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Operationalization of eudaimonia for User Experience on basis of the self-determination theory, the eudaimonic identity theory and the six-factor model of psychological well-being

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**Abstract**

The eudaimonic perspective of User Experience (UX) is a relatively new field in relation to the history of happiness research in psychology. Through comparison of prevalent theories and measurements of eudaimonia in psychology and related research in UX, this thesis summarizes an own definition of eudaimonia and operationalization for UX purposes. The focus of the definition lies on the self-determination theory, the eudaimonic identity theory and the six-factor model of psychological well-being. For the operationalization, parts of the Hedonic and Eudaimonic Motives for Activities (HEMA) Scale and the Psychological Well-Being (PWB) Scale were used as well as new additional items. The result is a six-item questionnaire measuring three different factors of eudaimonia.

*Keywords:* User Experience, Eudaimonia, Measurement

## Introduction

In western societies, there is a gradual transformation from a materialistic to a post-materialistic value system, changing the focus to pursuing personal goals like belonging and self-expression (Desmet & Pohlmeier, 2013).

Subjective and emotional qualities of interaction are more highlighted (Partala & Saari, 2015). Consequently, the view should shift from designing material representations to the experience it is creating. Thinking about everyday objects from the perspective of happiness instead of its pragmatic usages can lead to many more meaningful moments in life (Hassenzahl et al., 2013).

The concept of eudaimonia describes more personal values and long-lasting emotions resulting in a different gained form of happiness (Huta & Waterman, 2014). The term originated from ancient greek. It is divided into two parts: “*eu*” translating to well or good and “*daimon*” meaning divinity, spirit or soul (Vittersø, 2016). Aristotle formulates in his work the “*nicomachean ethic*” guidelines for a well-lived life. Part of his work is the analysis of happiness and the conclusion that it does not only consist of satisfying needs like pleasure, wealth or honor. He distinguished between experiencing pleasure as described in hedonia and living well in eudaimonia (Ryff & Singer, 2008). Eudaimonia is not only a mental state or a positive feeling; it is a part of one’s character pursuing virtues and excellences. A human engaging in an eudaimonic lifestyle is also in a continuous reflectivition of his own behaviors. Eudaimonic actions are an expression of oneself and in conclusion voluntary (Ryan, Huta, & Deci, 2008). Aristotle argues that the highest good a human can pursue is the “*activity of the soul in accordance with virtue*” and “to achieve the best that is within us” (as cited in Ryff & Singer, 2008, p.16).

The term eudaimonia was picked up again in the 20<sup>th</sup> century from humanistic psychologists. The humanistic movement started as a contrast to the in the first half of the 20<sup>th</sup>

century prevalent behaviorism and psychoanalysis. While behaviorism reduces the human to quantifiable behaviors and psychoanalysis concentrates on hidden meaning through layers of defense mechanisms, humanistic psychology strives for a holistic and descriptive perspective with an emphasis on freedom and the autonomy of a human and the inability to fully be simplified in formulations without losing essential parts (Joseph, 2015). Most literature of eudaimonia is nowadays centered in the movement of positive psychology. This psychological direction focuses on improving and developing strengths (Sheldon & King, 2001). Experiences like well-being, satisfaction as well as hope and optimism are at the center of attention (Seligman & Csikszentmihalyi, 2000) with identifying personality and social factors to improve strength, virtues and the overall development (Deci & Vansteenkiste, 2004).

Kashdan, Bismark-Diener and King (2008) believe, that to advance the study of happiness, studying related theoretical conceptualization except the philosophic eudaimonia is more efficient.

For this reason, this thesis is going to look more into certain theories of eudaimonia in the field of psychology first. This will give an overview on previous research on eudaimonia from the perspective of psychology. Problems in the definitions of eudaimonia are presented. Afterwards, a focus is set on specific measurement methods already in use of eudaimonia and results in the field of User Experience (UX). Last, potentials of the different assessments are discussed in order to create an own operationalization of eudaimonia for UX.

### **Psychological Theories**

Waterman (2010) noted that psychological theory must be sufficiently specific to measure abstract philosophical constructs in order to be useful for empirical psychological research. There are three well-known psychological theories categorized in positive psychology dominating the literature of eudaimonia (Vittersø, 2016, Seaborn, 2016). Thus,

this thesis focuses on the self-determination theory of Ryan and Deci, the eudaimonic identity theory of Waterman, and the six-factor model of psychological well-being of Ryff.

### **Self-determination theory (SDT)**

Self-determination theory (SDT) is a macro-theory of motivation, personality and optimal functioning. It was developed by Edward L. Deci and Richard M. Ryan of the University of Rochester (Deci & Vansteenkiste, 2004).

