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„On Becoming Authentic: A Self-Guided Web-Based Intervention Based on Existential Analysis"

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“It's hard to practice compassion
when we're struggling with our authenticity
or when our own worthiness is off-balance.”

— Brené Brown

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Abstract

Background: A multitude of web-based interventions (WBIs) have shown improvements in various psychological problem types. However, only a few therapeutic frameworks have been explored as a foundation.

Objectives: The study's primary purpose was to research the feasibility of employing a WBI based on an existential therapeutic framework: »*Existential Analysis*«. The second aim was to contribute to the ongoing discussion about whether trait authenticity can be fostered by therapy or counselling.

Methods: In a two-arm randomised controlled trial, the effects of a five-day self-guided WBI have been examined as compared to a wait-list control condition with a self-reflection task in the meantime. 244 adults were randomised to the intervention group (IG, N=122) or the control group (CG, N=122). Self-rate Questionnaires were filled out directly before and after the assigned treatment, and the gain-scores between the groups' completers have been analysed.

Results: Data were collected between October 2017 and February 2019. No significant effects between the overall analysed completers of the IG (n=37) and CG (n=63) have been found. However, striking effects have been observed considering the interaction-effect: *therapeutic experience*. Comparing completers of the IG (n=10) and CG (n=20) with at least some therapeutic experience, but not more than 30 hours, showed vast differences in gain-scores on all self-rate Questionnaires. The most striking effects occurred within the »*Test of Existential Motivations*« (d=1.15, p=.002) and specifically on the sub-scale »*value of self*« (d=1.82, p<.001). This sub-scale reflects the self-perceived ability to be oneself, including to value and accept one's uniqueness.

Conclusions: The study's findings indicate the feasibility of »*Existential Analysis*« as the basis of WBIs, and that some aspects of self-perceived authenticity are fosterable. Further studies are required to examine the nature of the interaction-effect: *therapeutic experience*, and more participants are needed to verify the WBI's striking effects.

Keywords

Self-guided Web-based Intervention, WBI, Existential Analysis, Authenticity, Randomised Controlled Trial, RCT, Test of Existential Motivations, TEM, Authenticity Scale, Self-Esteem Scale

Zusammenfassung

Hintergrund: Für unterschiedliche web-basierte Interventionen (WBIs) konnte bereits gezeigt werden, dass diese zu positiven Veränderungen bei einem breiten Spektrum psychologischer Problemfelder führen können. Dabei haben bisherige Studien allerdings nur einige wenige Psychotherapierichtungen erforscht.

Zielsetzungen: Das primäre Ziel der Studie war die Eignung der existenziellen Psychotherapierichtung: »*Existenzanalyse*« als Grundlage für eine WBI zu untersuchen. Sekundäres Ziel war es, einen Beitrag zur bestehenden Diskussion zu leisten, ob Authentizität durch Psychotherapie oder Beratung gesteigert werden kann.

Methoden: In einer randomisierten Zwei-Arm-Studie, wurde die Auswirkung einer fünf-tägigen selbstgeleiteten WBI einer Wartelisten-Kontroll-Bedingung mit Selbstreflexionsaufgabe gegenübergestellt und analysiert. 244 Erwachsene wurden zufällig der Interventionsgruppe (IG, N=122) oder der Kontrollgruppe (KG, N=122) zugeteilt. Direkt vor und nach zugewiesener Behandlung wurden Selbsteinschätzungs-Fragebögen ausgefüllt und die Veränderungswerte zwischen den Gruppen analysiert.

Ergebnisse: Die Daten wurden zwischen Oktober 2017 und Februar 2019 gesammelt. Im Vergleich aller, die die zugewiesenen Aufgaben der IG (n=37) und KG (n=63) abgeschlossen hatten, wurden keine signifikanten Veränderungen gefunden. Allerdings haben sich enorme Veränderungen bei der Berücksichtigung des Interaktionseffekts: *therapeutische Vorerfahrung* gezeigt. Die starken Veränderungen traten in allen Selbsteinschätzungs-Fragebögen auf, allerdings ausschließlich im Vergleich zwischen jenen der IG (n=10) und KG (n=20), die zumindest 1 Stunde bis maximal 30 Stunden therapeutische Vorerfahrung hatten. Die stärkste Veränderung wurde im »Test zur Erfassung der existentiellen Motivationen« ($d=1.15$, $p=.002$) und besonders in der Subskala »Selbstwert« ($d=1.82$, $p<.001$) festgestellt. Diese Subskala zeigt, inwieweit TeilnehmerInnen empfinden, so sein zu können, wie sie sind und sich mit ihrer Einzigartigkeit annehmen und wertschätzen können.

Schlussfolgerungen: Die Ergebnisse deuten auf die Eignung der »*Existenzanalyse*« als Grundlage für WBIs hin und zeigen, dass einige Aspekte von Authentizität durch den Einsatz therapeutischer Methoden gesteigert werden können. Weitere Studien sind notwendig, um den stark ausgeprägten Interaktionseffekt: *therapeutische Vorerfahrung* besser zu verstehen. Weiters müssen die enormen Auswirkungen der WBI mit mehr TeilnehmerInnen verifiziert werden.

Schlagworte

Selbst-geleitete web-basierte Intervention, Existenzanalyse, Authentizität, randomisierte kontrollierte Studie, RCT, Test zur Erfassung der existentiellen Motivationen, TEM, Authentizitäts-Skala, Selbstwert-Skala

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List of Abbreviations and Acronyms

AS… Authenticity Scale

CBT… Cognitive Behavioural Therapy

CG… Control Group

EA… Existential Analysis

GLE… Society of Logotherapy and Existential Analysis

IBI… Internet-based Intervention

IG… Intervention Group

KGA-Model…Kernis and Goldman Authenticity-Model

PEA… Personal Existential Analysis

RCT… Randomised Controlled Trial

SDT… Self-Determination Theory

SES… Self-Esteem Scale

TEM… Test of Existential Motivations

WBI… Web-based Intervention

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1 INTRODUCTION

1.1 Background

Being authentic has been valued throughout history and was correlated with self-esteem, subjective and psychological well-being (Brian Middleton Goldman & Kernis, 2002; Wickham, Williamson, Beard, Kobayashi, & Hirst, 2016; Wood, Linley, Maltby, Baliousis, & Joseph, 2008). More specifically, authenticity was associated with the ability to buffer the adverse effects of interpersonal conflict on self-esteem and life satisfaction (Wickham et al., 2016). High levels of authenticity have also been correlated with high levels of self-awareness and self-reflection as well as less self-rumination, which in turn was associated with less distress and increased life satisfaction (Boyraz & Kuhl, 2015).

Authenticity has been defined as a three-part construct, constituted of self-alienation (the difference between one's actual experience and one's conscious awareness of it), authentic living (the congruence of one's conscious awareness and behaviour) and accepting external influence (including the belief of having to meet others expectations) (Wood et al., 2008). The authors of that construct challenged the common belief in counselling and therapy, whether trait authenticity can be fostered (Wood et al., 2008). However, the claim that clients' authenticity can be fostered has been supported by Boyraz and Kuhl (2015), who used Wood *et al.'s (*2008) measure instrument, the Authenticity Scale, and suggested that *"interventions that focus on increasing self-reflection and reducing rumination can enhance authenticity and well-being"* (Boyraz & Kuhl, 2015, p. 74).

In recent years a multitude of »*Internet-Based-Interventions (IBIs)*« has been developed and studied outlining their advantages such as cost-effectiveness, availability and flexibility (Barak, Hen, Boniel-Nissim, & Shapira, 2008; Sander, Rausch, & Baumeister, 2016). A specific type of an IBI is a »*Web-Based-Intervention (WBI)*«, which is a mostly self-guided online program that "*attempts to create positive change and or improve/enhance knowledge, awareness, and understanding via the provision of sound health-related material and use of interactive web-based components*" (Barak, Klein, & Proudfoot, 2009, p. 5).

Although guided WBIs are more effective as unguided WBIs, the implementation cost and scalability of unguided WBIs provides increased access and availability, rendering them more suitable to address the prevention of mental disorders at a national scale (Baumeister, Reichler, Munzinger, & Lin, 2014; Karyotaki et al., 2015).

A central concern within E-Mental Health studies is the high drop-out rate of participants before study completion. Therefore, usage metrics and determinants of attrition need to be gathered and analysed to identify the reasons for dropouts (Eysenbach, 2005).

While a variety of problem types of psychological nature have been successfully addressed by IBIs interventions (Barak et al., 2008), none addressed the issue of becoming more authentic. Another lack in the current body of research has been outlined in recent meta-analyses on IBIs that reported the predominant use of »*cognitive behavioural therapy (CBT)*« as the interventions' therapeutic framework (Davies, Morriss, & Glazebrook, 2014; Sander et al., 2016).

Barak *et al.* (2008) hypothesised that other therapeutic approaches might be as well suited as WBIs based on CBT.

Within the literature review, no study of a WBI has been encountered that was based on an existential therapeutic framework. Existential therapies can be defined as *"psychological interventions that explicitly address questions about existence"* (Vos, Cooper, & Craig, 2015, p. 115).

Existential Analysis is a branch within the vast field of existential therapies that defines authenticity as the finding of one's being regarding one's inner coherence (Längle, 1998). The »*Personal Existential Analysis (PEA)*« is a practically applicable method within the therapeutic framework of »*Existential Analysis (EA)*«. It serves as a guide to existential therapists in helping their clients live an authentic life (Längle, 2000).

1.2 Research Focus and Value

In the literature exist two gaps this study aims to narrow. First, in the literature review, no study has been encountered that examined a WBI based on an existential therapeutic approach. Second, no WBI focused on fostering authenticity.

The main focus of this research is to gain primary insights of whether an existential therapeutic approach provides a suitable foundation for a self-guided WBI.

As unguided WBIs bear the capability to target health-related issues at a large scale, it is vital to explore the spectrum of possible WBIs, including the already existing therapeutic approaches. In general, different therapeutic methods and approaches yield different core strengths and weaknesses. Therefore, encompassing mostly interventions based on CBT limits the WBIs'suitable areas of application.

