide knowledge regarding the interface design. However, it was noted by one of the experts that the interface should be structured like a typical web page. This is in line with the prototypicality aspect and can lead to improved ease of use according to prior research (Roth et al, 2010).

Web aesthetics

Experts emphasized ease of use as a considerable aspect of a successful treatment. However, when asked how this could be achieved, it was somewhat difficult for the experts to pinpoint what exactly makes a program easy to use in terms of web interface elements. Nevertheless, experts were specific about making content such as text and images easy to understand. Comprehension could be made more accessible by implementing aiding text below the images or using images appropriate for the user group.

The module-based layout was highlighted as a necessary feature of constructing the interface. In some cases, this notion was based on feedback from users. The users did not want to decide what topics to pick from or what content was the most useful for them. Experts explained that since users are working with the programs alone, some guidance should be provided. The module-based layout, or the linear design, became a natural way to solve this issue. In a systematic research, the concept of the modular setup was identified in most mental health

interventions. Here, the researchers stated that utilization of the concept was based on the traditional face-to-face sessions where psycho-education and behavior modification usually is delivered step by step (Kelders et al, 2012).

In a study focusing on user engagement in IBIs, they found that to keep a website engaging, it should have multiple methods of information delivery. Articles, games, quizzes, message boards, photos, videos, and surveys were all found to be engaging elements (Reen et al, 2019). Non-directive interventions let users move to areas they feel relate more to them, which in turn could prevent users from opting out because of non-relatable content. This was not supported by the experts interviewed in this study. Their experiences were that users wanted to be led through the program.

Persuasive design techniques are often found in IBI research. Among the techniques, motivation and social support are identified as the most profound drivers of persuasive design (Gemert-Pinjenbet al, 2011). Regardless, little research explicitly stated how the techniques are achieved or designed for in detail. In mobile health, however, there seems to be more research regarding design characteristics and web aesthetics for how to design health applications (e.g. Cyr et al., 2006; Li & Yeh, 2010). This was grounded in the increase in the availability of mobile phones, accustomization of use for various purposes, and increase in popularity (Inal et al, 2020). Although there are crucial distinctions between mobile and desktop interfaces, some of the findings are likely to be generalizable to desktop interfaces.

Use of color
The choice of colors in the interfaces were based on meeting the needs of the user groups. One of the experts reported that the blue color gave a certain credibility and coherence with the health sector, whereas another said that blue was used to provide a calming space. Cool colors like blue or green are said to be favored over warm colors such as yellow or red (Cyr et al, 2009).

Opposing or contrasting colors were used on elements to make the interface look more interesting or engaging. Three out of the four programs utilized dark grey text color combined with a grey background in specific locations. This may reduce readability, as contrast should be strong enough to be in compliance with the Web Content Accessibility Guidelines (WCAG) and standards (*Accessibility - Material Design*, n.d.; Ling & Van Schaik, 2002) The experts acknowledged that this color distribution on text and background was not a deliberate choice. Moreover, headlines or other important content should not be induced by too bright colors. Too low contrast between foreground and background elements makes the content less clear and may lead to challenges for specific user groups.

Images and illustrations

Elements such as images and illustrations were used in all programs. While some designs contained both photographic images and illustrations, all justifications were different and revealed a somewhat comprehensive process. Because images maintain strong properties that may lead to various interpretations, this proposed difficulties for some experts. Photographs could sometimes be interpreted in unpredicted ways, and as a result, many photographs had to be discarded in the process. Here, the user involvement was essential to ensure the images met user expectations, and that they were appropriate for the user group.

Social presence may increase the possibility of a website being perceived as warm or personal, or create a sense of having human contact. This was considered a crucial factor in IBIs. As traditional face-to-face sessions are transformed into an online experience, research suggests that social presence should be considered to transfer the warm and personal aspects to the online environments. All programs use some form of social presence, though not always stated explicitly. Textual content is made warm, welcoming, and understanding, where images often show people or illustrations in various situations. Research declared that if visual means are used with meaning and care, trust was more likely to occur (Lazard et al, 2017). Trust was also confirmed as one of the key factors in the person-based approach (Yardley et al, 2016).