Based on research on intrinsic motivation and internalization, Ryan and Deci (2000) conclude that a set of universal psychological needs have to be fulfilled in order to be psychological healthy and to function properly. These needs are the need for autonomy, competence and relatedness and are important in order to understand the content of actions and why they are done.

Autonomy is the need to feel volition, the experience of freedom and integration in a behavior. It does not mean that one must be independent, it is more about to feel congruent with one's behavior. Competence is the need to proficiently deal with one's environment. Relatedness describes the need to feel connected to others, to experience a meaningful relation (Ryan & Deci, 2000; Deci & Vansteenkiste, 2004; Ryan et al., 2008). These needs are inherent part of the human nature and are fundamental for an optimal development and psychological health. Acknowledgment of competence through positive feedback or choice in one activity increasing the feeling of autonomy influences intrinsic motivation positively. Missing fulfillment of the needs results in passivity and ill-being. (Deci & Vansteenkiste, 2004)

The concept of human needs can provide an explanation for various experimental findings concerning people's actions and how they are affected by different motivations. (Deci & Vansteenkiste, 2004; Deci & Ryan, 2008b)

Ryan et al. (2008) present a model of eudaimonia based on SDT, characterizing four different motivational concepts. The first concept is the pursuit of intrinsic goals and values for their own sake. Intrinsic goals are defined as first-order values; values which are not reducible to other values and do not exist for other values. For example, wealth can be a substitute for being admired; to be loved is irreducible on the psychological level in their opinion and therefore a first-order value and intrinsic. The first-order goals are intrinsic aspirations. Second and higher order values are part of extrinsic aspirations and instrumental. If the needs are not satisfied, one will adapt more extrinsic goals as a substitute; failing to gain a feeling of well-being even if attained (Ryan & Deci, 2008b). Pursuing intrinsic aspirations in contrast is associated with greater well-being (Vansteenkiste, Matos, Lens & Soenens, 2006).

The second concept for eudaimonia defines behavior congruent with autonomous attributes. In contrast to other theories of motivation, the SDT concentrates on the different kind of motivation instead of the total amount opposing an unitary concept of motivation (Deci & Vansteenkiste, 2004; Deci & Ryan, 2008b). Autonomous motivation includes both intrinsic motivation and certain extrinsic value where the value of the activity feels congruent with one's own sense of self. Volition or self-endorsement are felt for one's activities and it leads to greater psychological health (Vansteenkiste et al., 2006). Controlled motivation is being influenced externally with prospects of reward or punishment. The people are feeling pressured to behave, think or feel certain ways.

The third concept for eudaimonia is acting mindful and with awareness. Awareness and interest to one's environment is associated with autonomous motivation. The reflective examination of needs helps developing a more autonomous orientation. (Ryan & Deci, 2008b) Both concepts are necessary for behaving in an eudaimonic way. One needs the possibility of choice to follow one's true self and without reflectivition one cannot know one's goals.

The fourth concept of eudaimonia is behaving in ways to fulfill the defined basic psychological needs. Intrinsic goals are efficient ways to satisfy these needs while extrinsic attainments are not well related to basic need satisfaction, nor do they facilitate psychological well-being.

Ryan et al. (2008) perceived eudaimonia as living well in a combination of intrinsically valued pursuit of goals and processes regulated by autonomy and awareness. Goals, regulatory styles and mindfulness are all part of the eudaimonic living. The result is a more enduring type of happiness in comparison to hedonistic approaches, manifesting in a sense of meaning, vitality, meaningful relationship and physical health mediated by the satisfaction of the basic psychological needs for autonomy, competence and relatedness.

The concept of the basic needs from the self-determination theory of Ryan and Deci is also prevalent in UX. Hassenzahl, Diefenbach, and Göritz (2011) found a relation between the satisfaction of the needs with positive user experiences. They used a questionnaire adapted from Sheldon, Kim and Kasser (2001). The original questionnaire added additional seven needs to the three of competence, autonomy and relatedness defined in the SDT. Sheldon et al. (2001) found out that additionally to the need of self-esteem, the needs defined in the SDT were found to be the most strongly associated with high-positive and low-negative emotion. Hassenzahl et al. (2011) added the setting of interacting with interactive products and technologies and found a clear link between need fulfillment and general positive affect.

### **Eudaimonic identity theory**

The eudaimonic identity theory is based on the question what defines “better” choices related to identity development. The term “daimon” defined by Aristotle functions as the guideline to find the best in oneself which results in the form of happiness in eudaimonia (Waterman, Schwartz, & Conti, 2008). To identify one’s daimon, the theory consists of the discovery of personal potentials, defining the purpose of one’s life and to find the suitable

opportunities to act on them. It is based on corresponding elements from classical personality theories related to identity formation.