The second focus is to contribute to the ongoing dispute of whether trait authenticity can be fostered by counselling or therapy. As being authentic increases well-being and satisfaction with life (Brian Middleton Goldman & Kernis, 2002; Wickham et al., 2016; Wood et al., 2008), it is of value to provide the means of fostering authenticity at a large scale.

1.3 Research Aims and Objectives

The main objective is to provide preliminary insights into the feasibility of employing WBIs based on existential therapies and guiding future research. The specific objective of this Pilot Study is to develop an unguided WBI based on PEA to foster participants self-perceived authenticity and examine the WBI's effectiveness.

The aims of the Pilot Study are:

- Develop and implement an unguided WBI based on the PEA to foster authenticity
- Analyse the WBI's participants' attrition
- Examine the effectiveness of the WBI to foster self-perceived authenticity
- Determine which (if any) aspects of authenticity can be fostered by the WBI

2 Literature Review

2.1 Existential Analysis (EA)

2.1.1 Existential Therapies

A multitude of existential therapies exists, based on different theoretical assumptions, geographic and linguistic differences and due to a lack of a single accepted founder (Correia, Cooper, Berdondini, & Correia, 2018). Their similarity is a phenomenological and person-centred approach as well as the therapeutic focus on existential aspects of life (Vos, Cooper and Craig, 2015).

Existential therapies can be defined as *"psychological interventions that explicitly address questions about existence"* and are based on at least one of the following existential philosophical assumptions: (Vos et al., 2015, p. 115).

1. "*Human beings are orientated to, and have a need for, meaning and purpose*"
2. "*Human beings have a capacity for freedom and choice, and function most effectively when they actualize this potential and take responsibility for their lives*"
3. "*Human beings will inevitably face limitations and challenges in their lives, and function most effectively when they face—rather than avoid or deny— these givens*"
4. "*The subjective, phenomenological flow of the individual's experiencing—including all senses, both negative and positive experiences—is a key aspect of being human, and therefore a central focus for psychotherapeutic work*"
5. "*Human experiencing is fundamentally interrelated with—rather than separate from—the experiencing of other human beings and with its world*"

(Vos et al., 2015, p. 115)

The following sections show that EA incorporates all assumptions above.

Taxonomy of Existential Therapies

The research conducted by Correia *et al.* (2018) analysed the body of literature on existing taxonomies of existential therapies outlining the following four main branches:

1. Daseinsanalysis
2. Existential-humanistic
3. Existential-phenomenological
4. Logotherapy and/or Existential Analysis

(Correia et al., 2018)

In most of the literature, the fourth main branch is referred to as »*meaning or logo-therapy*« (Correia et al., 2018; Vos et al., 2015). However, referring to their own previous work Correia *et al.* (2018, p. 4) argued that *"Frankl and Längle are considered its[that main branches] most influential authors [*(Cooper, 2012; Craig, Vos, & Correia, 2016)*]".* To include and outline the importance of Längle's developments on Frankl's Logotherapy Correia *et al.* (2018) appended the term »*Existential Analysis*« to the branches name.

2.1.2 Split between Logotherapy and EA

At first, Frankl and Längle collaborated with the shared aim of developing and spreading Logotherapy. In 1982 the *»Society of Logotherapy and Existential Analysis (GLE)*« was founded with Frankl as its honorary president. Attempting to create a full training in psychotherapy, many members of the GLE viewed Logotherapy as limited due to a lack of specific teachable tools (Längle, 2015). As reported by Längle (2015), Frankl intended Logotherapy to be

an extension to the psychotherapies in the 1930s, rather than an own school of psychotherapy. In agreement with that, Längle judged Frankl's Logotherapy as hardly usable as a psychotherapy on its own but *"an anthropological background for the application of other psychotherapies"* (Längle, 2015, p. 73).

In the beginning Frankl approved of the GLE's first methodological developments to therapeutically apply Logotherapy. However, in 1991 they split up, due to different core assumptions. Längle (2015) presented the importance of existential »*meaning*« as the root of their differences. Frankl viewed the origin of all psychopathology as a lack of existential »*meaning*« trying to understand most psychopathology *"through the perspective of a substantial loss of meaning"* (Längle, 2015, p. 74).

But, not all members of the GLE agreed with Frankl's view. Längle (2015, pp. 74–75) defined the opposing view within the GLE by describing the lack of existential meaning as:

- *"... a measure of the quality of life ... [but] no further information about the reasons or causes of why it is diminished or improved*" (i.e. In that view, there is no single cause to attribute a lack of existential meaning to. Being aware of a client's lack of existential meaning serves merely as an indicator of a lower quality of life and a guide to the therapist in searching for its cause.)
- *"... the result of many different causes, such as the suffering [of] underlying deficits, conflicts and problems"*
- *"... a feeling that the direction of life is missing existential values"*
- rooted in *"...insufficient perception of reality, values and of oneself"*

Längle (2015, pp. 74–75)

Interestingly, the reasons Frankl named for leaving the GLE did not explicitly outline the opposing view on the importance of »*meaning*«. Instead he named, as reported by Längle (2015), the following reasons:

1. The inclusion of biographical work in psychotherapy.
2. The development of the PEA (see 2.1.7).
3. The GLE's requirement of too many hours of self-experience to become a therapist within the GLE.

(Längle, 2015)

However, the first two reasons incorporate their different view on the importance of clients' lack of existential »*meaning*« in psychotherapy:

1. Biographical work requires to look at clients' past. Therefore, its inclusion in EA expresses the attitude that a lack of existential »*meaning*« is not the root of all psychopathology, as »*meaning*« can never be constructed around a past experience (Längle, 2003c).
2. Further, looking at the PEA, the focus shifts towards meeting clients' personal requirements first, in order to be able to help clients find a meaningful existence (Längle, 1993).

Today, these differences are still important, as they are the root of the existence of two separate schools of Logotherapy and/or Existential Analysis. Trying to understand the need for their existence Reitinger (2017) researched to what extent their underlying theories have diverged. She concluded that due to their different main assumptions and altered main concepts (i.e. »*person*«, »*freedom*«, »*responsibility*«, »*meaning*«) these must be viewed as two separate theories, having more differences than similarities (Reitinger, 2017).

Reitinger (2017) outlined their few similarities as:

1. … viewing humans in a non-reductionistic way, not being completely causally determined by including the noetic (spiritual) dimension of a person.
2. … the importance of »*meaning*« to live a »*fulfilling existence*« (see 2.1.10).
3. … the importance of »*self-distancing*« and »*self-transcendence*« to experience »*freedom*« and »*responsibility*«.

(Reitinger, 2017)

At the same time these similarities are limited as their concepts of »*person*«, »*meaning*«, »*freedom*« and »*responsibility*« differ (Reitinger, 2017). The main difference is Längle's shift to a phenomenological orientation, putting the subjective experience at the centre of attention (Reitinger, 2017).

To indicate the difference to Frankl's prior work, the GLE already referred to most of their first developments as existential analytic work instead of logotherapeutic work (Längle, 2015).

Following that practice, in this thesis Existential Analysis (EA) is used to refer to the GLE's developments and changes only. That is especially important, as both use the same labels for their core concepts but define them differently. Therefore, the concepts of the following sections refer to the definitions in EA, unless Logotherapy is explicitly named.

2.1.3 Definition of Existential Analysis

EA is a *"phenomenological-personal psychotherapy with the aim of enabling a person to experience his or her life freely at the spiritual and emotional levels, to arrive at authentic decisions and to come to a responsible way of dealing with himself or herself and the world around them."*
(Längle, 2003c, p. 3)

As a phenomenologically oriented psychotherapy the clients' subjective experiences are key to any of its methods (Längle, 2003a). It is assumed that the clients' subjective experiences hold all therapeutically relevant information of any situation worked on in the therapeutic setting. Clients' subjective experiences are in constant interplay between external information and internal forces (Längle, 2003a). If clients cannot freely experience their life, EA assumes that there is a mental block between the inner and the external world. Such a block can be located in clients' subjective experiences as a perturbance in their processing of external information (Längle, 2003a).

2.1.4 Personal Values

EA assumes that a meaningful way of living is only possible if one can realise own »*personal values*«. From a personal point of view a decision can only be considered as "good" if it is based on the decisionmakers affected »*personal values*«. Therefore, it is crucial to notice, recognise and experience »*personal values*« in one's life (Längle, 2003d).

Importance in EA

Längle approximated that a quarter of time spent in psychotherapy is dedicated to work on inhibited and blocked sensitivity to clients' »*personal values*« (Längle, 2003d).

Definition

»*Personal values*« must not be confused with universal values. On the contrary, a »*personal value*« refers to the immediate and subjective experience that something is experienced as "good" (Längle, 2003d). Like every other experience one cannot fully express or pass it on to another. A »*personal value*« is always moving the person on the inside and can mainly be grasped through one's feelings (Längle, 2003d). This results in a bidirectional relationship between

»*personal values*« and feelings (Längle, 2003d). With the following examples, Längle (2003d) tried to show the broad variety of objects to which »*personal values*« can refer to:

1. other human beings (the more we love the other person, the higher the personal value connected to that person),
2. experiences (e.g. sunsets, holidays, deep conversations, …),
3. material objects (e.g. books, vehicles, favourite clothes, …),
4. mental objects (e.g. thoughts, ideas, …)

(Längle, 2003d).

Any of the mentioned objects above can only be of »*personal value*« to someone if the person has established a relation with that object (Längle, 2003d).

In pointing out the importance of that relation, one can follow Längle's (2003d) conclusion that it is not possible to pass on a »*personal value*« to others as they cannot have the same relation with the referred object. There are not two relations that are the same.

Values and Non-Values

However, not every object we have a relation with is referred to by a »*personal value*«. Längle named another requirement, which can be experienced by asking oneself if the closeness and existence of the object, is experienced as positive. If one can experience the feeling towards the object as: **"Good, that you(it) exist(s)."**, one experiences its »*personal value*« (Längle, 2003d) with its intensity. Normally, a value is something with a positive impact on one's life, while everything harmful and destructive to one's life is experienced as a non-value (Längle, 2003d).

