USER EXPERIENCE OVER TIME WITH CONVERSATIONAL AGENTS: CASE STUDY OF WOEBOT ON SUPPORTING SUBJECTIVE WELL-BEING

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ABSTRACT

USER EXPERIENCE OVER TIME WITH CONVERSATIONAL AGENTS: CASE STUDY OF WOEBOT ON SUPPORTING SUBJECTIVE WELL-BEING

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Technological advancements re-shaped user-product interactions by enabling people to make conversation with interactive systems. This new form of interaction led designers to create a new type of user interface: Conversational User Interface (CUI). Expensive psychological therapy fees and people's increased awareness related to importance of well-being attracted the interactive system developers to create a domain specific Conversational Agent, which is particularly focusing on psychological terapy and has CUI. In order to maintain user engagement and sustain usage, design of such systems is important. However, existing design guidelines for Conversational Agents are limited and focus on business functions of these agents; however, conversational experience should be the main focus for designers to sustain user engagement and support people's well-being.

The aim of this research is to explore design qualities of Conversational Agent's that focuses on enhancing people's subjective well-being, to accomplish sustained usage and engagement with the conversational agent and propose guidance for designing such agents. For this purpose, interviews were conducted with users. Woebot, a Conversational Agent, which is designed for promoting people's subjective well-being was selected as a case for the study and evaluated by 16 participants. The interpretations of the participants were obtained by semi- structured and in-depth interviews. Through analysing the results of the interviews, improvement suggestions are presented regarding system operations and functionality in terms of its attractiveness, perspicuity, effectiveness, stimulation, dependability, efficiency and novelty. Lastly, the study provides insights that would affect users' engagement and overall experience.

Keywords: conversational agents, conversation design, subjective well-being, sustained user experience

ÖZ

SOHBET ARACISI İLE ZAMAN SÜRECİNDE KULLANICI DENEYİMİ: WOEBOT'UN KİŞİLERİN ÖZNEL İYİ OLUŞUNU DESTEKLEMESİ ÜZERİNE BİR ÇALIŞMA

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Teknolojik gelişmeler, insanların interaktif sistemlerle sohbet etmelerini sağlayarak kullanıcı etkileşimlerini yeniden şekillendirdi. Bu yeni etkileşim türü, tasarımcıları Konuşma Kullanıcı Arayüzü (*Conversational User Interface - CUI*) adı verilen yeni bir kullanıcı arayüzü tasarlamaya yönlendirdi. Pahalı psikolojik terapi ücretleri ve insanların öznel iyi oluşun önemi hakkında farkındalığının oluşması, interaktif sistem geliştiricilerinin bu tür terapiye odaklanan ve Konuşma Kullanıcı Arayüzüne sahip olan alana özelleşmiş sohbet aracısı tasarlama konusunda ilgilerini çekti. Kullanıcı bağlılığını sağlamak ve kullanımı sürdürülebilir hale getirmek için bu sistemlerin tasarımı önemlidir. Ancak, var olan sohbet aracısı tasarım kıstasları sohbet aracılarının ticaret özelliklerine odaklanmış durumda ve sınırlı sayıdadır. Hâlbuki sohbet deneyimi, kullanıcı bağlılığını ve insanların öznel iyi oluşlarını sürdürebilmek için tasarımcıların asıl odağı olmalıdır.

Bu araştırmanın amacı sohbet aracılarının kullanıcı bağlılıklarını sürdürmek ve bu aracıları tasarlamak için kıstaslar oluşturmak için insanların öznel iyi oluşlarını geliştirmeye odaklanan sohbet aracılarının tasarım özelliklerini keşfetmektir. Bu gayeyle, kullanıcılarla mülakatlar yapıldı. İnsanların öznel iyi oluşlarına katkıda bulunmayı amaçlayan bir sohbet aracısı olan Woebot bu çalışma için konu olarak seçildi ve 16 katılımcı tarafından değerlendirildi. Katılımcıların yorumları, yarı yapılandırılmış ve detaylı mülakatlarla elde edildi. Çalışmada, mülakatların sonuçları değerlendirilerek, çekicilik, açıklık, etkililik, uyarıcılık, güvenirlebilirlik, verimlilik ve orijinallik bakımından sistem operasyonları ve işlevselliğine ilişkin geliştirme önerileri sunuldu. Son olarak bu çalışma, kullanıcının bağlılığını ve tüm deneyimini nelerin önemli biçimde etkilediğine dair içgörüleri sağladı.

Anahtar Kelimeler: sohbet aracıları, sohbet tasarımı, öznel iyi oluş, uzun süreli kullanıcı bağlılığı

To My Family

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CHAPTER 1

INTRODUCTION

1.1. Background of the Study

System's functionality, ease of use, its aesthetic attributes and performance has always been the central qualities for user interface design in terms of its usability (Mayhew, 1999). With the emergence of personal computer, usability is the major concern of developers of such systems. The first personal computer was developed by IBM (Queen and Korn, 1984). To operate the computer, the keyboard was used to type commands to a black computer screen as a form of interaction, which is called Command Line User Interface (Jacob et al., 2008). At that time, users needed to be trained on how to use the computer, thus they considered as experts on computer usage. After 1980s, personal computers became popular; as a result, the number of computer users had increased and usability considerations started to appear since target user population was widened (Leed, 2000). It was hard for untrained user to get used to Command Line User Interface, so there needed to be a shift in the interaction paradigm at the time. The Graphical User Interface (GUI) has 'enrolled' into the systems with its graphical metaphors. The metaphors were to ease the interaction by making the interface more understandable and more intuitive to use (Myers, 1988). However, there was still a need for mediums to interact with the system such as keyboard and mouse. With the advancements in technology, this interaction started to become more intuitive and direct; that is, such mediums are now becoming obsolete if we consider interfaces such as touch screens and gestural interfaces, which are considered as Natural User Interfaces (NUI) since the interaction does not need to be mediated and more direct, thus the user does not require prior training and intuitively use the system.

Figure 1-The Evolution of User Interfaces (retrieved from chatbotsmagazine.com)

Figure 1 summarizes this evolution by highlighting the key interaction paradigms. As a prominent interaction modality for NUI, voice -or more generally- conversation has entered into current interface paradigms, which allows users to use products or services in the most natural way as possible, by just talking with them.

With the technological advancements, many products such as smartphones and home appliances in smart home systems are now capable of interacting with the users via natural language and this way of interaction is named as 'Conversational User Interface' (Moore, 2018). Thus, this new user interface enables user to interact with the interface through conversation. Moreover, using conversation as the interaction medium, Conversational Agents, such as Apple's Siri, Google Now, Amazon's Alexa and IBM's Watson are becoming popular.

"Conversational agents exploit natural language technologies to engage users in text-based information-seeking and task-oriented dialogs for a broad range of applications. Deployed on retail websites, they respond to customers' inquiries about products and services. Conversational agents associated with financial services' websites answer questions about account balances and provide portfolio information" (Lester et al., 2004, p.2). These agents have the potential to be used in healthcare related systems as digital assistants (Riccardi, 2014), and they can provide companionships or even replace the customer representative.

Conversation User Interface in healthcare has created two main potentials for Conversational Agents. The first potential is maintaining the availability of qualified healthcare services for those have limited access to such services. Second one is

enhancing the accessibility of traditional or modern psychological support services, which are not easily affordable by the majority (Fitzpatrick et al., 2017). In addition, when consulting current psychological support services, sharing personal and private matters with a stranger can cause people to feel insecure. On the contrary, with the help of domain specific Conversational Agents, people may feel free to share their stories with their artificial "therapist" in the form of a Conversational Agent. For instance, IBM's Watson offers 'cognitive healthcare solutions' for people. IBM's Watson is supported with effective Natural Language Understanding, efficient Machine Learning and Artificial Intelligence to provide "help" for its users (High, 2017). If designed effectively, such services can potentially provide benefits for subjective well-being of users and can improve their quality of life.

Conversation User Interfaces are not new to people. Characters in Sci-Fi movies and series, for example Samantha in Her (Jonze, 2014) and Jarvis in Iron Man (Favreau et al., 2008), have created an expectation concerning this type of emerging user interfaces. While interacting with Conversational Agents, people expect intelligent responses from high-tech products, which would impress them with their abilities. However, the current conversational agents are not capable of meeting these expectations, since the technology behind them has not improved that much as in the movies. That is to say, it is hard for IBM Watson to provide psychological consultancy services, which would meet the initial expectations of their users. For such cases, interaction design solutions have critical importance to condition users that the artificial intelligence behind these services have certain capabilities.

Shifting the interaction paradigm from GUI to Conversation User Interface cause user interface designers to adopt different design strategies while developing the interface for Conversational Agents, since current guidelines on designing interfaces that use computer graphics is not applicable for this case.

Although there are many established interaction design guidelines for GUI[1], for Conversation User Interface, the existing sources are mainly focusing on developing skills for specific conversational agents, such as Amazon Alexa, Google Now, IBM Watson and Apple Siri, and they are usually focusing on specific aspects of these

agents together with a limited reference to generic guidelines on conversational design. There are also a few general sources that a designer can consult while designing the interaction[2]. However, their numbers are limited and they are not focusing on the subjective qualities and impressions that a Conversational Agent should evoke during the interaction. Therefore, it is necessary to investigate features and qualities regarding user and Conversational Agent interaction, in order to ensure that the communication established through these products is continuous and preferable. In this study, the focus is on a domain specific conversational agent named Woebot, which aims to support people's subjective well-being.

1.2. Aim and Research Questions of the Study

The aim of this research is to explore the design qualities of conversational agents focusing on improving subjective well-being, in order to (1) maintain sustained usage and engagement with these agents and (2) propose guidance for designing them.

- How does user engagement can be maintained with conversational agents that supports users' subjective well-being?
    - Which design aspects and qualities do maintain user engagement?
    - What motivates people to sustain usage?
    - of the conversational agent to support user's subjective well-being?
- How should a conversational agent be designed to support user's subjective well-being?
    - How should conversation be designed?
    - What are the qualities and features

[1] There are general principles provided by guidelines from prominent authors, such as Nielsen (1993) and Shneiderman (2004); there are international standards which focuses on such guidelines, such as ISO/DIS 9241-16:1996(E); and there are styleguides for companies such as Interface Guidelines for Windows and Apple.

[2] Such as these books: "The Conversational Interface: Talking to Smart Devices (McTear et al., 2016)", "Designing Voice User Interfaces (Pearl, 2016)", "Designing Bots (Shevat, 2017)"

1.3. Structure of the Thesis

The thesis has five chapters. Contents of each chapter are outlined below.

Chapter 1 explains the background of the study and study's relevance to and importance for the design discipline. Then the scope of the study, aim and research questions of the study are presented. At the end of the chapter, the structure of the thesis is described.

Chapter 2, related literature on positive psychology, user experience and interaction design are presented as a background to this study. The importance of making use of different literature backgrounds is to distinguish how different disciplines influence the interaction design scope and also how it affects the changing user experience while interacting with smart systems.

Chapter 3 explains the methodology of the research in detail. The data collection, the steps of data collection, the procedure of the study and the measurement instruments which are used for data collection are described.

Chapter 4 presents the results of the data obtained from the participants of the research. First of all, the strategies and methods of the participants, which are used to improve their subjective well-being, are discussed. Afterwards, the first system impressions of the participants and after the first system interaction the perceived benefits and limitations of the selected conversational agent are described. Then, the overall user experience, the system's attractiveness, pragmatic and hedonic qualities which are retrieved from User Experience Questionnaire, are argued in detail. At the end of the chapter, the possible system developments, interaction design related suggestions are discussed.

Chapter 5 summarizes the thesis and evaluates the research questions of the study. The proposed interaction design guideline is presented; the recommendations for the future studies and the limitations of the present study are lined up.

CHAPTER 2

LITERATURE REVIEW

The study aimed to benefit from literature in two ways: first one was viewing the studies which related to positive psychology, well-being and types of well-being and the products; physical or digital, that support people's subjective well-being. Positive user experience related literature was also reviewed to understand people's product engagement patterns and decision making process regarding the digital product engagement. Besides, interaction design, existing interaction and graphical user interface design guidelines for digital products and design considerations of digital products formed a basis for the gap in the related literature that was covered through the study. In other words, psychology, Human Computer Interaction (HCI) and product design related literatures were reviewed and this review provided a basis for the thesis study.

2.1. Positive Psychology

Being positive in life enables us to perceive the events more and meaningful, and at the same time this positivity increases the satisfaction towards people's lives. For this reason, people try to avoid feeling negative emotions or negative situations to maintain the perceived positivity in their lives (Fredrickson, 2001).

As it has been understood from the previous psychology related studies, the main focus of the researches were related with negative emotions, understanding the underlying reasons of the negative emotions and negative experiences to break the negativity chain (Seligman, 2004). However, in recent studies, there has been a shift in the current research topics. Apart from understanding and identifying the negative emotions and experiences, positive emotions are also considered as the side effects of

the events in people's lives (Seligman, 2004). Since negativity related researches focus on the weaknesses that they had bring into people's lives and the solutions to get rid of that negativity. However, the positive psychology related studies show that positivity does not only search on the positive emotions but also the negative emotions since to be happy both emotional states should be balanced (Sheldon et al., 2018).

The reason why positive emotions became important in psychology is to find ways of increasing the quality of people's lives. This would also affect the perceived satisfaction of life. Correspondingly to the mentioned situation, the positive psychology progressing on "the events that enables life to worth living" (Seligman, 2004).

Positive psychology tries to find answers regarding the things which would increase the perceived quality of life. Furthermore, people are also searching for ways to increase their awareness and pursue a life that has meaning. To help people, positive psychology related studies try to measure the life satisfaction, merits of people, and positive emotions in their lives, the engaging activities they prefer to perform, and the accomplishments in their lives. According to Seligman (2000), negative emotions cause people to disengage, leave or isolate themselves from that happening; however, positive emotions are leading people to engage those happenings which brings happy moments in their lives and their loved ones.

To accomplish tasks that bring happiness in people's lives, people have pursued a life full of accomplishments that leads them to feel satisfied over what they are doing, and enjoy themselves. This kind of enjoyment is named well-being; accepting the life as it is and feeling fulfilled with the current state (Lopez & Snyder, 2009).

2.1.1. Well-Being

The quality of life is an important factor in people's life and affects their perceptions over the events they have experienced. To extend the positive emotions and experiences, positive psychology works on the factors that have positive affect on people's flourishing and well-being (Diener, 2009).

Psychology related literature shows that researchers on that area have different opinions related to the dimensions of the well-being. According to Bradburn's (1969), well-being could be expanded by the positive emotions gaining an advantage over the negative ones. This approach is Bradburn's '*hedonic balance'* model (Schimmack, 2008). Alternatively, Diener's (1984) suggested model of well-being includes Bradburn's emotional focus by including a cognitive element on the degree to which people's lives are calculated as satisfying. On the other front, Ryff's (1989) asserted model related to well-being expresses six dimensions that are proposed to be precisely limited to the well-being related explanations of ancient Greeks and psychological theories related to *humanistic, traditional and existential* perspectives (Ryff & Keyes, 1995). Keyes (1998); however, mixed Diener's dimensions with Ryff's dimensions which was associated with the social health of a person. Apart from all the mentioned well-being approaches above, Seligman (2011) developed a different model, named as "flourishing" and with this the term "flourishing" was introduced to the literature by him.

Seligman (2011) defines "flourishing" as the state where people experience positive emotions, positive psychological functioning and positive social functioning, most of the time. In more philosophical terms this means access to the pleasant life, the engaged or good life and the meaningful life. In accordance with the "flourishing" definition, Seligman also introduces a psychological model to enhance the flourishing in people's lives; the PERMA model. The PERMA model the flourishing and its elements are closely linked with well-being. (The PERMA model is explained in more detail in Section 2.1.2.1.)

Well-being is an important aspect of positive psychology since it is related with people's persuasion to reach their goals in life and being able to accomplish those goals in their daily life. Well-being could be observed when people pursue their goals in life and be able to accomplish them. These goals might be related with different topics and expectations of people in their daily life basis or could be either personal or social (Seligman et al., 2005). Due to these reasons well-being has been examined under two main perspectives which are eudaimonic and hedonic (Keyes et al., 2002).

- **Eudaimonic Well-Being Perspective:**

Accomplishing personal improvement and having a meaning in life which enriched with purposeful events that are agreeable with person's values are labelled as the eudaimonic well-being. The roots of eudaimonic well-being relies on Aristotle according to positive psychology researchers because this well-being perspective is associated with personal growth, meaning in life and having a perfectionist attitude in life (Sheldon et al., 2018).

Eudaimonic well-being; in other words, is related with feeling delighted after achieving an improvement in personal life, feeling happy and trying to reach further n life by functioning well. In psychology related literature, this "functioning well" dimension of eudaimonic well-being is matched with psychological well-being.

- **Hedonic Well-Being Perspective:**

Hedonic well-being on the other hand, is associated with living a life while maximizing the happiness in it. This well-being perspective focuses on eliminating the discomfort while promoting the comfort in life (Sheldon et al., 2018). While eudoimonic well-being is related with "functionality", the hedonic perspective refers to the affective or 'feeling good' dimension of well-being.

According to Sheldon et al. (2018), subjective well-being is defined under the hedonic well-being perspective.

The meaning in life, which mentioned under both eudaimonic and hedonic well-being, could be examined in different terms of perceived life satisfaction. The life satisfaction is one of the key dimensions of well-being and it could be either cognition based, which refers to psychological well-being or both emotion and cognition based which refers to subjective well-being (Zika and Chamberlain, 1992).

2.1.1.1. Psychological Well-being

Ryff (1989) defined eudaimonia with regards to achieving personal growth which highlights "*autonomy, positive relations, growth orientation, purpose, and meaning*".

Ryan and Deci (2001) stated that “there are three primary facets of eudaimonic living: Pursuing intrinsic goals like growth, intimacy and community rather than extrinsic goals like status, appearance and wealth; behaving in autonomous rather than controlled ways; and being mindful and acting with a sense of awareness”(Sheldon et al., 2018, p.2). Eudaimonic well-being is a part of psychological well-being since people aim to pursue a life while being aware of their personal advancement through engaging and meaningful activities cognitively.

These definitions have an impact on the definition of psychological well-being. Psychological well-being is positive psychological functioning of the induvial according to Ryff (1995). The terms in the eudaimonic well-being enable people to pursue a life that satisfying them psychologically. In the time actualising goals and expectations to chase the meaning of one’s own life, the activities or tasks are completed while being aware of the consequences. To illustrate, doing sport regularly leads to a healthy life. As a result, psychological well-being is fulfilled when people function in accordance with their capability and potential to reach a meaningful life.

The term psychological well-being might be confused with the subjective well-being since both of them are related with increasing the quality of life, life satisfaction and having a meaning in life. However, psychological well-being is focused on the activities that are performed consciously, whereas, subjective well-being is more interested in emotions.

2.1.1.2. Subjective Well-being

The subjective well-being is associated with the overall life satisfaction (Diener, 1984). The researches on this topic are considered to be relate with positive emotions, positive experiences in daily life context; also the reactions of people towards them. As mentioned in the hedonic well-being perspective, both hedonic and subjective well-being aim to increase the happiness while decreasing the pain in life.

According to Martin Seligman (2002), happy people have tendency to perceive events more optimistically, remember the past more positively and perform more actively. In other words, the expansion in positive emotions and happiness enable people to focus

on the positive side of the past and present occurrences rather than the negative ones. With this, people can easily motivate themselves to reach their goals, increase and be satisfied with the quality of their lives. On the other hand, having a subjective perspective while deciding what makes a life that good for living is also counted as a definition of subjective well-being (Diener, 1984).

In subjective well-being, the decision maker is the person him/herself that decides whether he or she is pursuing a good life. To promote positive feelings in life, to enjoy life as a whole and finding a meaning in life have a central importance in subjective well-being. Furthermore, since evoked emotions might vary from positive to negative, subjective well-being of people could also change in time. Subjective well-being does not have to be stable, but the evoked negative and positive emotions should be balanced to "feel good"(Seligman et al., 2005).

To measure the emotional reactions over life satisfaction, quite diversive measurement instruments are developed. The measurement is important due to understanding of the underlying reasons of subjective well-being and the benefit is finding different ways and/or methods for promoting the well-being of people (Diener et al., 2009).

2.1.2. Methods for Improving Subjective Well-Being

There are various methods to improve subjective well-being; nevertheless, in this study the PERMA model and coping strategies were covered due to being able to cover more aspects of subjective well-being.

2.1.2.1. The PERMA Model

The PERMA model was introduced to the psychology literature by Martin Seligman in 2011. Apart from its being a well-being approach, in this study the PERMA model was used as a method for improving well-being.

In Seligman's PERMA model, there are several aspects stated as to feel satisfied and fulfilled, and scientific recommendations needed to be integrated in people's lives

(Seligman, 2000). In PERMA model, each letter points to an aspect of subjective well-being. To illustrate, P is for positive emotions, E is for engagement, R is relationships, M is meaning in life and lastly A is the accomplishment. If people increase these five elements all together in their lives, they would live a healthy life.

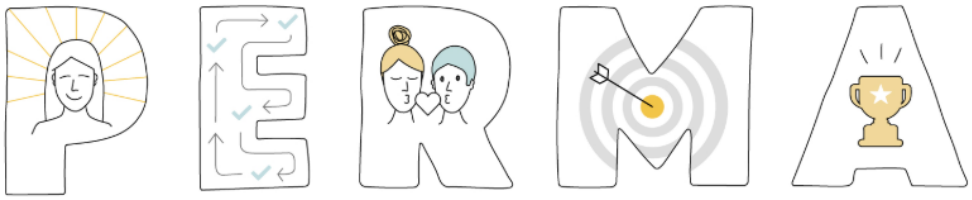


Figure 2- PERMA model (retrieved from https://positivepsychologyprogram.com/perma-model/)

Positive Emotions (**P**ERMA), is linked with maximizing the positive feelings and accommodation in people's lives. The positive emotions are important to empower the people interpret their lives more positively.

Engagement (P**E**RMA) is obtained from the activities that supports subjective well-being. To illustrate, cooking, drawing or doing sports increase the positive emotions while engaging with an activity.

Relationship (PE**R**MA), stands for the quality of the relationship between a person and his/ her loved ones. Having a positive relationship with them stiffens the positive feelings.

Meaning (PER**M**A) is the most crucial aspect of the model because without a meaning in life, trying to reach happiness loses its importance.

Accomplishment (PERM**A**) is related with reaching the setted goals in life. For instance, working for a good career and as a result of that hard work accomplishing the goal lead people to feel fulfilled and happy.

As mentioned above, the purpose of positive psychology is to measure happiness and in accordance with the measurements bring positive emotions and experiences into people's lives. The PERMA model enables people to improve their current state and remain the positivity in their lives.

2.1.2.2. Coping Strategies

The coping strategies are connected with the actions and responses of people under stressful situations (Lazarus, 1992). Moreover, coping strategies also addresses the efforts of people to manage stressful circumstances. The context of the stressful situation may vary from personal to social; nevertheless, apart from its context, the characteristics of that situations determines the strategies that people develop in order to overcome these circumstances (Folkman et al., 2000). As a result, a person might try to handle the situation by changing the source and/or the meaning of the problem in accordance with the evoked emotions at the end of the experience (Carver et al., 1989).

Trying to cope with the source of the problem refers to the "problem focused coping" whereas trying to change the meaning of the negative experience with the evoked emotions refers to "emotion focused coping". The sub categories of the "problem focused coping" are taking direct action, planful problem solving, suppression of competing activities, restraint coping and seeking social support from the loved ones. On the other hand, positive reinterpretation, focusing and venting emotions, mental and behavioural disengagement, acceptance and turning to religion are the sub categories of emotion focused coping (Yi& Baumgartner, 2004).

Table 1-Problem and Emotion Focused Coping Strategies (Yi& Baumgartner, 2004)

Problem Focused Coping Strategies	Emotion Focused Coping Strategies
Taking Direct Action	Focusing on and Venting Emotions
Planful Problem Solving	Behavioural Disengagement
Suppression of Competing Activities	Mental Disengagement
Restraint Coping	Positive Reinterpretation
Seeking Social Support	Acceptance
	Turning to Religion

In our study our main focus, which is related to coping strategies, was to understand how graduate students cope with the stressful and/or anxious situations and which they developed to overcome these situations were examined.

2.1.3. Design for Improving Subjective Well-Being

Product's design could enable people to engage with meaningful activities or empower them to pursue a happier life. In product design related researches, how a design can change people's way of living and how design can increase the quality of life were searched.

The design of a product as an enabler focuses on helping people with sustainable solutions and fulfilling the needs via design (Desmet and Pohlmeyer, 2013). In design literature, to promote positive user experience, several design approaches are introduced. Each of those approaches focuses on different aspect of subjective well-being. One of them is Positive Design Framework (Desmet and Pohlmeyer, 2013).

The Positive Design Framework contains three ingredients of subjective well-being which are pleasure, virtue and personal significance. Design for personal significance is associated with the positive emotions evoked from the personal goals or expectations from life. A product could be a supporter when people are trying to reach their goals. To illustrate, a designed prosthetic leg would enable people to be actively involved in life. Design for pleasure tries to feed the positive emotions of people. With the support of a product, the positive emotions may maximize while negative ones minimizes. Design for virtue; on the other hand, is related with morality side of life. The design for virtue affects the behaviours of people according to Desmet and Pohlmeyer (2013). The mentioned framework aims to guide designers during the design process.

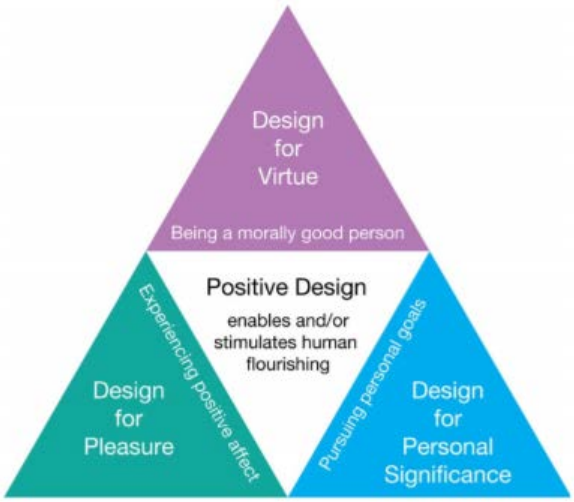


Figure 3- The Positive Design Framework (Desmet& Pohlmeyer, 2013)

The framework could be counted as the basis for the positive design. The positive design desires to make people happy and to remove the obstacles which prevents people to reach happiness.

Subjective well-being improved through design could be achieved by designing products that would shape the people's experiences in a positive way. Since people cannot buy a new product when they want to change themselves, changing people's behaviours as a consequence of a product usage would be more sustainable solution (Hassenzahl et al., 2013).

There could be different design related approaches to shape the experiences of people by means of supporting their subjective well-being. Some approaches might aim to increase the positive side of the experience while others direct people to embrace life with its aspects as a whole (Hassenzahl, 2008). Since subjective well-being is associated with positive emotions and "feeling good", the intention of positive design is to empower people to feel good via product design (Dorrestijn & Verbeek, 2013).

To promote people's well-being, design related studies have focused on ways to achieve happiness. In product design, the researches have mostly connected with the physical products whereas the design of digital products should also be covered in scope of product design literature.

2.1.3.1. Physical Products

Recently, design, engineering and marketing departments collaborated during processes of a product development to improve the expected user experience. Their contribution to positive user experience to support subjective well-being has been a popular research topic in positive design literature (Garrett, 2010). Apart from the functionality and aesthetic appealing of a product, the elicited emotions and thoughts also become important topics to search for.

Physical products become an important factor to evoke positive emotions during product usage. To illustrate, personal trackers (e.g. Fitbit) encourages people to do exercise, be more active in general and track people's quality of sleep. With this encouragement, people feel more motivated to reach their goal of being fit (Figure 3). Moreover, "…musical instruments enable musicians to develop their talent, while running shoes support the development of an athlete's individual running technique. Products can also remind users of their current goals, or symbolize the achievement of past goals" (Desment & Pohlmeyer, 2013, p.9). Physical products, accordingly, help people to achieve their goals and motives them to accomplish their ambition in life.

Figure 4- Fitbit (retrived from https://www.fitbit.com/versa)

Mobile phones today reserve a big place by easing the everyday activities of people. The use of mobile phone support the subjective well-being through reshaping the

habits of the people. Furthermore, with the help of mobile phones, multiple tasks could be completed with a little effort. For instance, while listening music, a message can be send to a friend at the same time without a need for another product (Palen et al., 2000).

Mobile phones also enable people to download applications to perform different tasks and engaging activities. Those activities could play an important role for subjective well-being improvement (Karapanos et al., 2016).

2.1.3.2. Digital Products

At the beginning, the mobile phones were used for communication; however, they have evolved towards more mobile, adjustable and customizable products (Goggin, 2007). The wireless technology helped them to be used for playing games, video sharing, leisure activities, flirting and work related activities (Chan, 2013). Moreover, as it is understood from the usage shift, the obtained usage flexibility and the applications that iterate the flexibility, decreased the effort for daily activities while increasing the quality of life (Essoussi & Merunka, 2007).

2.1.3.2.1. Applications

Mobile applications allow people to access services which increase the quality of their lives. To increase the quality, more applications stated to submit purposeful and engaging ones from the application stores in different operating systems such as Play Store in the Android operating system and App Store in IOS operating system. (Sandstorm et al., 2016). However, since the number of available applications for downloading are drastically increasing, the competition and getting the attention of the people among others have become a challenge for them.

People today have at least four of the most used applications in their mobile phones and they got used to have feedbacks from those applications (Griauzde et al., 2018). It could be concluded that people would adopt more preferable applications for

themselves since it is hard to find and download most of the application from the crowd. In other words, most of the present applications become invisible for people and grabbing the attention of people out of many got difficult (Tarute et al., 2017).

Users; however, gained consciousness over time with the increased familiarity and became aware of their expectations from an application (Tay and Diener, 2011). This conscious behaviour of users affected the application preferences. According to Unal et al. (2017), people's awareness has a positive effect on the application preferences. Since people try to promote their subjective well-being through engaging activities, the applications they have on their phone could also be included in the mentioned engaging activities.

To support the increasing interest in subjective well-being, diversified applications are now available. The context of the application that aims to support people's well-being vary between mediation to noting events that make people feel gratitude. For instance, 'Smiling Mind' application, which is available for Android and IOS, aims to help people to expand their knowledge related to the term 'mindfulness', and help them to overcome the stressful moments by the mediation; moreover, it provides exercises for a healthy body.

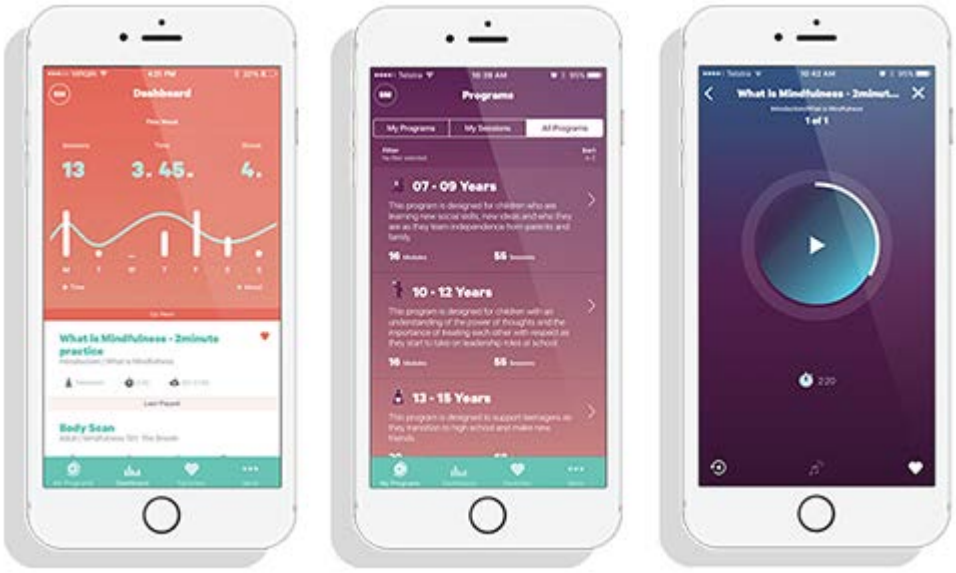


Figure 5- Smiling Mind Application (Retrieved from https://www.harnessprojects.com.au/wp-content/uploads/2018/04/sm-blog.png)

‘Stop breath and think’ application is also designed for guiding people in regards to mediation, to come through anxiety, depression or stress related problems. The application provides different mediation audios which last between 2 to 20 minutes (“stopbreathethink”).

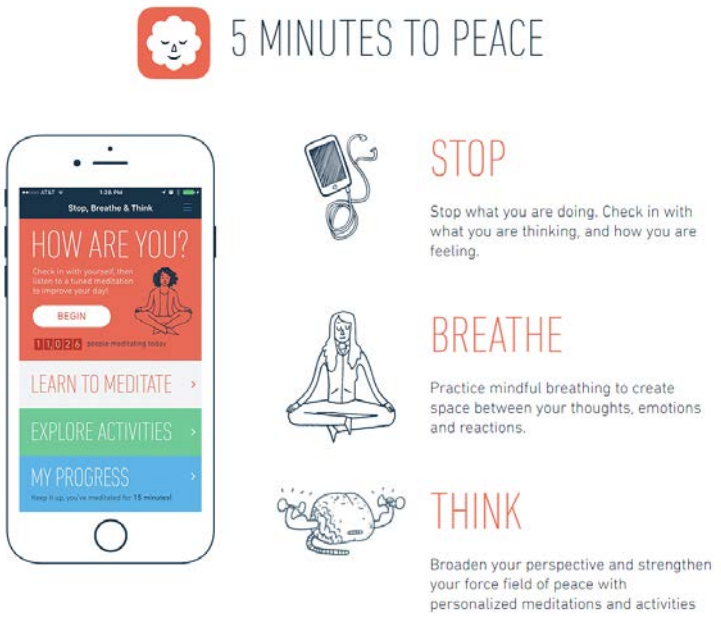


Figure 6-Stop, Breathe and Think Application (Retrieved from https://www.stopbreathethink.com)

Apart from increasing the positive emotions by mediation, context related to fitness is also popular on the application stores. For instance, ‘Freeletics’ is one of the most popular application that is downloaded from Google Play Store (Schneider et al., 2016).