The theory sets the contrast of generic human nature to unique characteristics of individuals. Generic human abilities are learned as a function of biological development through physical support and social environment. They are part of the normal maturation process of an individual, for example to walk and to talk. Unique characteristics consist of interest and talents in certain fields. There are activities one finds more interesting and one can do better than others. To identify these potentials is the first part of developing better identity decisions (Waterman, 2011). The experience of eudaimonia was proposed to help a person recognize these potentials. Activities which enable eudaimonic and hedonistic enjoyment instead of only hedonistic enjoyment are most likely to be worth pursuing in a constant self-realization (Waterman et al., 2008).

The use of eudaimonia in this theory is strongly related to the one of intrinsic motivation of the self-determination theory of Ryan and Deci (Waterman, 2011).

### **Six-factor Model of Psychological Well-Being**

The six-factor model of psychological well-being is based on integration of recurrent themes of positive functioning established in the 1980s (Ryff & Singer, 2008; Ryff, 2013). The attention of that time lied on reports of happiness, satisfaction and positive affect, with minimal focus on the consistence of well-being. There were overlapping themes for what it meant to be optimally functioning. These themes became the foundation to summarize six core dimensions representing key factors of psychological well-being and their conceptual origin: Self-acceptance, purpose in life, autonomy, personal growth, environmental mastery and positive relationships (Ryff, 2013).

The dimension of self-acceptance is to perceive oneself. To have a positive self-regard, awareness of positive and negative sides of oneself and their acceptance. It is a long-term self-evaluation, richer than the normal self-esteem (Ryff & Singer, 2008). Lower self-acceptance is accompanied with a dissatisfaction of one self and disappointment with past occurrences (Ryff, 2013). The dimension of positive relations contains meaningful relations with others. Aristotle wrote of the importance of friendship and love (Ryff & Singer, 2008). To be concerned about the well-being of others, the ability to feel strong connections through empathy, affection and intimacy is a feature of a well-lived life (Ryff, 2013). Personal growth describes the dimension of developing one's potential. It is strongly related to the meaning of Aristotle's eudaimonia. One must be open-minded about new experiences and new challenges in order to achieve continuous personal growth (Ryff & Singer, 2008). Purpose in Life is the dimension of finding one's goal in life, to hold beliefs and give life purpose. The dimension of Environmental Mastery describes the competence to manage the environment, to make effective use of one's surrounding opportunities and change it suitable to personal needs and values (Ryff, 2013). The last dimension of autonomy is to be self-determining and independent. One must evaluate oneself on own personal standards without looking for others' approval (Ryff & Singer, 2008).

### **Other theories of eudaimonia**

While these three theories are more known, they cover only a fraction of concepts of eudaimonia in psychology. Huta and Waterman (2014) summarized elements of eleven different papers and their definition of eudaimonia. They proposed a categorization of well-being into four different categories; orientations, behaviors, experience, functioning.

The first two categories can describe a way of living. Orientations are what a person seeks in life, their values and priorities. These are predictors for the behavior and explain why a person chose this direction of action. Behaviors are the activities one engages in. The term

contains the content of behavior: what a person is doing, their characteristics and what they are engaging in.

The other two categories can describe well-being outcomes. Experiences are the subjective impressions, felt emotions and feelings. Functioning is how far the person has come in their abilities and skills. It is often a mixture from the objective mastery of the environment and the subjective aspect through self-acceptance.

Additionally, Waterman and Huta (2014) assess the degree of a person's eudaimonia in the trait level or the state level. The trait level is more stagnant, measuring the typical degree of eudaimonia. The state level is the degree of eudaimonia in a fixed time period or situation, meaning that its degree can vary with the circumstances. The literature sometimes describes eudaimonia as a trait level or as a mix of both trait and state level.

### **Problems of Eudaimonia**

Eudaimonia is well established in the psychological community as an additional part of the concept of happiness itself, but the definition in papers is often vague or overlapping to hedonism (Vittersø, 2016; Huta & Waterman, 2014; Kashdan et al., 2008; Nussbaum, 2012). This broad conception is a big problem for a coherent science on eudaimonia (Kashdan et al., 2008; Nussbaum, 2012).

There are difficulties accompanying the scientific research of eudaimonia. The philosophical background makes it difficult to translate it into scientific operations, their definition not being especially suited for operationalization purposes. How can one translate the originally objective designed term in a subjective experience? How does a participant decide whether they have reached their full potential and, on the other side, how can a researcher objectively note that this concept is fulfilled (Kashdan et al., 2008)?