The Fundamental Value

The »*fundamental value*« as any other »*personal value*« is an inner reference to something, namely the experience of and the attitude towards one's own life. Every other »*personal value*« is connected to one's »*fundamental value*« as a reference point. Fostering the »*fundamental value*« increases the intensity of experiencing every other »*personal value*« (Längle, 2003d).

Längle (2003d) supported that concept by pointing towards strong depression and suicidality showing that the value and non-value classification is reversed due to a destructive attitude towards one's own life.

Suddenly, »*personal values*« can refer to harmful objects endangering one's life. In such cases, he argued that the preconditions for Logotherapy and meaning oriented therapy are not fulfilled as »*personal values*« cannot be experienced and it is therefore not possible to lead a meaningful life (Längle, 2003d). To work with clients that have a negative »*fundamental value*«, the therapeutic relation is crucial to support the clients in reappraising the past (biographical work) and to allow the feelings and pain which clients would not dare to face on their own (Längle, 2003d).

Frankl (2015), the founder of Logotherapy, wrote in his work on the fundamentals of Logotherapy about suicide as well. He outlined the requirement to support clients in finding a purpose in life to consider their own life as a value (Frankl, 2015, p. 101)

Leaving their different assumption on the cause of suicidality (and all psychopathologies) aside, one can see the shared view of Frankl and Längle on the importance of helping clients to experience their own life as a value.

The »*fundamental value*« is expressed in the thought: **"I am and ultimately it is good that I exist."** Only with that, it is possible to

experience other »*personal values*« and only then one can say “It is good that you exist”. (Längle, 2003d)

Thus, experiencing »*personal values*« increases the positive attitude towards one’s life and experiencing not enough »*personal values*« in one’s life decreases one’s »*fundamental value*« (Längle, 2003d).

Therapeutic Assumptions

A goal of therapy is to create an openness towards one’s values, a relationship with oneself and one’s surrounding (Längle, 2003d). In counselling, it is solely enough to hint clients towards how and where they can experience »*personal values*«. Counselling clients are considered to be strong enough to open themselves up to »*personal values*« (Längle, 2003d).

While the difference between counselling and psychotherapy is an unresolved issue of dispute (Aldridge, 2014; Feltham, Hanley, & Winter, 2017), by using the term “counselling” Längle pointed at the mental state of clients that are eligible to counselling. In a counselling setting, only clients considered as mentally healthy, therefore, not suicidal, are treated. With that in mind, it is not necessary to work on clients reversed value and non-value classification. Instead, therapists and counsellors can directly aim at helping their clients in finding and experiencing personal values, to increase their positive attitude towards life.

2.1.5 Emotions

In EA emotions are distinct from affects. While affects are only the reactive part of a stimuli, emotions are the subjective quality of any experience. Emotions show how the content of an experience feels like. Such contents can be of various forms such as perceptions, imaginations and thoughts (Längle, 2003e).

An emotion is always based on »*personal values*«. Emotions have the purpose of hinting their bearer towards something. One of the main reasons why people undertake psychotherapy is that they do not understand why they have the emotions they have. A key objective of PEA is to help clients to get in touch with their emotions (Längle, 2003e).

Therapeutic Outline

Therefore, the very first step is accessing clients’ original emotions of a situation, termed »*primary emotions*«. These always hint towards affected »*personal values*« in a specific situation. To enable clients to act authentically it is necessary to try to discover, expose, allow and value any emotion regarding an event (Längle, 2003d).

In a second step, these »*primary emotions*« are integrated into the clients’ life context. This requires clients to take emotional and rational positions to connect the dots through self-understanding, as well as understanding their relations and to form opinions about both their own and others actions (Längle, 2003d).

A prerequisite to follow that therapeutic outline is that clients have an accepting attitude towards their emotions and do not feel threatened by their past experiences (Längle, 2003d).

That prerequisite is closely related to the basic assumption that sets apart Frankl’s Logotherapy from EA. In case the prerequisite is not met, only EA would resolve to biographical work (see 2.1.2).

Primary Emotions

»*Primary emotions*« are the first perceptible response to the immediate impression of a situation. This contains the primary assessment of the situation (e.g. fear while thinking ahead; anger while remembering a past event; relief while receiving good news) (Längle, 2003e).

As long as a »*primary emotion*« is not reflected it affects one's behaviour like an impulse, being either drawn to or repulsed by something (Längle, 2003e).

However, »*primary emotions*« towards specific contents of experience can change through personal development and learning experiences. A once repulsing object like 'doing mathematics' can after some preoccupation with it be experienced as positive (Längle, 2003e). The possibility of that change is a crucial premise to help clients develop a different attitude.

»*Primary emotions*« occur spontaneously and are like wishes to receive the objects related to »*personal values*« (e.g. The wish of simply taking the next days off to travel to a beloved place.). They are like impulses, constituted of the affected personal values, the preferred action and the current mental state. Although »*primary emotions*« already contain the composition of one's holistic conduct of life when they occur, most times that cannot be grasped in that moment (Längle, 2003d).

Integrated Emotions

»*Primary emotions*« need to be further reflected and viewed within a wider context than solely within the current situation. The affected »*personal values*« in a situation need to be related to the »*personal values*« that would be affected in case of following the impulse of the »*primary emotion*« (Längle, 2003d).

»*Integrated emotions*« are detached from the situation's immediate impression and aligned with all relevant »*personal values*« (Längle, 2003e).

Therefore, »*integrated emotions*« do neither endanger one's view of the world nor one's self-view. Acting based on an »*integrated emotion*« serves as emotional justification to act authentically. In EA, the term »*inner coherency*« refers to the quality of an »*integrated emotion*« to seamlessly align with one's »*personal values*« and world views. (Längle, 2003e).

Therapeutic Steps

Längle (2003e) described the procedure of integrating »*primary emotions*« as these consecutive steps:

1. Perceiving: First, it is necessary to take a step back from the current experience. Längle (2003e) pointed to the common advice to *"take counsel with one's pillow"* to take a more self-distanced perspective, which simply takes time. The aim is to let go of wanting a change right away. This can be experienced by asking oneself: "Could I live without that something I'm occupied with or without that which I would like to have?" Imagining that can help, even if it is just for a short moment, to view the desired object without its utility but instead for its own value (Längle, 2003e).
2. Understanding and Integrating: Next, it is necessary to put the affected »*personal values*« in context with all relevant »*personal values*«. Only by relating them with each other, it is possible to understand the existential relevance of a situation (Längle, 2003e).
3. Justification: The justification is done in a wide context including the object affecting the »*personal values*«, oneself and all relevant »*personal values*«. With the resulting »*integrated emotion*« it is possible to justify and press the relevant personal values in front of oneself and in front of the public (Längle, 2003e). If that is not the case, another »*personal value*« has been ignored so far and needs to be considered as well. However, it would be impossible to consider and think of all »*personal values*« and relate

them to each other. Therefore, one core assumption of EA is that one can sense these relations without explicitly thinking of every »*personal value*« (see 2.1.9).

4. Inner Position: An opinion is formed based on the preceding steps by taking an authentic position towards the emotional content of the situation's impression. However, an emotional position is not necessarily in alignment with a practical position. Due to discrepancies between rational thoughts and the feeling for what is right one can be blocked to take an inner position. Only if these doubts can be eliminated one can find a purposeful intention (Längle, 2003e).
5. Decision: The final step is to put the inner position into practice, considering how one wants to take concrete actions, resolving the remaining doubts (Längle, 2003e).

These steps can be used alongside the PEA to lead clients towards their own personal inner positions.

2.1.6 Inner Positions

Taking inner positions and putting them into practice is part of increasing clients personal freedom and therefore crucial part of EA (Längle, 2011a). An inner position is taken towards the affected »*personal values*« and is always based on both emotions and rationality (e.g. The cost of travelling to a beloved place is based on both rational thoughts like what can be afforded financially and timewise as well as what is considered as personally more important, the gains from the travel or the things one would do and experience in case of staying.) (Längle, 2003d).

2.1.7 Personal Existential Analysis (PEA)

The PEA was developed by Alfried Längle as a programmatic extension of Viktor Frankl's Logotherapy and Existential Analysis including a concrete method which is practically applicable (Längle, 2003b). The main assumption is, that it is not possible to find a meaningful »*existence*« without fulfilling certain personal requirements (Längle, 1993).

The Method of PEA

It is a guide for psychotherapists to help their clients in living a more authentic life (Längle, 2000). In EA literature this method is referred to as "*the processual model for working through of problems, deficits or trauma"* (Längle, 2015, p. 75).

Längle (2003b, p. 44) named the applicability of this method with clients "*...in case of missing or incomplete inner positioning. Here patients feel a lack of inner freedom or complain about insecurities, fears, the inability to decide or assert oneself, insecurity of, or alienation from self (being unable to do what they want, or unable to understand what they do)."*

It consists of 4 consecutive steps offering therapists orientation by providing basic questions, tasks and methodological recommendations, in the process of guiding clients in difficult situations (Längle, 2000):

1. »*PEA 0: Description*« "What has happened?"
2. »*PEA 1: Impression*«, "How is that for you?"
3. »*PEA 2: Inner Positioning*«, "What do you think about it?"
4. »*PEA 3: Expression*«, "How can you realise what you want?"

The above questions are only the guiding questions for each step. Längle's (2000)

schematic outline of the PEA offers a multitude of questions for each step:

PEA 0: Description

The description of the situation, with a focus on the relevant facts. Längle (2000) hinted at the methodological necessity of empathic and interested checking back with clients to clarify contradictions in their description. He instructed therapists to take on the reality of their clients and to exclude anything but facts at this step (Längle, 2000).

While describing a situation can be done on one's own, the therapists' part is to recognise contradictions and guide the client to focus on the situational facts.