Even though few of the programs used images with people, research has shown that images presenting people are the most engaging (Cyr et al, 2009). However, rationale for discarding human images was well-reasoned.

5.4 Limitations

There is an abundant knowledge of visual design and facilitation of user experience in HCI research. Little research has been found with regards to frameworks supporting design suggestions in terms of visual constructs that may aid users' cognitive processes. This could limit the research in that the frameworks used might not be the best to match the ways IBIs are designed regarding the interface and the module-based layouts. The rationale for the module-based layout is well-made, and best practices for how to design module-based layouts should be further investigated.

Moreover, interviews with the experts could have been broadened to involve other participants in the projects. Other domain experts, such as HCI experts or developers, could be interviewed to provide valuable information about their experience working with IBIs. User involvement, in particular, was described by experts as a critical factor towards success in their IBI programs. Gaining users' opinions on their experience with IBIs could provide valuable information.

Chapter 6

Conclusion

This study has identified several visual dimensions that are shown to impact users' evaluations, and that can ease users' cognitive processing. There is a wealth of studies of usability principles and guidelines targeting IBIs, yet, few seem to describe in detail the design choices made. This study primarily focused on the visual dimensions prototypicality, web aesthetics, as well as visual web interface components such as images and illustrations, and audio and video. The visual dimensions were mapped to four different IBI cases and described in detail. Moreover, interviews with contributing experts were held. The data declared methods, influence, essential aspects, and design rationale in terms of an objective description as well as subjective experiences from experts' viewpoints. To date, few studies address visual components in IBI interfaces. Instead, general guidelines and principles are provided concerning the content and the design process. Researchers seeking to design IBI interfaces can benefit from this study, as it may aid researchers in providing explicit examples of how IBIs are designed. Understanding experts' potential challenges, influence of methods, and solutions can, in addition, provide useful information for those investigating how to design IBIs.

6.1 Future work

In future research it would be advantageous to investigate other fields of expertise, such as educative information systems, which may be similar in structure and design. Frameworks and best practices of structure in educational programs should be further explored. Moreover, further data collection should be conducted, where all participants in the mental health project could participate by providing deeper insights into how the experts in differing professions create value.

Bibliography

Andersson, G. (2018). Internet interventions: Past, present and future. *Internet Interventions*, *12*, 181–188. https://doi.org/10.1016/j.invent.2018.03.008

Baltierra, N.B., Muessig K. E., Pike E. C., LeGrand, S., Bull, S.S., Hightow-Weidman, L.B. (2016) More than just tracking time: Complex measures of user engagement with an internet-based health promotion intervention, Journal of Biomedical Informatics, Volume 59, 2016, Pages 299-307, https://doi.org/10.1016/j.jbi.2015.12.015.

Breitenstein SM, Gross D, Garvey CA, Hill C, Fogg L, Resnick B. (2010) Implementation fidelity in community-based interventions. *Res Nurs Health*. 2010;33(2):164-173. https://doi.org/10.1002/nur.20373

Chatterjee, A., & Vartanian, O. (2014, July 1). Neuroaesthetics. *Trends in Cognitive Sciences*. Elsevier Ltd. https://doi.org/10.1016/j.tics.2014.03.003

Coyle, D., Matthews, M., Sharry, J., Nisbet, A. and Doherty, G. (2005), "Personal Investigator: A therapeutic 3D game for adolecscent psychotherapy", Interactive Technology and Smart Education, Vol. 2 No. 2, pp. 73-88. https://doi.org/10.1108/17415650580000034

Crutzen R, Cyr D, de Vries NK. (2011). Bringing Loyalty to E-health: Theory Validation Using Three Internet-Delivered Interventions. *J Med Internet Res 2011*;13(3):e73 URL: https://www.jmir.org/2011/3/e73