Apart from conception confusion between different psychologists, Nussbaum (2012) argues that psychology has been misguided to define key concepts as pleasure, happiness and

positive as unitary, while they are multidimensional. Psychologists try to define the broad concept in quantitative measures, instead of regarding their qualitative qualities. To ask the question “how satisfied one is with one’s life” for example is reducing participants of a questionnaire to define a multidimensional concept on a single scale. They cannot go deeper into the different positive and negative aspects composing the concept and are prevented of giving a well-grounded answer. She also questions what defines positive emotions. Ancient philosophers stress that happiness and sadness are conceptually interconnected, meaning that they cannot be exempt from each other. To love something cannot go without anxiety. There is positive pain to deal with grief in contrast to positive psychologists like Seligman thinking of promoting good feelings and reducing bad feelings.

Kashdan et al. (2008) question the differentiation of hedonia and eudaimonia. There is a tendency with eudaimonic theorists to define hedonic theories to not be sufficient in defining a well-lived life. This distinction has gained widespread acceptance and is used by many researchers as a basis of research, but it is not a proven fact.

### **Difference of hedonia and eudaimonia**

Hedonism and well-being have a long history of being connected. From early Greek philosophers to utilitarian philosophers, the definition has variations from maximizing one’s pleasure to the pursuit of appetites and self-interests. Psychologists adapted a broad view of hedonia, making little distinction between hedonia and well-being. The concept of subjective well-being (SWB) was used to evaluate happiness, with life satisfaction, presence of positive emotions and absence of negative mood being the three components it assesses. In contrast to a more hedonistic view, the term eudaimonic well-being (EWB) was coined (Ryan & Deci, 2001). While SWB viewed happiness as the goal and reason, the EWB concept places happiness as the byproduct of eudaimonic activities. (Waterman, 2010). There is also the concept of Psychological Well-being (PWB) derived and explained in the six-factor model of

psychological well-being (Ryff & Singer, 2008). Waterman (2008) is opposing the equation of EWB and PWB, arguing that PWB is focusing on the pursuit of goals other than subjective experiences of hedonia (Waterman, 2008).

There are many ways to achieve pleasure not only through eudaimonic means, making the distinction not simple (Ryan et al., 2008). Feelings of autonomy and its balance of growth and relatedness are all associated with SWB as hedonic well-being (Sheldon & Niemiec, 2006). Additionally, positive affects as in more hedonic viewed qualities are directly related to eudaimonic happiness (Kashdan et al., 2008). Hicks, Trent, Davis and King (2012) tested positive affect to meaning in life in relation to perceived time limitations. Positive affect has a strong relationship to higher meaning in life; the effect was stronger with participants thinking they had fewer opportunities left to pursue goals.

In the SDT, hedonism is categorized between intrinsic and extrinsic categories. While the pursuit can be used as mean of gaining pleasure for their own sake, it can be instrumentalized as distraction and avoiding responsibilities and function as an extrinsic goal (Ryan et al., 2008).

There seems to be a high covariance between hedonism and eudaimonia. It is suggested that eudaimonia can set off hedonistic enjoyment, while hedonism is less accompanied with eudaimonic enjoyment (Deci & Ryan, 2008). A person engaging in eudaimonic activities can experience happiness and pleasure as characteristics of hedonism (Ryan & Deci, 2001) as well as activities can be both hedonic and eudaimonic motivated (Ryan & Huta, 2010). This correlation was also proven in the field of human-computer interaction (Seaborn, 2016).

### **Measurement of eudaimonia**

As written before, the broad concept of eudaimonia makes standardization difficult (Kashdan et al., 2008; Nussbaum, 2012). Depending on the assessment, there are certain

aspects of eudaimonia which can be unique for their definition and too large to include in the scope of this thesis. There can be same terms, which are defined with small changes as a concept, which could lead to confusion and less accuracy. Thus, this thesis aims on investigating only certain measurement methods of eudaimonia in psychology, respectively the assessments created by the authors of the three psychological theories presented before.

### **Personally Expressive Activities Questionnaire (PEAQ)**

Waterman developed two measurement methods. The Personally Expressive Activities Questionnaire (PEAQ) was constructed in 1993. Huta and Waterman (2014) categorize the assessment of experience in eudaimonia on a state level. The PEAQ asks the participant to list five activities of importance to them and with which they identify with. Afterwards, they have to answer 12 questions (six each for hedonia and eudaimonia) on a 7-point scale about involvement, meaning, pleasure and enjoyment. Personal expressiveness is used as a synonym of eudaimonia by Waterman (2008). It will occur if one's skills and talents are promoted in correlation to their potential, experiencing self-realization. There are four logical categories about the relation of personally expressive activities and hedonic happiness. The first category emphasizes both eudaimonic and hedonic enjoyment, the second is only hedonic enjoyment, the third is neither hedonic nor eudaimonia and the fourth is eudaimonic enjoyment without hedonia which is considered a theoretical null in being nonexistent (Waterman, 2005).