PEA 1: Impression

The enquiry of the patient's actual emotions in the situation. Längle (2000) outlined the phenomenological aspect of this step in perceiving one's »*primary emotions*« (see 2.1.5) and the affected »personal values« in the situation. In this step, any interpretation still needs to be excluded and the clients self-acceptance needs to be fostered (Längle, 2000).

The therapist's task is to help clients ignore interpretations and face their emotions. Especially, while dealing with emotions they have but disapprove of.

PEA 2: Inner Positioning

The understanding of oneself and the other participants of a situation results in an inner position towards the situation. Längle (2000) outlined the task of integrating emotions and affected »*personal values*« with one's other »*personal values*«. This is grounded in the EA's process of integrating one's emotions up to the point of taking an inner position (see 2.1.5).

PEA 3: Expression

The elaboration of the patient's inner position into concrete actions (Längle, 2000).

This includes reflecting on how clients can and want to act in reoccurring similar situations as well as how to further handle an occurred situation.

Längle (2000) named the requirement of planning concrete actions and helping clients to execute these steps in playing through various scenarios.

2.1.8 Person

The concept of being a »*person*« is a crucial part of EA. Längle (1993) named his reflection of that concept as a foundation of the PEA's development. Being a »*person*« consists of being open to and differentiating oneself from the external world. This includes being able to express oneself in a suitable manner and to be open to interact and get involved with the external world. In EA this is considered as one's »*dialogue ability*«. Every human is in constant interaction with oneself on the inside and the world on the outside (Längle, 1993).

Längle (1993) defined »*person*« as that which speaks inside me.

To be and to realise oneself, one needs to get in touch with one's »*person*« and set up the relation to the external world from within. To do that, PEA tries to get clients in touch with their current and earlier experiences and to set up relations between their »*person*« and other things and beings. In short: fostering clients' »*dialogue abilities*«. To fully embrace such a dialogue, one needs to be addressable, understanding and to respond from within (Längle, 1993).

Längle (1993) defined three basic actions of being a »*person*«, namely:

1. being addressable, which is to recognise and acknowledge that that, what happens on the outside, concerns me. I am responsible for my response and my not acting counts as a response as well.
2. understanding others, the situation and oneself.
3. responding from within, expressing oneself in coherence with one's values and beliefs.

(Längle, 1993)

These basic actions of the »*person*« are reflected in the PEA-steps (Längle, 1993):

»*PEA 1: Impression*« (being addressable), »*PEA 2: Inner Positioning*« (understanding), »*PEA 3: Expression*« (responding).

2.1.9 Inner Coherence

Längle (2003e) defined »*inner coherence*« as the encouragement of the »*inner voice*« to accept a value that is in alignment with one's other »*personal values*«. In most situations this alignment can be felt. »*Inner coherence*« is the basis of one's ability to make personal moral decisions whether something is considered as "right" or "wrong" (Längle, 2003e).

"*The central aim of Existential Analysis is to help people live with inner consent in all that they do, and to see themselves in dialogical relation with the world and themselves*" (Längle, 2015, p. 67).

Inner Dialogue

The positive »*inner dialogue*« is a core aspect of mental health and it can be trained (Längle, 2011a). Therefore, the first three steps of the PEA include guiding clients towards their own positive inner dialogue. At the first step »*PEA 0: Description«* the clients' awareness of their »*inner dialogue*« is trained. The next step »*PEA 1: Impression«* focuses on the phenomenological aspect of "how" clients talk to themselves. To foster clients self-understanding the third step »*PEA 2: Inner positioning*« aims at helping clients to find a positive manner to talk to themselves (Steinert, 2014).

In EA-terminology a positive »*inner dialogue*« is represented by a strong »*inner voice«*. The aim of the »*inner voice*« is to be able to take an inner position. EA assumes that everyone has such an »*inner voice*«. On the contrary, negative »*inner dialogue*« is represented by »*inner commentators«*. These can be differentiated from the »*inner voice*« as they result in more self-doubts instead of leading towards an inner position. Instead of establishing a dialogue with »*inner commentators*« they tend to take over the inner conversation and transform it into a monologue, mainly consisting of derogatory remarks towards clients' »*primary emotions*« (e.g. A client with the »*primary emotion*« of enjoying the currently playing music is misled by an »*inner commentator*« to doubt the own taste in music.) (Längle, 2011a).

Body Oriented Access

Using clients' body-awareness an EA-psychotherapist developed together with a physiotherapist concrete method to gain access to clients' »*inner coherence*«. In their paper, the authors described a method termed »*body related meditation*« to switch from an everyday attitude towards a phenomenological attitude in order to increase one's inner patience, phenomenological openness and self-acceptance (Angermayr & Strassl, 2013).

2.1.10 Existence

In EA, one's »*existence*« is characterised as *"having a chance to change things for the better, to experience what is of value and to avoid or to eliminate what could be damaging or harmful."* (Längle, 2003c, p. 14)

A »*fulfilling existence*« is viewed as *"finding a way of living with inner consent"* (Längle, 2003c).

»*Inner consent*« is *"the agreement or affirmation, of what one does or experiences"* (Längle, 2015, p. 77). Therefore, living with »*inner consent*« can be defined as an *"inwardly felt or spoken yes"* towards one's intentions and actions (Längle, 2003c, p. 3). It is the aim of EA to help clients live their life with »*inner consent*« (Längle, 2003c).

2.1.11 Fundamental Motivations

Längle (2003c) named four »*cornerstones of existence*« towards which one needs to take an inner position to live a »*fulfilling existence*«.

In EA, it is supposed that these are *"involved in every motivation". H*ence, they are labelled «*fundamental existential motivations*» (Längle, 2003c, p. 4).

Taken together, the »*fundamental motivations*« form the basic conditions of »*existence*«, which we as humans have to live with (Längle, 2013). In his theory, Längle (2015) referred to them as the »*structural model«*.

The following sections describe each »*fundamental motivation*« as the fact which all humans have to face, followed by the »*fundamental question*« that arises from that condition (Längle, 2003c, p. 5) as well as the therapeutic implications.

The first condition

… is the "*fact that **I am** here at all, that **I am** in the world*" putting forth the »*question of existence«:* **"I am - can I be?"** (Längle, 2003c, p. 5). To apply this question to one's own life situation, it can be rephrased as: "*Can I claim my place in this world under the conditions I live within AND the possibilities I have before me?*" (Längle, 2003c, p. 5). From a therapeutic stance, Längle (2003c) named the needs to:

1. feel accepted and protected and at home somewhere
2. have enough space to be
3. feel supported in one's life

If these needs are not met one feels restless, insecure, fear and anxiety. If all are met one is able to trust in the world and feel confident in oneself (Längle, 2003c). Additionally, one needs to accept one's fulfilled needs by relying on given support, trusting in one's protection and occupying the space one has and needs. At the same time, one needs to be able to accept the difficult parts in one's life and tolerate the unchangeable (Längle, 2003c).

Längle (2015, p. 77) put it shortly as the *"acceptance of what is given"*.

The second condition

… is the fact that I am not simply here, but I experience life with both its pleasant and unpleasantness. The wanting of "*our existence to be good*" puts forth the »*question of life«*: **"I am alive – do I like this fact?"** (Längle, 2003c, p. 6). To better understand that Längle (2003c, p. 6) explained that being alive is "*to cry and to laugh, to experience joy and suffering, to go through pleasant and unpleasant things, to be lucky or unlucky and to experience what is worthwhile and what is worthless.*"

From a therapeutic stance, Längle (2003c) named the needs to:

1. have relationships where one experiences community and closeness
2. spend one's time on personally considered valuable things
3. maintain and experience closeness to others as well as animals, plants and things

The lack of these needs results in a feeling of distance at first and in the end in a depression. Only if these needs are met one can value oneself and one's own life resulting in the deep feeling: "it is good that I am alive" (Längle, 2003c). Additionally, one needs to engage in life. That is to allow oneself to get close to others, maintain the closeness, choose to spend one's time on the things valuable to oneself while allowing to be touched and moved by the world. This always requires taking the risk of experiencing loss and grief. Not wanting to take that risk can be the cause to distance oneself from life (Längle, 2003c).

The main task within this condition is the *"turning towards values and relationships"* (Längle, 2015, p. 77).

The third condition

… is the fact that I am separate and different from others. This puts forth the »*question of being a person*«: **"I am myself – may I be like this? Do I feel free to be like this"** (Längle, 2003c, p. 7).

From a therapeutic stance, Längle (2003c) named the needs to:

1. be seen by others for one's uniqueness (attention)
2. be treated fairly with respect to one's own boundaries (justice)
3. be valued by others and oneself (appreciation)

If these needs are not met one feels alone in this world with episodes of exaggerated emotions or excitement. One experiences shame for how one is. On the other hand, if these needs are met, one finds his or her own authenticity together with the self-respect for how one is. Experiencing attention, justice and appreciation are building blocks of one's self-esteem. This includes valuing and accepting the unique »*person*« that one is (Längle, 2003c). Längle (2003c, p. 7) labelled that as saying: *"yes to myself"*.

However, this dimension should not be confused with an egocentric world view. Längle (2015, p. 77) put it as *"seeing oneself authentically and others as unique persons"* and once again, outlined the importance in EA to include the outside world as well.

This third »*fundamental motivation*« is closely related to the concept of authenticity, as being able to be oneself (Längle, 1998).

The fourth condition

… is the fact that we are striving for a purpose in life to experience fulfilment. This puts forth the »*question of the meaning of our existence*«: **"I am here – for what purpose?"** (Längle, 2003c, p. 7).

From a therapeutic stance, Längle (2003c) named the needs to have:

1. a field of activity
2. a structural context
3. a value to realise in the future

If these needs are not met one feels emptiness, frustration and despair. To feel fulfilment in one's life one further needs to take the attitude that life addresses me personally in every situation and that my response matters (Längle, 2003c).

2.1.12 Meaning

Meaning is defined in EA as the overlap of a situation's demands and a person's self-understanding. This self-understanding is formed by the understanding of one's self-concept (i.e. "How am I?") and one's presumably conflicting feelings of obligation and correctness (i.e. "How should I be?") (Längle, 2003c).