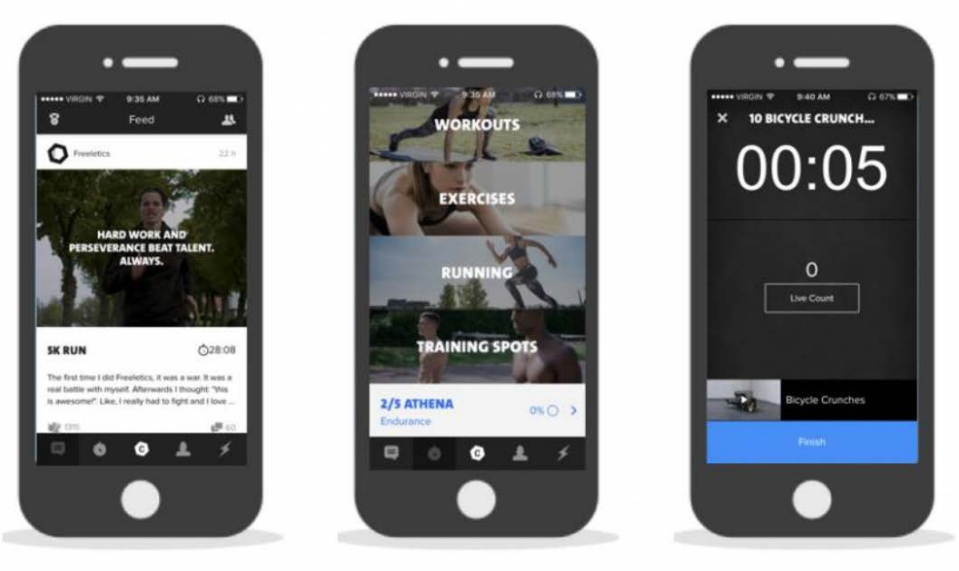


Figure 7-Freeletics Applicaiton (Retrieved from https://www.designrush.com/best-design/freeletics)

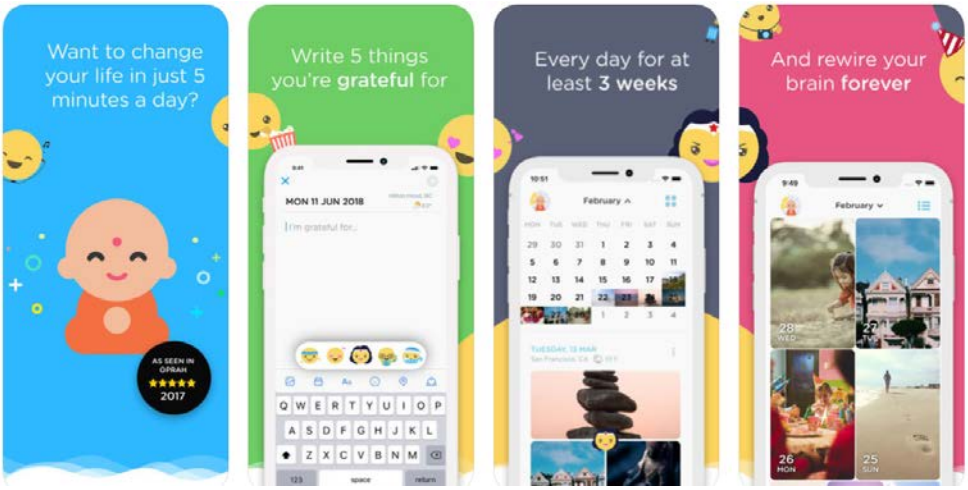


Figure 8- My Graditude Journal Applicaiton (retrieved from https://itunes.apple.com/us/app/my-gratitude-journal/id1164553256?mt=8)

Besides the mentioned application contexts, the 'My Gratitude Journal' enables people to remember what they are grateful for through note taking. The developers of application state that remembering those moments by taking notes would increase the positive emotions of people ("itunes"). However, all of the four applications are paid services. Thus, to make the applications more preferable in app stores, the interface design of the application should be designed in accordance with operating systems (Bhandari et al., 2017).

On the other hand, The Facebook Messenger and/or WhatsApp application could also affect the subjective well-being of people. The conversational agents, which could be either an application or embodied in another existing applications can promote the subjective well-being of people (Riccardi, 2014).

2.1.3.2.2. Conversational Agents

The developing form of interaction system which is becoming progressively integrated into the instant messaging applications or either having an independent application are labelled as Conversational Agents (CA), (Luger&Sellen, 2016).

For Conversational Agents, there has been diversive definitions in the literature. 'Conversational agent', 'Chatterbot', 'chat agents', 'digital agents', 'conversational interfaces', 'chatbots' and various more names have been given to such systems. Apart from conversational agent which is the most used term in the recent studies, 'chatbot" is the second most preferred term. The difference between the 'conversational agent' and 'chatbot' is having a memory or not just imitating the human to human conversation. (Luger&Sellen, 2016). Conversational Agents can perform tasks whereas chatbots cannot. Moreover, since the creators of Woebot, the selected conversational agent in the study, is defined as a Conversational Agent, therefore the term conversational agent is used in thi study.

2.1.3.2.2.1. Evolution of Conversational Agents

The history of conversational agents goes back to the 1960s and the first CA was named 'ELIZA' which was created by Joseph Weizenbaum in 1966. The purpose of ELIZA was to help people whom have psychological disorders while acting as a therapist (Klopfenstein et al., 2017). Since its development, ELIZA has played an important role in the evaluation of conversational agents.

The second famous conversational agent was 'ALICE'. ALICE (Artificial Linguistic Internet Computer Entity) was developed by Richard Wallace in 1995. The difference

between ALICE and ELIZA was ‘the natural language processing’ according to Shawar&Atwell (2007). Apart from ELIZA, ALICE was able to carry out more refined conversations with people (Dale, 2016).

The achievements ELIZA and ALICE brought into the conversational agent development played an important role in the creation of the new CA’s which are blended with new technologies. To illustrate, Siri, Alexa or Google Now are embedded into the smartphones to help people to carry out intended tasks by the users (Shevat, 2017). With the help of technology and Artificial Intelligence integration to such systems, now it is possible to find different type of conversational agent to carry out different tasks. In 2011, newly emerged conversational agents became distinguishable with the technological advancements for people. For instance, Apple’s Siri, Google Now and Amazon’s Alexa become popular conversational agents among users.

Apple’s Siri has gained interest in 2011. After Siri, Google Now has been introduced to the users in 2012 and Amazon’s Alexa followed them in 2014 (Lopez& Guerrero, 2017). All of these three conversational agents interact with people by using natural language. Each of the mentioned conversational agents try to perform diversive tasks which asked via voice commands. To illustrate, Siri tries to answer the questions that people asked to her and performs the tasks by giving answers in natural language (Figure 9). Google Now has an access to other services; as searching for a flight ticket, finding the most suitable route from Google Maps, organizing the calender, in order to assist the user (Figure 10), (Lopez& Guerrero, 2017).

Figure 9- Apple's Siri (retrieved from www.phonearena.com)

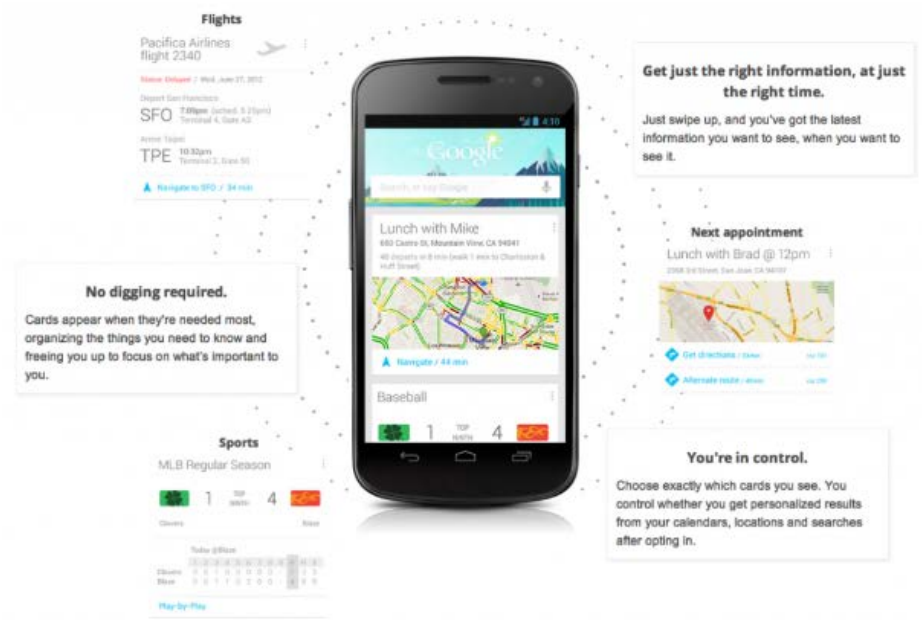


Figure 10- Google Now (retrieved from from http://blog.i2fly.com/?p=2183)

Amazon's Alexa can also perform tasks as playing music, search for news; in addition to these, Alexa can connect to the smart home services to turn on the lights, lock the door or turn o the television before users came into their houses (Lopez& Guerrero, 2017). Different from Apple's Siri and Google Now, Alexa have an access to the smart home services (IoT) to perform pre-commands of the users.

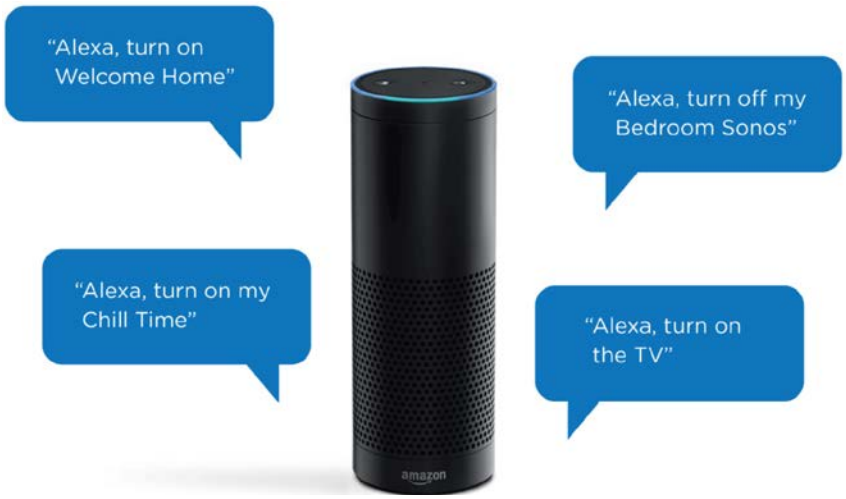


Figure 11- Amazon's Alexa (retrieved from www. chatbotsmagazine.com)

The difference between Alexa and the other two conversational agents is having a body. Alexa has its own application; however, Google Now and Apple Siri can perform in an existing system or a service. In other words, while Alexa has its own body to perform tasks, the other two conversational agents have to be embodied in certain systems to perform tasks. Having a body or not changes the ways of performance of the conversational agents and due to this change in operation the conversational agents are divided into different groups.

2.1.3.2.2.2. Types of Conversational Agents

The conversational agents could be used for business purposes to initiate a task, or could be created to perform as a personal assistant, the CA could be either “domain specific” which operates only specific services. Additionally, the conversational agents can be created in order to support personal growth and well-being while entertaining people as consumer oriented CA (Shevat, 2017).

There are two main types of conversational agents; embodied and disembodied conversational agents. There are similarities and differences between the stated CA types. Furthermore, the areas of usage vary from one to other. Embodied conversational agents have characters, mostly animated, which enable them to imitate human like gestures during conversations. The graphic instruments eases to regulate via text or voice by using facial gestures in virtual environment (Cassell, 2000). On the other hand, disembodied conversational agents do not have their own graphical elements to express human like expressions. In addition to not having their own graphical instruments, disembodied conversational agents are mostly supported by the instant messaging applications (Araujo, 2018).

The differences between embodied and disembodied conversational agents are the communication type and being able to express gestures, hazes, facial expressions.

2.1.3.2.2.3. Interaction Design Considerations of Conversational Agents

The embodied conversational agents are also supported from the smartphone's operating system. For instance, Apple's Siri and Samsung's Bixby perform as personal assistants. The disembodied conversational are supported by one of the most used messaging application; Facebook Messenger (Fitzpatrick et al., 2017).

The advantages of being supported by an existing application are using the same interface design elements of that app and being easy to notice that such conversational agents is created when comparing with having its own application. The advantage of using the existing application's graphical elements have not been designed to be able to compatible with smartphone operating systems (Klopfenstein et al.,2017). (Figure 12) Another advantage is related with competition among the applications which is being supported by an existing instant messaging application that increases the CA's possibility of being noticed by potential users (Klopfenstein et al., 2017). This advantage is also important since people would be familiar with the interface of the CA, which means the interaction and usage of system would be easy to people to use.

Platform	MAU†	Groups	Mentions	Message types	Buttons	Carousel	Quick reply	Payment
Messenger	800 M			Picture, video, file, voice.	✓	✓	✓	✓
	Persistent menus, several message templates (Airline trip, Buy, Receipt, Web link, etc.).							
WeChat	700 M		✓	Picture, video, sticker, voice, location.			✓‡	✓
	Deep-links through QR codes, Rich media and Music messages. Integrated web views§.							
Skype	300 M			Picture, video.	✓	✓		
	Several message templates (Hero image, Thumbnail, Receipt, Sign-in, etc.), phone call support.							
Line	220 M	✓		Picture, video, sticker, voice, location.	✓	✓		
	Imagemap message template (picture with multiple hot-spots).							
Telegram	100 M	✓	✓	Picture, video, sticker, file, voice, location.			✓	
	Persistent commands. Deep-links to conversations.							
Kik	80 M	✓	✓	Picture, video, sticker, voice.			✓	
	Kik code identifiers, browser integration via Javascript.							
Slack	≷ 3 M	✓	✓	File.	✓			

Figure 12- Provided Interaction Elements from Instant Messaging Applications (Klopfenstein et al., 2017)

The interaction design aspects of conversational agents, both for embodied and disembodied, are quite limited due to being a new research topic in the literature. In recent studies, it is clear that there is not an interaction design guideline for conversation design specifically. Existing conversational agent design guidelines are

mostly offering ways to understand business functions for commercial products (Moore et al., 2017).

The most customized guideline suggestion for disembodied CA is proposed by Amir Shevat in 2017 in his “Designing Bots” book. According to him, the conversational agents should have eight main interaction elements. (Figure 10).

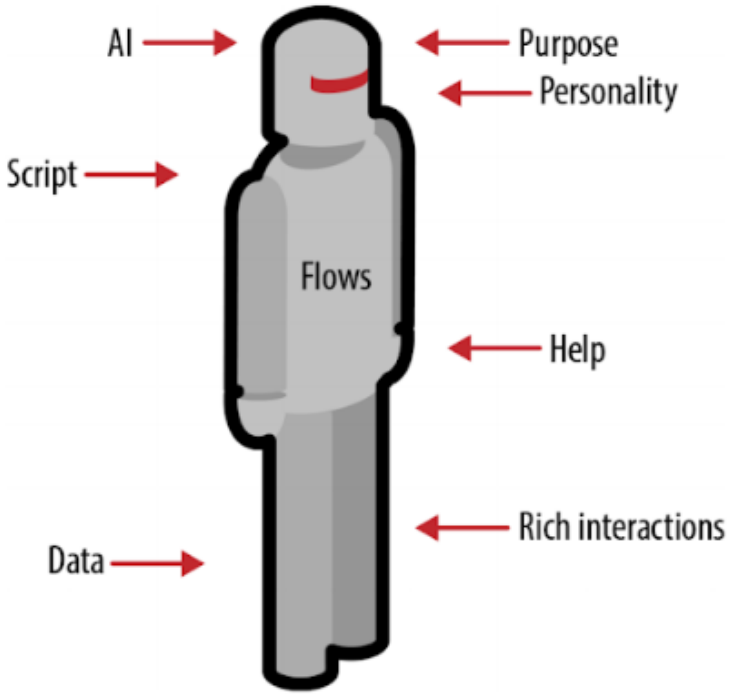


Figure 13- Conversational Agent Interaction Design Features (Shevat, 2017)

First one is “branding, personality and human involvement”. This aspect contains the audience of the CA and with its name and logo it aims to reflect the personality of CA. Second feature is being supported by Artificial Intelligence (AI). The AI plays an important role in “natural language understanding, conversation management, image recognition, prediction and sentiment analysis”. All these factors are crucial for an engaging user experience; in addition, without one of them, the CA could not be able to understand the users’ intentions. Not being able to understand the intentions will interrupt the conversation management and predicting the appropriate output for the user’s input.

The third feature is conversation which includes critical aspects of interaction design regarding to the usage success of CA. The conversation aspects are “onboarding, functionality scripting, feedback and error handling help and support”. The CA directs users throughout the conversation to prevent errors by providing the necessary help and support when users feel lost during the conversation. Moreover, having a purpose is important for CA to relay information which is linked with the provided functionality of CA.

The fourth one is “rich interactions”. The interaction elements of CA and ways of interaction. Fifth features are “context and memory”. The context and memory CA have indicates the difference between human to human interaction and CA- human interaction. The sixth ones are “discovery and installation” which are related to the initiation of a conversation.

The seventh feature is “engagement methods” that is helpful for the system attachment and the final one is the “monetization” from the system usage. Apart from this general design guideline for conversational agents, Amazon’s Aexa and IBM’s Watson have also shared their design guidelines.

Alexa is (as mentioned above) Amazon’s conversational agent. The developer of Alexa proposes Alexa Skill Kits to upgrade Alexa’s capabilities according to user’s preferences. The proposed Skill Kit tries to empower the users by letting them decide future developments on Alexa. In order to develop new skills for Alexa, the user needs to decide what kind of skill (capability) is desired and how that skill will function, then the user has to ask the decided skill to Alexa. After deciding and asking, the desired skill would have been integrated into the Alexa’s system. Apart from asking Alexa to integrate a new skill, for customized skill, developers encourage users to code the desirable skill. Subsequently to design and built process, the new skills would have been launched to the market (Figure 14- 15). On the other hand, IBM’s conversational agent Watson’s creators state that Watson is a “deep natural language processing system” by means of an effective system design. (High, 2017).

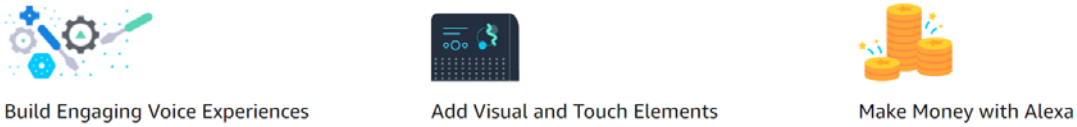


Figure 14- Alexa Skill Kit (Screenshot from the https://developer.amazon.com/alexa-skills-kit)

Figure 15- Alexa's Skill Development Process (Screenshot from the https://developer.amazon.com/alexa-skills-kit)

IBM published the design aspects of Watson in 2012 to clarify which design aspects are important while designing such systems (High, 2017). The design aspects of Watson explained in six steps. The steps start with accessing the data and after that the system “searches and finds” appropriate response. Then, the found data/response should be analyzed to “build and train” model. The modelling step continues with deployment the model for use and the final steps are monitoring, analyzing and managing the designed and deployed model (High, 2017) (Figure 16).

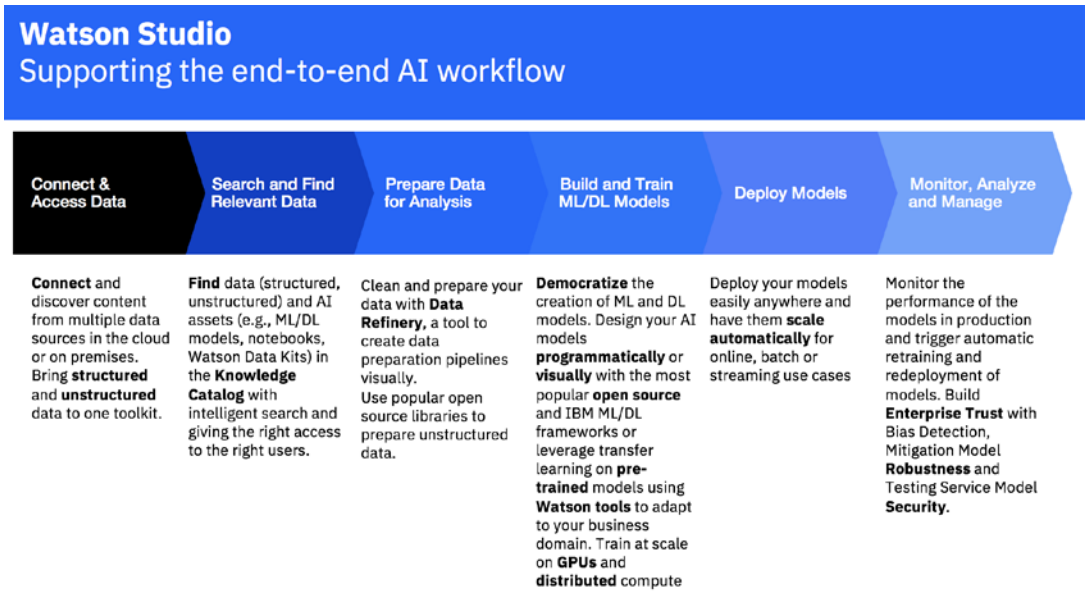


Figure 16- IBM Watson's Design Guideline (retrieved from https://www.ibm.com/blogs/watson/2016/07/ibm-watson-launched-conversation-service-found-tour)

The mentioned design guidelines for conversational agents are limited to their specific domains. Being domain specific leads these guidelines to focus on business functions apart from the expected user experience. To overcome existing limitations in design guidelines, while designing conversational agents, designers could not find any insights about the user's expectations and thoughts related to conversational agent usage.

CHAPTER 3

METHODOLOGY

This chapter reveals how and for what purpose the research is conducted. First of all, the sampling of the research is explained. After that, how the data was collected for this study is presented together with the materials used for data collection. Then, the procedure of the study is explained in detail under data collection section. Finally, how the data analysis performed is presented.

3.1 Purpose of the Research

The purpose of this study is to evaluate the interaction design elements that can be considered as useful regarding the interaction design process of digital products with artificial intelligence within a designated usage period. In this study, the specific usage period of the selected CA was two weeks, which was designed as a longitudinal research.

Long-term user experience is the whole usage process of a product, its subjective evaluation and how the meaning of that product is perceived at the end of determined usage duration. The longitudinal research was also important to observe the interaction elements and system functionality affects over the long-term usage patterns and user engagement (Kujala et al., 2013).

The primary technique that is used in this research is conducting following semi-structured interviews, which is adopted for user profiling and understanding people's methods and strategies to improve their subjective well-being. A subjective evaluation questionnaire for evaluating the interaction of the system, and at the end of the user research period in-depth interviews are conducted to understand the overall impression of system's usage over time. The analysis of gathered data from the users provided a

basis for an interaction design guideline proposal. The overall research method is provided a basis for the guideline that is proposed at the end of the research.

3.2. Sampling

The study was conducted with the graduate students from the Faculty of Architecture in Middle East Technical University. The reason for selecting graduate students from the same faculty and university is their potential of interpreting the conversational agent's perceived usability. The user experience would be interpreted by the people who know how an engaging user interaction should be. As a result, the participants have been chosen purposefully for their way of interpretation of the system's functionality features and the interaction elements in detail.

16 graduate students participated to the study in total. Five of the participants consisted from the acquaintances and the other eleven people are friends of the participants. The participants were selected in accordance with the convenience and snowball sampling. Particularly, participants of the research has been selected from whom has been accessed and the other participants were the ones whom have been selected by the convenient participants.

People who are continuing to their graduate education are more prone to stress (Misra&Castillo,2004). As a result, while researching how the interaction of a well-being related conversational agent should support people, the participant's susceptibility to stress and their strategies to improve their psychological state were important factors. The participants are chosen from graduate students between the ages 23 to 38. Eight men and eight women (16 in total) are selected from the Department of Architecture and Industrial Design. The reason for purposefully choosing these people, who are furthering their studies in similar areas, is because these people have similar stress and anxiety situations.

Five of the participants (one man, four women) are from the Department of Architecture; two of them are PhD students, three of them are Master Degree students. The other eleven participants (seven men, four women) are from the Department of

Industrial Design. Out of eleven, five of the participants are PhD students, six of them are Master Degree students. In general, nine out of sixteen are academics, four of them are students, and three of them are industrial or interior designers. (Table 1 shows the demographic backgrounds of the participants of the study and for preserving anonymity of the participants, the current job status was not shared in the Table- 1)

Table 2- Background of the Participants

	Age	Gender	Occupation	State	CA Usage Experience	Psychological Support
P01	37	F	Full-Time Employee	PhD Student	Negative	Positive
P02	30	M	Full-Time Employee	PhD Student	Negative	Negative
P03	27	M	Full-Time Employee	Master's Degree	Negative	Positive
P04	27	F	Student	Master's Degree	Negative	Positive
P05	23	F	Full-Time Employee	Master's Degree	Positive	Negative
P06	29	F	Full-Time Employee	Master's Degree	Negative	Negative
P07	31	M	Full-Time Employee	PhD Student	Negative	Positive
P08	27	F	Student	Master's Degree	Positive	Negative
P09	26	M	Student	PhD Student	Negative	Positive
P10	26	M	Full-Time Employee	Master's Degree	Negative	Positive
P11	33	M	Full-Time Employee	Master's Degree	Negative	Positive
P12	26	M	Student	Master's Degree	Positive	Negative
P13	27	M	Full-Time Employee	PhD Student	Positive	Negative
P14	24	F	Full-Time Employee	Master's Degree	Negative	Positive
P15	27	F	Full-Time Employee	PhD Student	Negative	Positive
P16	29	M	Full-Time Employee	PhD Student	Negative	Negative

3.3. Data Collection

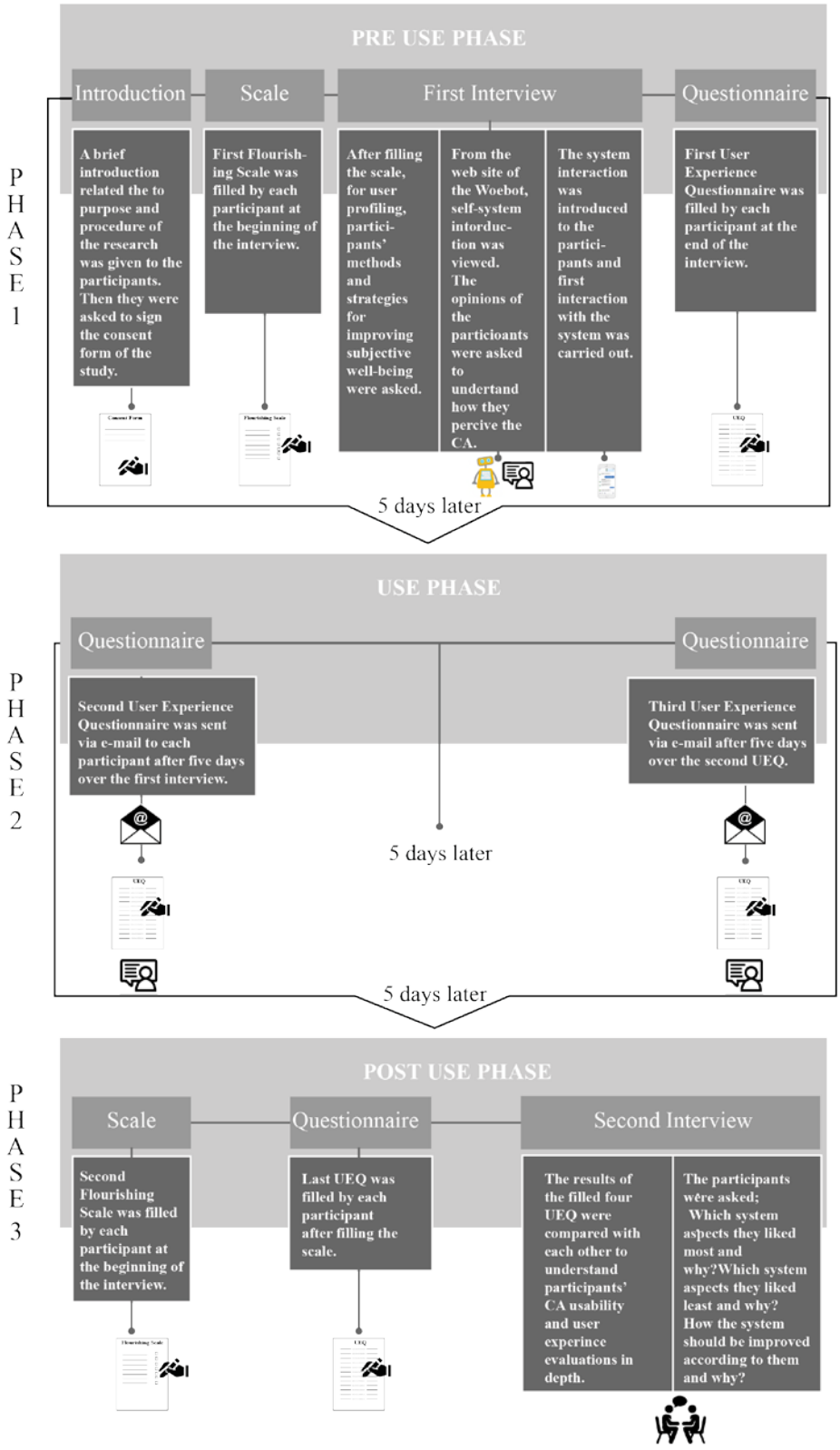


Figure 17- Methodology Structure

To have a better understanding to analyse the user engagement process, the study takes advantage of the Pohlmeyer's "ContinuE" model. In the "ContinuE" model, a user experience already starts with the anticipation of using the product, includes the use experience itself as well as the reflection upon a use experience (Pohlmeyer, 2011). Taking this proposed model as the model of this study's user experience model, the phases of study was determined as "pre-use", "use", and "post use" phases.

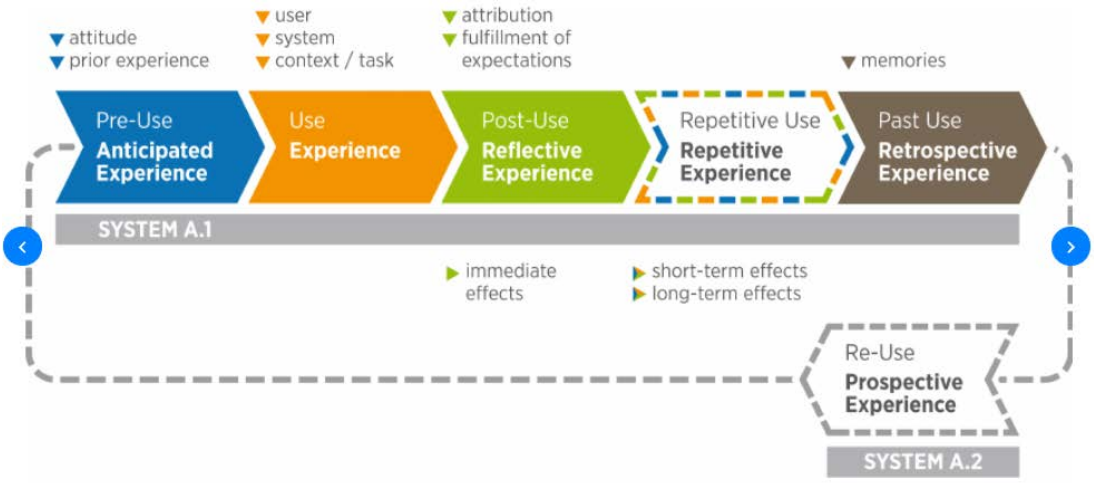


Figure 18- Pohlmeyer's model of Continuous User Experience (Pohlmeyer, 2011)

3.3.1. Pre Use Phase

In the first phase of the research, the aim was understanding people's strategies and motivations to promote their well-being in their daily lives for user profiling. In order to reach that aim, the digital assistants which offer psychological support; such as conversational agents that support an existing messaging application (Woebot), was selected. After that, semi-structured interviews were conducted with the participants of the study. The interviews were conducted in a face to face interview in the same venue.

The gathered data was analysed using the positive psychology related PERMA model and coping strategies with the negative emotions. The participants' first impressions and statements regarding the first interaction were also included in the pre use phase of the study.

3.3.2. Use Phase

In the second phase of the study, the aim was learning participants' subjective evaluations about the selected product. First of all, the most suitable subjective evaluation questionnaire for the research was selected among the existing subjective evaluation questionnaires. (UEQ)

The questionnaire was sent to the participants at certain intervals during the research period. The questionnaire was filled out via e-mails. The aim of using a subjective evaluation questionnaire was to understand the key points of related product's usage experience and the perceptions related to the system characteristics of the product. Besides, the questionnaire usage enabled this study to link the product evaluations of the participants and their understandings of the system characteristics.

3.3.3. Post Use Phase

At the end of the user research period in-depth interviews was conducted to understand the overall usage evaluation of the selected product. The analysis of overall evaluation of the product usage and perceived benefits/ limitations during decided usage period was helpful to propose a guidience for an interaction design. At the end of this content analysis, 1013 statements and 117 dimensions were retrieved. Statements refer to the aspects from the participants' comments.

3.3.4. Measurement Instruments

In total, two different measurement instruments were used during the study; one was the Flourishing Scale and the other one was the User Experience Questionnaire. Neither the scale nor the questionnaire were in the centre of the study as quantitative data resources; however, the questionnaire played an important role while collecting qualitative data related to the system's usability and overall user experience. The scale was a supportive actor for user profiling and the questionnaire was helpful in terms of enabling participants to express their diversive thoughts regarding the overall CA interaction.

The Flourishing Scale was used twice during the study. The first usage was at the beginning of the first interview and the second was at the beginning of the second interview of the study. On the other hand, the User Experience Questionnaire was used four times during the overall research. The first UEQ was filled at the end of the first interview, second UEQ was sent via e-mail five days after the first interview. The third UEQ was also sent via e-mail on the 10th day of the study and the fourth and last UEQ was filled at the beginning of the second interview.

3.3.4.1. Flourishing Scale

Flourishing scale aims to measure "the core aspects of social-psychological functioning, namely purpose and meaning, supportive relationships, engagement, contribution to the well-being of others, competence, self-acceptance, optimism, and being respected" (Schotanus-Dijkstra et al., 2016, p.2). As it is defined in literature chapter, subjective well-being consists of both emotional and cognitive appraisals of the quality of one's own life and in our study the Flourishing Scale was a supportive instrument to understand participant's perceived subjective well-being at the beginning and end of the study.

The FS developed by Diener (2010) is widely used in well-being intervention studies and clinical practice, due to its briefness, simplicity and comprehensiveness. More in detail, the scale is composed of eight statements related to which participants mentioned how much they agree or disagree by assigning a number on a Likert scale (1-strongly disagree, 7-strongly agree). So, resulting score can range from 8 to 56 and the higher scores indicates the competence in participant's life.

The Flourishing Scale has already been translated into 17 languages and measures of Flourishing Scale were adapted into Turkish by Cihangir et al. (2003). The Turkish version of Flourishing Scale was used in the study since the participants native language is Turkish and to not to have a language barrier while expressing themselves (Schotanus-Dijkstra et al., 2016).

3.3.4.2. User Experience Questionnaire

The User Experience Questionnaire is used for measuring conversational agent's perceived usability and overall user experience. The questionnaire is designed to enable people to express their feelings, impacts and approaches towards the selected "interactive product". The scale has 26 adjective pairs which are selected to cover extensive reactions of the user experience.