Their findings support that eudaimonic experience can bring forth hedonic happiness, but it is not a necessary ingredient. Despite the common variance, it can be assumed that these two experiences of eudaimonia and hedonia are distinct. Feelings of personal expressiveness were stronger associated with a sense of importance, their correlated activities described with feelings of challenge, competence and high level of concertation. More hedonic inclined actives were more related to the feeling of relaxation, losing track of time and forgetting one's

own problems, and unrelated to challenges or skills (Waterman, 1993). See Appendix A for the items of the PEAQ.

Mueller, Mekler and Opwis (2016) successfully used the PEAQ to discern characteristics in experiences with interactive technologies. Interesting to note is that personal expressiveness was correlated to both negative and positive aspects. A plausible interpretation would be the correct reflection of one's struggles and the accompanying negative affects in reaching one's true self and positive affects in successful realizations. The psychological needs for competence, popularity and security were also correlated to eudaimonia but not hedonic enjoyment.

### **Questionnaire for Eudaimonic Well-being (QEWB)**

The second method is the Questionnaire for Eudaimonic Well-being constructed in 2010. The goal is to be an operational assessment of eudaimonic well-being with items based closely on philosophical theories of eudaimonia. The questions were either reflecting the philosophical view point in pursuing excellence for example, or more focused on subjective experiences like the feeling that the activity is personally expressive. Huta and Waterman (2014) categorize the assessment for eudaimonic functioning at the trait level. This stands in contrast to earlier research of Waterman, which was focused more on experiences with specific activities. Part of the measurement is the concept of self-discovery, including the elements of eudaimonist philosophy of striving towards self-realization (Waterman et al., 2010) and the psychological importance of identity formation as explained in the eudaimonic identity theory (Waterman et al., 2008). Other items include the perceived development of one's best potentials, a sense of purpose and meaning in life, investment of significant effort in pursuit of excellence, intense involvement in activities and enjoyment of activities as personally expressive (Waterman et al., 2010). Liked activities with high-effort attributes were more associated with personal expressiveness, self-realization and other concepts of

eudaimonia than low-effort activities (Waterman, 2005). See Appendix B for the full QEWB. There is no research of the QEWB in the field of UX as to the knowledge of the author of this thesis.

### **Hedonic and Eudaimonic Motives for Activities (HEMA)**

The Hedonic and Eudaimonic Motives for Activities (HEMA) was constructed 2010 by Huta & Ryan. The HEMA-scale distinguishes between hedonic motives and eudaimonic motives. Huta and Waterman (2014) categorize the measurement for eudaimonic orientations on both the state or trait level depending on the used instructions. For every activity named they question what kind of motives are underlying, if it is hedonic, eudaimonic, both or neither. Hedonia and eudaimonia are presented as parallel concepts in the form of distinct subscales (Huta & Ryan, 2010). They address several critiques of Kashdan et al. (2008). As reaction to their statement that psychologists are oppressing participants to adjust their own model of well-being (Kashdan et al., 2008), they let the participants assess their activities on their own in hedonic and eudaimonic motives on a 7-point scale. The items are either hedonic motivated, or eudaimonic motivated. They found out, that hedonic motivated activities relate stronger to positive affect in the short-term, while eudaimonic motivated activities were more related in a 3-month follow-up. Hedonia was also more strongly correlated to carefreeness. The results supported that meaning was a concept more associated with eudaimonic activities. Eudaimonia was also associated to elevating experience in the 3-month follow-up. Both hedonia and eudaimonia were related to vitality, assisting in a heightened sense of aliveness. Overall, Ryan & Huta (2010) suggest a complementary role of hedonia and eudaimonia for well-being. They cannot exclude, that retrospective biases, self-presentation biases and lack of insight could have influenced the self-report measures of the participants.

Based on the review of Huta and Waterman (2014), Huta (2016) added a fifth item to the HEMA eudaimonia scale. This revised HEMA scale is called HEMA-R. The new item

tries to assess the concept of meaning, which is included in most eudaimonia research but was excluded until then because of the fear that the assessment would measure too broad of a concept. See Appendix C for the HEMA. Items 1, 4, 6, 7, 9 and 10 represent hedonia, while the items 2, 3, 5, and 8 stand for eudaimonia. Items 4, 6 and 9 reflect pleasure, 1 and 7 comfort. Items 3 and 8 reflect the concept of authenticity, 5 and 8 excellence and item 2 growth. The added item 10 reflects the concept of meaning of eudaimonia (Huta, 2016).