»*Meaning*« can only be found in a situation and can never be constructed around a past experience. (Längle, 2003c).

EA differentiates between »*existential meaning*« and »*ontological meaning*«. »*Existential meaning*« considers only what

is possible in one moment for one specific »*person*«. »O*ntological meaning*« considers philosophical and religious matters, that can be experienced through faith (Längle, 2003c). It could be viewed as a higher meaning of one's life, which one does not have to be able to comprehend fully. It is a sense of purpose that is fulfilled by one's life.

By referring to Frankl's taxonomy of values Längle (2015, p.77) showed a relation between EA and Frankl's Logotherapy in the fourth »*fundamental motivation*«, that is concerned with »*existential meaning*«.

Taxonomy of Values

Frankl's taxonomy of values is a central part of Logotherapy and consists of three types of values. Frankl (2015, pp. 91-94) described them as:

1. **Creative Values** «*schöpferische Werte*» can be realised in doing and creating something. Frankl (2015) put it as enriching the world through ones doing. However, he outlined not the importance of what one does, but how one does it. As a positive example, he described someone who fulfils his or her concrete tasks in his job and family, without regard to how small and unimportant they may seem, with conscientiously and with care. Really fulfilling the given tasks in one's life is where creative values can be realised (Frankl, 2015).
2. **Experiential Values** «*Erlebniswerte*» can be realised in anticipation of an experience (e.g. fully experiencing the beauty of nature or art). Frankl (2015) put it as enriching oneself through one's experience. As an example, he described the experience of a musical person that is fully emerged in listening to an excellent orchestra when at a particular part of the piece a shiver runs down his or her spine. He argued that asking that person just a moment after that experience, if his or her life has a meaning, that that person would have to answer yes. Because that moment on its own was worth to live for just to be able to experience it (Frankl, 2015), with that in mind, experiential values can be viewed as experiences that make one's life richer, that are worth to be experienced and therefore make one's life worthwhile and valuable.
3. **Attitudinal Values** «*Einstellungswerte*» can be realised in the attitude one takes on towards one's current life situation. Frankl (2015) focused not on what fate one has to deal with, but on how one deals with one's fate. As an example. he named taking on attitudes like bravery in one's suffering and dignity in one's failures and decline. He argued that this category of values could be realised when neither »*creative values*« nor »*experiential values*« can. Moreover, to Frankl only in such situations »attitudinal values« even get realisable (Frankl, 2015).

Frankl (2015) represented the opinion that for as long as someone is conscious, one carries the responsibility to realise one's values. He argued that life always presents the opportunity to turn to at least one of the above three value categories, rendering it impossible for human existence to become utterly meaningless (Frankl, 2015).

Instead, Längle (2015) only referred to the possibility of finding existential meaning in experiencing these values. Again, Längle's focus on the subjective experience shows their differences:

Frankl does not consider that the »*person*« needs to be addressed by a value. To him, »*meaning*« is already there, it exists in the world and corresponds with the most valuable possibility in every situation. The

»*person*« is responsible for realising that value to live meaningfully. To Längle a value can only be experienced and is not there beforehand. Once a »*person*« is addressed by the possibility of realising a value, the »*person*« is going to want to realise it. In that view, the »*person*« is only responsible for realising that »*wanting to*« and not as Frankl sees it to the value itself (Reitinger, 2017).

Frankl (2015) gave the example of a man sitting in a tram reading newspaper. He described a scene where that man is merely looking outside his window to enjoy the beautiful sunset and is, therefore, missing the realisation of an experiential value.

In respect of Längle's shift of the concept of »*responsibility*«, this man would not act irresponsible towards a value, if he did not feel addressed by the beautiful scenery. Without being touched by the view of the sunset and therefore not moved on the inside the »*person*« would not »*want to*« experience it and therefore could not act irresponsibly towards the own »*wanting*«.

With such a shifted view, a therapist would have a starting point in the exploration of why that man does not feel addressed by the beautiful scenery.

2.1.13 Effects of Existential Therapies

The following results refer to Vos, Cooper and Craig's (2015) meta-analysis which compared 15 Randomised Controlled Trials (RCTs) based on existential therapy interventions from the four existential therapy main branches (see 2.1.1). Most participants of these studies were around 50 years old with physical diseases, like cancer, which the authors outlined as a limitation to their implications (Vos, Cooper and Craig, 2015). They reported the largest postintervention effect-sizes in the 6 RCTs based on Logotherapy and/or EA in

- positive meaning in life (d = 0.65),
- self-efficacy (d = 0.48) and
- psychopathology (d = 0.47)

(Vos et al., 2015).

The interventions of these 6 RCTs focused on explanations, discussions and support to help clients *"act directly and positively with respect to their meaning in life"* (Vos et al., 2015, p. 121). The authors outlined that they *"found particular support for structured interventions incorporating psychoeducation, exercises, and discussing meaning in life directly and positively with physically ill patients."* (Vos, Cooper and Craig, 2015, p. 115)

Effects of EA

The following studies show the effects of interventions based on EA.

In an 8-week stationary setting, the efficiency of EA was analysed as a treatment of drug addiction for 280 patients using the TPF (Becker, 1989), a self-rate-instrument to measure mental health and the ESK (A Längle, Orgler, & Kundi, 2000) to analyse existential parameters (Längle, Görtz, Rauch, Jarosik, & Haller, 2000). Significant pre- and post-treatment improvements have been reported with effect-sizes ($ES=(\bar{x}_{post}-\bar{x}_{pre}) / S_{pre}$) in:

- ESK: responsibility (ES=.51)
- ESK: self-transcendence (ES=.45)
- TPF: mental health (ES=.42)
- TPF: self-esteem (ES=.38)
- ESK: self-distancing (ES=.31)
- TPF: autonomy (ES=.27)
- TPF: self-centring (ES=.26)
- ESK: freedom (ES=.22)

(Längle et al., 2000)

Patients treated with EA showed greater improvements in most existential parameters, especially in «*responsibility*» and «*self-transcendence*», as compared to the control group treatment based on other

psychotherapies. Only the existential parameter of existential «*freedom*» showed less improvement. The authors attribute that to patients' increased experienced «*responsibility*» at the beginning of an EA-therapy. An issue resolved at a later stage in EA-therapy when EA-therapists help their clients to develop new decision capabilities and discover new possibilities and options in situations and their life in general (Längle et al., 2000).

Another effectiveness study of existential analytic individual therapy carried out by the GLE tested their therapeutic method with 248 patients of 12 EA-therapists. The therapy-duration ranged from 3 to 106 hours (on average, 28 hours, excluding the drop-outs of 24%) (Längle et al., 2005). The treating therapists recorded their clients' self-report results not only before and after treatment but additionally every tenth session. The average effect-sizes ($ES=(\bar{x}_{post}-\bar{x}_{pre})/S_{pre}$) of all existential parameters as measured with the ESK showed constant improvements with ongoing therapy, as shown in Table 1 (Längle et al., 2005).

Table 1, Therapy stages ESK's total effect-sizes each compared to the beginning of therapy (Längle et al., 2005)

After 10 hours	After 20 hours	After 30 hours	At the end of therapy
0.11	0.37	0.58	0.99

Although not explicitly outlined by the authors, the calculated change between therapy stages (see Table 2) shows that the first 10 hours of therapy had the smallest impact on the ESK's results.

Table 2, Changes of the ESK's total effect-sizes in-between therapy stages

0-10	10-20	20-30	30-end
0.11	0.26	0.21	0.41

Opposed to the previously reported study, this time, the effect-sizes were interpreted without comparison to any control group.

While differences in gender, education and marital status did not show any significant influences on the treatment effects, age and place of residence did. Age influenced the effect-size of the existential parameter: «*freedom*», with the smallest effect-sizes in the age-cluster from 30-39 and the largest in the age group below 20 and above 50. The authors attribute the small changes in the age-group from 30-39 to the feeling of "having to achieve", which could result in a restricted experience of freedom (Längle et al., 2005). The authors could not pin down the reason for why the place of residence showed an effect on most existential parameters (responsibility, self-distancing and freedom) of the ESK (Längle et al., 2005).

2.1.14 Future Directives

Längle *et al.* (2000) recommended conducting studies with a stronger focus on process-oriented study designs, including the single steps of the therapeutic method of PEA (Längle et al., 2000).

As a conclusion of their meta-analysis of existential therapy studies, Vos, Cooper and Craig (2015, p.125) *"recommend selecting outcome instruments that directly measure the aims of an [existential] intervention, and not only general outcomes such as level of psychopathology."* Based on their findings, the authors suggested that existential interventions help people with existential questions while advocating the importance to study which intervention suits which client best (Vos et al., 2015).

2.2 Authenticity

2.2.1 Definition of Trait Authenticity

Kernis and Goldman (2006, p. 347) defined and measured »*trait authenticity*« as *"the unimpeded operation of one's true or core self in one's daily enterprise"*. Although the authors have not provided a concrete and complete definition of the *»true self«,* in a side note, they defined it as an individual's specific *"propensities and characteristics"* (Kernis & Goldman, 2006, p. 295).

A similar yet distinct notion of authenticity exists, referred to as »*state authenticity*«, which can be defined as *"the sense that one is currently in alignment with one's true or real self"* (Sedikides, Slabu, Lenton, & Thomaes, 2017, p. 1). This puts the focus, as expected of a state-based concept, on one's current state.

»*State authenticity*« is only weakly correlated to one's »*trait authenticity*« and can vary three times more within the same person than between different persons (Sedikides et al., 2017).

Henceforth, the term authenticity refers to »*trait authenticity*« within this thesis unless the term »*state authenticity*« is used.

Vannini and Franzese (2008, p. 1631) outlined that *"authenticity is not only about striving to achieve for an ideal self, but also about negotiating what one actually is and what one just cannot be"*.

As various views on authenticity focused on its different aspects, Goldman and Kernis (2002) tried to integrate them, suggesting a multicomponent-conceptualisation. They were followed by Wood *et al. (*2008), who attempted to provide a coherent overall concept of authenticity.