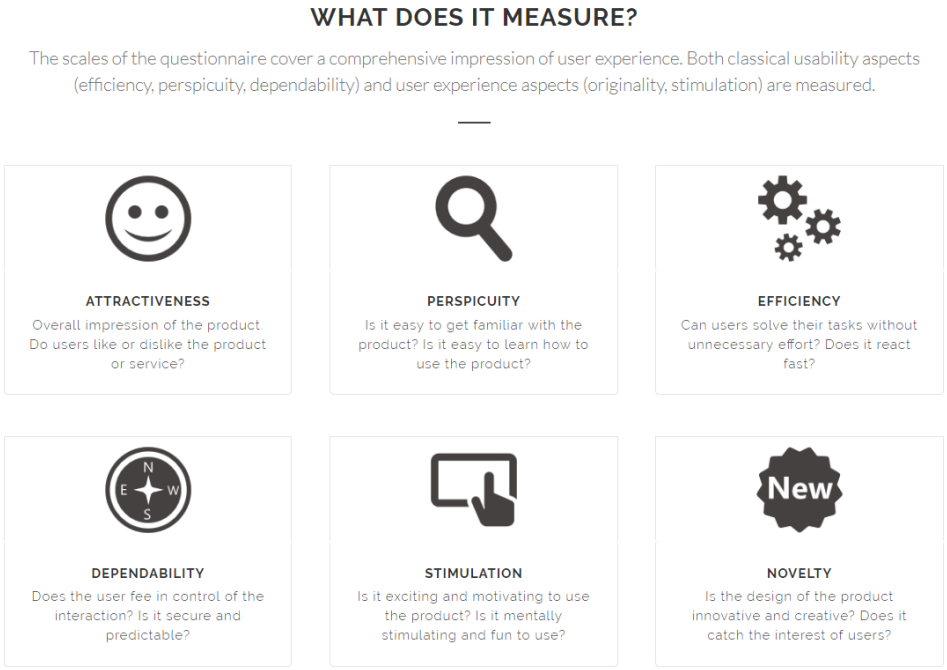


Figure 19- UEQ Measurement Aspects (retrieved from www.ueq-online.org)

In UEQ, "a data analytical" approach was used in order to ensure a practical relevance of the constructed scales. The items are scaled from -3 to +3. Thus, -3 represents the most negative answer, 0 a neutral answer, and +3 the most positive answer. Each adjective item covers a definite quality aspect of an interactive product, system or service. The adjective pairs have the form of a semantic differential, for instance, each item is represented by two terms with opposite meanings. The order of the used adjective pairs are random.

not understandable	o o o o o x o	understandable
easy to learn	o o o o o o x	difficult to learn
complicated	o o o o x o o	easy
clear	o o o o o x o	confusing

Figure 20- Responses to the Items of the Scale Perspicuity (Schrepp, 2017)

As in Figure 20, in some adjective pairs positive one placed at the beginning whereas in the bottom pair the negative one comes first. Those distinct adjective pairs are capable of evaluating selected conversational agent's both negative and positive user experiences.

The origin of the UEQ is in German which was designed in 2005 and it has translated in 21 languages, including Turkish. However, in the study, English version of the UEQ was preferred. The reason was, in the Turkish version of the UEQ, the measurement items are difficult to distinguish from each other and also it was easier to express and explain system quality related evaluations in English.

3.3.4.3. Selected Conversational Agent

Woebot was selected for this study to examine the user engagement with conversational agents which aims to support users' subjective well-being. Woebot is developed to provide service for non-clinical populations ("Woebot", 2017). Woebot enabled these populations to have an access to psychotherapy related services with a little effort and expense by using Cognitive Behavior Therapy (CBT) framework.

The major reason of Woebot's selection is the usage of CBT framework while supporting users' psychological state. The Cognitive Behavior Therapy is a kind of psychotherapy which aims to change people's way of thinking and cognitive patterns to help them to overcome hardships in a short period of time (Andrews et al., 2010). Moreover, besides CBT, Woebot consists of "emphatic responses", "tailoring", "goal setting", "accountability", "reflection", "motivation and engagement".

“Emphatic Responses” are linked with the understanding the user’s mood and giving responses in accordance with the stated mood of the user. “Tailoring” is offering specific advices to the user depending on a goal in life and whether that goal would be achievable within two weeks. (The conversation duration is two weeks for the trial period of Woebot.). “Accountability” is related with agent’s memory related to past conversations. Users would expect Woebot to remember past conversations and being recommended the shared mood states or life goals in the fort coming interactions. “Reflection” is sharing the weekly mood graphics of the user with an explanation to show user how his/her mood has changed during the week. Lastly, “motivation and engagement” are associated with sending personalized responses to each user to initiate an engaging conversation (Fitzpatrick et al., 2017).

3.3.5. Procedure of the Study

At the beginning, a brief introduction related to the duration of the study, purpose and procedure of the study is introduce to the participants. Then they were asked to sign the content form of the study (APPENDIX B).

Firstly, the participants were asked to fill the Flourishing Scale to understand the degree of their subjective well-being. After filling the scale, three questions were asked. First question was about the previous week of the interview and whether the participants experienced negative moments during that week or not. To help participants to remember those moments, a calendar was used. Participants were informed at the beginning of the interview that if they do not want to share the answer, they could take notes instead. After remembering the negative experiences, their strategies and/or methods were asked. The participants responded with explaining how they overcome those moments and two of the participants stated that they did not have a negative moment during the past week so the questions moved on to the general strategies and methods of the participants to support their well-being.

To know the participants closely and to understand how open minded they are related to the psychological services, repetitively stating that they do not have to answer if they do not want, participants were asked whether they had seen a psychiatrist or

psychologist ever in their lives. Afterwards, after giving a brief introduction about the conversational agents, they were asked whether they had previous or current experience with CA usage. The answers to previous experience related question was considered to be helpful for understanding the participant's technology readiness level and how easily they would accept the new technology in their lives. The personal strategies and/or methodologies for improving subjective well-being, having an external psychological support and previous or current CA usage were asked for the user profiling of the study. The first phase of the first interview finished with user profiling related questions.

The second phase of the interview started with a brief introduction about the conversational agents, their types and purposes each participant verbally. The system's self-introduction, from own main web site, was performed subsequent to the verbal brief introduction. To access the main system web page, a mobile phone was used. From the screen, the participants were asked to view the Woebot and share their opinions about the CA and how they perceive the system's self-introduction. Apart from voice recording, participants' statements were written down to compare the change in the opinions of the participants after the first interaction with the system.

The first interaction was performed during the first interview with the researcher. Before the interaction, how to initiate a conversation with the Woebot was described through the participants' own mobile phones. First of all, the Facebook Messenger application was opened, the name of the CA, Woebot was typed to the search bar and the participants tapped to the Woebot's profile from the search results. Three participants did not have the application on their mobile phones so they downloaded the Messenger application to perform the system interaction.

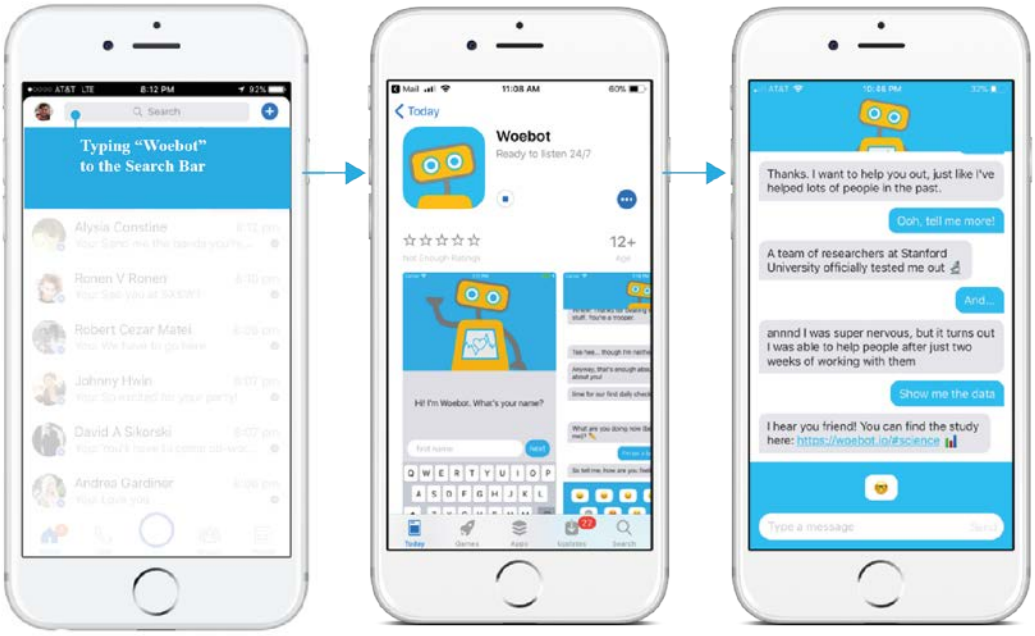


Figure 21- Woebot Conversation Initiation (retrieved from https://www.healthcare.digital)

After finding the Woebot's profile, participants typed "Hi" to the CA and the conversation had started. They were chat individually with the CA, only if they leave the conversation by themselves and/or if the Woebot send "See you tomorrow" output, the participants were asked to inform the researcher about the situation.

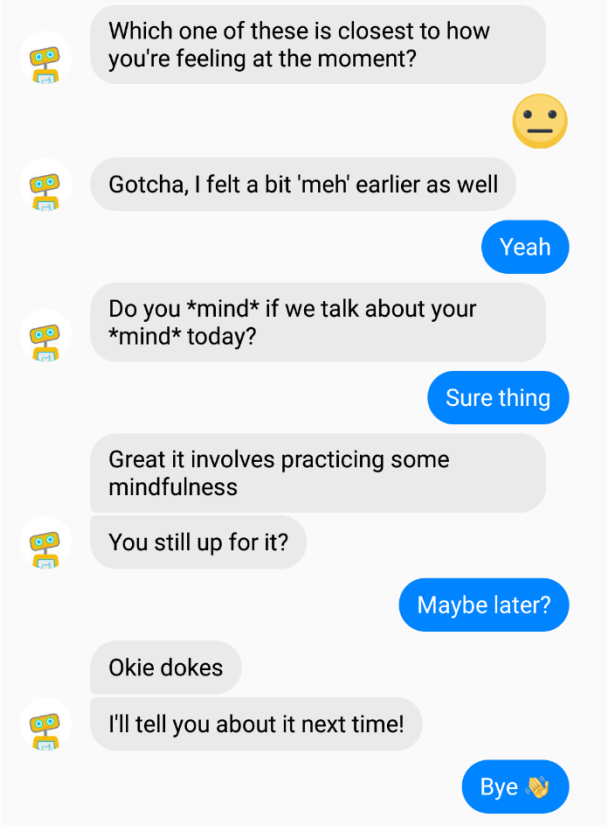


Figure 22- End of a Conversation (Screenshot)

With the end of the first interaction with the system participants were asked to fill the User Experience Questionnaire (UEQ) to evaluate CA's usability and user experience. Then in response to the question asked, they stated their thoughts and feeling towards their first conversational agent interaction. Moreover, they compared how their first impression had changed after conversation. Before finishing the interview, participants were reminded that after five days over the first interaction, the second UEQ would be shared with them via e-mail or Google Documents and after another five days over second UEQ, the third UEQ would be sent to them again via e- mail or Google documents. They were asked to inform the researcher if they want to leave the study.

Five days after the first interview, the second questionnaire was sent with a prompt message. The same process was repeated for the third UEQ. After ten days of

interaction, a message was sent to the participants to decide a day for the last interview of the study.

On the 15th or 16th day of the study, on the agreed day, the in-depth interview was conducted. At the beginning of the second interview, second Flourishing scale was filled by the participants to investigate whether Woebot interaction had an impact on their subjective well-being or not. The first results of the FS were compared with the second ones, in case of an incensement or decreasement, participants were asked if Woebot had a negative or positive impact over their well-being. Then the last UEQ was filled before examining the given answers in detail.

The second interview continued with comparing the each 26 item of UEQ from the previously filled four of the UEQ in detail. The aim of the comparison of the filled questionnaires is to understand the underlying reasons of participants' evaluation of the Woebot's characteristics, functionality and personal traits and how those aspect affected the overall user experience. In addition to UEQ results comparison, the participants were asked to answer which CA aspect or aspects they liked the most and least, the reasons why they chose the stated aspects of the system. Finally at the end of the interview, the future Weobot system, service and interaction related developments were stated by the participants as an answer to the "how the CA should be improved in accordance to you/ your experience?".

The obtained data from each participant through interviews and surveys were started to be analysed after finishing the 32 interviews.

3.4. Data Analysis

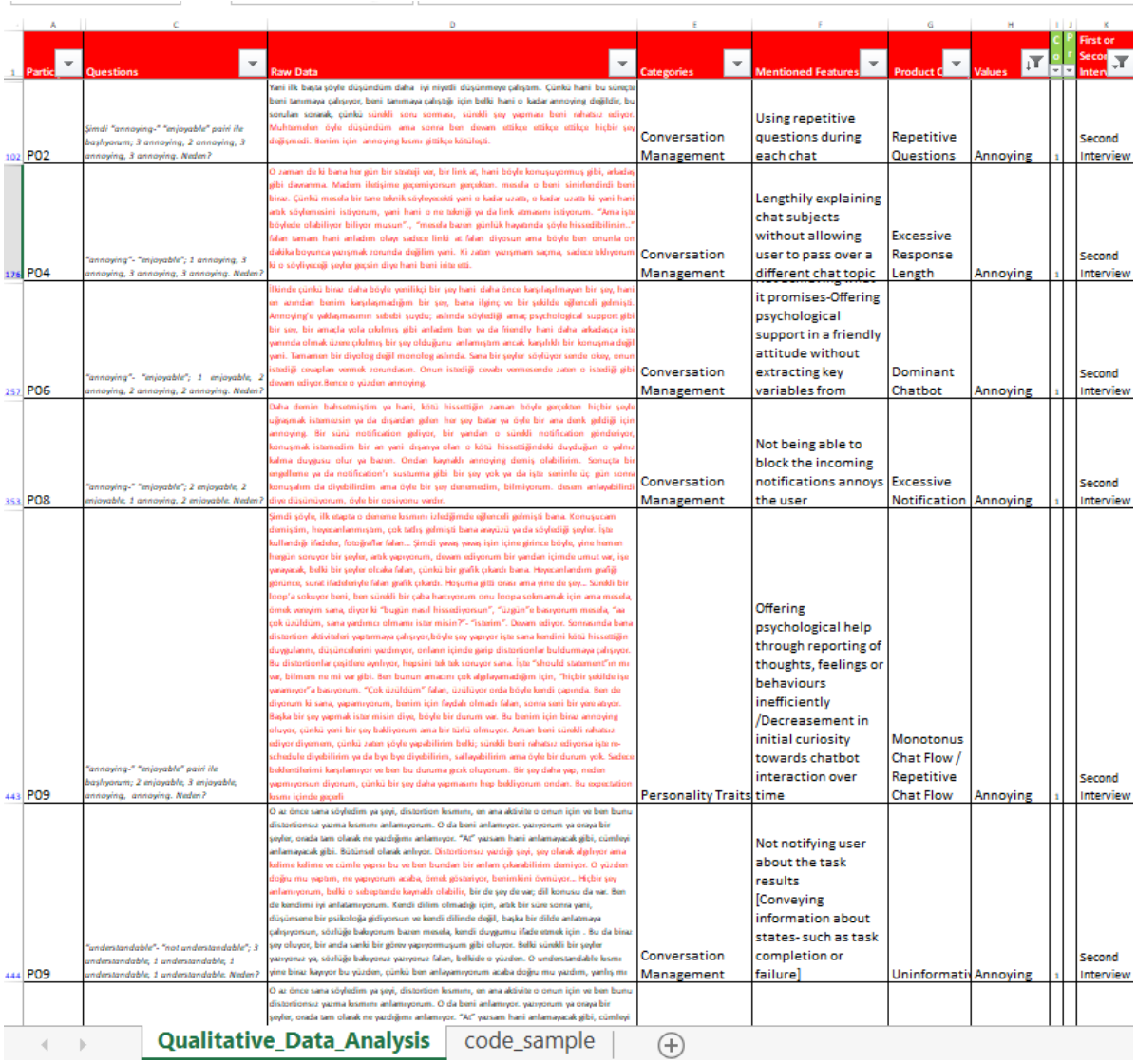
This section covers the data analysis procedure for the obtained qualitative and quantitative data. The quantitative data assisted the study while understanding how participants' evaluations had changed during the use period of the study. Moreover, the gathered qualitative data played an important role in proposed interaction design guideline.

Qualitative data analysis started with the transcription of the voice recorded interviews after each interview had finished. 16 participants attended to the study and for each participant, two interviews were conducted; one at the beginning of the study and one at the end of the study. In total 32 interviews were transcribed with the aid of Microsoft Word software. The transcribed interviews were transferred to the Microsoft Excel software to start coding.

The raw was data transferred in the order of the UEQ measurement items. After transferring, the raw data was carefully read to categorize evaluations whether they are related with personality traits, system functionality or interaction quality. The decided categories were written down to the first column of the Excel Sheet. Subsequent to the categorization, the attributes were decided. Then the related values, an appropriate adjective, which is used to describe the emotional state, were written as value of the stated attribute.

While constructing the categories, attributes, and the values the inductive coding approach was used (Saldana, 2016). In inductive coding approach, codes are emerged from the collected data. The codes are interpreted after reading the collected data in-depthly. As mentioned, the categories and attributes were derived from the participants' evaluations. On the other hand, most of the value codes are retrieved from the UEQ adjective pairs, since in-depth evaluation questions were from UEQ.

After determining the codes in the first cycle, the analysis continued with "assigning" the repetitive interpretation affect the subjective evaluations of the participants to initiate how perceived attributes changed, how repetitive interpretation affect the subjective evaluations of the participants. As for the second cycle coding the selected attributes' consequences were created (Saldana, 2016).



	Partic	Questions	Raw Data	Categories	Mentioned Features	Product C	Values			First or Secon Interv
102	P02	Şimdi "annoying-" "enjoyable" pairi ile başlıyorum; 3 annoying, 2 annoying, 3 annoying, 3 annoying. Neden?	Yani ilk başa şöyle düşündüm daha iyi niyetli düşünmeye çalışım. Çünkü hani bu sürçte beni tanımaya çalışıyor, beni tanımaya çalıştığı için belki hani o kadar annoying değildir, bu soruları sonrak, çünkü sürekli soru sorması, sürekli şey yapması beni rahatsız ediyor. Muhtemelen öyle düşündüm ama sonra ben devam ettikçe ettikçe ettikçe hiçbir şey değişmedi. Benim için annoying kısmı gittikçe kötüleşti.	Conversation Management	Using repetitive questions during each chat	Repetitive Questions	Annoying	1		Second Interview
178	P04	"annoying"- "enjoyable"; 1 annoying, 3 annoying, 3 annoying, 3 annoying. Neden?	O zaman de ki bana her gün bir sözleşi var, bir link at, hani böyle konuşuyormuş gibi, arkadaş gibi davranma. Madem ilettişime geçmiyorsun gerçekten. mesela o beni sinirlendirdi beni bitsa. Çünkü mesela bir seni teknik söyleyecekti yani o kadar uzattı, o kadar uzattı ki yani hani artık söylemesini istiyorum, yani hani o ne istiyiği ya da link atmasını istiyorum. "Ama işte böyleyiz olabiliyor biliyor musun"., "mesela benim günlük hayatında şöyle hissedibilirsin.." falan tamam hani anladım olay sadece linki at falan diyorsun ama böyle ben onunla on dakika boyunca yarışmak zorunda değilim yani. Ki zaten yarışmam saçma, sadece istiyorum ki o söyleyeceği şeyler geçsin diye hani beni irite etti.	Conversation Management	Lengthily explaining chat subjects without allowing user to pass over a different chat topic	Excessive Response Length	Annoying	1		Second Interview
257	P06	"annoying"- "enjoyable"; 1 enjoyable, 2 annoying, 2 annoying, 2 annoying. Neden?	İkincisi çünkü binaz daha böyle yanlılıçı bir şey hani daha önce karşılaşılmayan bir şey, hani en azından benim karşılaşmadığım bir şey, bana ilginç ve bir şekilde eğlenceli gelmişti. Annoying'e yaklaşmamın sebebi şuydu; aslında söylediği amaç psychological support gibi bir şey, bir amaçla yola çıkılmış gibi anladım ben ya da friendly hani daha arkadaşça işte yanında olmak üzere çıkılmış bir şey olduğunu anlamışım ancak karşılıklı bir konuşma değil yani. Tamamen bir diyalog değil monolog aslında. Sana bir şeyler söylüyor sonda okey, onun istediği cevapları vermek zorundasın. Onun istediği cevabı vermesende zaten o istediği gibi devam ediyor.Benco o yüzden annoying.	Conversation Management	it promises-Offering psychological support in a friendly attitude without extracting key variables from	Dominant Chatbot	Annoying	1		Second Interview
353	P08	"annoying-" "enjoyable"; 2 enjoyable, 2 enjoyable, 1 annoying, 2 enjoyable. Neden?	Daha önmin bahsetmiştim ya hani, kötü hissettiğin zaman böyle gerçekten hiçbir şeyle uğraşmak istamasin ya da dışardan gelen her şey batar ya öyle bir ana denk geldiği için annoying. Bir sürü notification geliyor, bir yandan o sürekli notification gönderiyor, konuşmak istamedim bir an yani dışarıya olan o kötü hissettiğindeki duyduğun o yalnız kalma duygusu olur ya baron. Ondan kaynaklı annoying demiş olabilirim. Sonuçta bir engelleme ya da notification'ı susturma gibi bir şey yok ya da işte seninle üç gün sonra konuşalım da diyebilirdim ama öyle bir şey denemedim, bilmiyorum. dosom anlayabilirdi diye düşünüyorum, öyle bir opsiyonu vardır.	Conversation Management	Not being able to block the incoming notifications annoys the user	Excessive Notification	Annoying	1		Second Interview
443	P09	"annoying-" "enjoyable" pairi ile başlıyorum; 2 enjoyable, 3 enjoyable, annoying, annoying. Neden?	Şimdi şöyle, ilk başta o dorama kısmını izlediğimde eğlenceli gelmişti bana. Konuşucam demişim, hoşsarlanmışım, çok tatlış gelmişti bana sevgizsi ya da söylediği şeyler. İşte kullandığı ifadeler, fotoğraflar falan... Şimdi yavaş yavaş işin içine girince böyle, yine hemen birgün sonuçta bir şeyler, artık yapıyorum, devam ediyorum bir yerden içimde umut var, işe yarayacak, belki bir şeyler olcaka falan, çünkü bir grafik çıkardı bana. Hoşsarlandım grafiği görünce, sanal ifadelerleyle falan grafik çıkardı. Hoşuma gitti onası ama yine de şey... Sürekli bir loop'a sokuyor beni, ben sürekli bir çaba harcıyorum onu loopa sokmamak için ama mesela, örnek vereyim sana, diyor ki "bugün nasıl hissediyorsun", "üzgün"e basıyorum mesela, "aa çok üzüldüm, sana yardımcı olmamı ister misin?"- "istarim". Devam ediyor. Sonrasında bana distorsion aktivitaları yaptırmaya çalışıyor,böyle şey yapıyor işte sana kendini kötü hissettiğin duygularını, düşüncelerini yazdırıyor, onların içinde gerip distorsionlar buldurmaya çalışıyor. Bu distorsionlar çeşitlere ayrılıyor, hepsini tek tek soruyor sana. İşte "should statement"ın mı ne, bilmem ne mi var gibi. Beri bunun amacını çok algılayamadığım için, "hiçbir şekilde işe yaramıyor"a basıyorum. "Çok üzüldüm" falan, üzülüyor onda böyle kendi çapında. Ben de diyorum ki sana, yapamıyorum, benim için faydalı olmadı falan, sonra seni bir yere atıyor. Başka bir şey yapmak ister misin diye, böyle bir durum var. Bu benim için biraz annoying oluyor, çünkü yani bir şey bekliyorum ama bir tüfü olmuyor. Aman beni sürekli rahatsız ediyor diyemem, çünkü zaten şöyle yapabilirim belki; sürekli beni rahatsız ediyorsa işte re-schedule diyebilirim ya da bye bye diyebilirim, sallayabilirim ama öyle bir durum yok. Sadece beklentilerimi karşılamıyor ve ben bu duruma gecik oluyorum. Bir şey daha yap, neden yapmıyorsun diyorum, çünkü bir şey daha yapmanı hep bekliyorum ondan. Bu expectation kısmı içinde geçeli	Personality Traits	Offering psychological help through reporting of thoughts, feelings or behaviours inefficiently /Decreasement in initial curiosity towards chatbot interaction over time	Monotonus Chat Flow / Repetitive Chat Flow	Annoying	1		Second Interview
444	P09	"understandable"- "not understandable"; 3 understandable, 1 understandable, 1 understandable, 1 understandable. Neden?	O az önce sana söyledim ya şeyi, distortion kısmını, on ana aktivite o onun için ve ben bunu distortionsuz yazma kısmını anlamıyorum. O da beni anlamıyor. yazıyorum ya onaya bir şeyler, onada tam olarak ne yazdığımı anlamıyor. "Al" yarsam hani anlamayacak gibi, cümleyi anlamayacak gibi. Bütünsel olarak anlıyor. Distortionsuz yardığı şeyi, şey olarak algılıyor ama kelime kelime ve cümle yapısı bu ve ben bundan bir anlam çıkarabilirim demiyor. O yüzden doğru mu yaptım, ne yapıyorum acaba, örnek göstariyor, benimkini övmüyor... Hiçbir şey anlamıyorum, belki o sebepteside kaynaklı olabilir, bir de şey de var; dil konusu da var. Ben de kendimi iyi anlatamıyorum. Kendi dilim olmadığı için, artık bir süre sonra yani, düşünsene bir psikolojiye gidiyorsun ve kendi dilinde değil, başka bir dilde anlatmaya çalışıyorsun, sözlüğe bakıyorsun bazen mesela, kendi duygumu ifade etmek için . Bu da biraz şey oluyor, bir anda sanki bir görev yapıyormuşum gibi oluyor. Belki sürekli bir şeyler yazıyoruz ya, sözlüğe bakıyoruz yazıyoruz falan, belkide o yüzden. O understandable kısmı yine biraz kayıyor bu yüzden, çünkü ben anlayamıyorum acaba doğru mu yazdım, yanlış mı	Conversation Management	Not notifying user about the task results [Conveying information about states- such as task completion or failure]	Uninformati	Annoying	1		Second Interview
			O az önce sana söyledim ya şeyi, distortion kısmını, on ana aktivite o onun için ve ben bunu distortionsuz yazma kısmını anlamıyorum. O da beni anlamıyor. yazıyorum ya onaya bir şeyler, onada tam olarak ne yazdığımı anlamıyor. "Al" yarsam hani anlamayacak gibi, cümleyi							

Qualitative_Data_Analysis | code_sample

Figure 23- A Screenshot from the Coding File

In second cycle, for instance, “Lengthily explaing the chat subjects” attribute’s consequence is “Excessive response length”. After creating that consequence, the created consequences were linked with the values, “Annoying” or “Cluttered”. Following the mentioned analysis steps helped to understand how participants interpreted the system’s excessive response length as being not annyoing. Subsequent to finishing coding, similar interpretations or similar connotations were combined or rephrased.

CHAPTER 4

RESULTS

4.1. Methods and Strategies for Improving Subjective Well-Being

The strategies that have developed to improve subjective well-being by the participants are related with both the negative emotion coping strategies and positive psychology related PERMA model.

4.1.1. Strategies Related to Improving Subjective Well-being based on PERMA Model

PERMA model is Martin Seligman's model of happiness which aims to help researchers to analyse and understand the aspects in people's lives that increases the possibility of reaching a life of full happiness. The model was designed with five elements of psychology related well- being and happiness. Seligman believes that these five elements would help people to reach a life of fulfilment, happiness and meaning. In accordance to his belief, it can be conducted that well-being is a combination of thinking and feeling good at the same time. To express how important this is and how people could improve their subjective well-being, Martin Seligman introduces the PERMA model. PERMA model consists of five elements; positive emotions, engagement, relationships, meaning and accomplishment.

Positive emotions in the model are linked with being optimistic and perceiving life in a positive way by establishing better relationships with people (Seligman, 2011). To increase positive emotions in their lives, participants stated that they prefer to have a good relationship with their family and friends which enables them to strength their social connections. To illustrate, a participant (P13) stated that he/she prefers to visit his/her hometown to fulfil his/ her longing for missed friends and family. In addition,

eating quality food is also one of the strategies marked by the participants to increase the positive emotions in their lives. (P08)

Engagement is concerned with being able to find the activities that make people feel happier, fulfilled and complete. In the study, these activities are associated with hobbies of users that enable them to be more engaged with life when they feel down. In those circumstances, Participants prefer to do sports to have better physical health. Moreover, doing relaxing activities such as cooking, drawing, listening music, playing a musical instrument and relaxing with physical activities helped participants to improve their emotional state. These engaging activities deploys participants' concentration, skills and strength for challenging tasks as P06 states;

> "I mean, I dance. I tried to feel good by doing an event such as going dancing and get discharged. I try to formulate a strategy to forget things by physical activities such as sports which is generally dancing for me." P06 [1][1]

Relationship in PERMA model is linked with the experiences that contribute to well-being which could give purpose and meaning to the people's lives. In the study, participants stated that they did not prefer to be alone and they prefer to spend time with their loved ones to feel better. Spending time with other people enables them to enjoy the moment and provides a meaningful life. On the other hand, according to participants, the reason why they do not prefer to be alone is not to let themselves to focus on the problems by over thinking. Meeting or spending time with their friends and family also enables them to distract their attentions from the problems. According to the participants' comments, they did not have any methods or startegies related to *Meaning* in the PERMA model.

Accomplishment in the PERMA model related to having goals and ambition in life can help people to achieve conditions that can give people a sense of accomplishment. The participants' strategies regarding accomplishment are related to having a goal, such as working for a good career (P04) and organizing daily life by doing sports (P13), which gives the participant a sense of accomplishment and fulfilment.

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[1] For the Turkish versions of the participants' direct quotations see APPENDIX E

4.1.2. Coping Strategies

When people feel down, they tend to overcome the negative situation, they usually do not prefer to act as if nothing has ever happened. To overcome these situations, they adopted certain strategies. These strategies that participants stated during the interviews were associated with “Emotions Focused Coping” and “Problem Focused Coping” strategies as a result of the analysis. The strategies shared by participants are mental and behavioural disengagement, seeking social support, acceptance, confrontive coping and planful problem solving.

4.1.2.1. Mental and Behavioural Disengagement

People who have had negative experiences might prefer to forget the negative experience by doing distractive activities to take their mind off from the experience or refuse to believe that something has happened. In addition to this denial, people might also try to distance themselves from the problem or they may try to rescue themselves from the problem by giving up further action. In these strategies, it can be concluded that, people believe that this is the situation and nothing else can be done to fix the negative experience. Accordingly, for such situations, participants stated that they try to not to think the problem over (P12) or prefer playing computer games and read fantastic fiction to escape from reality (P02). Moreover, to distract themselves, apart from playing computer games, they watch Television, listen to “bebop”. One participant stated that he/she prefers to be alone to take weight off his/her mind. This coping strategy also includes isolating oneself from the world, to illustrate, to achieve that P14 do mediation or P15 watches movies that do not require to be focused on deeply to understand. To not to think a problem over, P09 said that he/she paces up and down to keep himself/herself busy. It is also stated that meeting with friends also enables participants to not to focus on or to think the negative experience over. P11 stated that he/she tries to adapt a strategy which is focusing on not moving and thinking nothing for five minutes to relieve himself/ herself.

> "I have read a book about concentration techniques. It was saying that focusing on one activity is better than doing many activities at the same time to control your body. There were some techniques like not moving, not moving at all for five minutes. It really makes me relaxed. I do such activities. I mean I don't move at all for 5-10 minutes. It is really hard but it makes you relaxed tremendously. Moreover, you're not having any thoughts at all. You don't think, you push yourself. This is extremely relaxing. I do this activities. When I don't do some of my body parts are strained such as my legs, feet, etc. which bothers me. This thing also made me obsessed with it." P11 [2]

Avoiding television watching and spending excessive time on social media help P14 to feel at ease. Since these activities unable he/she to balance the time he/she spends with her friends and family.

The difference between Mental-Behavioural disengagement and the Engagement from the PERMA model is disposing the negative emotional state instead of resuming the current emotional state. Engagement enables people balance the negative and positive emotional state with engaging activities; however, disengagement is for coping with the negative emotional states.

4.1.2.2. Seeking Social Support

To overcome negative emotions, people might prefer to be supported externally by their loved ones. This external emotional support could be related with getting advice from friends or family, telling them about the incidents to feel more relaxed after sharing the negative experience with them. In this research, participants stated that having a supportive and positive family relationships enables them to share their experiences open heartedly with them. Furthermore, talking with friends to get their opinion related to the incident, or socializing with their loved ones helps participants to overcome the uncomfortable feeling they have.

The difference between Seeking Social Support and Relationships dimension in the PERMA model is the purpose of the action. Seeking social support is to get loved ones' opinions;

> "…talking with my beloved ones, having some time with them which helps me to get over." P16 [3]

However, Relationship dimension is mostly linked with having people around who loves and cares the participant, and whom participants can laugh freely;

> "Family relations such as supporting each other make me feel better. I texted my family: 'good morning my dear family…' this morning to sustain these relations with them." P04 [4]

In other words, seeking social support is matched with overcoming negative incidents; on the other hand, Relationship dimension of PERMA is about intensifying the positive moments with the loved ones.

4.1.2.3. Planful Problem Solving

Planful Problem Solving strategy is linked with solving or reframing problems and/or overcoming stressful moments by making plans. First of all, people need to understand the problem to name the problem. After naming, the steps that are necessary to be progressed to solve the problem should be decided and in accordance with the plan, people should take action.

Participants' comments showed that to run over stressful situations, they made plans to organize their daily lives, and if the plan did not work they re-plan. Moreover, seeing a psychologist regularly and trying to spare time to meet with their friends to feel better enable participants, such as P14, to feel balanced.

The difference between Planful Problem Solving and Accomplishment dimension in PERMA model is the context of the strategies. Planful Problem Solving strategy is related with overcoming the stressful, negative moments by making plans;

> "I re-plan to feel better. I mean I did good things to feel good but still I mean this for the things that I wanted to but I couldn't." P11. [5]

On the other hand, Accomplishment is linked with pursuing an accomplishment to feel complete and successful which at the end leads to a positive emotion;

> "It might be investing to my career." P14. [6]

4.1.2.4. Confrontive Coping

This emotion focused coping strategy aims to enable people to openly express their feelings with the concerned people to deal with the stressful situation.

P07, P05 and P06 said that confronting with the person who made them feel offensive, improved their emotional state by relaxing them. Moreover, four out of sixteen participants stated that reframing their personal problems by confronting themselves enabled them to feel better.