The HEMA scale is easily convertible to the field of human-computer interaction. Seaborn (2016) argues that items like “During the [activity], how much were you seeking enjoyment?” can be easily translated to “During the game, how much were you seeking enjoyment?”, without the loss of the original meaning. Also, the use of a Likert scale is already well-known in the field of human-computer interaction and quite often used, making a comparison between different constructs possible.

Mekler and Hornbæk (2016) used the HEMA scale in measuring user-generated experiences with interactive technology. In their study, they found out that eudaimonia and hedonia were relatively independent of another, proving that a differentiation can be possible. Eudaimonia was more associated with positive affects and fulfillment of needs. Also, hedonic motives were not perceived to be important on a long-term scale.

### **Psychological Well Being (PWB) Scale**

Based on the six-factor model of psychological well-being. In 1996, Ryan and Deci created a construct-oriented measurement. Huta and Waterman (2014) categorize the measurement for eudaimonic functioning on a trait level. They constructed definitions of high and low scores for each of their six dimensions of self-acceptance, positive relations with others, personal growth, purpose in life, environmental mastery and autonomy (Ryff & Singer, 2008). Initially, there were 20 items per scale and 120 in total. There are different versions now; a 14-item scale for 84 items in total, a 3-item scale for 21 items in total and the

newest a 7-items scale for 42 items which seems to adequately balance the scale length with the depth of the measurement. It is already known that certain personality traits predict higher scores in the dimensions and higher well-being (Ryff, 2014).

The subscales of Ryff's PWB 42-item version measure average levels of well-being adequately but lack precision in high levels. Because of the many different item lengths for each assessment, it is hard to make assumptions about the overall effectivity. Reports suggest that there are high inter-factor correlations and that items are spanning over several factors (Abott, Ploubidis, Huppert, Kuh and Croudace, 2010; Springer & Hauser, 2006). The psychological well-being scale could not measure six distinct dimensions of psychological well-being with a satisfactory accuracy (Springer & Hauser, 2006).

Kamp and Desmet (2014) adapted parts from the psychological well-being scale for a new measurement in UX. They differentiated their items statements, measuring pragmatic, hedonic and eudaimonic qualities with the aim of identifying different product qualities. As of now, to the knowledge of the author of this thesis there is no research about the effectivity of this assessment.

### **Discussion**

As already described, the definition of eudaimonia is broad and often vague (Vittersø, 2016; Huta & Waterman, 2014; Kashdan et al., 2008; Nussbaum, 2012). In Waterman's theory of eudaimonia for example, pleasure is a key factor of eudaimonia. In comparison to that, Ryff's theory of psychological well-being does not contain pleasure as a central element of well-being. In the self-determination theory of Ryan & Deci, pleasure is also not a part, but is picked up in their concept of hedonic well-being (Vittersø, 2016). Nussbaum (2012) even questions pleasure actively as a part of eudaimonia, saying that Aristotle's definition is in some special cases not related to pleasure at all.

There is also a difference in the term of autonomy in the SDT and the six-factor model of psychological well-being. While the SDT mentions that autonomy is not necessarily related to independency (Ryan & Deci, 2000; Ryan et al., 2008), the six-factor model of psychological well-being does not make this clear differentiation (Ryff & Singer, 2008). For measurement purposes, it is unclear whether independency could be an item of interest.

As well as different variations of concepts, Ryff and Singer (2008) use the concept of psychological well-being (PWB) as equal to eudaimonia, Waterman (2010) is averse to that and questions if the concepts of subjective well-being (SWB), eudaimonic well-being (EWB) and PWB are distinguishable conceptions of well-being or are all underlying to the same construct. It was not always directly clear when well-being in general was used as a synonym to eudaimonia or not, when well-being only included hedonic aspects, or when it did both. For example, SWB is normally more inclined to hedonistic views in psychology. But depending on the paper, SWB also contains eudaimonic aspects like virtue and personal significance (Deci & Ryan, 2008; Desmet & Pohlmeier, 2013).

For these reasons, this thesis proposes a version of eudaimonia from several summarizations of the mentioned concepts and aspects for eudaimonia on basis of the three psychological theories listed in this thesis. The author suggests this with the mindset that the many specific aspects described in theory would be perceived as too overlapping by participants in a real setting in order to be operational, and could not lead to correlating effects between items.

Included should be a summarization of the concepts of competence, environmental mastery and personal growth. Competence is included in the SDT as a need to proficiently deal with one's environment (Ryan & Deci, 2008). Similar is environmental mastery and personal growth as described as a dimension of the PWB. (Ryff, 2013). To be able to find suitable opportunities and to find personal potential and one's best to act on is also part of the

eudaimonic identity theory too (Waterman et al., 2008). An eudaimonic oriented interaction should facilitate the enhancement of growth and competence in talents and abilities. It should help a user to feel more adapted to one's environment and focus on more pragmatic qualities which an interaction could provide.