Both of their models are accompanied by a self-rate-measure instrument, consisting of sub-scales to measure their respective components:

- KGA-Model, providing the self-rate-scale: Authenticity Inventory (AI) (Kernis & Goldman, 2006)
- Authenticity Scale Model, providing the self-rate-scale: Authenticity Scale (AS) (Wood et al., 2008)

In the following sections, both models are examined and compared with each other, providing an in-depth definition of the multifaceted-concept of »*trait authenticity*«.

2.2.2 Kernis and Goldman Authenticity (KGA) Model

Kernis and Goldman (2006) suggested viewing authenticity as four interrelated and measurable components: »*awareness*«, "*unbiased processing*«, »*behaviour*« and »*relational orientation*«.

The first two components refer to self-knowledge, while the latter two show external expression and influence (Kernis & Goldman, 2006).

Awareness

The first component of self-knowledge reflects the knowledge of one's self-aspects, including contradictions instead of viewing oneself only as a collection of coherent self-aspects. This comprises one's knowledge and confidence in one's feelings, desires, values, self-cognitions, strengths and weaknesses. (Kernis & Goldman, 2006).

Unbiased Processing

The second part of one's self-knowledge is one's potential to extend it through external information. This is determined by how objectively one deals with external information about oneself without distortion in either a positive or negative direction. Unbiased processing of self-relevant information is the external foundation of an accurate self-image, reducing one's self-misconceptions (Kernis & Goldman, 2006). Not by any means believing every self-

evaluative feedback but trying to consider it objectively.

Together, »*awareness*« and »*unbiased processing*« enable authentic assessment of one's self-aspects and provide the basis to consider competing feelings and values in one's decisions (Kernis & Goldman, 2006).

Behaviour

This component shows the congruence of one's values, preferences and needs regarding one's behaviour. Knowing one's true opinion is part of the previous two components, which provides the basis to behave in accordance with one's self-knowledge (Kernis & Goldman, 2006).

However, it is a common misconception to must always express one's thoughts and feelings to be authentic. It is not a compulsion, but the attempt to resolve one's conflicting values and needs in a situation and to behave based on that resolution (Kernis & Goldman, 2006).

In EA, such resolutions are referred to as inner positions and are accompanied by a feeling of »*inner coherence*« (see 2.1.6, 2.1.9)

Viewing authenticity as a multifaceted model highlights that authenticity cannot only be judged by one's »*behaviour*« alone, as authenticity is comprised of three more aspects.

Kernis and Goldman (2006) outlined the similarity between authentic »*behaviour*« and SDT's (see 2.2.4) component of »*autonomy*« which both require the matching of one's values and needs with one's actions and not to act only to please others.

Relational Orientation

While expressing one's true opinion in every situation is not a necessity to be authentic, being genuine in one's close relationships is a crucial component of authenticity. This component reflects the extent to which one values openness, sincerity and truthfulness in one's close relationships. It involves helping others to see who one really is instead of acting and trying to be viewed as an ideal version of oneself. In order to establish a close relationship with someone, it is necessary to be able to trust one another. Within authentic relationships, people show not only their positive self-aspects but also those they consider as unfavourable. They show themselves as vulnerable in sharing intimate and self-relevant information (Kernis & Goldman, 2006).

2.2.3 Authenticity Scale Model

Wood *et al. (*2008) outlined the lack of a shared understanding of authenticity in empirical research. Therefore, the authors tried to integrate the existing conceptions of authenticity into one model and grounded it in person-centred psychology. Additionally, as the model's name suggests, they provided a self-rate measure instrument: the Authenticity Scale (Wood et al., 2008).

The authors claimed that their model (see Figure 1) maps the most prevalent conceptions of authenticity to the three dimensions: »s*elf-alienation*«, »*authentic living*« and »*accepting external influence*« (Wood et al., 2008).

(Self-)Alienation

Alienation arises from an inevitable mismatch between one's actual experience (Box A in Figure 1) and the experience one is consciously aware of (Box B in Figure 1). It is only possible to extend one's conscious awareness to minimise this predestined mismatch, but never to eliminate it (Wood et al., 2008).

In alignment with their aim of incorporating the existing notions of authenticity, the

authors used the term *»true self«*, which was previously used by Kernis and Goldman (2006) in their definition of authenticity. However, this time the authors defined it more specifically as one's *»actual experience«* which includes one's *"actual physiological states, emotions, and schematic beliefs"* and managed to visualise its relation in their model of authenticity (Box A in Figure 1) (Wood *et al.*, 2008, p. 386).

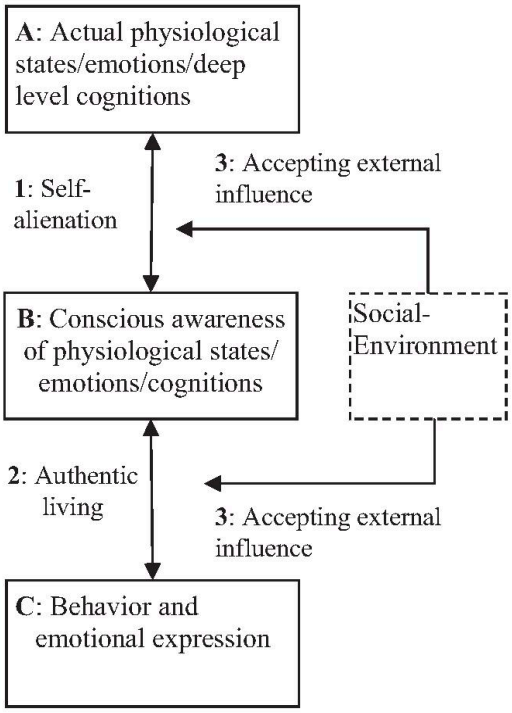


Figure 1: The three-dimensional person-centred conception of authenticity (Wood *et al.*, 2008)

From an EA perspective *»alienation«* *"can be seen as an individual's inability to establish contact with the personal dimension, so that interaction with the world remains guided by biological needs and social norms, rather than by the individuals personal values and aspirations*" (Osin, 2009, p. 4).

In PEA, the *»alienation from self«* is defined as *„being unable to do what they[clients] want, or unable to understand what they do"* and viewed as hindering clients from taking inner positions (Längle, 2003b, p. 44). In alignment with that, Osin (2009 p. 5) pointed out that an alienated person is not able to *"perceive the questions that life asks"*, due to the inability of perceiving own *»personal values«* and therefore the inability to find *»existential meaning«*.

Wood *et al.* (2008) referred to the importance of bringing *»self-alienation«* to awareness, hinting at existing research and the opinions of the existential therapists, Yalom (1980) and May (1981), who viewed *»self-alienation«* as the core aspect of authenticity and the cause of mental distress.

Authentic Living

To live authentically means to express one's emotions, values and beliefs and to behave in accordance with one's conscious experience (relation between Box B and Box C in Figure 1) (Wood et al., 2008).

"Authentic living involves being true to oneself in most situations and living in accordance with one's values and beliefs" (Wood *et al.*, 2008, p. 386).

Similar to Kernis and Goldman (2006), the authors phrased the definition of their model's action-oriented component in a way that allows the existence of situations where it might not be possible to act that way.

Accepting External Influence

This aspect shows the degree to which one is influenced by others and one's belief of having to conform to other's expectations. As visualised in Figure 1, *»accepting external influence«* impacts the other two aspects of authenticity (Wood et al., 2008).

Vannini and Franzese (2008, p. 1626) outlined their previous research showing that *"having a higher need for social approval predicts lower levels of authentic behavior"*.

Intercorrelation

In the authors first attempts to evaluate their measure-instrument, the dimension of *»accepting external influence«* was

positively correlated with »*self-alienation*« at r = .4 and negatively with »*authentic living*« at r = -.38 (Wood et al., 2008).

However, all three dimensions of the tripartite-construct are intercorrelated, and the strongest negative correlation was found between »*self-alienation*« and »*authentic living*« at r = -.44 (Wood et al., 2008).

Comparison to the KGA Model

The main difference between the Authenticity Scale Model and the KGA-Model is the content of the models' dimensions. Although the dimensions show similarities, their boundaries differ. Looking at the visual representation of the Authenticity Scale Model (see Figure 1: The three-dimensional person-centred conception of authenticity (Wood *et al.,* 2008)) each dimension is defined as a relation between defined objects (i.e. actual experience, consciously aware experience, behaviour, social environment). Working with both models could be confusing as similar names are used to label different entities (e.g. While one of the KGA-Model's dimensions is labelled as »*behaviour*«, it refers to more than behaviour in the Authenticity Scale Model, but also greatly overlaps with the Authenticity Scale's dimension »*authentic living*«.).

Another difference is found in both models' counts of components. However, as visible in Figure 1, the relation »*accepting external influence*« is defined as the relation to two different relations and could, therefore, be viewed as two components as well. This is supported by the two separate intercorrelations of »*accepting external influence*« and the other two components. Viewed like that, the Authenticity Scale Model would consist of 4 dimensions like the KGA-Model.

The remaining difference is the KGA-Model's more explicit definition of the dimensions »*relational orientation*« (i.e. addressing relationship patterns) and »*unbiased processing*« (i.e. how accurately one processes information about oneself), which do not exist in the Authenticity Scale Model (White, 2011).

Although these two dimensions are not as explicitly accounted for in the Authenticity Scale Model, a more general concept is included which could serve as a mapping point to previous research data. The relation of »*accepting external influence*« with »*self-alienation*« could be mapped to »*unbiased processing*« in the KGA model. Both focus on how we internally deal with external influences. Further, the relation of »*authentic living*« to »*accepting external influence*« could be mapped to the KGA-model's »*relational orientation*« as both focus on how one externally deals with external influences, through expression and behaviour.

The lack of specificity in the Authenticity Scale Model's definition reflects the aim of Wood et al. (2008) to create a model able to integrate the multitude of existing notions of authenticity. This is achieved but at the cost of not explicitly outlining parts of authenticity (e.g. only the KGA-Model specifically accredits the importance of openness and genuineness in one's close relationships).