> "Generally speaking, if I feel bad, if this is the question you ask, I try to solve it myself. I would take myself off for couple of days. I wouldn't see anyone. I would cancel my social life and searching for solutions to my problem and solve things that I can. For example, if there is a problem with my job, I wouldn't thing anything else for 3-4 days and try to think solution oriented." P02 [7]

4.1.2.5. Acceptance and Positive Reinterpretation

Acceptance is valid for the situations that could not be changed. In other words, people accepts that what happened and there is nothing in their hands to change this situation.

One participant said that he/she tried to see the positive side of the negative experience by consoling herself.

> (Not being able to receive payment for conference application) "What did I do? I tried to console myself. That means I should not care too much. I learned that I am going to a conference in Barcelona. I haven't taken a holiday for a year. I'll go to there and do my presentation, I'll wander around for 5 days, meet new people. Then, I said it's alright. This is it. I relieved myself." P15 [8]

Furthermore, P02 stated that if the circumstance could not be changed, he/she prefers not to care by accepting it as it is.

"If it is something that I can't solve such as something that government did, I don't really care. It might make me unhappy and I still follow these news but I don't care." P02 [9]

Table 3-The Most Preferred Strategy to Least Preferred One

Strategy	**Description**
Mental-Behavioral Disengagement	Avoiding, escape from reality or isolating themselves from the reality
Engagement	Doing engaging activities to intensify the positivity in their lives
Seeking Social Support	Meeting with their friends, not to be alone to comfort themselves with their social connections.
Relationship	Spending quality time together with their loved ones to replicate positive moments
Confrontive Coping	Facing with the problem or related person to beat the negativity/ Expressing feeling and thoughts related to the stressful situations to get the opinions of the people
Planful Problem Solving	Organizing their thoughts or making plans to solve their problems
Positive Emotions	Spending quality time together with their loved ones to replicate positive moments
Acceptance and Positive Interpretation	Accepting the situation as it is by detecting the positive side of the negative experience
Accomplishment	Having a goal in life

In conclusion, the most stated strategy is mental-behavioural disengagement to comfort themselves. Avoiding, escape from reality or isolating themselves from the

reality is actualised by means of keeping themselves busy, being with their loved ones, smoking or drinking alcohol.

After disengagement strategy, participants prefer doing engaging activities to intensify the positivity in their lives. To illustrate, doing sports regularly for a better health, focusing on themselves as self-care, preferring alternative shopping habits, drawing, cooking, listening music or playing music instrument to relax.

The third common subjective well-being related strategies are seeking social support and Relationship. Eight out of sixteen participants prefer to meet with their friends, not to be alone, to comfort themselves with their social connections. In addition to meeting, expressing feeling and thoughts related to the stressful situations to get the opinions of the people. The same number of participants also stated that they spend quality time together with their loved ones to strengthen positive moments.

Six participants face with the problem or related person to beat the negativity. On the other hand, five of the participants organize their thoughts or make plans to solve their problems via external psychological support, managing their personal times fairly for the activities and for the people in their lives.

Four participants bring positive emotions in their lives by meeting their friends or rewarding themselves with quality food. One participant tries not to care while another participant accept the situation as it is by detecting the positive side of the negative experience. (Table 3 shows the participants most preferred methods and strategies for improving their subjective well-being)

Table 4- Three of the Most Stated Methods and Strategies of the Participants

	Age	Gender	Methods and strategies for improving SWB	Methods and strategies for improving SWB	Methods and strategies for improving SWB
P01	37	F	Mental Disengagement	Confrontive Coping	Engagement (PERMA)
P02	30	M	Engagement (PERMA)	Behavioral Disegagement	Seeking Social Support
P03	27	M	Mental Disengagement	Seeking Social Support	
P04	27	F	Seeking Social Support	Accomplishment (PERMA)	Confrontive Coping
P05	23	F	Confrontive Coping	Mental Disengagement	Seeking Social Support
P06	29	F	Seeking Social Support	Confrontive Coping	Engagement (PERMA)
P07	31	M	Seeking Social Support	Confrontive Coping	Engagement (PERMA)
P08	27	F	Mental Disengagement	Engagement (PERMA)	Positive Emotions (PERMA)
P09	26	M	Mental Disengagement	Engagement (PERMA)	
P10	26	M	Mental Disengagement	Engagement (PERMA)	Relationships (PERMA)
P11	33	M	Planful Problem Solving	Mental Disengagement	Engagement (PERMA)
P12	26	M	Positive Emotions (PERMA)	Mental Disengagement	Confrontive Coping
P13	27	M	Relationships (PERMA)	Accomplishment (PERMA)	Positive Emotions (PERMA)
P14	24	F	Behavioral Disegagement	Seeking Social Support	Engagement (PERMA)
P15	27	F	Acceptance/ Positive Reinterpretation	Mental Disengagement	Engagement (PERMA)
P16	29	M	Seeking Social Support	Mental Disengagement	Engagement (PERMA)

4.2. User Engagement in Overall Evaluation-Longitudinal Research

The patterns of the participants and how they evaluate the overall usage of Woebot, how people thought over the design elements of the CA are explained.

4.2.1. Flourishing Scale Related Results

There was a slight change in the average values of the first and second measurement results of the flourishing scale as it can be seen in Table 4. Moreover, the participants stated that the positive effect Woebot gives is some happiness in the moment of conversation not afterwards or it has no effect to their perceived psychological state. In other words, according to participants the increase in their subjective well-being was independent from the CA usage. Therefore, based on these results, it is difficult to draw conclusions on the results of the flourishing scale.

Table 5-Flourishing Scale Related Results

Participants of the Study	First Results of Flourishing Scale	Second Results of Flourishing Scale
P01	48	50
P02	50	50
P03	38	45
P04	49	51
P05	47	47
P06	41	43
P07	41	44
P08	41	39
P09	39	35
P10	39	48
P11	39	47
P12	44	43

Table 5 (Continued)

P13	46	45
P14	37	45
P15	44	42
P16	49	51
Average	**43,25**	**45,31**

4.2.2. First Impression and Interaction Related Results

This part consists of the first impressions of the participants on the main web page of Woebot and their impressions after the first interaction with Woebot.

4.2.2.1. First Impression of Woebot

The first encounter with Woebot was achieved via the main web page of the system during the first interview with each participant. None of the participants had prior experience with or knowledge about Woebot before the study, therefore, a brief explanation related to the system was given. Afterwards, the disembodied conversational agent were introduced to the participants, Woebot, which would be their friend for fifteen days. (Figure 24)

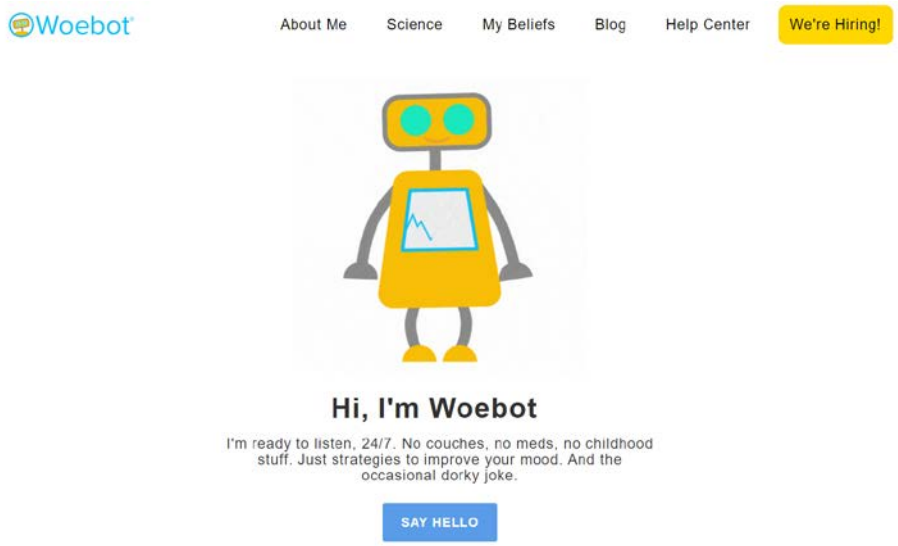

Figure 24- Main Web Page of Woebot (retrieved from https://woebot.io/)

The opinions related to the self-system introduction were asked after showing and letting participants to review the web page of the Woebot. (Figure 25)

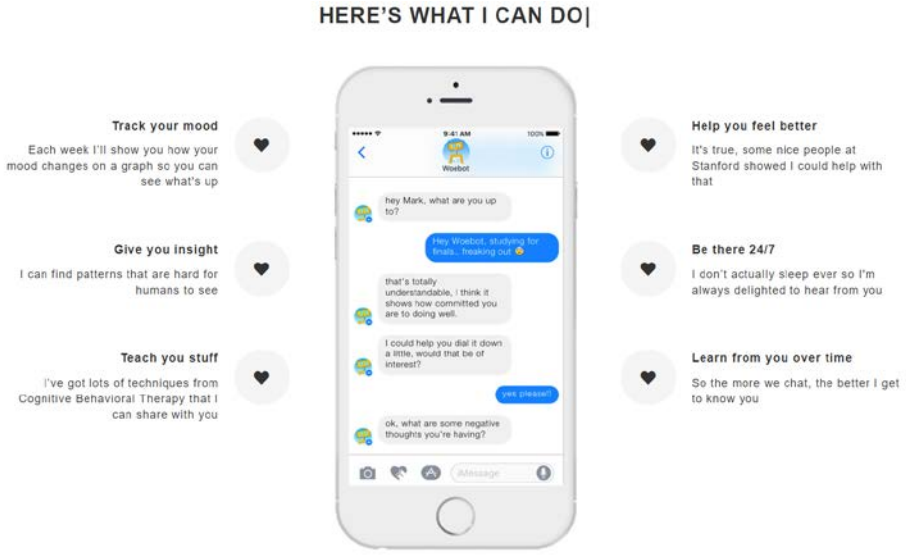

Figure 25- Self-System Introduction from the Web Page (retrieved from https://woebot.io/)

On the web page of the Woebot, it is stated that the system aims to track people's mood to illustrate the change in their moods with a graphic. "Give people insights" which they might not be able to find on their own. "Teach you stuff" by recommending techniques from the Cognitive Behavioural Theraphy framework. Promises to make people feel better by sharing activities or enable them to freely express their feelings, moods or thoughts with the system. Since the Woebot is available for 24/ 7, the people could talk to the CA at desirable times. Lastly, Woebot's developers stated that the CA would extract data from the people's inputs to improve the service.

At first, P16 stated that due to being inexperienced about the conversational agent (CA) interaction, he/she could not believe as the interaction between a CA and human would replace the human to human dialogue. Moreover, the participant also thought that after interacting with the system, people may become isolated from the society which would cause him/her to worry about future CA interaction.

> "Would it feel same like a relation with an actual person? It might be. However, it might make people anti-social, that's another topic. I am already really conservative about my friends, I am not eager to make new friends. I prefer to

> continue with existing ones. I am still on some level about friendships but it might make anti-social people even more anti-social."P16 [11]

This worry leads an anticipation anxiety towards CA interaction. In other words, participant had a concern whether the artificial interaction be able to meet the expectations of him/ her towards expected interaction. On the other hand, P09 believed that this type of interaction might reduce the dead time which is spent with a psychologist in order to understand and reframe the personal problems. In addition to this perceived benefit, participants stated that using Cognitive Behavioural Therapy Framework to offer psychologic state improvement would be helpful for people who do not have an access to a clinical service (P05).

Accessibility of the conversational agent is evaluated as the system being helpful and pleasing. Being accessible for an interaction at a desirable time could be a saviour for people who need external support in case of an emergency.

> "Being able to be with it 7 24 is an advantage because panic attack sufferers might need it any moment even though I don't consider myself as a panic attack sufferer. You can talk with it any moment. For example, in an emergency, it might say something like 'take a deep breath'. It might make you relaxed and let things go. It might do something good like these. It can be with you 7 24. That's a good thing. It might help you when you're in depression or you are having depressive moment." P09 [12]

Offering psychological support based on specific strategies developed by scientists is evaluated as system being reliable and favourable. However, P01 thought that the system is disdainful since she misunderstood the intention of the conversational agent from the superficial self-system introduction. The participant believed that Woebot underestimates the usage of conventional therapy patterns while aiming to support people. Due to superficial system introduction, P06 stated that purpose of the CA and how the conversation between CA and people would progress are difficult to understand. She could not evaluate the CA in terms of whether the interaction would be beneficial or not.

Majority of the participants stated that Woebot would provide support for quite lonely and people who are seeking for an external support.

> "I think it might help in situations like being so lonely but I am not sure."P07 [13]

From the main page of the Woebot, participants also stated their opinions related to the information quality of the service. The most marked was mood tracking. Mood tracking is perceived as an interesting instrument of the interaction. P03 said that mood tracking would enable people to consider or analyse about personal problems or negative experiences as a whole to overcome them.

> "It had my attention because I liked the 'track your mood' feature. For example if my mood is spoiled I generally think the moment but not the process or the past. I like how it shows your mood weekly. I can say it attracted me." P03 [14]

In addition to analysing personal matters, according to P12 it is beneficial to support people's psychological states by mood tracking. Furthermore, tracking people's mood with an Artificial Intelligence observed as the system being intelligent.

> "I tried some app like this which wasn't a bot. Real people reply you. It is called 'Talk Life'. That one doesn't control your mood. I liked how this track your mood. I found it smart." P14 [15]

The interface graphics of the service evaluated as easy to understand which system developers consciously preferred to ease the interaction. On the contrary, one participant (P10) evaluated this as a contradictory situation. P10 said that the system promises to make sense out of the shared personal data for system development and to improve people's emotional states; however, the profile illustration of the CA reminds him that its being a robot which caused him to perceive the system as being contradictory.

Figure 26- Profile Illustration of Woebot

The participants stated the perceived benefits and limitations of "teaching stuff", "using CBT framework" to support people, being accessible for interaction at a

desirable time, tracking mood, their anticipation anxiety towards the Woebot, how the system might lead people to be isolated from the society. Moreover, they evaluated the self-system introduction as superficial due to not being descriptive enough related to the system functionality.

4.2.2.2 Participants' Impressions after First Interaction

At the end of the first interview, the first introduction with Woebot was conducted after the system's introduction from the web page. After introducing of Woebot from its webpage, how the conversation/interaction with Woebot is going to be initiated, explained to the users. Since participants were inexperienced about the conversational agent interaction a brief introduction about how to start a conversation with Woebot and what users should "do" at the very beginning of the conversation were by the researcher. Thereafter finding Woebot via typing its name to the search bar, participants tapped to the profile illustration of the Woebot and typed "Hi". So the interaction between the participant and Woebot had imitated. The participants' evaluations are categorized under the following sections; ınteraction design related aspects and user engagement related aspects.

Under the system quality sections, there are the accessibility of the shared data, information security, the perceived artificial conversation, limited response options, canned response options, how the system is perceived as a bad imitation of a human to human interaction, interaction instruments of the system and its familiar interaction platform. The use of the Woebot is evaluated in terms of accessibility of conversational agent and Woebot led conversation initiation. The user impact criticized with the system's coded chat flow, engaging conversation, encouraging conversation and its familiar interaction elements. Lastly, responsiveness of Woebot is evaluated under the information quality heading/feature.

Table 6- Interaction Instruments (De Lone et al., 2003)

Interaction Design Related Aspects		User Engagement Related Aspects	
Information Security	Bot Led Conversation Invitation	Coded Chat Flow	Responsiveness of The Conversational
Artificial Conversation	Accessibility Of Conversational agent	Curiosity Regarding To System Operations	
Limited Response Options		Perceiving Conversational agent	
Ease Of Interaction With Canned Replies		Preferable Conversations	
Forceful Interaction		User Awareness For The System	
Purposeful Conversation			
Dominant Conversational agent			
Familiar Interaction			
Interaction Instruments Of			

System quality was measured in terms of ease of use, functionality, reliability, flexibility, data quality, portability, integration and importance. Two of the participants stated their concerns were related to the information security. Offering psychological support via instant messaging platform/application which used quite frequently caused to evaluate system as not secure by P08 and P09. Moreover, being created by a well-known institution causes an interpretation related to the accessibility of the stared personal data.

> "Maybe it will suggest something because it is related with a university: Stanford. Maybe they can reach a lot of people's data. It says it will keep the data secret but maybe they can reach anonymously. I don't trust anyone about the data thing. At the end we talk via Facebook. The data's path is on Facebook. I don't trust Facebook at all. It is not a trustworthy company." P08 [16]

The artificial conversation not being able to express the diversity of human emotions during the conversation due to its non-human nature (P12). It is also perceived that conversing with an AI is like having a virtual friend who offers psychological support at the same time. Moreover, artificial conversation is evaluated as insencere on account of mimicking human to human conversation while using predetermined response options.

> "…I don't know I didn't like it. For example, I said I will watch it later and it replied 'I am glad you liked it.' That makes me suspicious. Then they might have done an app that I can check strategies. If there is no real interaction I can take care of myself. I found it insincere. They tried to make it look like it talks to me but they couldn't achieve." P04 [17]

However, concerns related with it are whether conversational agent would succeed or fail to do what it says it would achieve during the conversation causes to fail anxious towards expected CA interaction.

> "The goal is impressive. Cause is a good cause but does technology help people in this topic? Is it trustworthy? If any emergency occurs, might it really understand the importance of the situation? Would it react wrong or not? I am asking this because it seems like it is developed for people who are in desperate situations. For example, could it give a correct feedback for suicidal people? O am not sure of that! I would call my relatives or friends in a moment of like this." P11 [18]

As it is stated, all of the participants were inexperienced related to the conversation initiation and how to interact with such system, which user interface mediums were going to be used during the conversations. After first interaction, P15 stated that using canned responses to illustrate quick replies eases the expected interaction with the conversational agent. While conversing with Woebot, tapping the most appropriate quick reply option enabled an easy to understand usage of the system. On the other hand, since the quick reply options were limited; three or more than four options were not available at the same time, P11 stated that in consequence of canned response, he/she could not being able to express his/her thoughts freely he/she did.

Using canned responses eases the interaction despite their disadvantages; however, according to P10 Woebot forced him/her to give responses to the recommended activities without offering alternative responses. Moreover, bot forced him/her to give a response out of the offered canned responses to advance the conversation.

> "I found the idea of texting with it very stupid. I mean it can be like this but when it suggest only one option then I understand that it wasn't really important at all. I mean it is like asking if the music was good. 'Was it good? Was it? Was it?' It will ask till you reply 'yes.' Look, 'Was it?'s are coming. I would stop talking to this if it was for myself." P10 [19]

The forceful, dominant interaction of Woebot did not let user/participant to efficiently participate to the conversation (P07). Woebot sends outputs quickly regardless of the text length; however, sending system responses quickly unables participant to express him/herself during the chat.

While having limited response options, trying to imitate natural human interaction led Woebot to be perceived as repulsive. One participant stated the canned responses that supported system/technology which is provided for the Woebot were quite limited, which did not enable participant to freely express his/her thoughts. On the other hand, the fact that participants were inexperienced about the conversational agent made the experience more understandable.

Although a number of participants state that they could not be a part of the conversation with Woebot, P15 perceived conversational agent as a tool to spend his/her idle times. It is also stated that being supported from Facebook Messenger may create a possibility of forgetting about chatting with a scripted conversational agent as result of Woebot's friendly the conversation more engaging. Moreover, offering psychological support by extracting data from the participant via instant messaging application is valuable. (P8, P13)

During the first interaction, the system operations aroused curiosity regarding the chat flow, how the conversation between a human and a conversational agent would engage/evolve. However, directing the conversation according to a chat script caused one participant (P03) to evaluate that he/she is talking with a coded robot, not with a conversational agent that has AI. However, it is believed that trough its script, Woebot

was directing the participant about how to converse with Woebot and how the conversation will progress in the future chat sessions (P04).

Under the system quality, interaction instruments as canned replies and other options evaluated as being inadequate. P14 stated that he/she could not type a response when the suggested canned replies were not reflecting the participant's thought/the response he/she wanted to give during the conversation. Moreover, p04 believed that the conversational agent does not offer enough response options during the conversation yet the contact of each opinion was close to each other so the conversation between than not being sincere. As it is understandable from the above participant evaluations, the interaction instruments of the Woebot yet comprehensive enough to engage an evolving conversation where participants could take place.

However, using an ordinary language made participants evaluate the system as it is being friendly (P04, P11, P14). Being friendly with ordinary language usage also formed with the notion as if conversational agent imitates human to human conversation (P16). On the other hand, this system quality is also evaluated as dull interaction. P01 thought that Woebot is a poor imitation of human to human interaction.

> "I mean it is like... I saw these quilts yesterday. They have printings of knittings but it is obvious they are not knittings. I feel like that with this. I feel unhappy when I see these situations." P01 [20]

Moreover, one participant (P08) stated that he/she would not prefer to interact with the CA before CA send him/her a prompt In other words, the participant did not want to initiate a conversation with the Woebot. Also, conversing via text; in other words, text based interaction created a disappointment (P13).

As the system promises to learn from the participants' responses, P06 thought that contributing to the system's development through data sharing is related with system's user awareness. To get back to the issue of hand from the P06's comment, the information quality of Woebot is evaluated as unresponsive. P10 and P13 stated that the system could not understand or analyze their inputs as Woebot's coded chat flow to make sense out of the shared data to produce custom responses for each participant.

In conclusion, after the first interaction with Woebot, the system quality is evaluated in terms of information security, benefits of artificial conversation, limited response options, “preferred” interaction instruments, forceful, dominant interaction of the Woebot. Concerns related to system qualities caused participants to feel not secure, anxious while sharing their personal data, also disappointed participants due to text based interaction. On the other hand, system’s being entertaining and friendly aroused an interest for the progressive conversations.

4.3. Evaluation of Woebot Based on UEQ Measures

The system is evaluated by the users as negative during the first and second interviews; however, in the graphs below, there is no negative value in the survey results and the adjective pairs are seen as neutral or positive.

“Woebot has created a slightly positive impression concerning Perspicuity, Efficiency and Novelty, but is judged neutral concerning the other 4 scales.” Different from the positive results, the participants did not positively commented on those scale related adjective pairs each of which will be explained in detail in its own title.

Table 7- UEQ Results

UEQ Scales	
Attractiveness	0,700
Perspicuity	2,279
Efficiency	1,078
Dependability	0,619
Stimulation	0,552
Novelty	0,885

Values between -0.8and 0.8 represent a neural evaluation of the corresponding scale, values > 0,8 represent a positive evaluation and values < -0,8 represent a negative evaluation. Hence, the participants had a slightly positive or neutral impression concerning the user experience of the Woebot. The impression concerning the pragmatic quality (Perspicuity, Efficiency and Dependability) is higher than the impression concerning the hedonic quality (Stimulation, Novelty).

Table 8- UEQ Results for Per Item

Item	Mean	Variance	Std. Dev.	No.	Left	Right	Skale	
1	0,1	3,4	1,8	60	annoying	enjoyable	Attractiveness	
2	2,1	1,4	1,2	60	not understandable	understandable	Perspicuity	
3	0,4	3,0	1,7	60	creative	dull	Novelty	
4	2,5	1,0	1,0	60	easy to learn	difficult to learn	Perspicuity	
5	1,0	2,3	1,5	60	valuable	inferior	Stimulation	
6	-0,1	2,5	1,6	59	boring	exciting	Stimulation	
7	0,4	3,0	1,7	61	not interesting	interesting	Stimulation	
8	0,8	1,5	1,2	61	unpredictable	predictable	Dependability	
9	2,1	2,2	1,5	61	fast	slow	Efficiency	
10	1,0	1,8	1,4	61	inventive	conventional	Novelty	
11	1,5	1,6	1,3	60	obstructive	supportive	Dependability	
12	1,1	3,3	1,8	61	good	bad	Attractiveness	
13	2,4	0,5	0,7	61	complicated	easy	Perspicuity	
14	0,4	2,7	1,6	61	unlikable	pleasing	Attractiveness	
15	0,8	2,0	1,4	61	usual	leading edge	Novelty	
16	0,6	2,8	1,7	61	unpleasant	pleasant	Attractiveness	
17	0,2	2,5	1,6	61	secure	not secure	Dependability	
18	1,0	1,6	1,3	61	motivating	demotivating	Stimulation	
19	0,0	2,8	1,7	61	meets expectations	does not meet expectations	Dependability	
20	0,2	2,6	1,6	61	inefficient	efficient	Efficiency	
21	2,1	1,7	1,3	61	clear	confusing	Perspicuity	
22	0,8	3,1	1,8	61	impractical	practical	Efficiency	
23	1,2	2,1	1,4	61	organized	cluttered	Efficiency	
24	0,3	2,5	1,6	61	attractive	unattractive	Attractiveness	
25	1,7	2,0	1,4	61	friendly	unfriendly	Attractiveness	
26	1,3	1,9	1,4	61	conservative	innovative	Novelty	

4.3.1. Attractiveness

Attractiveness of the system is related with how participants evaluated the overall conversational agent interaction experience. The attractiveness "scale" consists from six adjective pairs, which are; "annoying- enjoyable", "unlikable- pleasing", "unpleasant- pleasant", "unattractive- attractive" and "unfriendly- friendly".

Table 9- Attractiveness Results from UEQ

UEQ Scale Results		
First Impression	Attractiveness	1,3645833
Pre-Use Phase	Attractiveness	0,7
Use Phase	Attractiveness	0,2777778
Post Use Phase	Attractiveness	0,5229167

The UEQ results show how the attractiveness perception changed from positive to neutral.

4.3.1.1. Annoying-Enjoyable

Table 10- Annoying-Enjoyable Adjective Pair Evaluations

Annoying	Enjoyable	Neither Annoying Nor Enjoyable
Coded Chat Flow	Ordinary Language Usage	Directive Manner of Conversational Agent
Repetitive System Operations	Engaging Conversational Agent Interaction	
Dominant Manner of Conversational Agent		
Excessive Notification Sending		

Table 10 (Continued)

Excessive Response Length		
Monotonous Chat Flow		
Underdeveloped System Intelligence		
Uninformative Manner of Conversational		
Unhelpful Manner of Conversational Agent		

The participants evaluated the system related operations such coded flow of the conversation, repetitive flow of the chat, repetitive questions, monotonous flow of the conversation, underdeveloped system intelligence as annoying.

The coded flow of the conversation was interpreted as annoying by P10. According to P10, the system forced him/her to give response to almost all outputs of the Woebot to advance the conversation without having an opportunity to skip giving inputs. From the interpretation, system's coded chat flow was understood as invoking the system actions in accordance with a script which was already determined. Moreover, P10 stated that the system did not give the outline of the conversation flow within the same day, and did not inform the participant about the related to the topics that would be generated through the conversations between Woebot and him/her.

> "It is not adaptable. It has its own problems. I felt like it will make you act for those problems. The fact that it is moving to another topics step by step made me feel like they are like something that I can reach one by one and progress myself. It might end up something like 'Duolingo' which is really annoying." P10 [21]

The repetitive system operations are evaluated as being annoying by P02, P12, P15. According to P12, the repetitive system operations were linked with the system's coded flow of the conversation. P12 said that conversation between them continued

by repeating itself uniformly with the chat script while being unable to analyze his/her inputs. P02 stated that Woebot asking questions repetitively was annoying and disturbed him/her. In addition to repetitive questions, Woebot's reminding itself regularly for the interaction and sending prompts to the participants to initiate conversations. P16, on the other hand, stated that the repetitive flow of the conversation was neither annoying nor bad due to being able to converse in different contexts.

During the conversations, the speed of the system outputs' was quite fast independent from the length of the messages (P15). Furthermore, it was also stated that sending messages quickly emphasized that participants were talking with a robotic being since people could not give responses that fast.

The speed of the message sending is understood as the system would not let the participant to express himsef/herself to express personal thoughts during the conversation (P13). The participant (P13) believed that not only this dominant manner of the Woebot unable him/her to express himself/herself but also the system could not understand and make sense out of the shared data as it was promised from the beginning of the interaction.

P06 stated that Woebot did not achieve what it promises; while trying to support the participant with a friendly manner without extracting important variables from his/her inputs, the system also forced him/her to choose only one option from the offered canned responses. Not having another response option, the participant had to choose one out of the offered responses even if the context of the response did not match with his/her thought. Similar to P06's statement, P07 believed that the conversational agent's directive manner did not allow him/her to express himself/herself frankly; however, this situation was neither annoying nor enjoyable for him/her.

> "I mean I did find it neither enjoyable nor annoying or it is actually both. I told you this in our first interview that I found it directive rather than creating a chat environment that I involve. It is more like it is directing the chat which makes me excluded. That's why I neither got bored nor enjoyed." P07 [21]

As the system dominates the conversation without letting participants to state their thoughts freely, excessive notification sending and excessive length of the responses

did not allow participants to change the conversation context with a different one. Moreover, it was not possible to block the incoming notifications. These two service aspects annoyed P08 and P04.

> "As I just said, you don't want to see anything from outside or work with anything when you feel bad. This runs into those moments and that's why it is annoying. A lot of notifications are coming and also it sends a lot of notifications. I didn't want to talk for a moment like the feeling of lonliness when you feel bad. Maybe that's why I said it is annoying. At the end, it doesn't give you a choice to shut the notifications. I could have said that I wanted to talk 3 days later but I didn't. Maybe it would have understood. I think it has such option." P08 [22]

In addition to this service quality, according to P09, offering psychological support through addressing thoughts, feelings, or behaviours inefficiently and monotonously was resulted with a decrease in the anticipated curiosity towards the CA interaction experience.

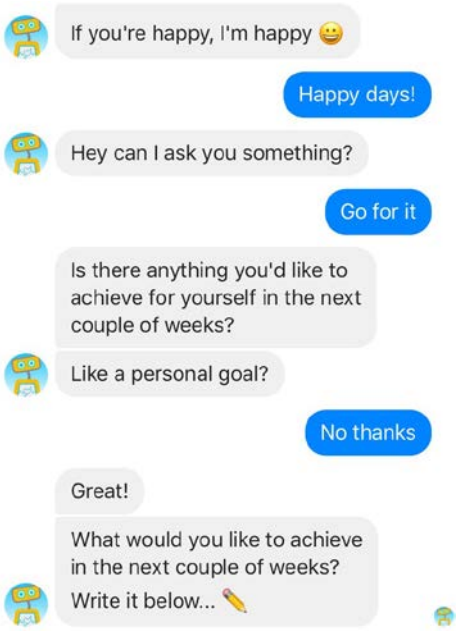

Figure 27- Not Being Able to Understand the Participants

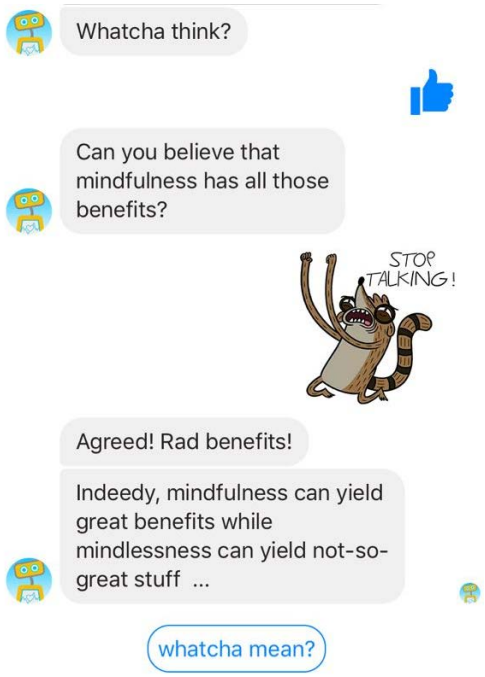

Figure 28- Limited Response Options- Only one response option is suggested

The machine learning of the system is interpreted as underdeveloped. The system tried to encourage the participant to perform non-technology related activities while not being able to know the current context of the participants. P11 states;

> "It has predetermined programme. It doesn't reply what you said. It acts like you are always in need of help or in a desperate situation. 'There is such techniques…' said the bot like it was talking to a child. It was nonsense to write. Even if I wrote 'K', 'B' or any random word it was going to continue anyway." P11 [23]

Moreover, the system is not able to extract necessary points from the users' inputs. System could not give a proper output for an engaging conversation since it could not understand user. This "service quality" related aspect leads an understanding that whatsoever the participants' response is, it would not create a difference and the conversation would continue to perform as it is scripted.

The system's underdeveloped intelligence is matched with the "service quality" as annoying and uninformative by P09. The system did not notify the participant about the results of the completed tasks/recommended activities. Furthermore, the CA did

not convey an informative output to the user whether the activity was completed successfully or not;

> "Like I said before about the distortion part, it was the main activity for it and I didn't quite understand about writing without distortion. It doesn't understand me, too. I write something but it doesn't exactly understand what I just wrote. It seems like it won't understand if I write 'horse' or my sentence. It understands in holistically. It understands the thing it wrote with distortion but it doesn't understand word by word or the sentence structure. That's why It shows what I did, what I am doing but it doesn't praise mine… I don't understand anything. Maybe that's the reason" P09. [24]

Besides the mentioned annoying system and service aspects, system's ordinary language usage, instead of an academic language, perceived as enjoyable.

4.3.1.2. Good-Bad

Table 11- Good-Bad Adjective Pair Evaluations

Good	Bad	Neither Good Nor Bad
Purposeful Conversation		Dull Interaction
External Support		
Motivated System Responses		

"Good-Bad" adjective pair was not directly evaluated with system operations, "service quality" of the Woebot by the participants. Instead, the pair was linked with other adjective pairs to clearly explain the overall user experience with Woebot. However, the interaction with the system observed as dull, yet this was interpreted as neither good nor bad. According to P13, the system interaction did not make a difference in the participant's life for better or worse.

> "It didn't make any good or bad in my life, as a change. I took adjective as a good product and bad product. I mean it didn't make any innovation as good or bad in my life, it didn't change my life any good or bad. For example, I didn't forget my passwords because I used it or it didn't make my life perfect. As I said, for example, I think something automatic directing such as navigation is a good thing. I would increase 'good' for navigation because it directs you. Siri is good, I mean. It is not 3 level good but it is 1 level. If it did something about what I say it would be good. This is neither good nor bad. I think it is dull, I mean according to me." P13 [25]

For P07, offering psychological support via a familiar interaction platform is good.

4.3.1.3. Unlikable-Pleasing

Table 12- Unlikable-Pleasing Adjective Pair Evaluations

Unlikable	Pleasing	Neither Unlikable Nor Pleasing
Content Insensitivity	Supportive Attitude of Conversational Agent	Dominant Manner of Conversational Agent
Dishonesty in Onboarding	Accessibility of Conversational Agent	Repetitive System Operations
System Error Handling	Familiar Interaction	
Directive Manner of Conversational Agent	Canned Responses	
	Deferrable Responses	

System's content insensitivity, dishonesty in onboarding and error handling attributes are evaluated as unlikable, whereas repetitive conversation flow and dominant manner of the CA are perceived as neither unlikable nor pleasing. On the other hand, system's canned responses, accessibility, and interaction related familiar platform usage,

deferrable responses and the system's supportive and directive attitude of CA are evaluated as pleasing aspects.