Cyr, D., Head, M., Larios, H., & Pan, B. (2006). Exploring Human Images in Website Design Across Cultures: A Multi-Method Approach. *SIGHCI 2006 Proceedings*. Retrieved from https://aisel.aisnet.org/sighci2006/6

Cyr, Head, Larios, & Pan. (2009a). Exploring Human Images in Website Design: A Multi-Method Approach. *MIS Quarterly*, *33*(3), 539. https://doi.org/10.2307/20650308

Cyr, Head, Larios, & Pan. (2009b). Exploring Human Images in Website Design: A Multi-Method Approach. *MIS Quarterly*, *33*(3), 539. https://doi.org/10.2307/20650308

Essery, R., Kirby, S., Geraghty, A. W. A., & Yardley, L. (2017). Older adults' experiences of internet-based vestibular rehabilitation for dizziness: A longitudinal study. *Psychology*

and *Health*, *32*(11), 1327–1347. https://doi.org/10.1080/08870446.2017.1310861

Freedman, S. A., Dayan, E., Kimelman, Y. B., Weissman, H., & Eitan, R. (2015). Early
intervention for preventing posttraumatic stress disorder: An internet-based virtual reality
treatment. *European Journal of Psychotraumatology*, *6*(1), 25608.
https://doi.org/10.3402/ejpt.v6.25608

Hassenzahl, M. (2008). User experience (UX). In *Proceedings of the 20th International
Conference of the Association Francophone d'Interaction Homme-Machine on - IHM
'08* (p. 11). New York, New York, USA: ACM Press.
https://doi.org/10.1145/1512714.1512717

Hsieh, H.-F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis.
Qualitative Health Research, *15*(9), 1277–1288.
https://doi.org/10.1177/1049732305276687

Inal Y, Wake J.D., Guribye F, Nordgreen T. (2020). Usability Evaluations of Mobile Mental
Health *Technologies: Systematic Review*. *J Med Internet Res*. 2020;22(1):e15337.
Published 2020 Jan 6. doi:10.2196/15337

INTROMAT. (n.d.). Psycho-social support for women recovering from gynecological cancer
– Intromat. Retrieved April 23, 2020, from https://intromat.no/cases/psycho-social-
support-cancer/

INTROMAT. (2018a). Cognitive training in ADHD – Intromat. Retrieved April 23, 2020,
from https://intromat.no/cases/cognitive-training-in-adhd/

INTROMAT. (2018b). Early intervention and treatment for social anxiety disorder in
adolescents – Intromat. Retrieved April 23, 2020, from https://intromat.no/cases/social-
anxiety-in-adolescents/

ISO 9241-210:2019(en), Ergonomics of human-system interaction — Part 210: Human-
centred design for interactive systems. (n.d.). Retrieved March 25, 2020, from
https://www.iso.org/obp/ui/#iso:std:iso:9241:-210:ed-2:v1:en

Katz, A. S., Ikar, D., & Tractinsky, N. (2000). What is beautiful is usable. *Interacting with
Computers*, *13*(2), 127–145. https://doi.org/10.1016/S0953-5438(00)00031-X

Kelders SM, Kok RN, Ossebaard HC, Van Gemert-Pijnen JE (2012)
Persuasive System Design Does Matter: A Systematic Review of Adherence to Web-Based Interventions. J Med Internet Res 2012;14(6):e152
DOI: 10.2196/jmir.2104

Kim, J., & Moon, J. Y. (1998). Designing towards emotional usability in customer interfaces - Trustworthiness of cyber-banking system interfaces. *Interacting with Computers*, *10*(1), 1–29. https://doi.org/10.1016/S0953-5438(97)00037-4

King, A. J. (2015). A Content Analysis of Visual Cancer Information: Prevalence and Use of Photographs and Illustrations in Printed Health Materials. *Health Communication*, *30*(7), 722–731. https://doi.org/10.1080/10410236.2013.878778