Another factor should include a summarization of the concept of personal expressiveness, autonomy, self-acceptance and mindfulness. Autonomy is described in the SDT as to feel congruent with one's behavior and to feel volition in the act (Ryan & Deci, 2000). This definition is similar to that of the definition of personal expressiveness of Waterman's eudaimonic identity theory, even if it is used there as a synonym for the definition of eudaimonia as a whole (Waterman, 2008). When one feels that a behavior fits to one's will it should in conclusion also be an expressive behavior of one's person. Self-acceptance is another dimension of the PWB. It describes to be aware and accepting of one's strengths and weaknesses (Ryff & Singer, 2008). Mindfulness is the third concept for eudaimonia of the SDT. It describes being aware and accepting of one's environment and being in a reflective examination (Ryan & Deci, 2008b). There are similarities to the environmental mentioned before. As interpreted by the author of this thesis, the first summarization there is a focus on the following act of a person, while in this factor it is only the ability of perceiving these opportunities itself. Self-acceptance and mindfulness are incorporated here, because it is important to know oneself and be aware of one's surroundings to really express oneself and act autonomously.

The last factor should be a summarization of the concepts of purpose, meaningfulness, relatedness and positive relations. Purpose is mentioned in the eudaimonic identity theory as defining the purpose of one's life (Waterman, 2011). In the PWB, purpose is mentioned as a dimension of finding one's goal in their life and their beliefs (Ryff, 2013). For the author of this thesis, these definitions describe the process of finding goals which are meaningful for

oneself – something which is of larger significance. This factor should include the perception of a bigger meaning, an interaction which deeply moves us in a way. Relatedness as part of the SDT is the need to feel connected to others and have meaningful relations (Ryan & Deci, 2000). Positive relations used in the PWB also defines meaningful relations to others (Ryff & Singer, 2008). Depending on the intended aim of an interaction, it makes sense to exclude the factor of relation to other persons in a possible assessment. Carpenter and Mekler (2019) presented different ways of evaluating meaning to companies. Four criteria were responded most thoughtfully: meaningfulness in an everyday setting (How it can be adapted to fit our needs in a given moment), value over function (How it can offer more than convenience), purpose (personal goals) and significance (beyond momentary interaction).

On basis of this summarization, the author proposes an own assessment of eudaimonia. It lends adapted items from the HEMA scale and the PEAQ, as well as adding new items. Due to the lack of precision in the PWB Scale (Abott et al., 2010; Springer & Hauser, 2006), a further usage than as of now in UX can be questioned. While Kamp and Desmet (2014) did make an assessment on basis of the PWB Scale, there is no literature on the effectiveness as of now. The PWB Scale could be of use in assessing general well-being, but the distinction between the different dimensions can be not clear cut (Springer & Hauser, 2006). To adapt certain items of it in order to measure a specific aspect of eudaimonia could be problematic. Also, the items of the QEWB prove difficult to convert due to the focus on eudaimonic experiences on a trait level. For these reasons, the adoption of items of either the PWB Scale or the QEWB were rejected in the presented operationalization of eudaimonia.

For the first operationalization, a converted version of the second item of the HEMA scale representing growth in the original scale is adopted: “The [interaction] support me in developing a skill, learn or gain insight into something”. This covers the aspect of personal growth. Additionally, the facilitated adaption to one’s environment as in the concept of

environmental mastery is concluded as a new item: “The [interaction] supports me to deal with tasks easier”.

For the operationalization of the second summarization the author proposes an adaption of the third item of the HEMA scale, converting it to: “The [interaction] lets me do something I believe in”. As a second item, an adaption of the third item of eudaimonia of the PEAQ is chosen: “The [interaction] gives me feelings that this is who I really am”. These two items reflect that the interaction enables one to engage in a way which one finds personally expressive and autonomous, a behavior one feels congruent to, something one believes in and which can be used to define oneself.

For the operationalization of the third summarization, the author proposes a modification of one of the criteria which were responded as more thought-provoking in the study of meaning by Carpenter and Mekler (2019). Value over function, how it can offer more than convenience is modified to: “The [interaction] offers more than convenience”. For the second item is replaced with a new item: “The [interaction] deeply moves me”. The first item describes a bigger significance to the interaction, the second item the affective impact of an interaction. An item of the concept of meaning in the HEMA-scale was not included, seeing as the focus of this thesis lies more on the meaning for oneself and possible interaction with one’s environment instead of reducing the meaning only in relation with contributing to others and one’s surroundings (Huta, 2016).

Summarizing, six items were introduced:

1. The [interaction] supports me in developing a skill, learn or gain insight into something.
2. The [interaction] supports me to deal with tasks easier.
3. The [interaction] lets me do what I believe in.
4. The [interaction] gives me feelings that this is who I really am.