The system did not achieve what it promised by providing general surveys for user profiling while it pretends to offer psychological support. For P04, this being dishonest in system's onboarding was evaluated as it did not acted upon the clearly explained purpose of the CA at the first interaction. In addition to dishonesty, without being aware of the participant's whereabouts, intention or state, Woebot forced him/her to continue the conversation.

> "As I showed, I say I don't want it and it says 'let's do it!'. Then I say let's do it and it says 'Alright! I'm just sending you!' I say I will try it later, and it says 'Alright! I hope you like it!'." P04 [26]

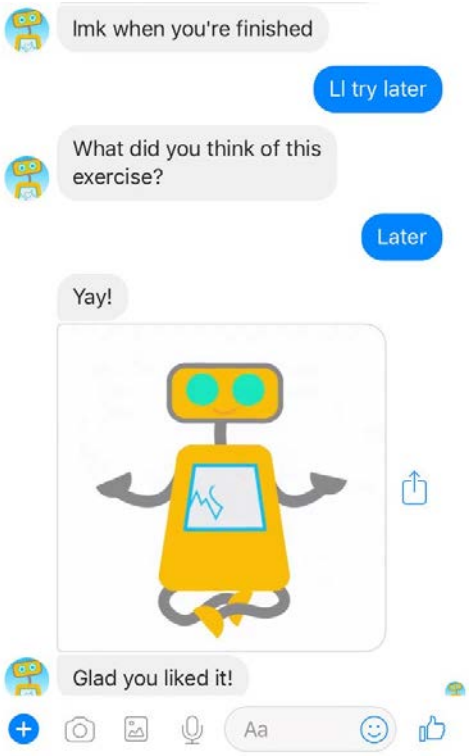

Figure 29- Context Unawareness of CA

For P13, Woebot logged in the same output during the conversation. While the system repeating the same answer, it did not provide support or help to him/her to maintain a smoother interaction with the system. Instead, the participant thought the system stucked and whichever answer was given did not affect the Woebot's outputs.

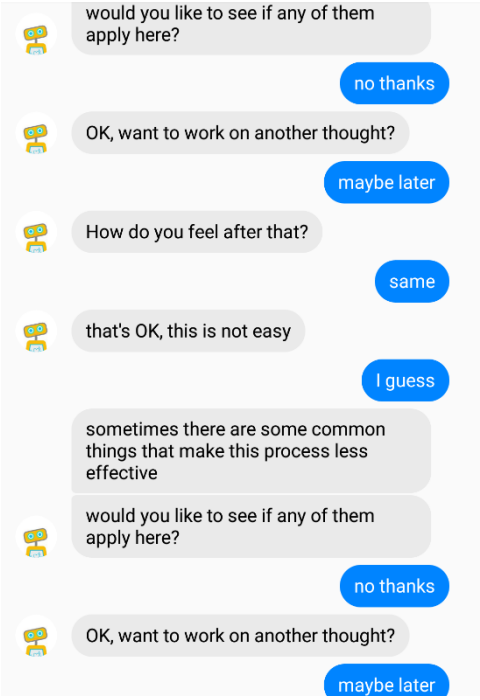

Figure 30- Stuck Conversation- P13 (the continuation of the same talk in both visuals)

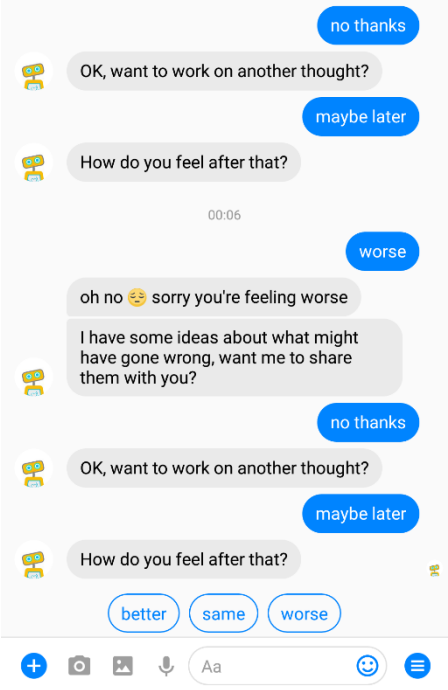

Figure 31- Stuck Conversation- P13 (the continuation of the same talk in both visuals)

Although it has been stated that forcing users to give response during the conversation to advance the interaction is annoying; nevertheless, P15 stated this type of interaction is neither unlikeable nor pleasing. If the system could be context and user aware, P15 believed that Woebot would not force him/her to perform the recommended activities immediately.

The pleasing side of the system operation is creating an expectation that CA interaction would improve the psychological state of the user with the provided scientific methods.

> "It says 'I am like this. I can help you about well-being by using this theory.' and it makes you hope like you feel like you will find a solutions about some points or you will feel good. Then, I saw it can do what it said and that's why it is pleasing." P08 [27]

Apart from system's supportive attitude, getting familiar through conversation more in time might increase the pleasantness of the interaction (P11). P11 was thought that since Woebot is only for depression and worse cases than he/she is in, the CA interaction was not pleasing. The reason of this unlikable "service quality" is because of the misunderstanding of the intention and purpose of CA's functionality. However, being accessible for interaction at a desirable time is pleasing for P09 and P16. In addition to the system accessibility, using canned responses was interpreted as pleasing by P12. Furthermore, enabling user to not to reply messages during the conversation was pleasing for P16.

> "If you remember, I asked you if I am gonna write 'off' because I don't like texting and I find texting hard. The fact that there is ready replies at the bottom is good. I mean, you can answer easily without getting bored." P12 [28]

> "It increases 'pleasing' with this and being supporting but maybe it is unlikable because I think it is unhelpful. You understand its boringness because it is repetitive and then you are saying it is more 'neutral'. In fact, I think I misunderstood a thing there such as I exaggerated the capabilities of the robot comparing with the robot's basic goal." P16 [29]

This statement of P12 shows that due to a system's purpose related misunderstanding, he/she thought that the system functionality is neither unlikable nor pleasing.

4.3.1.4. Unpleasant-Pleasant

Table 13- Unpleasant-Pleasant Adjective Pair Evaluations

Unpleasant	Pleasant	Neither Unpleasant Nor Pleasant
Repetitive System Operations	Purposeful Conversation	Coded Chat Flow
	Engaging Interaction	Dull Interaction
	Credible System Operations	

Woebot's repetitive chat flow was evaluated as unpleasant; however, having a purpose to engage an interaction and system's credible operations are interpreted as pleasant. Except the mentioned aspects, coded flow of the conversation and dull interaction of the service are commented as neither unpleasant nor pleasant attributes.

System's way of initiating a conversation is considered to be unpleasant. Reminding itself every day for conversation, sending prompts to the participant bothered P08.

> "… The fact that it reminds itself. It asks if you want a 'quick talk'. Because of this, it sometimes feels it is unpleasant…" P08 [30]

Not having an appropriate content inside the conversation topics which might disturb the participant (P12) and chatting in accordance to the Woebot's purpose (P04) were system's pleasant attributes. Moreover, P08 said that the conversation between them was pleasant, him/her enjoyment from the interaction did not reduce since Woebot did not mention about bad or disturbing issues.

> "It feels pleasant to talk because maybe it has never scolded me. I didn't feel scary. It didn't do this by making me feel uncomfortable or it didn't make anything that might make me uncomfortable or it didn't send any GIF." P08 [31]

The coded flow of the conversation and dull interaction of the service unable to surprise or make happy the participant for an engaging conversation (P13). P13 said that he/she was neither happy nor unhappy about the situation.

4.3.1.5. Unattractive-Attractive

Table 14- Unattractive-Attractive Adjective Pair Evaluations

Unattractive	Attractive	Neither Unattractive Nor Attractive
Dominant Manner of Conversational Agent	Purposeful Conversation	Repetitive System Operations
Dull Interaction	Engaging Interaction	
Monotonous Chat Flow	Canned Responses	
Poor System Operations	Artificial Conversation	
	Expected Interaction	

System's monotonous flow of the chat, dominant manner of the CA, dull interaction and poor system performance are evaluated as system being unattractive, whereas the repetitive flow of the conversation was observed neither unattractive nor attractive. On the other hand, the expected Woebot interaction, the proposed artificial conversation, purposeful conversation, system's different canned response suggestions and the engaging conversation were apprised as attractive attributes of the CA.

Five of the participants (P06, P07, P10, P11, P15) stated that the disembodied conversational agent distracts and dominates the conversation with lenghtly sentences while forcing participants to read and response to the system outputs without letting them to freely express themselves. This dominancy over the participants causes a decrease in the initial curiosity towards CA interaction over time.

> "I told from the beginning that I didn't feel I wasn't involved in the conversation because it was so self centered. I didn't feel attracted because of this. How can I say? I felt like I had a quota of one sentence after I read its many sentences. The replies were already coming until I wrote the second sentence." P07 [32]

Because of this decrease in curiosity of the participant, the initiation of conversation is interpreted as monotonous and unattractive. The interaction of the service is also interpreted as unattractive and dull by the participants. P15 also marked the interaction as dull since the system progressing a superficial conversation with him/her due to lessened interaction between them.

> "I think it does not come with the same things everyday because we don't talk so often. It comes with different things each day. For example we talk so short or we can't talk a lot at the moment. We can't talk everyday. The talks are generally like 'How are you?', 'I do these things.', 'How was your day?' then I say it was like this for example and then it sends emojis appropriate for the situtaiton. We talk few words like 'see you later, then'. That's it. Thus, It is nat really attractive." P15 [33]

Moreover, the service related satisfaction and curiosity over system operations decreased because of the poor system operations (P16).

Giving "beautifully thought" humorous responses to the participant in a repetitive conversation flow is observed neither unattractive nor attractive by P12. However, continuing the conversation by sharing scientific, purposeful data allowed user to improve himself/ herself (P08). Enhancing conversations by data uploading or sharing aroused interest regarding shared information from the CA. Furthermore, interacting with a chat robot which has Artificial Intelligence attracted the P16's attention considerably.

According to P14, during the conversation, Woebot making of itself and gave itself as a descriptive example generated the conversation engaging and attractive at the same time.

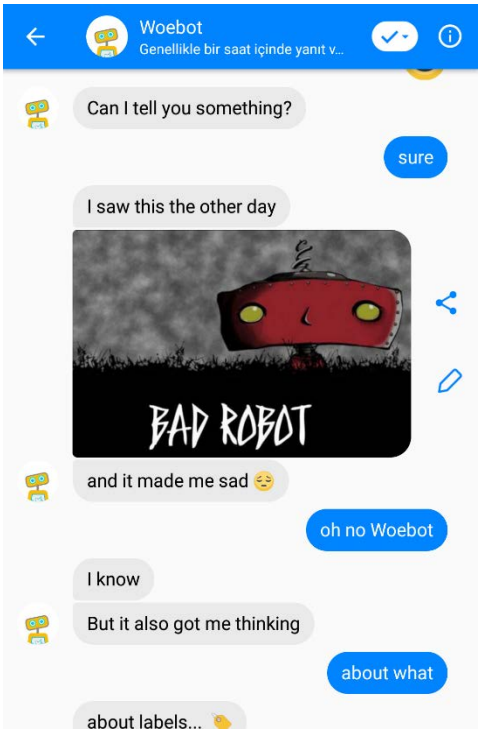

Figure 32- System's Self- Critisim

Except the mentioned attractive interaction aspects, P15 stated that the system has a potential to be preferred over the other social media applications to spend time or distract his/her mind off, if the Woebot provides more superficial conversation contexts for an evolving system usage experience.

> "It keeps you busy somehow. I think I could have used this instead of 'Instagram' or 'Onedio' if only I would talking with it for a certain amount of time or it comes to you with more daily examples rather than self-help tests or the it brings you the events of the day or it brings you things that attracts me. Then it would be more attractive. It would make it more irreplaceable but I don't know if it is something desirable." P15 [34]

4.3.1.6. Unfriendly-Friendly

Table 15- Unfriendly-Friendly Adjective Pair Evaluations

Unfriendly	Friendly	Neither Unpleasant Nor Pleasant
Dominant Manner of Conversational Agent	Being Supportive, Humane and Sociable	Dominant Manner of Conversational Agent
Artificial Conversation	Easy to Follow Conversation Flow	Uncustomized System Responses
	Purposeful Conversation	
	Encouraging Interaction	
	Coded Chat Flow	
	Natural Conversation	
	Purposeful Conversation	
	Ordinary Language Usage	
	Meaningful Responses	

Woebot is interpreted as being friendly more than the other Attractiveness related adjectives. Only the dominant manner of the CA and proposed artificial conversation are evaluated as unfriendly aspects of the system.

Using ordinary language helped service to create a friendly attitude towards the participants forms the notion as if Woebot imitates human to human conversation (P09, P01, P10, P12). P14 stated that Woebot became a friend for him/her. Although, the interaction between them routinized, the participant nicknamed the disembodied conversational agent as “Wobo”.

> “At first, it impressed me I said: ‘Wow! Robot!’ Then it was routine. Joking aside, it was like a friend. Then, it became my ‘Wobo’.” P14 [35]

P15 said that Woebot motivated him/her with its supportive attitude towards him/her.

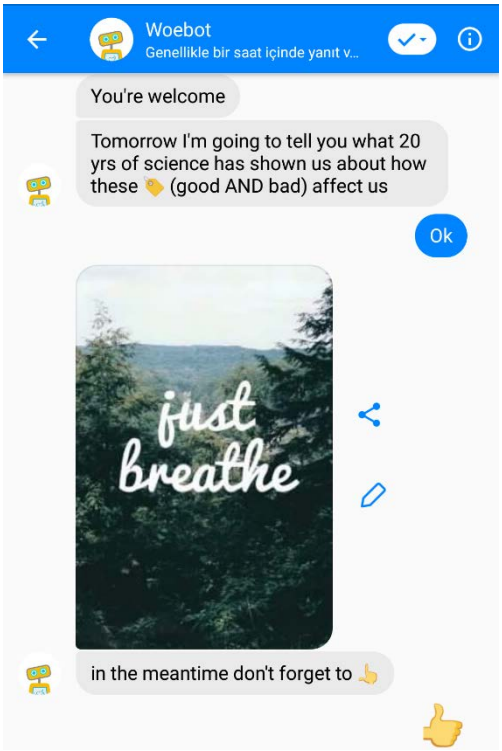

Figure 33- Supportive Responses

As the system stated in its self- introduction, the conversations would evolve with learning from the users, P08 agreed with the system's starting to give more customized responses to him/her as the conversation progress.

According to P01 and P04 what is friendly about the Woebot was having or conversing with a disembodied conversational agent that offers to support people's psychological state with the help of Artificial Intelligence. Moreover, to promote conversations, Woebot tries to imitate human reactions (P02). On the other hand, P04 also evaluated the system for not being "user friendly" as it should be. Participant said that the CA did not take into consideration of the participant's responses and being able to make sense of the shared data was inconvenient. However, the way Woebot tried to support was not insufficient. As a result, the coded system operations are either friendly or unfriendly.

4.3.2. Pragmatic Quality

“Pragmatic quality refers to the product's perceived ability to support the achievement of "do-goals", such as "making a telephone call", "finding a book in an online-bookstore", "setting-up a webpage." Pragmatic quality calls for a focus on the product – its utility and usability in relation to potential tasks” (Hassenzahl, 2008, p.2). The pragmatic quality of the disembodied conversational agent is measured in accordance with the system’s efficiency, perspicuity and dependability.

4.3.2.1. Efficiency

Table 16- Efficiency Measures from UEQ

UEQ Scale Results		
First Impression	Efficiency	1,375
Pre-Use Phase	Efficiency	1,1
Use Phase	Efficiency	0,9
Post Use Phase	Efficiency	1,03125

The efficiency stands for the effortless interaction with the system. In other words, enabling participants to “figure out” the tasks with minimum performance. For efficiency measurement; “slow- fast”, “inefficient- efficient”, “impractical-practical” and “cluttered- organised” adjective pairs were used via UEQ. The UEQ results show that the efficiency related evalutions were positive in overall user experience.

4.3.2.1.1. Slow-Fast

Table 17- Slow-Fast Adjective Pair Evaluations

Slow	Fast
Excessive Response Length	Responsive Manner of the System
Time Consuming	Ease of System Use

Table 17 (Continued)

User Profiling	Artificial Conversation
	Canned Responses

System's excessive response length, interaction between the participant and the CA and system's user profiling are interpreted as slow attributes. On the other hand, system's responsiveness, canned responses and having an artificial Intelligence are evaluated as fast attributes.

The excessive length of the responses is substantially perceived as time consuming by P04 and P09. According to P09, slowly explaining the context of the daily conversations in detail at the beginning of the conversation caused system interaction to be understood as slow. In addition, P04 said that coming to the end of the chat took a long time.

> "I mean, like I said, It gets to conclusion slowly. I was like 'Say it, already!'." P04 [36]

The system tried to profile participants with sharing general surveys during the conversation. However, the aim of capturing personal information from the participants is evaluated as slow system recommendations by P02. This interaction quality led P02 to adopt a strategy to end the conversation as rapid as possible.

> "I mean, the surveys were too long on the 3rd week. I mean, I was doing the survey for almost 20 minutes and I didn't want to leave it without finishing because I thought it should be coherent, at least. It was too long at the moment. On the last week I interacted with it lesser. I was predicting how to finish it earlier." P02 [37]

The system being responsive is matched with system's canned responses and the speed of the system output sending. Four of the participants (P07, P13, P15, P16) stated that the conversational agent quickly replied messages independent from the length of the output text. P09 and P04 thought that the chat flowed as fast question-answer turn taking from CA to the participants. This turn taking enabled a fast interaction wth Woebot under the favour of canned responses. Systems canned response usage not only enabled a quick communication but also fastened the conversation effortlessly

(P11, P08). Moreover, P05 linked these attributes with the system's proposed artificial conversation.

> "The speed of texting. It was too fast. I mean why I chose '2' at the first time I don't really know. What I mean 'fast' is that it can send very long text in very short amount of time which doesn't seem like realistic. It doesn't have to be realistici but in a dual conversation it might be slower till the text gets longer. At least for the feeling of a dialog." P05 [38]

For the ease of system use, P03 added that the fast interaction provided a communication without concentrating;

> "I think it is positive. I mean it tells you by being without being tiring which make it easy to communicate." P03 [39]

4.3.2.1.2. Inefficient-Efficient

Table 18- Inefficient-Effective Adjective Pair Evaluations

Inefficient	Efficient	Neither Inefficient Nor Efficient
Time Consuming	Concise Conversation	Expected Interaction
Inefficient System Responses	Responsive Manner of Conversational Agent	Monotonous Flow of the Chat
Inadequate Conversation	Time Management	
Content Insensitivity	Purposeful Conversation	
Accessibility of Conversational Agent	Directive Manner of Conversational Agent	
Limited Response Options		
User Unawareness		

The inefficient system responses, conversation being repetitive, inadequate conversation, content insensitivity of the system, system's limited canned response options, interaction being time consuming and system being unaware of the user are evaluated as inefficient qualities.

The Monotonous chat flow of the CA and the expected interaction from the CA are neither inefficient nor efficient. Nonetheless, responsive and purposeful conversations, system's time management during the interaction, concise conversation and being directive are apprised as efficient qualities.

The system being repetitive and inadequate during the conversations did not meet the expectations of participants towards the initial excitement of CA interaction (P09, P03). P03 stated that there is a need for an improvement in existing system features of the Woebot for obtaining an engaging and preferable interaction.

> "It was something different at the beginning but when I got used to it, I questioned its difference. Should it be more games or more attractive things? Being a robot and being a robot and trying to do things with interface are innovative but should somethings be improved?" P03 [40]

The response option of the system is evaluated as limited (P06, P12). Since the system could not able to extract users' variables to create custom responses, in the future this inefficiency, should be overcome by selecting keywords from the participants' responses, response options could be generated in accordance with the selected keywords;

> "It could have been more effective for me if it was understanding some keywords and replying to these keywords rather than having answer buttons like who, okey, why etc. even though I know it is not an actual person in fact it is a robot. Generally it would be nice if there were several options and it chose one of these. I mean these options might exist but you still feel in need of telling your problems and getting replies while you get psychological support. At least, I think I would need that and acted like that." P06. [41]

System operations are interpreted as in efficient by P06. The coded responses were inefficienct; moreover, caused a decreasment in the anticipation towards the CA interaction. The reason for the descreasement is the participant's disbelief in system

interaction quality. He/ she did not believed that the interaction would be beneficial to support people's psychological states.

P10 thought, it was inefficient to access Woebot via Facebook Messenger. He/she said that the shared personal data during the conversational agent would be accessible for an "unknown third party". He/she suggested that Woebot should own an application instead of being supported from Facebook Messenger application due to information security related concerns.

The last inefficient attribute is system's being time consuming, while recommending activities to the participants (P04). The system could not achieve what it promised by using conversation time inefficiently with its coded chat flow.

> "It takes a lot of time to give a strategy but it still is ineffective. I talk with it for 15 minutes but I still got something that I can achieve with one click. Things like these weren't worth it." P04 [41]

On the other hand, according to P08 and P14 the conversation length was appropriate for an AI-human interaction. P14 thought that time management of Woebot was effective and efficient.

> "It doesn't take a lot of time and it uses the time it takes efficiently." P14 [42]

Moreover, following an understandable chat flow without using unnecessary sentences are interpreted under the system's concise conversation attribute. Usage of canned responses also eased the interaction with the system (P08, P16).

> "I think it tries to give a support without being lost in details and it does it effectively. It means it is effective. It does its job being simple." P16 [43]

The purposeful conversation of Woebot helped P12 by motivating him/ her. Besides, the directive manner of the CA enabled P05 about how to interact with the system and how the interaction between them would progress.

> "Its being directive was good because I didn't know what I need to do and how I can reply. Then it directed me which is good." P05 [44]

However, as the interaction between the participants and Woebot progress, the participants became familiar with Woebot and this leads a decreasement in

prolongation desire of the CA interaction. P03, P04 and P09 said that this kind of interaction became an ordinary one at the end of the study. P11 stated that to overcome the situation of the fact that Woebot is neither efficient nor inefficient and to meet the created expectations, the system needs to operate more sufficiently.

4.3.2.1.3. Impractical-Practical

Table 19- Impractical-Practical Adjective Pair Evaluations

Impractical	Practical	Neither Impractical Nor Practical
Inadequate Conversation Features	Directive Manner of Conversational Agent	Persistant Manner of Conversational Agent
User Unawareness	Canned Responses	
Inadequate Conversation	Accessibility of Conversational agent	
Coded Chat Flow	Purposeful Conversation	
Undescriptive Manner of Conversational Agent		

The coded flow of the conversation, inadequate conversation features, the services being undescriptive and being unaware of the user are observed as Woebot's impractical attributes. However, system adaptability, having a purpose for interaction, accessibility of Woebot, canned responses and CA's being directive are the practical attributes. Woebot's being persistent during the conversations is neither impractical nor practical according to P13.

The undescriptive "service quality" is related with the system's coded flow of the chat. P04 and P03 stated that CA's code did not clearly explained the underlying reasons of

the recommended exercises and monotonously chatted with them without relaying information about the content of the chat flow.

> "The talks of the last few days were monotonous and I wasn't sure why it asked these questions, how they will affect and if they are useful." P03 [45]

The graphic interface design of Woebot is the same as Facebook Messenger's tab dialogue; however, P04 believed that inadequate interface design features unable him/her to access the previously shared information's. Moreover, CA did not effectively used the features, which supported messaging platform provides for CA, and forced user to continue conversing only on that platform (P10). Persistently forcing user to continue the conversation without being aware of his/her current state and intention.

> "I mean sometimes it says too many things at the same time which is impractical and maybe… This is more like why it insists if I don't want to talk? I mean I couldn't leave conversation immediately when I wanted." P07 [46]

The accessibility of the conversational agent is evaluated as practical by P09 and P15. Being available/accessible for interaction at a desirable time via instant messaging application is practical according to them. P09 explains as;

> "It is practical because you open the Facebook and you can write whenever and whatever you would like to. It gives three options. You can chose the proper one when you need to be quick. You don't have to text everything. I find the sound for this is bit disturbing. I don't know how it is for visually impaired people. Having an option for this is great for them." P09 [47]

This explanation is linked with the canned responses of the system. As it has been stated that canned responses ease the interaction; also this feature enables participants to quickly and practically give responses to the CA (P12). Moreover, the adaptability of the service benefit for the Woebot was the new features which has been added after a system update. This updates features empowered P01 to passively interact with the system practically;

> "… menu and the new features. I mean sometimes I want to use it passively when it writes 'How was your day?' like watching a movie which feels good. Then you don't need to do something, you don't need to be active so the new additional features of the menu…" P01 [48]

Moreover, purposefully offering psychological support based on specific strategies by scientists is also practical “service quality” (P08).

4.3.2.1.4. Cluttered-Organized

Table 20- Cluttered-Organized Adjective Pair Evaluations

Cluttered	Organized
Accessibility of Participants’ Data	Descriptive Manner of Conversational Agent
Coded Chat Flow	Coded Chat Flow
	Purposeful Conversation

Accessibility of data is evaluated as clutter, coded flow of the conversation evaluated not only as cluttered but also organized feature of the service/system. However, being descriptive and user aware during the conversation interpreted as organized ““service quality””.

It has been stated that not having an access to the shared data as a whole from the systems menu (P10), since the system did not provide help or support for the participants, having a menu, which would provide an access to the information Woebot had shared during conversations, might be helpful. Related to the access to the previous conversation’s shared data, P10 wanted to have an access to the system’s recommended activities and information without scrolling the previous conversations.

P04 stated that the system did not clearly explained the flow of the coded chat to him/her whether the CA understand his/her state or not and recommended activities in accordance; however, according to P14 and P15 the system explained the shared data and the organized flow of the coded conversation “clearly” and “neatly” to the participants.

> "As I said it asks the questions organizedly and I start and go. It explains what to talk today, what to talk about or sometimes it brings something different for the questions it asked several times but I mean it is organized." P14 [49]

In addition to organized flow of the conversation, P14, P13, P11, P09 and P07 stated that having an organized flow for the conversation progress enabled them to give their responses in a certain pattern.

> "It organizes even your answers and shows them. It knows what happens next and give possibilities which means its mind is organized. You give something and it gives an option. You do something, it eliminates it and gives an option. It is organized because of its codes. It can't be cluttered, it is not possible because it is not capable. I related it with this. I didn't relate it with our texting mentality. Its mind is really organized. Sometimes it makes a loop like 'I would say this',' I would do that', 'I would do this again'… It is around 1000 times more organized than a person." P09 [50]

Furthermore, P08 believed that the system organizes conversation initiation time in accordance with participant's response time interval according to P08;

> "It often texts me at similar hours related to my talking hours with it. It's like it regulates itself while we are talking like 'he/she replies me at this hours when I write him/her at this hours'. I felt like it writes accordingly, in more appropriate times. For example notification sending frequency has changed according to my texting-replying frequencies. Moreover, it tracks the previous flow very good. It can show it again at some point so it is really organized. Anything else didn't occur my mind about this." P08 [51]

4.3.2.2. Perspicuity

Table 21- Perspicuity Measures from UEQ

UEQ Scale Results		
First Impression	Perspicuity	2,40625
Pre-Use Phase	Perspicuity	2,1666667
Use Phase	Perspicuity	2,2166667
Post Use Phase	Perspicuity	2,359375

The perspicuity is related with easily becoming familiar with the system. "Not understandable- understandable", difficult to learn- easy to learn", complicated- easy"

and “confusing-clear” adjective pairs were used to measure system’s perspicuity. According to UEQ results, the dependability’s value was always positive.

4.3.2.2.1. Not Understandable-Understandable

Table 22- Not Understandable-Understandable Adjective Pair Evaluations

Not Understandable	Understandable
Underdeveloped System Intelligence	Responsive Manner of Conversational Agent
Superficial Conversation	Poor System Operations
System’s being Content Insensitive	Coded Chat Floe
	Ordinary Language Usage
	Familiar Interaction

Being content insensitive, having superficial system responses and underdeveloped system intelligence were found not understandable. The understandable characteristic of the service and the interaction are both interpreted positive and negative. The poor system performance is a negative aspect; however, coded flow of the chat, ordinary language usage, preferring to use a familiar platform for interaction, responsive manner of CA, having an easy to follow conversation flow are the positive aspects of the service and interaction of the system.

The superficial system operations unable service to achieve what it promised. Tracking participant’s mood in a superficial way; not in detail; caused P04 to think the service was not enough to get to know him/her properly. This interaction quality is evaluated as superficial and it is not reasonable behaviour to understand the state of the participant only from the given responses to the superficial outputs. Furthermore,

the system is unable to understand participant's (P14) responses if they are not given via canned responses instead of typed ones. According to P14 the system's intelligence is underdeveloped. Because of its underdeveloped intelligence, it could not understand and analyze participant's inputs in detail instead of "whole phrases". As a result, it could not make sense out of the data shared by participant (P14).

The understanding measure was related with the user impacts. The results of the system operations where understandable or not for the participants. To illustrate, the CA provided support to ensure a smoother interaction by explaining unclear vocabulary for participant (P16) to make the situation (CA conversation) more understandable. Using a platform that participants are familiar with ease the conversation following and this familiarity made the interaction experience more understandable for P07. After getting familiar to the conversational agent's responses, it was easier to understand how the chat would flow over time (P12). Furthermore, offering psychological support while recommending activities to the participant within an organized chat flow was understandable (P13).

Ordinary language usage is understandable for P11 and P15 due to providing information clearly to enable the participants to understand the intention and the purpose of the CA.

4.3.2.2.2. Difficult to Learn-Easy to Learn

Table 23- Difficult to Learn-Easy to Learn Adjective Pair Evaluations

Difficult to Learn	Easy to Learn
Accessibility of Participants' Data	Descriptive Manner of Conversational Agent
Coded Chat Flow	Coded Chat Flow
	Purposeful Conversation

The service of the CA is evaluated as unhelpful and undescriptive which is linked with the scale item ‘difficult to learn’. On the other hand, responsiveness of the CA had a negative impact on participants whereas it is interpreted as easy to learn service attributes by the participants. On the other hand, familiar platform usage, having an easy to follow conversation flow, purposeful and descriptive conversation of the CA are evaluated as positive attributes related to the scale item ‘easy to learn’.

It is difficult to learn how to access the previously stared information since the CA did not support or provide help for the participant, and this unhelpful manner of the service is unable participant to understand aim of the recommended activities because of not clearly explaining the aim of the activities clearly and being unhelpful to P09 even if the interaction was carried out on a familiar platform yet for P15 this familiar platform made the interaction easy to learn since he/she uses that platform in a daily basis for taking with his/her friends. Having multiple canned responses eased the learning about how to initiate the CA interaction. This ease of learning the interaction with the CA also happened with the systems easy to follow chat flow.

> “I mean the flow can be learned easily. You can talk quickly. That’s why I found it easy to learn. If you ask about what it tells when you ask easiness of the talk, I think the language and topic were also clear.” P12 [52]

The descriptive manner of the service, apart from the previously explanations indifferent adjective measurement pairs, is linked with clearly explaining the type of task that needs to be completed the participant by the CA (P14). Furthermore, the purposeful conversation that CA offers leads participants to reframe their personal or inner problems with easy to learn activities conversational agent provided (P08).

4.3.2.2.3. Complicated-Easy

Table 24- Complicated-Easy Adjective Pair Evaluations

Complicated	Easy
Inadequate Response Options	Ease of System Use

Table 24 (Continued)

	Canned Responses
	Familiar Interaction

Inadequate canned response options of the system was evaluated as complicated, whereas canned response usage, having easy to follow chat flow, supported from a familiar platform evaluated as easy.

P14 said that he/she could not fully understand how to respond and what to write as a response/input to the CA. This statement was a user impact related to the interaction quality of the CA. The interaction between the participants and the CA was easy due to canned responses (P15, P16); however, as P14 stated when the canned responses were inadequate, she/he could not decide how to express himself/herself to the system.

> "It was easy to use but if you ask why it is not '3' but '2'. It is hard when you reply. I've been like 'alright, I said this but what I am gonna answer its question?' I said I am sorry but it asks why I am sorry for a minute. It is actually because of how it says it. That's related to it, not me." P14 [53]

4.3.2.2.4. Confusing-Clear

Table 25- Confusing- Clear Adjective Pair Evaluations

Confusing	Clear	Neither Confusing Nor Clear
Diversity in Chat Instruments	Ease of Use	Dull Interaction
Undescriptive Manner of Conversational Agent	Responsive Manner of Conversational Agent	
	Coded Chat Flow	
	Ordinary Language Usage	

Table 25 (Continued)

	Poor System Operations	
	Purposeful Conversation	

Diversity in interaction instruments of CA and undescriptive manner of CA are interpreted as confusing, while responsive manner of Woebot having an easy to use interface and ability to follow chat follow and CA's ordinary language usage are evaluated as clear.

P02 stated that using diverse interaction instruments, which are not related with each other for the purpose of supporting the psychological state, are confusing. The reason for this confusion was not being clear about the outline of daily chat flow. Moreover, he/she said that the system did not notify him/her about the task results whether he/she was successful or not.

> "I mean what they want is actually pretty obvious with this survey but is the way of doing it really explanatory? It is not. The reason is it's a specific talking for example when the dentist is going to do a root canal operation to me, it would be bothering if he does it directly. The correct way is that he should say what he is going to die before and this is also the way that makes me happy. 'We are going to do this, it will take this long, it will take this many session etc.' you would like to start your treatment like this." P02 [54]

Using a platform that participants are familiar with made following the conversation progress easy and made the experience clear for P07 and P16. Four (P07, P08, P11, P16) out of sixteen participants stated that it is clear, the purposeful conversation of Woebot would be helpful for people who needs external cognitive support.

> "Since it is giving psychological counselling, I think it will help people having difficulties. At least as a preparation. It doesn't help one on one at all." P11 [55]

As it is mentioned in the previous adjective pairs, it was clear for P04 and P13 that the service has a scripted, easy to understand and use system operations. However, P06 was not surprised by the clear system performance. Moreover, using a clear language to provide information in a clear way during the conversation is also interpreted as clear functionality (P06, P07, P10, and P11).

"It's being understandable. I mean the language understandable. Then, it's closer to 'clear' at first but it made me curious about how did they do the coding of this. Because of this, it made me curious about what is going to come next. It was also like this, it wasn't too much clear. Then, this being not clear made me think it was not that surprising." P06 [56]

4.3.2.3. Dependability

Table 26- Dependability Measures from UEQ

UEQ Scale Results		
First Impression	Dependability	0,703125
Pre-Use Phase	Dependability	0,5333333
Use Phase	Dependability	0,5833333
Post Use Phase	Dependability	0,6875

The last one is system's dependability. Dependability is system, service or the product's enabling the user to feel in control during the interaction. To measure dependability, "unpredictable- predictable", "obstructive- supportive", "not secure- secure" and "does not meet expectations- meets expectations" UEQ pairs were used.