2.2.4 Self-Determination Theory (SDT)

SDT is an approach to understand human motivation and personality integration, assuming an innate tendency to inner growth and the fulfilment of basic psychological needs (Deci & Ryan, 2000a). These basic needs are defined as *"innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being"* (Deci & Ryan, 2000b, p. 229).

The proposal of Deci and Ryan (2000a) that the satisfaction of these needs is crucial to understand authenticity took root and was used as a theoretical building block of the development of the KGA-Model (Brian M Goldman, 2004; Brian Middleton Goldman & Kernis, 2002; Kernis & Goldman, 2006).

Deci and Ryan (2000a) viewed both commitment and authenticity to be prevalent in intrinsic motivation and integrated extrinsic motivation. This is most likely to occur with the satisfaction of one's basic need to experience: »*autonomy*«, »*competence*« and »*relatedness*« (Deci & Ryan, 2000a).

Autonomy

The need to perceive oneself as behaving volitionally and in congruence with one's values and needs. (Deci & Ryan, 2000b; Ryan, Deci, & Grolnick, 1995). This includes acknowledging one's feelings (Deci & Ryan, 2000a) and perceiving an internal »*locus of causality*«, that is to perceive oneself as the origin of one's actions, instead of viewing oneself as a pawn to external forces (Ryan & Connell, 1989).

Competence

The need to feel efficacious in one's actions. This includes being able to both achieve and observe the results one wants to achieve with one's actions (Deci & Ryan, 2000a).

Relatedness

The need to feel connected and belonging to significant others with whom one shares similar values and needs (Deci & Ryan, 2000a).

Self-Regulation

In SDT, »*self-regulation*« refers to the process of how social values and extrinsic demands become »*personal values*« and turn into self-motivated behaviours (Deci & Ryan, 2000a).

Intrinsic motivation is *"the doing of an activity for its inherent satisfaction"* (Deci and Ryan, 2000a, p. 72). This type of motivation always results in authentic behaviour (Deci & Ryan, 2000a). »*Intrinsically motivated behaviours*« are what Deci and Ryan (2000a) defined as the most authentic behaviours.

On the other hand, *»extrinsic motivated behaviours (EMB)«* vary with regards to the extent of the assimilated reasons to do it (Deci & Ryan, 2000a).

The following different types of extrinsic motivation can be distinguished regarding the experienced autonomy during the »*self-regulation process*«. Deci and Ryan's (2000a) taxonomy of EMB ranges from low to high levels of autonomy:

1. **External EMB**, done to fulfil external demands, receive rewards or avoid threats
2. **Introjected EMB**, done to boost one's ego or to avoid guilt and/or anxiety
3. **Identified EMB**, done to reach an accepted or personal relevant goal
4. **Integrated EMB**, done as the behaviour is viewed in accordance with oneself. It has been fully integrated with one's other values and needs. The remaining difference to intrinsic motivation is that the action is done to attain something and not as the enjoyment of the action itself.

(Deci & Ryan, 2000a)

Besides »*autonomy*«, the basic needs of »*relatedness*« and »*competence*« foster the integration of EMB. It is more likely to adopt a behaviour if it is relevant to one's social group and if one feels competent to do it (Deci & Ryan, 2000a). The more internalised one's behaviours are, the more committed and authentic one feels in these behaviours (Deci & Ryan, 2000a).

2.2.5 Authenticity in Existential Therapy

Längle (1998) defined authenticity as the finding of one's own being with reference to one's inner coherence.

From the view of EA, we are thrown into a world with which we are in constant interaction. Defined as the »*existential antagonism«,* Längle (1998) outlined the importance of finding balance between

1. openness & dissociation to others,
2. selfless devotion & solipsism and
3. the outer & inner world.

This is reflected in the difficulty of maintaining one's identity with a feeling for oneself without closing oneself off to the world and becoming self-centred (Längle, 1998).

"Encounter and reject are the two means by which we can live authentically without ending up in solitude" Längle (2003c, p. 7). This quote outlines the area of conflict in being oneself. In everyday life, one needs to interact and appreciate others while distancing oneself from others to be oneself.

In the interaction with others, one can experience who one is. Valuing and appreciating another help to do the same for oneself (Längle, 2003c).

If one can value another person with his or her flaws and talents, it becomes easier to accept and value one's own uniqueness. At the same time, one needs to stand up for one's own values and refuse what is not in coherence with one's sense of self (Längle, 2003c).

Sources of Identity

To be oneself is dependent on 4 attributes of being human, termed the »*sources of identity*«. Disregard towards either of them is disregarding oneself by ignoring either one's thoughts or feelings, resulting in a one-sidedness and a feeling of inauthenticity (Längle, 1998).

Längle (1998) described the »*sources of identity*« as **the fact of:**

1. **having a body**, which is the link between oneself and the world. A constant that can be seen, felt and experienced as one's own, which is different to the body of anyone else (Längle, 1998). While there is a distinction between the "*sense of ownership for one's body as an object of perception—the body-as-object—and the sense of ownership for one's body as that by which and through which one perceives the world—the body-as-subject*" (Mandrigin and Thompson, 2015, p. 1), both are relevant as the primary »*source of identity*«.
2. **having an emotional experience** of the things in the world and experiencing oneself with them. This includes feelings, needs, impulses and moods, which are always experienced as one's own. Selfhood can be experienced exceptionally well in directing one's attention to one's own body (Längle, 1998).
3. **being a person** (see 2.1.8), with the ability to select whether one agrees or disagrees, says yes or no, gets into or distances oneself from something including both external and internal openness (Längle, 1998).
4. **being able to act**, with the awareness that one's actions have an observable effect (Längle, 1998).

Conditions of Being

Similar to these *»Sources of Identity«* the renowned existential psychotherapist James F. T. Bugental (1969) noticed five similar fundamental attributes of being human. He defined living authentically as living in

accord with these five conditions of life, described as, **the fact of:**

1. **being embodied physically,** refers to the continual change, one is inevitable going through (Bugental, 1969).
2. **being finite and limited** refers to the limited control one has over one's life and the limited knowledge of the future (Bugental, 1969).
3. **being able to act,** refers to the responsibility one has for the actions one takes and does not take. Meeting that responsibility provides the chance of having a "*feeling of commitment in our living which is the very stuff of our identities*" (Bugental, 1969, p. 48).
4. **having a choice** of the actions one takes and does not take, instead of attributing own actions to others (Bugental, 1969).
5. **being "apart-from" and "a-part-of" others** refer to the two aspects of being separate but at the same time connected with others which Bugental (1969) punned *»a-partness«* (Bugental, 1969).

To become more authentic, Bugental (1969) argued, one needs to face the threat (i.e. existential anxiety) included in each of these conditions. That is to fully recognise each of these facts with its implications and without distorting them. As an existential psychotherapist, he viewed his therapeutic role as helping clients experience their own vitalness in being confronted with these facts while supporting them to be able to face and recognise them (Bugental, 1969).

2.2.6 Correlations of Authenticity

The following correlations always refer to self-rated »*trait authenticity*« which was either measured with the Authenticity Scale (AS) or the Authenticity Inventory (AI).

Well-being

Authenticity was positively correlated with well-being in general (Wickham et al., 2016). However, the term well-being can be misleading as it refers to two theoretically and empirically differentiable concepts, »*Subjective well-being (SWB)*« and »*Psychological well-being (PWB)*«, which do not necessarily overlap. Keyes, Shmotkin and Ryff (2002) have shown that 45% of people that score high on one type of well-being score low on the other.

SWB looks at the long-term evaluation of one's life and the current balance between positive and negative affect, which is also referred to as happiness (Keyes et al., 2002).

PWB shows another aspect of well-being. It regards the own *"perception of engagement with existential challenges of life"* (Keyes et al., 2002, p. 1007) and was operationalised as a multi-dimensional-model, representing six challenging aspects of life, namely an individual's autonomy, environmental mastery, positive relations with others, personal growth, purpose in life, and self-acceptance (Ryff, 1989).

Goldman and Kernis (2002) indicated a positive correlation of authenticity (AI) with life satisfaction and lower levels of negative affect. Although the authors used the term *»psychological well-being measures«* to refer to life satisfaction and affect measures, what they really showed was a positive correlation with SWB.

A few years later, testing their AS in four studies, Wood *et al.* (2008, p. 390) confirmed the literature's prediction that authenticity is "*related to both aspects of well-being, with authentic people both experiencing positive emotional experience and also engaging in the existential challenges of living.*" Notably, »*self-alienation*«, a reverse-scored aspect of authenticity (AS), showed a strong positive correlation with anxiety and stress and a negative correlation to life satisfaction,

offering some insight into which part of authenticity impacts SWB (Wood et al., 2008).

Self-Focus-Tendencies

Boyraz and Kuhl (2015) further researched the relation between authenticity and SWB. They positively correlated self-reflection and self-awareness with authenticity (AS) and showed a negative impact of tendencies to self-rumination. The authors stated that *"participants with a tendency to engage in self-reflection reported higher levels of authenticity, which then was associated with increased life satisfaction and decreased distress. On the other hand, participants who are inclined to self-ruminate reported lower levels of authenticity, which in turn, mediated the effect of rumination on both life satisfaction and distress"* (Boyraz and Kuhl, 2015, p. 70).

Age and Gender

Boyraz and Kuhl (2015) noticed that their female and older participants reported higher authenticity (AS). Although the authors reported small but significant gender differences, they recommended further investigation as they only had a small sample size for men (n=155, 25% of included participants).

Self-Esteem

Scores from both, AS and AI, showed a positive relation with self-esteem (Goldman and Kernis, 2002; Wood *et al.*, 2008).

High authenticity (AI) was shown to help people buffer the negative effect of interpersonal conflict on self-esteem and life satisfaction (Wickham et al., 2016).