Kvåle, S., & Brinkman, S. (2009). InterViews: Learning the Craft of Qualitative Research Interviewing - Steinar Kvale, Svend Brinkmann - Google Bøker. Retrieved April 24, 2020, from https://books.google.no/books?hl=no&lr=&id=bZGvwsP1BRwC&oi=fnd&pg=PR1&dq =InterViews:+Learning+the+Craft+of+Qualitative+Research+Interviewing&ots=q7KQ wiuxJ9&sig=_Hj2b8pgUtxlXyeqwsjBDIgmYgA&redir_esc=y#v=onepage&q=InterVie ws%3A Learning the Craft of Qualita

Kvåle, S., & Brinkmann, S. (2018). *Det kvalitative forskningsintervjuet*. (M. T. Anderssen & J. Rygge, Eds.) (3rd ed.). Oslo: Gyldendal Norsk Forlag AS.

Lavie, T., & Tractinsky, N. (2004). Assessing dimensions of perceived visual aesthetics of web sites. *International Journal of Human-Computer Studies*, *60*(3), 269–298. https://doi.org/10.1016/J.IJHCS.2003.09.002

Lazard, A. J., Dudo, A., Dennis, T., Ewald, M. G., & Love, B. (2017). Making a Visual Impression (or Not): Current Design Practices of Nutritional Websites. *Health Communication*, *32*(4), 470–482. https://doi.org/10.1080/10410236.2016.1140267

Lazard, A. J., & King, A. J. (2020). Objective Design to Subjective Evaluations: Connecting Visual Complexity to Aesthetic and Usability Assessments of eHealth. *International Journal of Human–Computer Interaction*, *36*(1), 95–104. https://doi.org/10.1080/10447318.2019.1606976

Lazard, A. J., & Mackert, M. S. (2015). e-health first impressions and visual evaluations.

Communication Design Quarterly Review, *3*(4), 25–34. https://doi.org/10.1145/2826972.2826975

Lazard, A. J., Pikowski, J., Horrell, L., Ross, J. C., Noar, S. M., & Sutfin, E. L. (2019). Adolescents' and Young Adults' Aesthetics and Functionality Preferences for Online Tobacco Education. *Journal of Cancer Education*, 1–7. https://doi.org/10.1007/s13187-019-1475-4

Leder, H., Belke, B., Oeberst, A., & Augustin, D. (2004). *A model of aesthetic appreciation and aesthetic judgments*. *British Journal of Psychology* (Vol. 95). Retrieved from www.bps.org.uk

Li, Y. M., & Yeh, Y. S. (2010). Increasing trust in mobile commerce through design aesthetics. *Computers in Human Behavior*, *26*(4), 673–684. https://doi.org/10.1016/j.chb.2010.01.004

Ling, J., & Van Schaik, P. (2002). The effect of text and background colour on visual search of Web pages. *Displays*, *23*(5), 223–230. https://doi.org/10.1016/S0141-9382(02)00041-0

Accessibility - Material Design. (n.d.). Retrieved June 15, 2020, from https://material.io/design/usability/accessibility.html#hierarchy

McCarthy, J., & Wright, P. (2004). Technology as experience. *Interactions*, *11*(5), 42. https://doi.org/10.1145/1015530.1015549

Moshagen, M., & Tielsch, M. T. (2010). Facets of visual aesthetics. *International Journal of Human-Computer Studies*, 689–709. https://doi.org/doi:10.1016/j.ijhcs.2010.05.006

Proudfoot, J., Klein, B., Barak, A., Cuijpers, P., Lange, A., Ritterband, L., & Andersson, G. (2011). Establishing Guidelines for Executing and Reporting Internet Intervention Research. *Cognitive Behaviour Therapy*, *40*(2), 82–97. https://doi.org/10.1080/16506073.2011.573807

Reen, G., Muirhead, L., & Langdon, D. (2019). Usability of Health Information Websites Designed for Adolescents: Systematic Review, Neurodevelopmental Model, and Design Brief. Journal of Medical Internet Research, 21(4), 1-21. [e11584]. https://doi.org/10.2196/11584