5. The [interaction] offers more than convenience.
6. The [interaction] deeply moves me.

### **Limitations and further research**

This thesis provides a possible operationalization on basis of the self-determination theory, the eudaimonic identity theory and the six-factor model of psychological well-being, including parts of the HEMA scale and the PEAQ.

In the scope of this thesis, the focus was set only on three theories and their respective assessments. There are many other psychological theories with additional concepts not included, as well as other assessments with items, which could be of interest. Some items are proven effective in research and could fit better to the here defined factors. For further research, it would prove important to define a standardization of the term of eudaimonia, summarizing all concepts of eudaimonia researched in psychology. As of now, it is too broad to include all aspects of eudaimonia effectively into an assessment and the vagueness makes it difficult to precise measurement and comparison between concepts.

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**Appendix A: Items on the feelings of personal expressiveness (eudaimonia) and hedonic enjoyment (hedonia) scales of the Personally Expressive Activities Questionnaire (PEAQ).**

The first step in administering the PEAQ is to have respondents identify five personally salient activities that they would use to describe themselves to another person. These activities are then rated on a variety of scales including those for eudaimonia and hedonia.

Feelings of personal expressiveness (eudaimonia) items

1. This activity gives me my greatest feeling of really being alive.
2. When I engage in this activity I feel more intensely involved than I do when engaged in most other activities.
3. This activity gives me my strongest feeling that this is who I really am.
4. When I engage in this activity I feel that this is what I was meant to do.
5. I feel more complete or fulfilled when engaging in this activity than I do when engaged in most other activities.
6. I feel a special fit or meshing when engaging in this activity.

Hedonic enjoyment (hedonia) items

1. When I engage in this activity I feel more satisfied than I do when engaged in most other activities.
2. This activity gives me my strongest sense of enjoyment.
3. When I engage in this activity I feel good.
4. This activity gives me my greatest pleasure.
5. When I engage in this activity I feel a warm glow.
6. When I engage in this activity I feel happier than I do when engaged in most other activities.

Note. From Waterman (2008)

**Appendix B: The Questionnaire for Eudaimonic Well-Being.**

This questionnaire contains a series of statements that refer to how you may feel things have been going in your life. Read each statement and decide the extent to which you agree or disagree with it. Try to respond to each statement according to your own feelings about how things are actually going, rather than how you might wish them to be.

Please use the following scale when responding to each statement.

Strongly Disagree 0 1 2 3 4 Strongly Agree

1. I find I get intensely involved in many of the things I do each day
2. I believe I have discovered who I really am.
3. I think it would be ideal if things came easily to me in my life. (R)
4. My life is centered around a set of core beliefs that give meaning to my life.
5. It is more important that I really enjoy what I do than that other people are impressed by it.
6. I believe I know what my best potentials are and I try to develop them whenever possible.

7. Other people usually know better what would be good for me to do than I know myself. (R)
8. I feel best when I'm doing something worth investing a great deal of effort in.
9. I can say that I have found my purpose in life.
10. If I did not find what I was doing rewarding for me, I do not think I could continue doing it.
11. As yet, I've not figured out what to do with my life. (R)
12. I can't understand why some people want to work so hard on the things that they do. (R)
13. I believe it is important to know how what I'm doing fits with purposes worth pursuing.
14. I usually know what I should do because some actions just feel right to me.
15. When I engage in activities that involve my best potentials, I have this sense of really being alive.
16. I am confused about what my talents really are. (R)
17. I find a lot of the things I do are personally expressive for me.
18. It is important to me that I feel fulfilled by the activities that I engage in.
19. If something is really difficult, it probably isn't worth doing. (R)
20. I find it hard to get really invested in the things that I do. (R)
21. I believe I know what I was meant to do in life.

(R) Item is reverse scored.

Note. From Waterman et. al (2010)

**Appendix C: The HEMA questionnaire (hedonic and eudaimonic motives for activities) and the HEMA-R (HEMA- revised)**

To what degree do you typically approach your activities with each of the following intentions, whether or not you actually achieve your aim?

1. Seeking relaxation?
2. Seeking to develop a skill, learn, or gain insight into something?
3. Seeking to do what you believe in?
4. Seeking pleasure?
5. Seeking to pursue excellence or a personal ideal?
6. Seeking enjoyment?
7. Seeking to take it easy?
8. Seeking to use the best in yourself?
9. Seeking fun?
10. Seeking to contribute to others or the surrounding world?

The items are rated from 1 (not at all) to 7 (very much) Items 1–9 make up the HEMA; items 1–10 make up the HEMA-R

Note. From Huta (2016)