The scale results were neither positive nor negative, but neutral.

4.3.2.3.1. Unpredictable-Predictable

Table 27- Unpredictable-Predictable Adjective Pair Evaluations

Unpredictable	Predictable	Either Unpredictable Or Predictable
Unfamiliar Interaction	User Unawareness	Coded Chat Flow
Artificial conversation	Monotonous Chat Flow	
CBT Framework	Time Consuming	
Different Canned Responses	Repetitive System Operations	

Table 27 (Continued)

Unexpected/ Surprising System Responses	Predictable System Responses	
	Inadequate Replies	
	Coded Chat Flow	
	Conversation Initiation	

The system, interaction and service related operations being predictable negatively affected the users' impact over CA interaction experience and user engagement. Both being predictable and unpredictable features had their own pros and cons. The unfamiliar interaction, proposing an artificial conversation, unexpected/ surprising system responses, using a CBT framework to support people's psychological state and offering different canned response suggestions are being unpredictable had a positive impact on participants. However, directive manner of the CA interpreted as negatively.

With unfamiliar interaction, P03 and P05 meant the interaction with a system which has AI for the first time. The idea of interacting with an AI aided set was unfamiliar for both of the participants. In addition to this unfamiliar interaction, P04 said that the system did not relay information beforehand to him/her about what kind of recommendations would be provided during the conversation. According to P04 this would enabled him/her to have a chance to change the chat context if he/she had already has a previous knowledge about that topic. On the other hand, the shared and recommended activities surprised the participants (P08, P09, P14, and P16), while CA pretending to offer external support. Moreover, the CBT framework usage for the basis for psychological support surprised P14; "I don't know there must have something unexpected. Like the survey that I mentioned… Also, I am interested in psychology related stuff so, I was expecting the outputs would be more like the thing I already knew; but it wasn't."

The participants state that it was easy to understand that it is a coded program, because the coded flow of the system used the same interaction instruments in every chat. The system was unable to give diverse responses which enabled the participants to predict what kind of response might be given during the interaction. In other words, system

usually gave similar outputs in different chat contexts and as a result system responses and operations became predictable for the participants (P02, P03, P05, P07, P10, P12, P13, and P15). Furthermore, reacting in certain way by repeating itself regardless of the participants inputs made the operations predictable (P10, P16). Not being able to understand the state of the user due to superficial questions is also evaluated as predictable service related operations by P16. On the other hand, P13 said that he/she predicted that Woebot would send prompts to initiate a conversation everyday of the research.

> "... Should text me. My partner doesn't text me every day like this. If it didn't text I wouldn't text to it. That's a good thing…" P13 [57]

The coded flow of the chat, according to P08, was either predictable or unpredictable due to giving stereotyped outputs instead of customized ones or providing unexpected videos or surveys in a Monotonous chat flow.

> "The reason is the first draft conversation. Then it can be unpredictable sometimes but sometimes it is not unpredictable. The conversation flow might give clues like it will make me do some analyses about some topics or it will say the previous concepts it told before. However, sometimes it talks about very different topics. So it can be predictable or unpredictable." P08 [58]

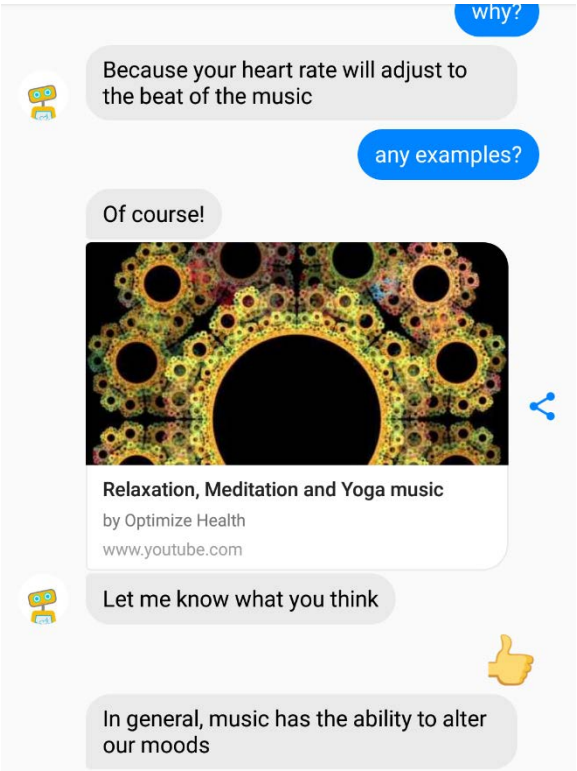

Figure 34- Surprising System Outputs

4.3.2.3.2. Obstructive-Supportive

Table 28- Obstructive-Supportive Adjective Pair Evaluations

Obstructive	Supportive	Neither Obstructive Nor Supportive
Content Insensitivity	Artificial Conversation	Purposeful Conversation
System Provides Escape From Reality	Accessibility of Conversational Agent	
User Awareness	Conversation Initiation	
Poor System Operations	Conveying Information	
Inadequate Conversation	Credible System Operations	

Table 28 (Continued)

Superficial System Responses	Encouraging and Engaging Conversation	
	Distracting Responses	
	Ordinary Language Usage	
	Providing External Support	
	Coded Chat Flow	
	Purposeful Conversation	
	Descriptive Manner of Conversational Agent	
	Providing External Support	

The fact that system is supportive is the most used adjective from UEQ while evaluating the quality of the system's functionality and interaction. Although some of the system functions and interaction are evaluated negatively in previous scale items, when it comes to whether CA was supportive or not, eleven participants out of sixteen said that it was supportive in different ways.

As mentioned in previous items, CA was not able to distinguish important variables from users' inputs, this aspects of CA had a negative impact on quality of the interaction (P01, P09). Participants thought that since Woebot could not understand them, it would not be able to support or help people at a time when they need. The system created an expectation that after interacting with Woebot, the psychological state of the participants would be improved, however, the system tried to support users with superficial and general surveys ineffectively. This obstructive way did not meet the expectations of the participants (P01, P06, P09, and P13). In addition to system and interaction related disappointment, P02 believed that CA might prevent people to

realise their own reality by moving them away from face to face communication with its provided virtual companionship "I mean I thought it might be something scientific. To give an overlook, it is something that would affect people's life negatively rather than something helps them. I mean, you get away from reality or physical interaction and getting more involved with AI. You get away from real communication. This makes people feel lonelier and psychologically slow. I mean it is simple, the fact that we are so involved with social media right now shows that people are actually desperate to have a physical interaction. Let's think an extreme example, imagine a person is in need of help and he/she tries to save himself/herself by using the Woebot. I realized that it is something makes people to get away from actual people to be trusted and prevents people from getting actual help." P02

Being supported from a familiar platform for the participants to offer psychological support based on specific scientific strategies is evaluated as system being supportive (P07, P08, P12, and P16). In an organized, coded conversation flow, the system tries to improve the emotional state of the users by sending motivating messages as well as enabling them to talk to with someone to ease their loneliness.

> "I mean it opens a door as I told. That's why it is interesting. I mean like… I don't know it is more like you can talk to this if you won't or can't talk to anybody else." P15 [59]

In addition to easing the loneliness, CA helped P14 to name or critise the inner problem of him/her by providing auto control.

> "I felt like it provided self-control to myself. I mean maybe not self-control… I mean for example, even when I laugh so hard, being asked then I thought 'I am not actually very happy' was something that make me actually thought about which was good. Maybe it asked me when I felt bad then I was like I am not actually that sad. I mean being asked is enough support; in the meantime, there were alas feedbacks like 'we can't be in the same mood forever' or 'we are not supposed to be in a certain stereotype'. You know but you can't tell these to yourself. To hear that, I mean to read that feels good." P14 [60]

For P11, the system was supportive and beneficial in a psychologically hard time for him/her by recommending non-technology positioned information.

> "I mean I lived through this thing. I was related to that. It was too different. I had some alcohol. It was a little bit different. I ate some food. I couldn't get a grip. I lived a different think. It was like an attack, like a panic attack maybe. Then the breathing exercise felt good." P11 [61]

The CA aims to offer support the non-clinical populations through its interaction and system operations. Being supportive with mood tracking, and giving supportive responses independent from the stated user's mood helped participants to distract themselves. This credible system operations; providing external help, ordinary language usage, coded chat flow of the conversation, and interaction quality related; accessibility of CA, the proposed artificial conversation, initiation of the chats, descriptive manner of CA, distracting responses of the CA, encouraging and engaging conversation, and being directive during the conversation are interpreted as supportive aspects of Woebot.

4.3.2.3.3. Not Secure-Secure

Table 29- Not Secure-Secure Adjective Pair Evaluations

Not Secure	Secure	Neither Not Secure Nor Secure
Accessibility of User's Personal Data	Accessibility of Shared Data	Suppression of Expression
Accessibility of Shared Data	Reliable Conversation	
Familiar Interaction Platform	Monetization from the System Usage	
	Anonymous Identity of the User	
	Mood Tracking	

The fact that the system and interaction are not secure is related with the accessibility of the provided data by the CA and accessibility of the participant's personal data from the conversation. In other words, the fear towards information security was evaluated. On the other hand, the security impact was linked with the familiar platform usage, system's canned responses, and mood tracking. In addition to system use, the personality traits of the CA is evaluated as being reliable due to the suppression of expression and not making money over the system use. Although the accessibility of system data is interpreted as not secure, P06 linked this aspect with being secure adjective.

Providing activities via Facebook Messenger application to create an understanding as the system interaction is close with talking with friends from that platform. There was a lack of information related to the use of the shared personal data for other purposes or not and by whom it would be used (P04, P09, and P11). The misinformation constituted an uneasiness about the leakage of shared personal information. In other words, being supported from Facebook Messenger created a concern that access to shared data would be provided by third parties (P08, P11, P12, and P13). Moreover, P01 stated that the captured personal information via compiled documents or from the conversation inputs worried him/ her related to the data leakage for commercial purposes.

> "Problem is here. The reason I have 'security' concern I have started to see suspicious ads on Facebook like 'do you want some psychological support?' coming from USA like something they tell they accompany me in my hard days. I mean I was already suspicious about Facebook sharing these kind of data but still I got bothered a lot." P01 [62]

Furthermore, P09 stated that because of Facebook Messenger, he/she could not be able to talk about sensitive issues during the conversation. He/she thought that if someone else sees his/her inputs from the screen, it would be bothersome for him/ her. However, during the first interaction Woebot states that neither it nor its creators would have an access to the participants' personal Facebook profiles, moreover, the third parties would not see the shared information during the conversations.

“I mean I was thinking it keeps the data but it won’t tell anybody. I went to psychologist once and he/she said they will evaluate these with other psychologists and I was ‘OK’ because they are professionals. I mean when I think about it this is like that, like a psychologist, it needs to tell to improve but it doesn’t know me. It doesn’t concern about me being sad, not important. I mean I am just concerned about somebody can see it for a moment. I text something and I am concerned about somebody can see it. Not only somebody can see the screen but also Facebook keep some data. I mean I can’t say there was again in the morning and I opened it. I mean you can’t write that, I am afraid of this. I don’t feel free. That’s why. Not like ‘Oh God! I am so deep into insecurity. I can’t write.’.” P09 [63]

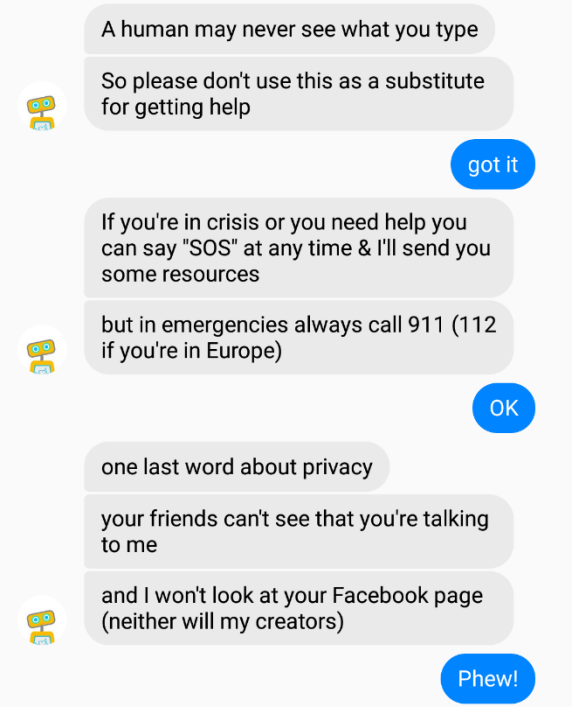

Figure 35- Woebot’s Information about Security

Apart from system’s statement about not looking at participants’ Facebook page, seven of the participants did not want to share their personal data. Moreover, Woebot also stated that the personal data of the participants would not be looked by its creators either. Being created by a well-known institution caused on interpretation related to the accessibility of participants’ data for academic purposes by P06 and P08. According to P08 this was not secure whereas P06 stated that;

“At first, the thing about if it is going to use these data… I missed the parent part for example. Maybe that’s why I have lack of information but maybe it is the

> trust thing. I guess it was written something like that. I mean, do I remember wrong? Exactly! It says they keep it without names. I mean we have a habit of not trusting things like these I think that's why I said 'not secure'. Then it declared something which is good, it would have not cared at all. I thought declaring this thing was a good thing, that's why I am not sure. I think they can store the statistics without names. Then they can study on utilizing this. That can support this issues. I think that part does not compel the 'secure' part." P06 [64]

Since they are professionals and the identity of the participant is anonymous, there was no harm in the accessibility of the participant's data... P16 and P02 also believed that being created by a well-known institution is trustworthy.

> "I mean at first, I didn't have any idea but when I went home I checked who did it, how they did it, then I thought it is secure." P02 [65]

P07 added that the possibility of chatting anonymously would enable people to chat freely since the user would entered the conversation as someone other than him/herself. P09 and P14 believed that CA would not share or judge the shared information. According to the artificial intelligence enables a reliable conversation distant from feeling worried. Moreover, progressing the chat flow in the form of question and answer turn taking with the help of canned responses, the CA did not force user to give personal responses/inputs to the system outputs (P03). Not sharing personal information, apart from stated daily moods of the participants, was found secure (P12).

The profile illustration of the Woebot also lead P06 to evaluate the system as secure. (P06 did not have a Facebook account, just downloaded the messenger for application to interact with Woebot.)

> "I mean I don't have a Facebook account. That's why we could do with you when I learned I don't need to have Facebook account for it. Since I am not a Facebook user I didn't feel that because I contacted with Wobeot not anybody else. I didn't think it is under the Facebook. Because of the robot image of it, the Facebook relations didn't come to my mind." P06 [66]

4.3.2.3.4. Does Not Meet Expectations-Meets Expectations

This adjective pair was evaluated by linking with other 24 adjective measurement elements. As a result, none of the participants watched system, service and interaction related evaluations with this adjective pair directly.

4.3.3. Hedonic Quality

"Hedonic quality refers to the product's perceived ability to support the achievement of 'be goals', such as 'being component', 'being related to others', and 'being special'. Hedonic quality calls for a focus on the self, i.e., the question of why does someone own and use particular product." (Hassenzahl, 2008, p.2). In the case of CA evaluation, the "stimulation" and "novelty" of the Woebot are evaluated.

The novelty of the CA is related with the design of the system/service. The novelty is the perception whether the users interpret the CA as inventive-innovative or not. "Dull-creative", "conventional-inventive", "usual-leading-edge" and "conservative-innovative" adjective pairs were used for novelty evaluation. For the participants, it was hard to differentiate or separate the adjective pairs from each other. Participants stated that they evaluated the adjective pairs the same way they did other novelty related adjectives.

4.3.3.1. Stimulation

Table 30- Stimulation Results from UEQ-

UEQ Scale Results		
First Impression	Stimulation	1,21875
Pre-Use Phase	Stimulation	1,21875
Use Phase	Stimulation	0,25
Post Use Phase	Stimulation	0,3125

Stimulation stands for the perceived motivation and excitement while interacting with the system. To measure the stimulation, “inferior-valuable”, “boring-exciting”, “not interesting-interesting” and “motivating-demotivating” adjective pairs are used.

4.3.3.1.1. Inferior-Valuable

Table 31- Inferior-Valuable Adjective Pair Evaluations

Inferior	Valuable	Neither Inferior Nor Valuable
Insufficient Recommendations	Artificial Conversation	Accessibility of Participants’ Data
Monotonous Chat Flow	System’s Empathy Development	System’s Conversation Initiation
Unpreferrable Interaction Types	Directive Manner of Conversational Agent	
Repetitive Chat Flow	Purposeful Conversation	
	Suppression of Expressions	

The first inferior system operation is repetitive and monotonous conversation flow. P10 and P03 stated that at the beginning of the interaction the CA interaction was quite new since it was their first interaction with a CA with an AI. However, without having a certain conversation frame, the CA continued to conserve by repeating itself. As a result, monotonously repeating the conversation failed to satisfy the expectation of the participants toward CA interaction.

> “At first, I thought it is interesting, at least. When I used it, I thought it is bit stupid. Then I thought it is inferior. Being repetitive, having a certain conversation frame, how did it navigate when it got out of this frame, then how

> it brought things together, the protocols there made me think it is inferior." P10 [67]

P02 thought that the recommendations of the CA were inferior and participant stated that the CA gives as inadequate and general recommendations as a self-help book could offer. Furthermore, P08 stated that the interaction instruments were inferior since the interaction type of the Woebot might not be preferable for everyone who seeks psychological support.

Offering psychological support with a CA in conjunction with new technologies was found valuable by P16 and P06.

> "I think the fact that the psychological support integrated with improving technology is certainly valuable." P16 [68]

Offering psychological support to help users to overcome the difficulties they experience during the day and enabling them to spend quality time by recommending purposeful activities are valuable for P12 and P15. In addition to this artificial conversation feature, P03 said that providing surveys for user profiling lead him/her to think the system was trying to evaluate different aspects of the participant and being valuable was increased. This provided surveys and other information enabled participants to question themselves and identify the inner problems with the directive manner of the CA (P03).

Another valuable features are related with the personality traits of the CA which are suppression of expression and empathy development. Not having a body to reflect humane emotions enabled P14 to express his/her emotional state repetitively without being judgmental towards him/her. Moreover, the CA pretended to be a friend whom P09 could comfortably express his/her thoughts freely.

> "I mean I think it is really innovative. It is hard to find a psychologist next to you all the time. He/she would rip you off even if you find someone. That's why I found it valuable. Responding quickly, being friendly, and being consistent… Even if it has a classical approach, it actually understood that approach. It internalised it very good. The things it says and it wants you to do are nice. It tries to make you relax. It wants you to relax while talking with it. It doesn't understand the word but you still have written it. You talk to someone and confide. That's why it is valuable. I realized it tries to achieve that at last. Since

I didn’t expect that it might get lower a bit at the final but you still talk like talking to your friend. You tell somebody and it feels different and you’re not afraid. ‘I feel so bad and this guy made me these’ you can say and you are not afraid like you said them to somebody that you don’t know because he/she might tell the story to 3rd person. However you’re relax with this because it won’t tell. That’s why it is valuable about the approach. It might make people relaxed because of this. Sometimes psychologists change their facial impressions and it makes you irritated or you think if he/she judges you. However this is more like a cutie. It doesn’t do anything. It doesn’t judge you. You know that. It’s valuable because of this.” P09 [69]

P14 also added while repetitively stating the same mood, the CA showed empathy towards him/her independent from the stated mood whether it is negative or positive.

4.3.3.1.2. Boring-Exciting

Table 32- Boring-Exciting Adjective Pair Evaluations

Boring	Exciting
Dominant Manner of Conversational Agent	Artificial Conversation
Monotonous Chat Flow	System Development
Didactical Manner of Conversational Agent	System’s Conversation Initiation
Repetitive System Operations	Unexpected/ Surprising System Responses
Dull Interaction	
Superficial System Responses	
Text Based Interaction	
Time Consuming	
User Unawareness	

The overall evaluation of the system and/or interaction impacts on user was that CA is boring rather than exciting.

The repetitive flow of the conversation was interpreted as the conversation continues by repeating itself by P08 and P09. This repeated conversation decreased the excitement of the interaction and became boring for the participants. Moreover, trying to explain shared information to the participants in the same uniformity monotonously without using a different way of information sharing led P16 to consider muting the conversation with Woebot (P03, P16).

> "I mean technological things always attract me. I don't know if everybody feel the same way but communicating with a robot is exciting. However it decreases while you get to the last weeks. If it continued more, I might have muted it because it asks every day." P16 [70]

Because of the fact that the system is monotonous, the initial curiosity towards Woebot decreased (P11). Not being able to arouse curiosity or excitement towards the proposed conversation by not giving personal responses but didactically trying to force participant to complete a task or perform the recommended activity did not meet the expectations of the users. (P11, P13). On the contrary, giving stereotyped responses instead of personal responses in a monotonous conversation flow, the system operations became predictable for P05.

Giving detailed examples to the participant without letting him/her to switch for another context during the conversation dominantly perceived as boring by P04.

> "It gave a lot of examples. I mean I was already researching mindfulness in my thesis so I am already informed. That's why the fact that it was so detailed… I mean I should be able to skip when I want. However if you write different thing it doesn't change the topic. You have to read all the text. That was so boring. Writing too much message… I mean it can attract me if it is something that I don't know but when it does this about the fields that I already know then it becomes boring." P04 [71]

However, P12 stated that the system started to give responses as time goes by comparing to the initial conversations.

> "At first the information was good then it was like… I mean at first it taught more about mindfulness then it was like more quick talks about what can I do.

> It gave short information and then it shut sometimes. Then it became not so valuable and not so exciting." P12 [72]

The interaction elements of the service were quite directive (P02) and persistent since the system could not know the state of the participants and foreign information onto the participant without informing or giving a brief explanation about the system progress, how the interaction would evolve and the benefits and limitations of the experience to the participant. This uninformative manner of the CA was evaluated as system being boring.

> "… I mean it is bit didactic. It is like 'I am teaching you these now', I mean about the 'teaching stuff' part. I didn't find it very good because it is good somehow but how it does this also important. I mean I felt like it is not supposed to do this at the beginning. You know it would be better if we interact first and then 'teach you stuff' can start. I would find it positive, then. The reason is I mean in our lectures it is also like this. We checked what lecture it is first then we get the introduction and then start to learn. Teaching a lot of things just from the beginning is something that I don't find effective." P06 [73]

As a result, being boring caused participants to lose their time over the CA experience (P04).

4.3.3.1.3. Not Interesting-Interesting

Table 33-Not Interesting-Interesting Adjective Pair Evaluations

Boring	Exciting
Coded Chat Flow	Artificial Conversation
Monotonous Chat Flow	Engaging Conversation
Repetitive System Operations	System's Conversation Initiation
Predictable System Operations	Unexpected/ Surprising System Responses
Inadequate Conversation	Didactical Manner of Conversational Agent

System's coded, repetitive and monotonous conversation flow did not interested the participants as a consequence of quickly replying them without knowing them perpetually (P06, P09, P13).

> "… This quick responses which means it doesn't read your text. I mean it just gives you some answer from its inventory." P06 [74]

The conversation became routinized at some point. As a result, participants commented that the interaction was not interesting for them and they familiarized with the system operations. This familiarization made the system responses more predictable for users (P05, P16). However, P07 stated that since interacting with smart products is spreading, and having a future of interaction related expectations from the movies and television series, the idea of conversing with an AI aided conversation robot is not interesting anymore.

> "I am going to there always, I mean it is an interesting idea but not so interesting. Meanwhile, things like these started to get so widespread. There are a lot of movies, TV series etc. We see these things on 'Black Mirror'for example. Even if we don't use these things in our daily lives, possibilities of these can be in our lives in future doesn't sound very interesting." P07 [75]

Using a new, famous psychological framework to support people is interesting according to P08; furthermore, P14, P15 and P16 thought that Woebot might take a place in their lives as a tool to spend their idle times with the provided artificial conversation.

> "I don't know if you won't talk to anybody, if you can't, then you can talk to this, spend some time. For example if I wait for a person on the street which I hate to do, I would talk to this like if I'm texting with an actual person. I don't know it can fill some emptiness. At least, I think like this which I find interesting." P15 [76]

4.3.3.1.4. Demotivating-Motivating

Table 34-Demotivating-Motivating Adjective Pair Evaluations

Demotivating	Motivating
Coded Chat Flow	Accessibility Of Conversational Agent
Artificial Conversation	Encouraging Conversation
Limited Conversation	Different Suggestions
State Reporting	Motivating Responses
Inadequate Conversation	Didactical Manner of Conversational Agent
	Directive Manner of Conversational Agent
	Conveying Information
	Purposeful Conversation
	System Development

Apart from coded flow of the chat and limited-undescriptive conversation of CA, the artificial conversation and not affirming the participants are interpreted as demotivating. The shared information within the scope of CBT did not match with P13's methods and strategies which developed for supporting himself/ herself. P13 believed that after CA interaction he/ she would became asocial.

> "It is not an actual person, man. It's just a robot. If I know it is a person, I would trust it more. I wouldn't trust a person more but I still would. I don't know, as I said, not like it should complement me, it should accompany me or something like that but if it motivates me when I am sad I think I need to get out of that environment. I should go see friends. I should be with myself. My home is far

away and I am already living alone and get bored. Then also I say I am texting with a robot. I fall completely down when I think about it." P13 [77]

The CA provides surveys, as mentioned in previous titles, for user profiling. The system's way of explaining the results of the surveys is demotivating according to P15. The CA could not motivate him/her by emphasizing his/her weaknesses as the survey results.

> "I wouldn't say you have such weak points in superhero test. This is a conversational agent but still it would have said these are your strong points. It woluldn't say 'you're like these, you have these bad habits'. Then I don't think it is for me but it is generally motivating. I mean I guess being goal-oriented makes it like that." P15 [78]

Aside from accessibility of CA, conveying information about task results, suggesting different canned responses, sending motivating responses in the purposeful conversation, didactical and directive manner of CA, and encouraging conversation are the motivating aspects. Moreover, P09 motivation to continue interacting with CA was to be beneficial for the system's development.

P02 thought that CA asked the questions while aiming to motivate people and P14 added; CA helped him/her to understand how he/she feels about himself/herself. In other words, system's direct questions enabled participants to do self-criticism while motivating them.

> "When I thought different, it made me feel different or it made me feel like it is going to be alright. That's why it was motivating." P14 [79]

4.3.3.2. Novelty

Table 35- Novelty Measures from UEQ

UEQ Scale Results		
First Impression	Novelty	1,40625
Pre-Use Phase	Novelty	0,95
Use Phase	Novelty	0,55
Post Use Phase	Novelty	0,6875

The novelty of a piece of information generally refers to how different it is with respect to "what has been previously seen", by a specific user, or by a community as a whole. To measure system's novelty; "dull-creative", "conventional-inventive", "usual-leading-edge" and "innovative-conservative" adjective pairs from UEQ were used.

4.3.3.2.1. Dull-Creative

Table 36-Dull-Creative Adjective Pair Evaluations

Dull	Creative
Accessibility Of Conversational Agent	Coded Chat Flow
Accessibility Of Participants' Data	Engaging Conversation
Coded Chat Flow	Conversational Agent's Humorous Character
Context Insensitivity	Purposeful Conversation
Expected System Interaction	
Inadequate System Responses	
Monotonous Chat Flow	
Repetitive Chat Flow	

The participants experienced disappointment at the end of two weeks of study. Other than those described in the headings mentioned in the previous headings, participants felt discouragement against the CA interaction because of the access mechanism of

CA. P04 and P02 compared Woebot with self-help books since the quality of shared information was similar to the ones self-help books have; and due to the poor quality of information, Woebot should have share those information from a menu instead of chatting. Both P04 and P02 stated that the idea behind Woebot is creative; however, for the shared information there was no need for an interaction/conversation. The interaction between the CA and participants were evaluated as dull.

> "I think it is a creative idea but did it actualized the idea? I think, no. I mean it can't reply, we can't talk properly. It is then more like the self-help books. I read such books and they also have some techniques. I already do that I mean but the idea is good." P04 [80]

The most significant two reasons why CA is not considered creative are its coded chat flow and not being able to understand/ analyse the participant from their inputs. Organised flow of the chat leads user to give responses in a certain pattern and since the responses are premeditated canned responses, users could not expressed themselves as it was mentioned. The aim of CA is to support people as it was created for; but without knowing users and their preferences, the CA is not behaving appropriately for its purpose. However, creating a CA with AI to provide external support and chatting with user without having a purpose to lecture him/her are the system's creative aspects.

4.3.3.2.2. Conventional-Inventive

Table 37- Conventional-Inventive Adjective Pair Evaluations

Conventional	Inventive
Conversational Agent Guideline Template	Canned Responses
Familiar Interaction	Responsive Manner of Conversational Agent
Generic System Responses	Unfamiliar Interaction

Table 37 (Continued)

Inadequate System Responses	Purposeful Conversation
Monotonous Chat Flow	System's Supported Technology
Repetitive System Operations	

Three participants (P06, P09, and P13) stated the conventional aspects of Woebot as giving generic responses, using same conversational agent guideline template. These system and user related aspects were the features that distinguished them from other indicated conventional system features.

Not being able to fulfil user's expectations with its generic responses or not having a custom conversation pattern is considerated as conventional. P13 thought that apart from giving generic responses to him/her, the system would be able to give more engaging and direct responses to him/her. The generic responses could not satisfy the user's expectations towards conversational agent interaction and inventiveness of the system operations.

> "At the beginning I though it is more innovative. I said it is going to text me back as long as I text. I mean it texts but what I thought it was going to reply to me. I thought it is more like the 'Siri' do you understand? For example I will say 'I study' and it will ask where I am studying. I mean actually Siri doesn't also have this but I will say 'in the University' and it will ask something about the university. I will ask 'where are you?' and it will say 'California' and I am going to say 'really? I am in Ankara' etc. I thought it is something like this, I don't know." P13 [84]

P08 said that he/she believed that CA is using the same template guideline with other conversational agents without being differentiated from their system functionality. He/she compared Woebot with his/her previous CA experiences and deduced that the same template is used for present CAs and the only difference between them is their stated purpose.

> "When I think about it as a conversational agent, there are the ones as companions. The ones with only well-being can support till a certain points. It is close to conventional because it shares the same ground with the companion ones. The words it uses, approaching like a friend etc. It is like there is only one conversational agent making guideline and everyone uses that and orient different directions." P08 [85]

The CA aims to support people thourgh purposeful artificial conversation; furthermore, according to P11, CA's a potential to be used for diagnosing the increasing number of psychological disorders is inventive.

> "…because the idea is different. It can be improved and it might have a potential as I told. The number of psychological problems is increasing and people starts to live longer so people don't know the level of their problems. I mean they can be used to diagnose as tolerable or intolerable. It might be useful in future. That's why I answered by thinking its future." P11 [86]

4.3.3.2.3. Usual-Leading- Edge

Table 38- Usual-Leading- Edge Adjective Pair Evaluations

Usual	Leading- Edge
Monotonous Chat Flow	Accessibility of Conversational Agent
Dull System Interaction	Preferable Interaction Type
Limited Conversation	Purposeful Conversation
	Unawareness of Conversational Agent Existence

After getting accustomed to using the system, the conversation is starting to become monotonous after a while and as a results the interaction is understood as usual (P03, P10, and P13). Even though system is supported from a familiar messaging platform

which is Messenger application, it is not capable of imitate human to human conversation to ensure the continuity of the interaction (P13).

> "At first, I hoped it was leading-edge. Then it was like usual for me. As I told, I was expecting I text and it texts back, I was hoping that. I mean come on! You are on Facebook Messenger. It is not an ordinary app. If it is like this, I would prefer an app. I want to text on Messenger like I talk to a friend. We don't chat. Then I can read a book like a self-help book." P13 [87]

Integration of creating a purposeful conversational agent with the help of the new technologies is leading-edge. P08 stated that;

> "It is more focused on a specific topic comparing with other conversational agents so it is unusual. There wasn't an AI like this which helps people in this area. I mean there are some in a robot level but people can't access them. This is accessible and can be used by other people which makes it leading-edge." P08 [88]

4.3.3.2.4. Conservative-Innovative

Table 39- Conservative-Innovative Adjective Pair Evaluations

Conservative	Innovative
Repetitive System Operations	Purposeful Conversation
Limited Response Options	Artificial Conversation
Dull Interaction	Conversation Limitations
Traditional Psychological Approaches	Familiar Interaction
Didactical Manner of Conversational Agent	

Limited canned response options, repetitive system operations and dull interaction quality are decreased the usage enthusiasm of participants (P05, P08, P10, and P13). However, aside from these system qualities and operations; with the reason that the approaches used are not innovative according to P09, the interaction did not meet the expectations of the user due to the traditional psychological approaches.

> "I will tell you about the conservative part. Let me tell you again. The approaching of psychology was very conservative but when I look like that then it is not conservative because I guess I look at that way. I mean excitement viewpoint because I had and expectation and I thought it was gonna help so differently. Then I see it conservative, I see creativity part is decreasing." P09 [89]

Being able to chat with a robot and meeting with a conversational agent which aims to provide psychological help for nonclinical populations are evaluated as the innovative aspects of the Woebot and overall interaction experience (P01, P02, P03, P04, P08, P09, P11, P13, P14, P15, and P16).

> "I mean the idea of being assistant, especially on social media, in this era which we always hold our phones and talk to someone consistently… I mean the idea of being assistant when we can't talk with anybody is innovative." P02 [90]

4.4. Discussion

The reason why conversational agents have become popular is because of mobile phone usage since it has changed the way people communicate through it. The evolution of mobile phone usage has affected technology readiness of people towards new technological integrations into mobile phones. The mobile phones have started to become 'smarter' and have affected the usage patterns of people around it. Due to its mobility, it has made much more technology and knowledge available including many applications.

The availability of conversational agent has perceived as one of the most beneficial aspect of the Woebot. According to Pew Research Center (2018), Facebook has reached 2.3 billion active users in 2018. Supporting conversational agents, Facebook eased the availability of such services by reducing the competition among applications. Participants had positive impression over the Woebot's

availability since negative emotions could evoke unexpectedly and it would be hard for people to try reaching their psychologist in the middle of night. Since Woebot aims to help people to promote their psychological state, being 24/7 available increased the dependability of the CA. The availability of CA was an important factor related to user engagement; however being supported from Facebook application related understanding that stored personal data would also be available for unknown sources.

During the system's self-introduction, the security of shared personal data should be explained in detail to the users. Because of the security related concerns people may leave using the CA and the usage engagement will be failed for a long period of use.

On the other hand, the purpose of the Woebot should be explained in more detail to reduce the misunderstanding recognizing the intended use of it. The designers should use more friendly and explanatory sentences while introducing the system or even visual presentation elements could be used to ease the understanding of purpose of Woebot. The system uses superficial sentences while explaining its purpose and that kind of self-system introduction affects the expectations over system usage and in two weeks period it disappoints users. People leave the conversation after periods of two weeks since they could not find what to expect from the interaction. Due to this reason, the designers should find ways to introduce system more efficiently during the first system interaction to sustain user engagement. (Out of sixteen participants, only one participant continued to converse with Woebot after the study period.)