RestDep. (2019). Om RestDep – RestDep. Retrieved April 23, 2020, from

https://www.restdep.no/om-behandling-av-depresjon/

Roth, S. P., Schmutz, P., Pauwels, S. L., Bargas-Avila, J. A., & Opwis, K. (2009). Mental models for web objects: Where do users expect to find the most frequent objects in online shops, news portals, and company web pages? *Interacting with Computers*, *22*, 140–152. https://doi.org/10.1016/j.intcom.2009.10.004

Roth, S. P., Schmutz, P., Pauwels, S. L., Bargas-Avila, J. A., & Opwis, K. (2010). Mental models for web objects: Where do users expect to find the most frequent objects in online shops, news portals, and company web pages? *Interacting with Computers*, *22*(2), 140–152. https://doi.org/10.1016/j.intcom.2009.10.004

Tuch, A. N., Presslaber, E. E., Stöcklin, M., Opwis, K., & Bargas-Avila, J. A. (2012). The role of visual complexity and prototypicality regarding first impression of websites: Working towards understanding aesthetic judgments. *International Journal of Human Computer Studies*, *70*(11), 794–811. https://doi.org/10.1016/j.ijhcs.2012.06.003

Van Gemert-Pijnen, J. E., Nijland, N., Van Limburg, M., Ossebaard, H. C., Kelders, S. M., Eysenbach, G., Seydel, E. R. (2011). A Holistic Framework to Improve the Uptake and Impact of eHealth Technologies. Journal of Medical Internet Research 11(13), e4. https://doi.org/10.2196/jmir.1672

Yardley, L., Morrison, L., Bradbury, K., & Muller, I. (2015). The person-based approach to intervention development: Application to digital health-related behavior change interventions. *Journal of Medical Internet Research*, *17*(1), e30. https://doi.org/10.2196/jmir.4055

Appendix A

Interview guide

Get to know phase

1. Can you describe your program for me?

2. What is the purpose of this internet-based intervention program?

3. What qualities does a successful online intervention program have?

    a. What is a good program with regards to the patient?

    b. What is a good program in terms of functionality in your opinion?

    c. What does a good online intervention *look* like?

Design and the decision-making processes

1. What was your role in the design process? By design process I mean the process when designing the program. Did you take part in designing the layout of the pages, the text, choice of images and so on? What was your role in this process?

2. Which parts of the design were your responsibilities? (For example in charge of the interface, the main content such as text, images, exercises and so on)

3. What kind of challenges did you face during the design process?

    a. How did you overcome these challenges?

    b. Were any of the challenges unresolved?

4. Did you analyze any similar (online intervention) programs?

    a. How did that influence the decision-making process of the design?

5. What method did you follow in your design process? (User-centered, person-based approach, participatory design etc.)

    a. How would you describe your process?

    b. How did the chosen method guide your process?

    c. What do you think was the advantage of using said method?

6. How did you ensure that the design decisions are appropriate for future users of your program?

    a. If you involved users, how?

b. What was the benefit of user involvement?

c. Did it change the course of your design process? Did you have to alter your designs to cater for the users' feedback?

Prototypicality

1. Were you involved in the decisions regarding the layout of the website? (how it looks on the screen)

   If yes to this question, continue:

2. What made you decide the specific placement of the logo (and back to homepage)?

3. What made you decide the specific placement of the main area (involving content such as text, images and video and audio)?

4. What made you decide the specific placement of the navigation?

5. What made you decide the specific placement of login/sign-in options?

6. What made you decide the specific placement of buttons (for instance in modules and/or other locations in the program)?

7. What made you decide whether to provide longer texts or shorter texts in the main area?

Web aesthetics

1. What is the reason behind the way of constructing the information in a module-based layout? The program consists of this model: program   modules   content   content elements (video, text, images etc.)