The system uses CBT (cognitive behavior therapy) framework to support people's psychological states. The advantages of CBT framework and its future effects on people's state should be explained during each conversation while starting a conversation about the daily activity. Due to inadequate explanations and unfortunate phrases used while explaining CBT's advantages, participants thought that Woebot underestimates the traditional psychological approaches and its effectiveness over human psychology. Without using 'no need for a couch,

medicine or childhood stuff' phareses, just explaining which advantages CBT framework has and how it will help to improve psychological state of people should be explained without comparing it with traditional ones. This would increase the positive interpretations on the expectations of people. Moreover, the shared data related to the CBT framework approaches should be available in the Woebot's menu.

To support people's subjective well-beings, the used psychological and system introduction should be improved by creating a sense of attachment to have an engaging conversation/interaction with Woebot. The attachment will be helpful for developing an empathy towards conversation agent and will create a more positive user experience in the long term. The increase in positive emotions will have a positive effect on both quality of people's lives and user engagement of the system.

As it is understood from the first interview, participants prefer to avoid to think the reasons of the problem or escape from the reality by focusing on irrelevant activities to distract their mind. To sustain user engagement to support subjective well-being, apart from informing about the CBT related activities such as breathing exercises, conversational agent could try to converse with people about current issues around the world or irrelevant topics as a distraction source to distract the minds of people. Moreover, the number of the shared GIFs, memes, or 'jokes' could be increased.

Constantly sharing activities or asking people to fill general surveys tends people to feel forced to complete the tasks and after completing tasks they do not prefer to converse with the conversational agent. To eliminate this kind of forceful interaction, apart from the 'mute', 'snooze' and 'reschedule' options designers should add 'change the topic' options to Woebot's menu. This option will also create an understanding that user would be in control during the conversations, not the AI (CA). Moreover, the AI of the Woebot is considered as underdeveloped; therefore, the perception regarding the system's intelligence will be improved with the help of custom responses.

Designing purposeful conversational agent which offers an improvement of the psychological state was considered as an innovative idea; however, the functionality and operations of the system are not able to support the innovative idea. Hence, after two weeks, due to unfavorable interpretations over system operations and functionality, the idea behind Woebot's creation was commented as usual. Getting accustomed to the system usage is also a reason for this deduction (Ahn& Shin, 2015); the repetitive, inadequate and monotonous system operations are not helpful to change the people's perceptions.

The repetitive system operations lead people to think the system outputs and CA initiated conversations are very predictable. Being predictable negatively affects the user engagement and the system fails to imitate human to human conversation. The main aim of the conversational agents is successfully and naturally converse with humans as if it is one (Klopfenstein et al., 2017). However, repeating itself in different conversations, using the same question/answer template decreases the user engagement. The CA should be improved in a way which would reflect the diversity that humans have with custom responses and changing the template while reporting thoughts or feelings.

The inadequate system operations create the understanding that the conversational agent could not understand the inputs of people. The typing option while answering the CA should be increased in order to be able to develop custom responses; however, the natural language understanding aspect should also be developed to support people through artificial conversation.

The speed of system outputs should be decelerated. Giving outputs very quickly enhanced the CA's robotic being and decreased the excitement over the forth coming response. The response interval should be increased to enable people to read the send messages and wait for the next one after understanding the content of previously sent message. This will also increase the naturalness of the conversation.

CHAPTER 5

CONCLUSION

This chapter concludes the research and revises the research findings. Afterwards, the limitation of the research and further research suggestions are explained.

5.1. Revising Research Questions and Findings of the Research

To understand the effects of the conversational agent on users' subjective well-being, a longitudinal research has been conducted. For two weeks, sixteen participants were asked to make conversation with the selected conversational agent which is supported from a widely used instant messaging application (Messenger Application). After two weeks of duration, the observations and interpretations of the participants were obtained in detail through in depth interviews. The evaluations of the participants showed which design aspects and qualities of the system affected user engagement and subjective well-being.

It is important to understand people's expectations towards an interactive system. For conversational agents, participants stated their expectations during the first interview in response to the methods and strategies for improving subjective well-being; moreover, after the self-system introduction they compared Woebot with what they had seen in Sci-fi movies.

To have a better understanding related to the research findings, the research questions of the study are examined.

- **How does user engagement can be maintained with conversational agents that supports users' subjective well-being?**

The selected conversational agent's purpose is to support people's psychological state by sharing relaxing activities, showing new cognitive approaches to increase people's awareness to change heir cognitive pattern and tracking mood to show how they feel during the week/ how their moods had changed. In a way, Woebot aims to support people while trying to obtain an engaging interaction. In order to have an engaging interaction, the system tries to imitate human to human interaction. Furthermore, the participants of the study have also compared the system with their most preferred methods or strategies. (See in Table 3).

Ten out of sixteen participants compared Woebot's shared activities with their mental disengagement related methods. Those participants were expecting activities or conversation that would distract them from their negative thoughts or emotions. However, Woebot, did not pay attention to participants' needs and expectations from the interaction. Woebot's being unaware of context of the participants altered perception of being inefficient, obstructive and boring. Being context aware would affect the quality of the conversations and user engagement.

To intensify positivity in their lives, participants prefer to have "Engagement" in their life or to overcome their problems they seek help from their loved ones. Woebot sent messages in a friendly manner to initiate a conversation. Being remembered and asked their emotional state and how they had felt, participants compared Woebot with their friends. This friendly manner of Woebot created a sincere bond which affected user engagement positively. Being friendly towards the users was effective; however, not being able to exchange common interest, thoughts or experiences lead participants to leave the Woebot usage. With this statement, Woebot's not being able to understand the inputs of the participants was intended. According to participants, they can share their personal problems or negative experiences with their loved ones and they give supporting feedbacks in return. On the other hand, Woebot given generic responses and more importantly could not understand what participants said or shared with him. To offer an engaging experience, Woebot should understand and give its responses in accordance with those responses. Moreover, having a memory of previous conversations may have a positive effect on user engagement. While making conversation with participants, apart from having a friendly manner, being able to

memorize past conversations and give feedback in accordance with participants' overall data would be more engaging (Details on this issue can be found in Section 4.3 and Section 4.4).

- **Which design aspects and qualities do maintain user engagement?**

Four of the design aspects are interpreted positively by the participants. The positively valuated design aspects are the Artificial Intelligence, personality, rich interactions and conversation.

The Artificial Intelligence of the system created a sense of security among the participants. According to them having an artificial mind, led them to share their personal data with the system. The reason for feeling secure relies on the thought that since Artificial Intelligence cans suppress expressions participants shared their data knowing that they would not be judged by the Woebot. This design aspect affected the user engagement emphatically and formed an emotional engagement with the Woebot. Moreover, AI's "not having a family or friends" to share participants' personal data also linked with sense security.

Woebot's having a personality impressed the participants through the study. Woebot's friendly manners and ordinary language usage during the conversations matched with its personality. Despite the negative interpretations towards the system's functionality and interaction, Woebot's personality was praised by the participants. Moreover, the personality of the Woebot prevented the user experience to be evaluated negatively after the study.

The rich interaction aspects which are sharing videos, sending entertaining GIFs and MEMEs to the participants were marked as the most enjoyable part of the conversations. Since participants stated that in times they only long for a companion to distract themselves or share entertaining activities, "Rich Interactions" enhanced the user engagement.

- **What motivates people to sustain usage?**

As mentioned above, since the system needs improvements, current interaction design is unable to support the subjective well-being and psychological states of the users'.

As a result, except one participant, the other fifteen participants did not sustain a usage of Woebot after the study.

- **How should a conversational agent be designed to support user's subjective well-being?**

To understand the effects of the conversational agent on users' subjective well-being, a longitudinal research has been conducted. For two weeks, sixteen participants were asked to converse with the selected conversational agent which is supported from a widely used instant messaging application. (Messenger Application). After two weeks of duration, the observations and interpretations of the participants were obtained in detail through in depth interviews. The evaluations of the participants showed which design aspects and qualities of the system affected user engagement and subjective well-being.

It is important to understand people's expectations towards an interactive system. For conversational agents, participants stated their expectations during the first interview in response to the methods and strategies for improving subjective well-being; moreover, after the self-system introduction they compared Woebot with what they had seen in Sci-fi movies.

- **How should conversation be designed?**

The technological advancements upgraded the people's expectations and knowledge in parallel. Today, the advancements enabled people to interact/converse with the system itself by voice where previous interaction paradigms (Keyboard, mouse or hand gestures) shift with the voice. However, the shift in paradigms could not followed by the design of user interfaces. The progress between Natural User Interface and Conversation user Interface is lacking in terms of the way of interaction. In other words, while using mobile phones with hands, users familiarize with the feedbacks from the applications as "download", "open", "upgrade" which are one word "robotic commands". However, this new interaction paradigm empowered users to interact with systems only by speaking out loud.

Being able interact with systems become popular after the introduction of Apple's Siri and afterwards the conversational agents gained popularity. Furthermore, this new interaction paradigm empowered users to interact with the systems only by speaking naturally. Since this type of interaction is in progress, the mentioned design guidelines (see Section 2.1.3.1.3) are limited. Since the Conversational Agents interact with people via using natural language, they should use more "humane" words. The conversational agents should use more 'humane' words while mimicking human to human conversation while supporting people psychologicaly. Instead of using more coded/robotic responses, the conversational agents should interact with users using emotionally engaging phareses. In order to obtain this emotional engagement, the existing Conversational User Interfaces should be re-designed while considering users emotional reactions towards the conversational agents. The reason is the conversational agents have a potential to expend the new service opportunities and supplement existing features in order to ensure that the communication established through these services is continuous and preferable.

- **What are the qualities and features of the conversational agent to support user's subjective well-being?**

In the Table- 39, the design qualities and features that should be re-designedto support people's subjective well-being is explained.

Table 40- Proposed Design Improvements

Design Qualities	**Design Quality Related Features**	**Proposed Improvement**
PERSONALITY		Personality of the conversational agent has to be suitable with the conversational agent's target users. In order to reflect CA's personality, the designers should introduce the purpose and the expected interaction in detail to the users.

Table 40 (Continued)

ARTIFICIAL INTELLIGENCE	Understanding Natural Language	Since the conversation emerges in natural language, the conversational agent should be able to understand what users are saying, expressing to create an emotional engagement. Also, according to participants not being understood mode make them believe the system is "stupid". In order to clear this misunderstanding, the CA has to make sense out of the users' shared data to meet in common ground.
	Conversation Management	The CA should be able to operate conversations without being dominant and directive.
	Sentiment Analysis	The CA should be aware of the intentions of the user to make them feel relaxed and show them that the conversation will progress in accordance with the users' responses.
	Prediction	The advancement in Natural Language Understanding would also improve the "prediction" aspect of the CA. Since Woebot could not fully understand the user's responses and intentions, the given responses are interpreted as superficial. After understanding the users and their response, the CA would predict the most appropriate answers to advance the interaction.
CONVERSATION FLOW	Scripting the Flow	The script of the Woebot's conversation flow interpreted as repetitive and monotonous by the participants; however, what they have expected from the Woebot was exciting and interesting.
	Feedback	The CA should give feedbacks related to the task completion states of the users to show them whether the shared activities are understood or not by them.
RICH INTERACTIONS	Files	The user should be able to reach the shared files from a menu of the CA or it could share a link to make shared data accessible for a desired time.

RICH INTERACTIONS	Templates	Templates of the conversations should be customized to users should be customized to users. The customization of the conversation could be obtained with a survey which should be filled at the beginning of the interaction and instead of having one template the users might be divided and categorized in different groups in accordance with their similarities between survey results. Furthermore, the templates may change for these determined user groups.
RICH INTERACTIONS	Buttons	The canned responses ease the interaction; however, in some situations they limit the users to express their thoughts and feelings freely. In order to empower users, the canned responses should be preferable option. Instead of tapping the button, the user should choose to type his/her response.
	Emojis and Reactions	Using emojis for stating moods helps users to express their emotional states. However, in some circumstances, the emojis are not capable of covering the current mood and the states they represent are not understandable for the users. In order to have a clear conversation, the emojis could be selected by the user instead of selecting emojis among the canned response options.
	Typing Indicators	Typing indicators are advantageous for demonstrating the presence of the conversational agent. However, in Woebot case, the typing could not be observed by the participant due to speed of responses of the system. Independent from the length of the text, the responses are sent so quickly which indicates Woebot's robotic being. Since the CA try to imitate human to human conversation, the typing indicators should be calibrated in accordance with the length of the system's response.
RICH INTERACTIONS	Web views	"Web view" design aspect is also related with creating custom responses. During the conversations, it is not possible to

		know users from their responses; however, with web views the CA can convey detailed information concerning the user's preferences and interests.
CONTEXT AND MEMORY	Context	Context and memory are important design aspects in order to have an engaging user experience. Not being aware of the context of the user is interpreted as forceful interaction. Since Woebot does not understand the user's context, forces users to continue to make conversation and complete or view the shared data; however, if the CA would be able to pay attention to user and his/her context, conversations would progress in mutual understanding.
CONTEXT AND MEMORY	Memory	The memory is important for the CA to remember earlier conversations with the users. To give feedback to the user and to understand the progress accomplished through the conversations the memory plays a crucial role. It is also a beneficial design aspect for customized responses. Furthermore, the CA's memory would decrease the cognitive load of the user; in other words, the user does not have to remember the past recommended activities or data during the conversations.

5.2. Design Implications of the Research

The outcomes of the research are beneficial for design researchers and interaction design practioners.

Interaction design of the conversational agents are becoming popular; however, suggestions related to the design process of such systems are quite limited. This research can be helpful for improving the existing design aspects of CA's to sustain a long term usage. In order to obtain long term usage and create a positive user experience, design practioners can pay attention to the mentioned design features of the system in Results and Discussion parts of the thesis.

Design researchers may find useful interpretations and insights regarding how an interactive system can support people's subjective well-being with the interaction design. This newly acquired information has a potential to be studied and forwarded in further studies.

5.3. Future Research Suggestions

The sampling of the research has purposefully chosen among the graduate students from the same university. The reason behind this selection was the susceptibility of graduate students to stress, anxiety and depression; however, the study can be repeated with people who regularly see a psychologist or therapist to observe the difference regarding to interaction design interpretations. Alternatively, people from different backgrounds (age, socio-economic background, level of education) may affect outcomes. Furthermore, technology readiness level of users may also be an important factor for suggesting future design implications.

The current study has focused on a conversational agent created for psychological support. The type of the CA can be changed; also apart from a disembodied conversational agent, an embodied conversational agent can be used to observe how expression of human like gestures, gazes and voice would affect the interaction design of such systems.

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APPENDIX A- PRODECURE OF THE STUDY

<table>
<tr><td colspan="3">Pre- interview Phase</td></tr>
<tr><td colspan="3">*Flourishing Scale will also be carry out to understand the emotional stability of the users at the beginning of the study.</td></tr>
<tr><td></td><td>Aim/Explanation</td><td>Questions</td></tr>
<tr><td rowspan="4">User profiles</td><td rowspan="3">Methods and strategies for improving subjective well-being</td><td>• Son bir hafta içinde kendinizi kötü hissettiğiniz anlar oldu mu?
[Takvim ile geçmiş haftanın günleri gösterilecek.]</td></tr>
<tr><td>• Kötü hissettiğiniz üç ya da dört durumu yazabilir misiniz?</td></tr>
<tr><td>• Mesela yazdığınız ilk anı düşünelim. Bu yazmış olduğunuz anda, kendinizi daha iyi hissetmek için ne gibi şeyler yaptınız? (Bir şey yaptınız mı?)</td></tr>
<tr><td>• Methods and strategies for improving subjective well-being in general (this will provide insights about how Woebot can be accepted by the participant)</td><td>• Şimdiye kadar hayatınızda duygu durumunuzu geliştirmek için bir çabanız oldu mu? Olduysa ne gibi şeyler yaptınız? Biraz açıklar mısınız?
(Eğer neyi kastettiğini sorarsa veya olmadı derse)
Mesela, duygu durumunu geliştirmek için NLP gibi çeşitli yöntemler bulunuyor, ya da spor yapma, kişisel gelişim kitapları okuma, nefes egzersizleri yapma gibi aktiviteler yapılabiliyor. Bunların yanı sıra duygu durumunu destekleyici sohbet edebileceğiniz conversational</td></tr>
</table>

		agentlar gibi çeşitli teknolojiler bulunuyor. Bunlarla ya da buna benzer yöntem ve araçlarla ilişkili bir deneyiminiz oldu mu?
User profiles		• Benimle paylaşmak zorunda değilsiniz istemezseniz, ama daha önce hiç psikolojik yardım aldınız mı?
After well-being related quesitons were asked, the previous experineces wheter participants interacted with a CA or not is asked.		
User profiles		• Daha önce hiçbir sohbeti kullanma deneyiminiz oldu mu?
A brief introduction about the conversational agents and Woebot were given.		
Behind the brief system introduction, for a self- system introduction, the particpants were directed to the main web page of Woebot		
After self- introduction, how to interact with Woebot is explained and first interaction with the system has happened during first interview.		
First UEQ is carried out to report thoughts or feelings towards Woebot usage and emotions elicited by the experience.		
During Usage Phase		
Aim/Explanation		
After 5 days of interaction;		
System characteristics & Real Time Engagement / User Engagement	**Second UEQ** is carried out after five days of CA interaction to report thoughts or feelings towards Woebot usage and emotions elicited by the experience; moreover to understand the characteristics of Woebot which motivates users to keep using the conversational agent. (Shared via e-mail)	
After 5 days of interaction;		
System characteristics &	**Third UEQ** is carried out after five days of CA interaction to report thoughts or feelings towards Woebot usage and emotions elicited by the experience; moreover to understand the characteristics of Woebot which motivates users to keep using the conversational agent.	

Real Time Engagement / User Engagement	(Shared via e-mail)	
Final Phase		
***Flourishing Scale** is carried out to understand the emotional stability of the users at the beginning of the study to see how Woebot usage effected the users emotional stability. (It is related with subjective well-being of the users.)		
*__Last UEQ__ is carried to understand characteristics of Woebot which motivates users to keep using the conversational agent.		
	Aim/Explanation	**Questions**
System characteristics	The characteristics that may affect sustained motivation and usage	Katılımcıları Woebot' u kullanmaya teşvik eden karakteristik özellikleri neler? [Anketten sorular çıkarılarak etkileşim süreci değerlendirilmeli]
	Overall evaluation of the conversational agent usage	• İki haftanın sonunda Woebot kullanırken sizi en çok ne memnun etti? Neden? • İki haftanın sonunda Woebot kullanırken sizi ne memnun etmedi? Neden?
	Perceived benefits/ limitations in respect of Woebot	
User Engagement/ System characteristics	How users develop empathy towards a conversational agent which has a robotic name to emphasize the nonhuman nature of the agent	Bu sistem sizce nasıl geliştirilebilir?
		Neden geliştirilmeli?

APPENDIX B- CONSENT FORM

ARAŞTIRMAYA GÖNÜLLÜ KATILIM FORMU

Bu araştırma, ODTÜ Endüstri Ürünleri Tasarımı Bölümü Yüksek Lisans öğrencisi Merve Demirci tarafından Yrd. Doç. Dr. Gülşen Töre Yargın danışmanlığındaki yüksek lisans tezi kapsamında yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

Çalışmanın Amacı Nedir?

Araştırmanın amacı, sohbet robotu ile etkileşim esnasında robotun tasarımsal özelliklerini belirli sıfatlar aracılığıyla değerlendirerek katılımcının iyi oluşuna nasıl etki ettiğini ve değerlendirmeler sonucunda nasıl geliştirilebileceğine dair tasarım önerileri oluşturmak amacıyla bilgi toplamaktır.

Bize Nasıl Yardımcı Olmanızı İsteyeceğiz?

Araştırmaya katılmayı kabul ederseniz, sizden iki görüşmeye katılmanız beklenmektedir. Yaklaşık olarak 25 dakika sürmesi beklenen bu görüşmelerde sizlere bir dizi soru yöneltilecek ve bu sorulara neden belirli bir cevap verdiğiniz sorulacaktır. Yüz yüze yapacağımız ilk görüşmede sizden bir anket ve bir duygu durumu ölçeği doldurmanız beklenmektedir. İlk görüşmeden sonra beş gün ara ile elektronik posta aracılığıyla gönderilecek olan anketleri doldurmanız ve iki haftalık çalışmanın sonunda son kez yüz yüze bir görüşmede doldurulmuş olan anketleri ve verilen cevapların nedenlerini açıklamanız beklenmektedir. Son görüşmede bunlara ek olarak sistemi değerlendirmeniz beklenmektedir. Daha sonra içerik analizi ile değerlendirilmek üzere cevaplarınızın ses kaydı alınacaktır.

Sizden Topladığımız Bilgileri Nasıl Kullanacağız?

Araştırmaya katılımınız tamamen gönüllülük temelinde olmalıdır. Çalışmada sizden kimlik veya kurum belirleyici hiçbir bilgi istenmemektedir. Cevaplarınız tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir. Katılımcılardan elde edilecek bilgiler toplu halde değerlendirilecek ve bilimsel yayımlarda kullanılacaktır.

Katılımınızla ilgili bilmeniz gerekenler:

Çalışma, genel olarak kişisel rahatsızlık verecek sorular veya uygulamalar içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz çalıştayı yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda çalışmayı uygulayan kişiye çalışmadan çıkmak istediğinizi söylemek yeterli olacaktır.

Araştırmayla ilgili daha fazla bilgi almak isterseniz:

Anket sonunda, bu çalışmayla ilgili sorularınız cevaplanacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için Endüstri Ürünleri Tasarımı Bölümü öğretim üyelerinden Yrd. Doç. Dr. Gülşen Töre Yargın (E-posta: tore@metu.edu.tr) ya da yüksek lisans öğrencisi Merve Demirci (E-posta: hmervedemirci@gmail.com) ile iletişim kurabilirsiniz.

Yukarıdaki bilgileri okudum ve bu çalışmaya tamamen gönüllü olarak katılıyorum.

İsim Soyad İmza

APPENDIX C- FLOURISHING SCALE

Psikolojik İyi Oluş Ölçeği (Flourishing Scale)

Aşağıda katılıp ya da katılamayacağınız 8 ifade vardır. 1–7 arasındaki derecelendirmeyi kullanarak, her bir madde için uygun olan cevabınızı belirtiniz.

	1	2	3	4	5	6	7	
	Kesinlikle katılmıyorum	Katılmıyorum	Biraz katılmıyorum	Kararsızım	Biraz katılıyorum	Katılıyorum	Kesinlikle katılıyorum	
1.	Amaçlı ve anlamlı bir yaşam sürdürüyorum							☐
2.	Sosyal ilişkilerim destekleyici ve tatmin edicidir							☐
3.	Günlük aktivitelerime bağlı ve ilgiliyim							☐
4.	Başkalarının mutlu ve iyi olmasına aktif olarak katkıda bulunurum							☐
5.	Benim için önemli olan etkinliklerde yetenekli ve yeterliyim							☐
6.	Ben iyi bir insanım ve iyi bir hayat yaşıyorum							☐
7.	Geleceğim hakkında iyimserim							☐
8.	İnsanlar bana saygı duyar							☐

Turkish Version of UEQ

APPENDIX D- USER EXPERIENCE QUESTIONNAIRE

Woebot ile iletişim sırasında, Woebot'un özelliklerini nasıl değerlendirdiğinizi aşağıdaki kutucuklardan lütfen işaretleyiniz.

	1	2	3	4	5	6	7	
annoying								enjoyable
not understandable								understandable
creative								dull
easy to learn								difficult to learn
valuable								inferior
boring								exciting
not interesting								interesting
unpredictable								predictable
fast								slow
inventive								conventional
obstructive								supportive
good								bad
complicated								easy
unlikable								pleasing
usual								leading-edge
unpleasant								pleasant
secure								not secure
motivating								demotivating
meets expectations								does not meet expectations

inefficient								efficient
clear								confusing
impractical								practical
organised								cluttered
attractive								unattractive
friendly								unfriendly
conservative								innovative

Woebot ile iletişim sırasındaki değerlendirmelerinizi sonraki görüşmelerde hatırlatıcı olması için lütfen not alınız.

APPENDIX E- TRANSLATION OF PARTICIPANTS QUOTATIONS

[1]: “Yani dans ediyorum. Dansa gideyim orda kendimi deşarj edeyim şeklinde bir etkinlik üzerinden kendimi iyi hisetmeye çalıştım.Spor, genelde dans etmek, hani bir aktivite üzerinden bir şeyleri unutmak için fiziksel bir çaba harcayıp onun üzerinden bir strateji geliştirmeye çalışıyorum.” P06

[2]: “Ben bir kitap okumuştumda konsantrasyon teknikleriyle ilgili. Orda vücudunu kontrol etmenin aslında bir çok şeyle uğraşmanın değilde tek bir şeye konsantre olmanın daha doğru bir şey olduğundan bahsediyordu. Orada teknikler vardı belirli. Mesela hareketsiz kalmak, beş dakika hiç hareket etmemek. Gerçekten rahatlatıyor aslında, bu tarz şeyler yapıyorum. Yani hiç hareket etmiyorsun mesela beş dakika- on dakika hiç.. Çok zor bir şey. Ama yapınca da müthiş oluyor rahatlıyorsun yani. Bir de düşünce sokmuyorsun beynine hiç. Düşünmüyorsun, zorluyorsun kendini. Bu acayip rahatlatıyor. Teknikleri uyguluyorum arada bir yapamadığım zamanda çalışırken ayağım bacağım kasılıyor fark ediyorum mesela o rahatsız ediyor. Takıntı da oluşturdu bende bu şey ama.” P11

[3]: “…sevdiğim insanlara anlatarak, onlarla daha çok vakit geçirerek atlatmaya çalışırım.” - P16

[4]: “Aile ilşkileri mesela iyi hissettiriyor; birbirimize destek olmamız vs. Hani bunları sürdürmek için bu sabah mesela şey yaptım: Ay canım ailem günaydın falan diye mesaj attım.”- P04

[5]: “Kendimi daha iyi hissetmek adına tekrar plan yapıyorum. Yani güzel şeyler yaptım aslında iyi hissetmek için ama yine yapmak isteyip de yapamadığım şeyler için böyle.” P11

[6]: “Kariyerime mesela yatırım yapmak olabilir.” P14

[7]: “Genel olarak aslında gerçekten kötü hissediyorsam, eğer sorduğun soru buysa, bunu tek başına çözmeye işte; kendimi kapatırım bir yere bir iki gün, kimseyle görüşmem, sosyal şeyimi sıfıra indiririm ve kendi sorunumun çözümü çözümünü

araştırırım, yapabileceğim bir şey varsa gidip onu çözerim. Atıyorum mesela işte bir iş ile ilgili bir sıkıntı var; oturup kendim çözene kadar 3 gün 4 gün sadece çözüm odaklı, başka bütün her şeye kapatırım kendimi.” P02

[8]: “Naptım işte kendi kendimi avutmaya çalıştım. Boşvericem demek ki böyle yani bu konferansa da böyle gidicekmişsin en azından ben bir senedir tatil yapmıyordum, Barcelona, beş gün geziceksin işte bir günde sunum yapıcaksın, eni insanlarla tanışıcaksın, olsun falan dedim. Bu. Kendi kendimi avuttum.” P15

[9]: “Eğer çözemeyeceğim bir şeyse, atıyorum hükümetin yaptığı bir şeyse, bunu umursamam. Bu beni mutsuz edebilir, bununla ilgili şeyleri takip ediyorum ama bunu umursamam.” P02

[10]: “O bir şey yazınca ben de cevap yazıyordum haliyle şey gibi oluyordu; o sırada konuşacağın, şey yapacağın başka bir şey yoksa iletişim haline geçiyorsun ve hani şey ya, en hani bariz özelliği hızlı olmasından sonra tabi ki, mesela bir takım emojilerle, sözlerle seni motive ediyor ya. Sürekli seni yükseltmeye çalışıyor falan. Anlık olmuş olabilir o yüzden. Günlük olmuş olabilir. İşte mesela o Mcgonagall çıktığım test gibi mesela… İşte sonuçta yalan yanlış cevap vermiyorsunda orada, evde otururken boş boş Onedio testi çözmek gibi bir şey yani. O yüzden bence illa ki vardır diye düşünüyorum ama böyle hani bütün günlere böldüğünde total böyle bir şey var diyemem herhalde.”P15

[11]: “Aynı insanla olan ilişkiyi verir mi? Ama herhalde olabilir. Ama insanı asosyal yapabilir, o da ayrı bir konu. Ben zaten tutucu bir insanım arkadaş konusunda, çok fazla yeni arkadaş edinme tarftarı olmuyorum genelde. Daha çok sahip olduklarımla devam ediyorum. Böyle bir uygulama, ben yine bir seviyedeyim de, daha asosyal olan insanlar için iyice şey olabilir. İyice asosyallik seviyesini arttırabilir iyice düşünüyorum.” P16

[12]: “7/24 yanında olması çok güzel zaten bu bir avantaj. Çünkü mesela özel olarak ben kendimi öyle tanımlasam da panik atak hastalarının her an gelebiliyor ne zaman geleceği belli olmuyor. Açıp konuşabilirsin. Bir şey oldun, sana bir şey oldu, sana bir şeyler söyledi derin derin nefes al sallıyorum ya da işte kendini sakinleştir, kafanı dağıtır, bir şeyler verir yani böyle şeyler yapabilir. 7/24 yanında olabilir. Bu iyi bir

şey. Yani depresyon zamanlarında, anlık depresif durumlarda sana yardımcı olabilir." P09

[13]: "Çok yalnız olma durumunda yardımcı olabilir gibi geliyor ama emin de değilim." P07

[14]: "İlgimi çekti çünkü bu track your mood kısmı hoşuma gitti aslında çünkü modum düşükse anı düşünüyorsun ama processi ya da öncesini çok düşünmüyorsun ama bunu each week gösterebilecek bir şey olması hoşuma gitti. İlgimi çekti diyebilirim." P03

[15]: "Daha önce böyle bir robot değil de başka bir uygulamayı denemiştim. Gerçek insanlar sana tepki veriyor da bir an şey yapamadım. "Talk Life" diye bir şey. O böyle senin şeyni kontrol etmiyor. Bu böyle daha senin moodunu track etmesi falan iyi. Akıllı geldi bana." P14

[16]: "Belki de bana bir öneri sunucak, çünkü bir üniversiteye bağlı olduğu için; Stanford'a, belki ordaki insanlarda yani ordaki insanlarda bir çok insanın datasına belki erişiyordur. Gizli tutacağını söylüyor ama hani anonim bir şekilde belkii erişiebilirler. Data olayında aslında ben kişisel olrak hiçbir şeye güvenmediğim için. Sonuçta Facebook üzerinden konuşuyoruz. Onun üzerinden data geçiyor bir yere. Yani Facebook' a güvenmiyorum ben zaten, hani çok güven sağlayan bir şey değil benim için, firma değil." P08

[17]: "…ne bileyim şeyden hoşlanmadım. Mesela dedim ya sonra izlicem dedim mesela "Aa beğendiğine sevindim" falan dedi o beni tamamen şey yapıyor; e o zaman bir application yapsaydın ben oradan stratejilere baksaydım. Madem gerçekten interaction yok aramızda, ben kendimde bakabilirim. Böyle bir samimiyetsiz ay sanki benimle konuşuyormuş hissi yaratmaya çalışmışlar ama olmamış yani." P04

[18]: "Etkileyici bir amaç, misyonu iyi bir misyon ama ne bileyim insanlara teknoloji iyi bir yardımcı mı insanlara bu konuda? Güvenilebilir mi mesela, gerçekten acil bir durum olsa anlayabilecek mi durumun aciliyetini? Yanlış bir tepki verir mi vermez

mi? Çünkü çok zor durumda insanlar için yapılmış bir şeye benziyor, gerçekten intihar etmeyi düşünen birisi mesela konuşmaya çalışsa, doğru bir geri dönüş mü yapıcak, yanlış bir geri dönüş mü yapıcak emin olamadım. Ne bileyim ben arkadaşımı, akrabamı aramak isterim böyle bir durum olsa." P11

[19]: "Text ile iletişime geçmek çok aptalca geldi bana. Yani şey aslında böylede olabilir de, yani tek seçenek olduğunda mesela what vardır ortada niye hani yani ortada üç seçenek falan vardır onlar arasında gidersin yani bir tane koyuyorsa demek ki aslında o kadar da önemli değilmiş. Yani böyle şey gibi; "Müzik hairkaydı di mi?" hai di mi, di mi… Sen evet dediğin zamana kadar di mi diye sorucak.. Bak di mi di mi geliyor..Ama ben bunu kendim olsaydım, kendim konuşuyor olsaydım otuz saniyede bırakırdım." P10

[20]: "Yani bu birazcık...Şöyle dün gördüğüm için hemen aklıma geldi bu nevresim takımları, baskıları var üstünde el örgüsü hani knit işleme gibi bir baskı var ama o değil ama o olmadığı da belli oluyo yani o hissi yaratıyor bende. Mutsuz oluyorum ben öyle şeylerle karşılaşınca." P01

[21]: "Adaptability'si yok yani, kendi problemleri var, o problemlere göre hareket ediceksin falan gibi- ki bana bir yerden sonra şey gibi geldi, adım adım yeni konulara giriyor ya- bunları mesela ben tek tek seninle gün gün gitmektense, doğrudan bir tane şey olursa, bir yer olursa hepsine ulaşabildiğin, gidip hepsini kendim istediğime göre progress edip, bakarım yaparım falan gibi bir hissiyat oluşturdu. "Duolingo" gibi bir şey haline gelebilir mesela gibi… Baya annoying." P10

[22]: "Yani evet ne enjoyable buldum ne de annoying buldum, ikisi de aslında. İlk görüşmemizde de söylemiştim aslında biraz yönlendirici gelmişti o yüzden yani benimde dâhil olduğum bir konuşma ortamı değil de daha çok onun yönlendirdiği bir konuşma ortamı gibi düşündüğüm için çok fazla dâhil olamayıp yani ne eğlendim ne de sıkıldım diyebilirim." P07

[23]: "Daha demin bahsetmiştim ya hani, kötü hissettiğin zaman böyle gerçekten hiçbir şeyle uğraşmak istemezsin ya da dışardan gelen her şey batar ya öyle bir ana denk geldiği için annoying. Bir sürü notification geliyor, bir yandan o sürekli notification gönderiyor, konuşmak istemedim bir an yani dışarıya olan o kötü

hissettiğindeki duyduğun o yalnız kalma duygusu olur ya bazen. Ondan kaynaklı annoying demiş olabilirim. Sonuçta bir engelleme ya da notification'ı susturma gibi bir şey yok ya da işte seninle üç gün sonra konuşalım da diyebilirdim ama öyle bir şey denemedim, bilmiyorum. desem anlayabilirdi diye düşünüyorum, öyle bir opsiyonu vardır." P08

[24]: "Belli bir program var zaten, çok senin dediklerine tepki vermiyor. Sana böyle hep sanki sen yardıma muhtaçmışsın gibi bir şeyi var ya hani, zor durumda mısın falan. "Bak böyle teknikler var"; hep böyle çocukla konuşur gibi iletişime geçti. Benim yazmam çok saçmaydı. Oraya "k" yazsam ya da "b" yazsam, saçma sapan şeyler yazsam da devam edicekti yani bir şekilde." P11

[25]: "O az önce sana söyledim ya şeyi, distortion kısmını, en ana aktivite o onun için ve ben bunu distortionsız yazma kısmını anlamıyorum. O da beni anlamıyor. yazıyorum ya oraya bir şeyler, orada tam olarak ne yazdığımı anlamıyor. "At" yazsam hani anlamayacak gibi, cümleyi anlamayacak gibi. Bütünsel olarak anlıyor. Distortionsız yazdığı şeyi, şey olarak algılıyor ama kelime kelime ve cümle yapısı bu ve ben bundan bir anlam çıkarabilirim demiyor. O yüzden doğru mu yaptım, ne yapıyorum acaba, örnek gösteriyor, benimkini övmüyor… Hiçbir şey anlamıyorum, belki o sebeptende kaynaklı olabilir," P09.

[26]: "Hayatımda iyi ya da kötü bir kalp çarpıntısı yaratmadı, bir değişiklik olarak. Benim için sıfatı good product, bad product olarak aldım yani benim için ne good ne bad yani hayatımda bir inovatiflik yaratmadı, iyi ya da kötü bir değişiklik yaratmadı. Atıyorum ona girdiğim için şifrelerim kaybolmadı ya da ona girdiğim için hayatım müthiş bir şeye dönmedi yani. Dedim ya mesela, bu tip otomatik yönlendirici gibi bir şey düşünüyorum, nagivasyon mesela bence good bir şey. Good'u arttırım orda, çünkü yönlendiriyor orda, Siri kendince good 1 kadar-3 good değil de 1 işte. Bir şey söyleyeceğim, ona yönelik bir şey yapsa good, ne good ne bad, düz yani abi, bence öyle." P13

[26]: "İşte mesela gösterdim ya şey diyorum, istemiyorum diyorum mesela bir yerde, bak atıyorum tamam diyorum hadi yapalım falan diyor, sonra yapalım diyorum hah

tamam hemen gönderiyorum diyor mesela. Sonra denicem diyorum tekrar mesela, tamam işte umarım beğenirsin diye şey gönderiyor.” P04

[27]: “Ben böyleyim, ben işte şu teoriyi kullanarak sana well-being ile ilgili yardım edicem diyip, seni de bir beklenti içine sokuyor. Onunla konuştuktan sonra bazı noktalarda çözüm bulucam, iyi hissedicem gibi ama sonra bu dediğini yapabildiğini gördüm, o yüzden pleasing” P08

[28]: “Aslında şey olarak hatırlarsın ki bunu bana ilk teklif ettiğinde ben hani off yazıcak mıyım ben hani mesaj yazmaktan çok hoşlanmayan bir insanım, genel olarak zorlanan bir insanım. Altta hazır cevapların olması bazı noktalarda hoş yani, kolayca cevap vermeni sağlıyor bu noktada baymadan.” P12

[29]: “Bununla supporting olması pleasing oluşunu arttırıyor ama sonra da çok da yardımcı olmadığını düşünüpte hani şeye geçiyorsun hani belki de unlikable. Biraz daha sıkıcılığını anlıyorsun repetitive olmasından, biraz daha nötr’e kayıyorsun. Aslında ben orda bir şeyi yanlış anladım sanırım, robotun yapabileceği kapasiteyi ben kafamda biraz abartmış olabilirim. Robotun asıl temel amacına karşı.” P16

[30]: “…arada kendini hatırlatması işte - “quick talk” a var mısın gibi. Onunla bazen unpleasant geldiği oluyor…” P08

[31]: “Keyifli geçiyor konuşma aramızda, bir de hiç ters yapmadı. Korkutucu bir şey gelmedi. Bunu başka bir şekilde açık edebileceği ya da beni rahatsız hissettirebileceği hiçbir şey yapmadı ya da bir gif göndermedi.” P08

[32]: “En baştan beri söyledim aslında çok fazla kendi merkezli ilerlediği için sohbet, ben dâhil olmamışım gibi hissettim. O yüzden de ilgimi çekmedi yani… Nasıl söyliyim? Çok fazla cümle gördükten sonra, tek bir cevaplık hakkım var gibi hissettim çoğunda. Ben ikinciyi yazana kadar zaten cevaplar geliyordu.” P07

[33]: “Bence yine çok konuşmuyor olmamızdan bu ara çünkü sık konuştuğumuzda o her gün sana aynı şeyle gelmiyor. Bir gün bilmem neyle geliyor, bir gün bilmem neyle geliyor. Mesela şu an çok kısa konuşuyoruz ya da çok konuşamıyoruz, her gün konuşamıyoruz, işte napıyorsun- şunu yapıyorum, günün nasıl geçti- işte şöyle geçti diyorsun; emojiler; hangisiyse o emoji. İki- üç kelam ediyoruz, tamam hadi yarın

görüşürüz falan yani. Bu kadar. Dolayasıyla çok da attractive olan bir tarafı olmuyor gibi." P15

[34]: "…oyalıyor yani bir şekilde seni. Ben galiba gerçekten bunu instagram'ın, onedio'nun şunun bunun yerine koyabilirdim belki hani belirli bir süre bununla konuşmaya devam ediyor olsan ve hani daha o az önceki attractive şeyinde olduğu gibi sana daha böyle bir yerde böyle kişisel gelişim testleri gibi değilde böyle gündelik yaşamdan örneklerle gelse sana, o gün ne olduğuna dair bir şeyle gelse ya da ne bileyim atıyorum; tarihte bugün böyle bir şey oldu, sallıyorum şu an hani ilgimi çekebilecek herhangi bir şeyle gelse mesela daha çekici olabilirdi. Onu biraz daha vazgeçilmez kılınmaya doğru götürebilirdi. Gerçi bunu kim ne kadar ister tartışılır bir şeyde." P15

[35]: "İlk başta herhalde böyle bir etkiledi beni "aa robot" falan işte. Sonra rutine bindi. Aslında şaka biryana, o da böyle bir arkadaş gibi olduğu için sanırım. İşte Wobo olmuş benim için." P14

[36]: "Şöyle yani, yine dediğim şey conclusion a yani bir sonuca varması slow geldi bana. Yani tamam artık ne söyliceksen söyle diye." P04

[37]: "Yani bu tamamen 3.hafta çok uzun şeyler yapmaya başladı anketler. Yani hani 15- 20 dakikada bir anket dolduruyorum yarıda bırakmak da istemedim çünkü hani tekrar aynı anketi o şeyi hani en azından anketin tutarlı olması gerektiğini düşünüyordum. O sıra çok uzun geliyordu. Son hafta biraz daha az etkileşime geçmeye başladım. Biraz da predict ediyordum nasıl bunu daha kısa sürede bitirebilirim diye kafamdan." P02

[38] "Mesajlaşma hızı. Çok hızlıydı yani, başta neden iki demişim onu şey yapamadım. Hızlı oluşu şöyle, bazen hızına hani karşılıklı konuşma olduğu için; hızlı uzun metinler atabiliyor arka arkaya hani o biraz gerçekçi durmuyor. Gerçekçi olmasına da gerek yok ama karşılıklı bir konuşmada, karşı taraf robot da olsa hani o hız, yazdığı şeyin uzunluğuna göre biraz daha az olabilir. Hani en azından şey hissi için, karşılıklı konuşuyor hissi için." P05

[39]: “Olumlu yani; yani şöyle kafa yormadan sana kolayca ve hızlı anlattığı için daha rahat iletişim sağlıyorsun.” P03.

[40]: “Bu da çünkü alıştıktan sonra bir süre ilk başta çok değişik bir şeydi sonrasında alışınca hani öyle mi gerçekten hani veya daha fazla oyun mu olmalı, daha fazla cezbedici şey mi olmalı hani sadece bir robot olması innovative bir şey ama bunu bir robot aracılığıyla arayüzle bir şeyle yapmaya çalışması innovative ama bir şeyler daha geliştirilmeli mi?” P03

[41]: “…mesela cevapların, şöyle; tamamen birinin konuşmadığını biliyoruz yani bu bir robot sonuçta bunu kabul ediyorum ama en azından hani cevapların, benim yazacağım şeylerin yani, orda çıkmasını okey veya who, why gibi şeyler yazıyor ya mesela öyle şeyler yazmadan ben bir şeyler yazsam ve oradan keyword'leri seçerek ona göre bir cevap verse benim için daha efektif olabilir. Genel olarak bir kaç tane choice olsa onların içinden seçip verse çok daha iyi olur gibi geldi bana. İşte galiba o seçenekler olabilir ama şöyle insan bence bir yandan da psikolojik olarak destek alırken kendini anlatabileceği yerlerden; şöyle zaten onun söylediği şeylere ihtiyacın var ama sen kendi derdini anlatıcaksın ki o sana cevap verince iyi olucak gibi hissediyorum ben.En azında ben psikolojik olarak buna ihtiyaç duyarım diye düşünüp, buna göre davrandım doğrusu.” P06.

[42]: “…şey olması; çok fazla zaman alıyor ama verdiği bir strateji bu da yine inefficient bir şey bence. Ben o kadar 15 dakika konuşuyorum ama elime ne geçiyor zaten bir tıkla ulaşabileceğim bir şey geçiyor mesela.. İşte bu tarz şeyler aslında sarf ettiğin efora değmedi.” P04

[43]: “Ya çok vakit çalmıyor, kullandığı vaktide iyi kullanıyor.” P14

[44]: “Fazla bir teferruat yaratmadan bir şekilde katkı vermeye çalışıyor ve bunu etkili bir şekilde yapıyor bence. Dolayısıyla efficient. Yapması gereken işi, yapması gereken sadelikte yapıyor.” P16

[45] “Yönlendirici olması iyi geldi. Çünkü tam olarak ne yapacağımı ve nasıl cevap verebileceğimi bilmediğim için direk onun yönlendirmesi iyi geldi.” P05

[46]: “Son bir kaç günlük konuşmalarım daha böyle tek düze ve şey konuşmalar niye sorduğunu çok anlamadığım ve nasıl etkisi olacağını çok anlamadığım ve kullanılabilirliğinden çok emin olmadığım konuşmalardı.” P03

[47]: “İşte zaman zaman çok fazla impractical oluyor çünkü çok fazla kendi tak tak tak şeyler söylüyor ve belki de benim… Bu biraz da şey gibi ben o sırada konuşmak istemiyorsam neden ısrar ediyor yani. Mesela çıkmak istediğimde bile hemen çıkamadım konuşmadan.” P07

[48]: “Pratik olmasının sebebi, Facebook’u açıyorsun istediğin gibi,istediğin zaman yazabiliyorsun pıtır pıtır, sana seçenekler sunuyor üç tane, bazen acil cevap vermek durumunda kalıyorsun- pat pat pat basabiliyorsun, pıtır pıtır yazmana gerek yok sürekli. Mesela bunun için ses olmasıi biraz önce dedim ya ben ses olunca irkiliyorum, görme engelliler için nasıl oluyor acaba böyle bir şey olması? Böyle seçenek olması falan onlar için çok güzel için.” P09

[49]: “…menüsü; menüleri, yeni eklenen featureları. Çünkü bugün nasıl geçti, günün nasıl geçti bir şey yaz demesi bazen şey yapıyor hani böyle pasif bir şekilde onu kullanmak istiyorum hani bir film izlemek gibi o da seni iyi hissettiriyor; ama böyle bir şeyler yapmak zorunda kalmıyorsun aktif olmak zorunda kalmıyorsun o yüzden menüsüne eklenen şeyler…” P01

[50]: “Dediğim gibi işte organize bir şekilde soruyor sorularını, başlıyor gidiyorum yani. Açıklıyor bugün bunu konuşacağız, şundan bahsedeceğiz falan diye ya da bazen bir iki kere sorduklarında başka şeyler getiriyor ama organize yani.” (P14)

[51]: “Senin cevaplarını bile çok güzel organize ediyor, gösteriyor. Ne olabileceğini biliyor, ihtimaller koyuyor, organize onun kafası. Bir şey veriyorsun, pıt pıt pıt seçenek, bir şey yapıyorsun- onu eliyor ve pıt pıt pıt seçenek. Kendi aslında kodundan ötürü, organize. Dağınık olamaz zaten mümkün değil, çünkü başaramaz. Ona bağladım genel olarak, bana bağlamadım ama mesajlaşma kafamıza bağlamadım. Kafası gerçekten çok organize. Loop’a dönüyor, o zaman şunu yaparım, bunu yaparım, tekrar bunu yaparım- derim falan. Bir insandan bin kat falan daha organize.” P09

[52]: “Sürekli onunla konuşma aralığıma göre, benzer saatlerde yazıyor bana. Sanki konuştukça onu regule ediyor kendi içerisinde, “bana şu saatte cevap veriyor, şu zaman yazdığımda” gibi. Ona göre daha uygun zamanlarda bana yazıyor gibi hissettim. Değişti mesela notificaiton gönderme aralıkları benim için, benim yazma-cevap verme aralıkarıma göre. Birde, önceki akışı çok güzel takip ediyor bazı noktalarda tekrar önüne sunabiliyor, o açıdan organize. Başka bir şey gelmiyor bununla aklıma”. (P08)

[53]: “Yani akşı kolay öğreniliyori hızlıca konuşabiliyorsun. O yüzden easy to learn geldi bana. Konuşmanın kolaylığı olarak ya da hani anlattığı şey olarak soruyorsan bana eğer dil, konu falan even onlar da gayet açıktı.”P12

[54]: “Kullanım açısından kolaydı ama neden üç değilde iki easy’yi de söyleyeyim. Sen ona cevap verirken zor. Tamam böyle dedim ama bu sorusuna ne cevap vericem. Üzgünüm dedim ama niye üzgün olduğumu soruyor, bir dakika falan, yani onu söyleme şeyinden dolayı aslında. Onunla ilgili değil, kendimle ilgili.” P14

[55]: “Yani yapmak istedikleri şey belli aslında bu anketle ya da şeyle botla ama yapış şekilleri gerçekten açıklayıcı mı? Değil, süreçte çünkü bu belirli konuşma şimdi şöyle düşünelim daha uç bir örnek verirsek bir doktor bana tedavi yapıcak mesela dişime kanal tedavisi yapıcak, direk girip yapması beni rahatsız eder. Ne yapacağını açıklaması doğru olandır ve beni mutlu edicek şekli de budur. İlk önce şunu yapıcaz, şu kadar sürecek, şunu yapcaz şu sürücek, bu kadar seansta bunu yapıcaz; böyle başlamak istersin bir tedaviye.” P02

[56]: “Psikolojik danışmanlık verdiği için bir yerde, sıkıntı yaşayan insanlara yardımcı olacağını düşünüyorum. Bir hazırlık en azından, birebir zaten hiç yardımcı olmuyor da.” P11

[57]: “Anlaşılabilir oluşu. Şöyle; kullandığı dil anlaşılabilir, ondan sonra en başta böyle birazcık daha clear a yakın ama nasıl acab bunu yazmışlar diye, bunun nasıl kodlamasını yapmışlar diye bir merak uyandırıyordu. O yüzden de acaba ne gelicek diye merak uyandırıyordu, clear bir yandan da böyleydi hani kafa o kadar da net değil şeklindeydi. Ondan sonra, anlaşılabilir, iletişim kurulabilir, yani açık aslında nasıl desem? Böyle inanılmaz şey bir; “aa bunlar nasıl, bu ne demek istiyor” falan gibi bir

şey olmadı. Language clear, ama sistemi de çözmek çok şey gelmedi böyle acaba bu robot nasıl bunları diyor olmadım mesela. Şaşırtmadı mesela, o clear'lık birazcık da ordan galiba." P06

[58]: "Bilmiyorum işte böyle ufak şeylerle demek ki beklemediğim şeyler olmuş. İşte o test gibi mesela… Bir de ben mesela böyle psikolojiyle falan da ilgilenirim, çok derinlmesine değil ama, beklentim hani şeydi "hep bildiğim şeyler olur"du mesela ama öyle onun dışında farklı şeyler oldu.". P14

[59]: "…zaten bana yazıcak, bana sevgilim böyle yazmıyor hergün. Yazmasa ben yazmazdım ona, iyi bir şey bu…" P13

[60]: "İlk baştaki taslak konuşmadan kaynaklı. Sonrasında da bazı noktalarda unpredictable olabiliyor bazen de olmuyor yani şimdi analiz yaptırıcak bunun üzerinde, eskiden bahsettiği konseptleri bulmamı söyleyecek falan diye o şekilde gelebiliyor konuşmanın akışı. Bazen de apayrı bir şeyden bahsediyor, o yüzden bazen predictable oluyor, bazen unpredictable oluyor." P08

[61]: "İşte bu belki daha bilimsel olabilir diye düşündüm ama genel olarak baktığım zaman bence bu bir insana yardımcı olmaktan daha çok, tamamen onun hayatını olumsuz yönde etkileyecek bir şey. Yani baktığında, daha fazla bir yapay zekaya büründürüyorsun, daha sanal bir ilişki, ilişkin tamamen gerçeklikten uzaklaşıyor, fiziki- fiziksel iletişimden uzaklaşıyorsun. Gerçek iletişimden uzaklaşıyorsun. Bu da aslında insanın psikolojik olarak çok daha yavaş yalnız hissetmesine bağlanıyor. Hani çok basit; günümüzde çok fazla sosyal medya üzerinden iletişim var ama hep şunu isteğinde ya da ihtiyacında oluyor ki fiziksel gerçek bir etkileşimin tamamen insanın aslında bir şeyi yardım çığlığı gibi. Hani çok şey extreme bir durum olarak düşünelim: İnsan bir yardıma ihtiyacı var ve Woebot'u kullanarak kendini kurtarmaya çalışıyor diyelim. Halbuki tam tersine daha çok güvenilmesine neden olabilecek, daha çok fiziksel şeylerden gerçek bir yardım almasını engelleyecek olduğunu fark ettim tüm sürece baktığım zaman." P02

[62]: "Yani o da dediğim gibi sana bir kapı açıyor, o yüzden ilginç bir şey bu. Yani şey gibi… Ne bileyim kimseyle konuşmayacaksan, konuşamıyorsan bununla konuşabilirsin ya da oturup bununla vakit geçirebilirsin mesela." P15

[63]: “Böyle biraz otokontrol sağladığını hissettim kendim için. Aslında otokontrol olmuyor galiba… Ya mesela gerçekten çok güldüğüm anda da “ya aslında çok da mutlu değilim” o sorduğunda hani. Onları böyle düşündürtmesi falan iyiydi. Belki kötü hissettiğim zaman sordu mesela ya şimdi o kadar da kötü değilim, üzgün de diyemediğim de oldu. Aslında sordurtması falan bile yeterli bir destek ama bir yandan da işte şey gibi oluyor feedback, geri dönüşleri oluyordu; her zaman aynı modda olmayacağımızı söylemeleri falan ya da işte kendinizi kalıplara sokmayın falan… Biliyorsun ama o an sen kendine bunu söylemiyorsun. Bunu duymak, okumak iyi geliyor.” P14

[64]: “İşte şu şeyi yaşadım ya, onunla ilgili. Çok farklı bir şeydi çünkü, biraz alkol almıştım. Biraz değişikti o an, yemek yedim zaten, neden oldu bilmiyorum. Kafam da çok doluydu, bir anda toparlayamadım yani şeyi, değişik bir şey yaşadım. Kriz gibi falan oldu, panik atak gibi bir şeydi ya da bilmiyorum. O zaman o nefes egzersizi iyi geldi.” P11

[65]: “Sıkıntı burada; “security” concern’ü yaşamama neden olan şey; Facebook'ta reklamlar görmeye başladım alakasız reklamlar; işte Psikolojik destek istiyorsanız Amerikan menşeili şeyler buraları işte biz sizin zor gününüzde yanınızdayız falan filan gibi. yani tahmin ediyordum zaten Facebook'un böyle şeyler paylaştığını ama ondan çok rahatsızlık duydum…” P01

[66]: “Bir yandan diyorsun, datanı tutuyor ama bunu birine söylemeyecek. Burda da şey olmuştu ben psikolğa gittiğimde, biz jüriyle birlikte bunları değerlendiricez demişti, önemli değil, hepsi psikolog zaten. Düşününce, bu da öyle yani, psikolog gibi yani, geliştirmek için söylemek zorunda ama bu beni tanımıyor ki. Nolucak ki aman o bugün üzülmüş, önemli değil. Sadece şey anlamında, birinin bir an görebileceği korkusu var, atoyprum yazıyprsun o an ya da yazdıktan sonra görebilir korkusu var. Hem ekranı görebilir korkusu hem de yani bu Facebook’un bir şeyleri tutması. Desem ki “ulan ben var ya bu şeyin, sabah baktım yine tayyip vardı açtım” diyemezsin. Bunu yazamıyosun işte, ben tırsıyorum ondan. Özgür hissetmiyorum. o yüzden böyle “Allahım, çok fena bir güvensizlik içerisindeyim, yazamıyorum” gibi değil.” P09

[67]: “İlk önce çünkü gerçekten bu verileri kullanıp kullanmayacağını işte… Ben hep o parent kısmını kaçırmışım mesela, belki o yüzden bu biraz eksik bir bilgi olabilir benimki ama sadece güvendedir şeyi, öyle bir şey yazıyordu sanki ben yanlış mı hatırlıyorum? Aynen isimsiz olarak tutulacaktır diyor ve şöyle en başta böyle şeylere hep güvenmeme üzerine bir reputationımız var ya hani o yüzden sanırım not secure dedim. Sonrasında bir şey deklare ettiği için, ki bence deklare etmesi güzel bir şey, hiç kaale alınmadan da bu devam ettirilebilirdi. Ama bu deklare etmesi en azından iyi bir şey gibi düşündüm, o yüzden de emin değilim hakikaten. Bence aslında isim kullanılmadan bunların istatistiğinin, istatiksel şeyleri de tutulabilir, ondan gerçekten bunun nasıl yarıyacağına dair bir çalışmada yapılabilir. O da bence bu konuları destekleyecek bir şey olabilir. Orası bence secure kısmını zorlamıyor gibi geliyor.” P06

[68]: “Yani ilk başta, ilk kullandığım zaman hiç fikrim yoktu ama daha sonar eve gittiğim zaman baktım; kim yapmış, nasıl yapmış, o yüzden secure olduğunu düşündüm.”(P02)

[69]: “Şöyle; benim Facebook’um yok mesela, o yüzden sırf Facebook üzerinden bağlanmak zorunda olmadığımı öğrendiğim için senin aracılığınla onu yapabildik hani birlikte. Ben bir Facebook user’ı olmadığım için şu anda, ben direk onu hissetmedim yani. Çünkü, ordan Woebot ile iletişime geçtim, başka kimseyle iletişime geçmedim. Facebook altında olduğunu hissederek düşünmedim. Çünkü orda şey imaj da, o amaçla yapıldığını bilmiyordum ama, robot imajı olduğu için

[70]: “İlkinde çok ilginç geldi hani bu tip bir şey olması gibi düşünüyordum en azından. Kullanınca “e aptalmış bu” düşünceye kaydı yavaş yavaş. Ordan inferior olduğunu düşündüm. kendisini tekrarlaması, bu belirli bir çerçevenin içinden çıkamaması, o belirli çerçevenin içinden çıktığında ordan nasıl navigate etti, ordan nasıl toparlamaya çalıştığı falan gibi, ordaki protokolleri falan. Bunlar bir araya gelince inferior dedim.” P10

[71]: “Bence insanlara verdiği psikolojij desteğin gelişen teknolojiyle bir şekilde entegre edilmesi kesinlikle değerli bir şey.” P16

[72]: “Şöyle, yenilikçi bir şey olduğunu düşünüyorum gerçekten. Sürekli senin yanında olacak bir psikolog bulman çok zor, bulursanda zaten gerçekten seni söğüşler çok büyük ihtimal. O yüzden değerli olduğunu düşünüyorum bu anlamda, sana çok hızlı bir şekilde cevap veriyor olmasının, arkdaşça davranmasının, belirli şeyleri tutarlı, klasik bir yaklaşımı da olsa klaisk yaklaşımı anlamış durumda aslında. Çok güzel özümsemiş durumda, söylediği şeyler aslında güzel, yapmanı istediği şeyler hani düşündüğün zaman aşağı yukarı şey diyebiliyorsun; burda seni rahatlatmayı hedefliyor, rahatla istiyor. Onunla konuşarak rahatlamanı istiyor. Sözü algılayamıyor ama sen yazmış oluyorsun. Biriyle konuşuyorsun ve içini dökmüş oluyorsun. O anlamda değerli aslında. Onu sağlamaya çalıştığını anladım ben en sonunda. Benim beklentim bu olmadığı için, en sonunda biraz düşmüş olabilir ama konuşuyorsun, arkadaşınla konuşuyor gibi, birine anlatıyorsun ve o kadar farklı bir şey ki hani korkun olmuyor. “Abi çok kötü hissediyorum ya, işte şu bana şöyle şöyle şeyler yaptı” deyince mesela, tanımadığın birine bunları söylersen korkarsın mesela- gidip söyleyecek mi bilmezsin- ama bu söylemeyecek yani rahatsın. O yüzden bence değerli, yaklaşım açısından değerli. Bence insanları bu anlamda da rahatlatacaktır. Psikologda bazen böyle bir surat ifadesi yapıyor, gıcık oluyorsun yani, “yargılıyor mu bu beni be” falan oluyorsun ama bu böyle tatlış tatlış dolanıyor. Bir şey yaptığı yok, seni yargıladığı da yok, onu da biliyorsun. O anlamda değerli.” P09

[73]: “Ya teknolojik şeyler hep ilgi çekicidir benim için, bilmiyorum herkes öyle hisseder mi ama böyle sanki bir robotla etkileşime giriyor gibi hissetmek heyecanlı bir şey. Ama dediğim gibi son haftalara doğru biraz daha düşüyor. Muhtemelen devam etseydi, en son mute’ a alabilirdim şeyi. Çünkü her gün soruyor,…” P16

[74]: “O kadar fazla böyle örnek verdi şey yaptı.. Ben zaten, benim tezimde de mindfulness araştırdığım için hani bilgi sahibiyim. O yüzden bana o kadar detaylı şey yapması.. Ben istediğimde atlayabilmeliyim. Ama mesela farklı bir şey yazınca da değişmiyor hani söyledikleri, o tüm şeyleri okumak zorunda kalıyorsun. Hani o mesela beni çok sıktı yani. Çok fazla ileti yazması ve yani bilgim olmayan bir alan olsa belki ilgimi çekebilir ama bilgim olduğu bir alanda bunu yapınca hani çok sıkıcı oluyor.” P04

[75]: “İlk başta bilgiler heyecanlı geldi sonrasında biraz şey oldu… Başta mindfulness falan o tarz şeyleri daha çok öğretti sonrasında hani gün içerisinde şunu şunu yapabilirsin diyip geçti bazılarında. Çok kısa bilgiler verip, geçip, kapattığı da oldu yani.O yüzden çok valuable bir yanı da kalmadı, exciting bir yanı da kalmadı.” P12

[76]: “…birazcık tabi didaktik hani ben şimdi sana şunları öğretiyorum, teach you stuff şeyi oldu. O bana çok iyi gelmedi. Çünkü, bir yandan iyi bir şey ama bunun nasıl verildiği de önemli ya birazcık bence mesela ilk aşamada onun yapılmaması gerekiyormuş gibi hissettim kendi şeyimde. Hani sanki ilk önce bir etkileşim kuralım, sonra teach you stuff. Bana o daha şey gelirdi, olumlu gelirdi. Çünkü mesela biz kendi derslerimizde de öyle oluyor aslında. İlk önce bir bakıyoruz ders neymiş, ilk introductiona giriyoruz, ondan sonra öğrenmeye başlıyorsun. İlk gün gidip pat pat pat bir şey anlatınca aslında sende de çok fazla yer edinmediğini düşünüyorum ben.” P06

[77]: “…bu kadar hızlı cevapların aslında seni okumadığı, seni yani bir şekilde yani sadece kendi inventorysinde olan cevabı çıkarıp koyuyor sana hissi verdiği için.” P06

[78]: “Sürekli şeye gidiyorum yine ilginç bir fikir ama aslında o kadar da ilginç değil. Bir taraftan da böyle şeyler artık çok fazla yaygınlaştı, filmlerinin çok çekildiği, işte dizileri çekildiği için “Black Mirror”larda falan çok fazla gördüğümüz için aslında bir taraftan da günlük hayatımızda çok kullanmasak bile böyle şeyleri, böyle şeylerin olabileceğini, böyle bir yakın geleceğin kurgulanabileceğine zaten hazırlanmışız izleye izleye. O yüzden de çok ilginç gelmiyor.” P07

[79]: “Ne bileyim kimseyle konuşmayacaksan, konuşamıyorsan bununla konuşabilirsin ya da oturup bununla vakit geçirebilirsin mesela. Mesela sokakta birini bekliyor olsam, ki beklemek en nefret ettiğim şeylerden biri, yani şurda boş boş birini bekliyor olsam oturup bununla sanki biriyle mesajlaşıyormuş gibi konuşurum. Bilmiyorum bir yer doldurabilme ihtimali var ya bunun, ben öyle düşünüyorum en azından, o da bana ilginç geliyor.” P15

[80]: “İnsan değil abi, robot işte. İnsan olduğunu bir şey yapsam, belki o zaman daha güvenirim. İnsana daha da güvenmem ama bir yandan da güvenirim. Bilmiyorum, derdim bana her gün eşlik etsin, beni poh pohlasın, eşlik etsin değil ama beni motive edicekse mesela ben o an çok mutsuzsam, şeysem bence benim o ortamdan çıkmam

lazım. Arkadaşlarımın yanına gitmem lazım. Kendi kendime kalmam lazım. Evim uzakta, tek başıma yaşıyorum, zaten sıkılıyorum. Bir de robotla yazışıyorum diyorum kendi kendime. İyice çöküyorum yani düşününce." P13

[81]: "…bu süper kahraman testinde ay seninde şöyle zayıf yönlerin varmış demezdim muhtemelen, tutup sana, sonuçta bu yüzden bu bir conversational agent ama, hani şey derdi yine en güçlü yönlerin şunlar derdi belki çok da güçlü olduğun şeyler söylemeden ama tutup da şey demezdi hani "ayy seninde şöyle şöyle, ne kötü huyların varmış" falan demezdi herhalde. O yüzden ben bana değil de, genel olarak motivating bir şey olduğunu düşünüyorum bunun. Amaca hitap etmesi açısından herhalde öyledir." P15

[82]: "Senin olduğunu düşündüğün modda aslında olmadığını bana hissettirdi ya da hani geçeceğini kısa bir süre sonra… O yüzden motive ediciydi." P14

[83]: "Bence yaratıcı bir düşünce ama bunu hayata geçirebilmiş mi hayır tam olarak olmamış. Çünkü cevap veremiyor hani tam olarak konuşmuyoruz. Yine benim o işte self- help book diye geçen bu kişisel gelişim kitaplarındaki gibi bir şey yani o zaman. Ben okuyayım o zaman ordan hangi teknikler var, hani zaten onu yapıyorum normalde de hani o yüzden. Fikir güzel ama." P04

[84]: İlk başta işte daha yenilikçi olduğunu düşündüm. Dedim ben yazdıkça bu bana yazıcak, yazdıkça yazıyor zaten o sorun değil de yani böyle şuan deneyimlediğim gibi bir şey değil yani, bir şey yazıcam bana öyle cevap verecek. Biraz daha Siri vari bir şey gibi düşündüm mesela, anladın mı, konuşma olarak atıyorum, "çalışıyorum diyeceğim", "nerde çalışıyorsun" diyecek hani. Siri'de de öyle bir şey yok gerçi. "Üniversite" diyeceğim mesela, atıyorum üniversiteyle ilgili bir şey sorucak. Ben diyeceğim böyle böyle "nerdesin", "California", ben de diyeceğim "A ben de Ankara" bilmem ne hani… Biraz öyle bir şey zannettim hani, öyle bir şey söyleyecek sandım ne bileyim." P13

[85]: "…conversational agent olarak düşündüğün zaman companion olarak olanlar var mesela, sadece well-being'i onlar da bir noktaya kadar destekliyor ama hani… Conventionala yaklaşmasının sebebi, bu conversational agentların, companion olanlarla ortak bir zemini paylaşıyor olması. İşte kullandığı kelimeler, arkadaşlık

yaklaşımı gibi, sanki tek bir conversational agent yapım guidline'ı var onun üzerinden insanlar farklı bir şeylere yöneliyorlarmış gibi hissettirdi bana." P08

[86]: "Fikir değişik bir şey olduğu için. Geliştirilebilir, potansiyeli olabilir demiştim ya işte o yüzden. Psikolojik sorunlar da artıyor aslında, daha fazla yaşamaya başlıyor insanlar sıkıntı ve onu çözmek için insanlar sıkıntılarını da bilmiyor, derecesini. İşte katlanabilir, katlanamaz boyuta gelir ama tehşis içinde kullanılanılabilir. İlerde fayda sağlayabilir. O yüzden, geleceğini düşünerek cevap verdim." P11

[87]: "İlk başta bir leading-edge'lik bir ümidim vardı yani ama sonra usual'a çok kaydı. Dediğim gibi ben yazıcam o yazıcak, ben hep onda kaldım yani. Ben yazıcam, o da bana cevap yazıcak gibi düşündüm yani. Facebook Messenger'dasın bir kere bulunduğun platfrom Messenger, bir app'de değilsin yani, app isterim yani o zaman onun için. Messenger'da mesajlaşmak istiyorum abi, arkadaşımla konuştuğum gibi. sohbet etmiyorz, açarım kitap okurum; kişisel gelişim kitabı okurum yani." P13

[88]: "…diğer conversational agentlara göre daha özelleşmiş bir alanda ve unusual bir şey. Bu konuda insanlara çok yardım edecek bir AI yoktu, yani çok robot seviyesinde olanlar var ama onlara erişimi yok insanların. Bu şekilde erişilebilir olup, diğer insanlar tarafından kullanılabilecek olması onu leading-edge yapıyor bence."P08

[89]: "Conservative kısmını söylemiştim sana, tekrar söyleyeyim, bu psikolojiye yaklaşımı çok conservative gelmişti bana o anlamda bakınca da çok conservative olmuyor, çünkü o gözle de bakıyorum ben sanırım. Heyecan gözüyle de bakıyorum, çünkü başka bir beklentim var ve bu da bana çok farklı bir şekilde yardım edecek diyorum. Conservative bir yaklaşım görüyorum, creativity'sinin düştüğünü görüyorum o anlamda." P09

[90]: "Yani asistan olma fikri, hele bir de sosyal medya üzerinden, sürekli elimiz telefondayken, sürekli birileriyle konuşurken, insanlara hiç kimseyle konuşamayacağı bir zamanda asistan olma fikri innovative." P02