2. What made you decide on the specific exercise interaction (use of buttons to present more exercise information (RestDep) / optional exercises (minADHD) / exercises to be implemented directly in the program (Gynea) - DIVERSITY

3. What made you choose this specific color in your design? (What is the decision of warm/cool hue based on?)

4. What is the reason behind using a symmetric color tone/multiple colors/single tone?

5. What are your thoughts on the use of text color and background color? What made you choose this specific format?

Images

1. What made you decide to use illustrations/photographic images?
2. What made you focus on people/objects/nature in the photographic images?
3. Most of the images representing people are showing certain emotions, what is the reason behind this? (Show example of images of people specific for each case)
4. Images are similar in themes (e.g. food/drink, nature / landscape), what is the reason behind this? (Show by examples)
5. Why did you choose these images?

   (Show example of an image: explain what is seen)
6. What purpose do the images serve?

Video/audio

1. What made you decide to use illustrations/real people in the videos?
2. What made you choose to focus on people/objects/nature in the videos?
3. What purpose do the videos have?
4. What purpose do the audio content serve?
5. What is the reason for using both video and audio in addition to text to convey the information in the programs?

Appendix B
Consent form in original language

Vil du delta i forskningsprosjektet *"Utforming av nettbaserte behandlingsprogram for lettere psykiske lidelser"*?

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å få innsikt i hvordan nettbaserte behandlingsprogram blir designet i forhold til brukeropplevelse og visuelle aspekter. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Dette forskningsprosjektet er en del av en mastergradsstudie ved Institutt for informasjons- og medievitenskap under Universitetet i Bergen. Forskningsprosjektet har som formål å utforske og å identifisere hvordan nettbaserte behandlingsprogram blir designet i forhold til bildebruk, tekst, multimedia (video/lyd), i tillegg til aspekter som inngår i grensesnittet i behandlingsprogrammet. Prosjektet har følgende forskningsspørsmål:

1. Hvordan utformes nettbaserte behandlingsprogram for lettere psykiske lidelser?
2. Hvilke verdimessige vurderinger gjør skapere av nettbaserte behandlingsprogram for lettere psykiske lidelser angående layout, presentasjon, farge og tekst?
3. Hvilke verdimessige vurderinger gjør skapere av nettbaserte behandlingsprogram for lettere psykiske lidelser i forhold til bruk av bilder, videoer og lydfiler?

Hvem er ansvarlig for forskningsprosjektet?

Universitetet i Bergen er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?

Du er kontaktet for å delta ettersom din ekspertise og konkrete erfaring i ditt fag vil bidra til å kunne få svært nyttig informasjon om hvordan man kan utforme nettbaserte behandlingsprogrammer og hvilke verdier som ligger til grunn for disse designvalgene. Det vil være totalt tre fokusgrupper i studien.

Kontaktopplysninger er formidlet gjennom veileder i prosjektet.

Hva innebærer det for deg å delta?

Deltakelse i studien innebærer å delta i en fagrettet fokusgruppe som vil ta rundt 60 minutter. Alle intervjuer vil tas opp med lydopptak, der det også vil bli ført notater underveis. Dataene (lydopptak) vil bli transkribert på et sikkert sted og slettet etter at innholdet er dokumentert. Transkribert data vil være anonymisert.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykke tilbake uten å oppgi noen grunn. Alle opplysninger om deg vil bli anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

- Masterstudent i prosjektet vil ha tilgang til innsamlet data.
- Sikringstiltak for at uvedkommende får tilgang til personopplysninger vil innebære anonymisering av transkribert data, der navn vil erstattes med en kode og som oppbevares separat fra disse data.
- Det opplyses om at sitat vil kunne bli brukt i masteroppgaven, men at denne informasjonen ikke vil kunne spores tilbake til deg.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Prosjektet skal etter planen avsluttes 01.06.20. Før denne dato vil alt datamateriale være transkribert og lydopptak slettet.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:
- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Universitetet i Bergen har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:
- Universitetet i Bergen ved Kari Raudstein, kra016@uib.no, eller prosjektansvarlig Yavuz Inal, yavuz.inal@uib.no
- Vårt personvernombud: Personvernombud ved Universitetet i Bergen, personvernombud@uib.no
- NSD – Norsk senter for forskningsdata AS, på epost (personverntjenester@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig

Masterstudent

Yavuz Inal

Kari Raudstein

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Utforming av nettbaserte behandlingsprogram for lettere psykiske lidelser», og har fått anledning til å stille spørsmål. Jeg samtykker til:

- å delta i fokusgruppe / intervju

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, ca. juni 2020.

Prosjektdeltaker, dato

Appendix C

Quotes from interviews in original language

EXPERT 1:

«At du må ha et språk som reflekterer at det er noen som følger med»

«De har spesielle behov, sant i hvert fall etter en depresjon og du sliter kognitivt, da er man veldig sensitiv for å få for mye stimuli sant.»

«man er veldig avhengig av en veldig tett dialog med de som har utviklet løsningen, de må gjøre innholdsmessige endringer, legge inn nye setninger, og jeg tror for min del er det veldig viktig å kunne gjøre det på egenhånd»

«Det har jo vært en evaluering på om ja, om endringene de foreslår at det passer inn med målet til programmet, for eksempel var det en som snakket om kanskje vi kunne ha inn noe om selvfølelse sant, men det er jo ikke akkurat det vi, målet med dette programmet»

«For å få den repetisjonen og siden du jobber med en gruppe som sliter kognitivt så er det jo at mennesker liker å få litt variasjon i måten de får fremstilt informasjonen på»

«det handler om dette med kredibilitet, altså troverdighet sant at dette er laget av personer som har forsket på dette temaet i mange år og har den kompetansen og at de (brukerne) kjenner seg trygg på det»

EXPERT 2:

«Men til slutt så må man bare akseptere at okei, det er det her jeg har å forholde meg til (latter), så må man gjøre det beste ut av det.»

«Og så er det noe med, man har jo et press på å få gjennomført de ordentlige testene, ikke de ordentlige men de kliniske testene, så det er ikke alt man rekker å ta hensyn til heller.»

«Altså blå skal vel være litt mer sånn beroligende hvertfall, ehm, så tror jeg, prøv å unngå liksom sånn altfor mye men, at det hvertfall skal være litt, noe som skjer på skjermen tror jeg det er som skal være tanken. Ehm, men ikke for mye heller, sånn at man. Ja, sånn som forsiden her, at det er liksom ikke voldsomt, men at det skal være hvertfall litt spennende visuelt da.»

«Ja sånn som fotografi av natur og sånn, det er vel, det er vel faktisk en baktanke ved at det er vel forskning på at det er det folk liker best»

EXPERT 3:

«Jeg tror tett samarbeid med utvikler underveis er utrolig viktig for at man kommer dit man skal. For det er så masse misforståelser som dukker opp underveis at de er lettere å ta tak i med en gang.»

«Ja, hun sa ihvertfall at orange kanskje er litt mer sprek og litt mer gøyere farge for en ungdomsgruppe»

EXPERT 4:

«Sånn at det er enkelt å, enkelt å forstå og at man både ivaretar den som, eller både ivaretar innholdet og at det kommer tydelig frem, men også ivaretar den som sitter og leser om det da, på egenhånd.»

«vi er jo først og fremst eksperter på innhold og ikke på eh fremstillingen da»

«vi lager på en måte produkt, men den bakgrunnen vi har, og de de midlene vi har. De er ganske begrenset.»

«Det er nesten ingen bilder av mennesker, men det er jo fordi at det blir fort tolket på en eller annen måte da. Oppleves sterkt på en eller annen måte.»

EXPERT 5:

«Det viktige med innholdet er jo identifisering og skjønne at du ikke er alene, mange av disse kvinnene tenker at de er alene, at det er bare jeg som opplever det slik»

«For de syns teksten, fortellingene var lange, men de ville ikke at vi skulle korte ned fordi alt var så godt og meningsfylt, men de har problemer med konsentrasjon og syns det ble, og ønsk- ba oss om å formidle ting på en annen måte.»