While the previous studies focused on »*trait authenticity*«, the following study examined the relation of daily reports of »*state authenticity*« and self-esteem throughout the day. The authors controlled for the effect of pleasant and unpleasant affect as well as the contribution of SDT's basic need-satisfaction (see 2.2.4). Despite the use of only two items to measure »*state authenticity*« (i.e. as wearing social 'masks' and being in touch with one's true self throughout the day), the authors suggested that their results indicate that »*state authenticity*« is positively correlated with self-esteem and their relation is based on more than just mood and need-satisfaction (Heppner et al., 2008).

2.2.7 Fostering Authenticity

Wood et al. (2008) challenged the prevailing assumption in counselling and existential therapy that »*trait authenticity*« can be fostered. Therefore, the authors suggested testing if undergoing therapy increases clients »*trait authenticity*« by comparing participants longitudinal change scores of the Authenticity Scale with a control group (Wood et al., 2008).

So far, the possibility of fostering authenticity has been supported by Boyraz and Kuhl (2015), who used the Authenticity Scale and compared it to self-focusing tendencies. The authors suggested that *"interventions that focus on increasing self-reflection and reducing rumination can enhance authenticity and well-being"* (Boyraz & Kuhl, 2015, p. 74).

Wickham *et al.* (2016) researched the possibility of fostering authenticity (AI). They concluded that the satisfaction of basic psychological needs (see 2.2.4) supports the development of two components of the KGA-Model, namely »*awareness«* and »*unbiased processing«* of self-relevant information.

Kernis and Goldman (2006) view »*awareness*« as the basis of becoming authentic if the self-knowledge is accepted and integrated. Referring to insights from

»*Gestalt therapy*« and »*mindfulness*« the authors outlined the importance of attending to self-aspects without evaluating them in the beginning. As dealing with ignored and unaware self-aspects can be challenging, it is necessary to understand and resolve one's difficulties with these self-aspects to integrate and accept them as parts of oneself (Kernis & Goldman, 2006). This is in accordance with Längle's (2003d) requirement of allowing and valuing »*primary emotions*« to be able to integrate them and act authentically (see 2.1.5, 2.1.7).

In accord with Bugental (1969), who believed that one could become more authentic by accepting and embracing the »*Conditions of Being*« (see 2.2.5), Miars (2002) was convinced of the possibility of fostering authenticity. He advocated helping clients to become more authentic in their living as a basic goal of counselling. Miars (2002) highlighted the requirement for clients to recognise their existential *"freedom and responsibility to choose how to live in the world"* (Miars, 2002, p. 223). The counsellor's task is to confront clients with the active role they played in creating their current life situation. The counsellor's aim should be to help clients *"take full ownership and responsibility for all choices (past, present, future)"* (Miars, 2002, p. 224). However, a common reaction to such a confrontation is the client's resistance (Miars, 2002).

2.3 Web-based Intervention (WBI)

WBIs are a subclass of »*Internet-based interventions (IBI)*« which include all types of computer-mediated interventions that use the internet as its communication medium. Most IBIs that are not WBIs are referred to as »*etherapy*«, an internet-mediated dialogue with a therapist via both synchronous (e.g. chat, audio, webcam) and asynchronous modalities (i.e. e-mail) (Barak et al., 2008).

2.3.1 Definition

A WBI is *"a primarily self-guided intervention program that is executed by means of a prescriptive online program operated through a website and used by consumers seeking health- and mental-health related assistance. The intervention program itself attempts to create positive change and or improve/enhance knowledge, awareness, and understanding via the provision of sound health-related material and use of interactive web-based components"* (Barak et al., 2009, p. 5). Based on their definition, the authors differentiated between three web-based intervention subtypes, namely:

1. »*web-based education interventions*«
2. »*self-guided web-based therapeutic interventions*«
3. »*human-supported web-based therapeutic interventions*«

(Barak et al., 2009, p. 5).

The focus of this thesis is set on the first two types of web-based interventions, namely interventions without human-support.

Guidance

Automated, self-administered, self-guided and unguided WBIs are all terms used in the literature to denote the independence of human-support. If human-support is part of an intervention it is referred to as a guided intervention (Baumeister et al., 2014; Davies et al., 2014).

2.3.2 Bibliotherapy

While some definitions of »*bibliotherapy*« only consider the use of literature, many have extended the term to include the use of electronic materials:

»*Bibliotherapy*« has been defined, with some similarity to WBIs, as *"the use of written materials or computer programs, or the listening/viewing of audio/videotapes for the purpose of gaining understanding or solving problems relevant to a person's development or therapeutic needs. The goals of the bibliotherapy should be relevant to the fields of counselling and clinical psychology"* (Marrs, 1995, p. 846).

Another similar definition outlines the role of bibliotherapy as assisting a person in their personal efforts: *"The formal implementation of written or digital materials to facilitate understanding or assist in efforts relevant to a person's developmental or therapeutic needs"* (Mieskowski & Scogin, 2015, p. 1)

Guiding Questions of Bibliotherapeutic Relevance

Duda (2004) developed a set of questions therapists can use as guidance to select a suitable and therapeutically relevant text for their client:

- What is the problem of the client, and how can the text help with its solution; does it match the client's situation?
- Does the text help to accept, understand and integrate emotions? Are "personal statements" and authentic life decisions fostered?
- Does the text support self-discovery, self-transcendence and self-distancing?
- Does the text foster self-worth?

- Does the text help to live and find purpose and meaning; address the question for purpose and meaning; provide help to deal with unchangeable situations like suffering, shame and death?
- Does the text support the reader in finding solutions to a conflict; show alternatives; motivate to think; Offer orientation?
- Does the text support accepting one's past; foster trust in reality and provide hope in one's future?
- Does the text encourage the reader to take the next step; are the single steps comprehensible and practicable?

(Duda, 2004)

Duda (2004) pointed out that a therapeutically relevant text should comply to at least one of the above questions.

Due to the overlap between bibliotherapy and WBIs, this set of questions could be an asset in the selection of materials for WBIs as well.

2.3.3 Effectiveness

To be able to compare two interventions with each other Cohen's (1992) effect-size measure (ES) is used to test if their population means are equal.

This measure is referred to as »Cohen's d« or »standardised mean difference (SMD)« and shows the magnitude of an effect, but not its statistical significance (i.e. if the observed effect is higher than it is expected to be by chance) (Faraone, 2008).

Cohen (1992) categorised such effect-sizes based on their magnitude as small (ES=.2), medium (ES=.5) and large effects (ES=.8). Whereas, he intended for a medium effect to be *"likely to be apparent to the naked eye of a careful observer* (Cohen, 1992, p. 99).

Meta-Analyses

Barak *et al.'s* (2008) meta-analysis of 92 IBI-studies calculated the included studies overall mean effect size of 0.53 (Barak et al., 2008) which can be interpreted as a medium effect (Cohen, 1992). The meta-analysis consisted of 65 WBI-studies and 27 etherapy studies and reported a higher mean effect-size in the WBI-studies (ES=.54) compared to etherapy-studies (ES=.46). The smaller effect-size in etherapy is explained by the inclusion of group etherapy studies which showed lower effect-sizes (ES=.36), while individual etherapies (ES=.57) slightly outperformed WBIs (Barak et al., 2008).

The meta-analysis aimed to locate and analyse moderating variables of effect-sizes in IBIs. However, instead of providing a p-value to indicate the statistical significance of the moderating values effect-sizes, only an indicator of the moderating variables homogeneity was given (Barak et al., 2008).

Marrs' (1995) meta-analysis of 70 bibliotherapy-studies with face-to-face therapist support, conducted a decade earlier, showed similar results. The authors reported a comparable mean effect-size of the same magnitude (ES=.565, $p < .001$). Further, no apparent differences in the effectiveness of bibliotherapy as compared to psychotherapy without bibliotherapy have been found (Marrs, 1995). However, the author warned not to misinterpret his limited findings, which solely analysed studies of non-clinical populations addressing non-clinical issues. He argued that the use of bibliotherapy with more critical issues (i.e. with clinical populations) raises ethical concerns as it could lead to severe consequences in case of inadequate treatment (Marrs, 1995).

2.3.4 Moderators of Effectiveness

The following sub-sections provide an overview of moderators of effectiveness which have been analysed in multiple meta-

studies on bibliotherapy-interventions, »*internet-based interventions (IBIs)*«, »*web-based interventions (WBIs)*«, »*computerised cognitive behaviour therapy (CCBT)*« (i.e. internet-based, internet-delivered and web-based CBT) interventions).

More recent meta-analyses only included »*Randomised Control Trials (RCTs)*« which have been referred to as *"the gold standard in evaluating the effects of treatments"* (Gartlehner, Hansen, Nissman, Lohr, & Carey, 2006, p. 3).

Problem Types

Barak *et al.'s* (2008) meta-analysis of IBIs examined the effectiveness within different problem types, and their authors concluded that IBIs *"are better suited to treat problems that are more psychological in nature—that is, problems dealing with emotions, thoughts, and behaviors—and less suited to treat problems that are primarily physiological or somatic (although these obviously have psychological components, too)"* (Barak et al., 2008, pp. 132–133).

Table 3 joins the meta-analyses of Barak *et al.* (2008) on IBIs and Marrs' (1995) on bibliotherapy. It provides support that somatic issues can be addressed as well, depending on specific problem type. The positive impact of studies focusing on the improvement of sexual dysfunction contradicts Barak *et al.'s* (2008) assumption that this kind of intervention is less suited to address somatic issues. However, it supports the claim for their strength in treating problems of psychological nature. Although effect-size alone is not a reliable measure of applicability, Table 3 outlines potential application areas of WBIs.

Table 3, Mean Effect-Sizes of Problem Types in both Bibliotherapy and WBIs

Problem Type	*IBIs ES*	*Biblioth. ES*
Sexual Dysfunction	-	1.28
Assertion	-	0.95*
Post-Traumatic Stress Disorder	0.88	-
Panic and Anxiety	0.80	0.91*
Smoking Cessation	0.62	-
Depression	0.32	0.57
Career	-	0.54
Self-Concept	-	0.52
Drinking	0.48	-
Body Image	0.45	-
Weight Loss	0.17	0.40*
Studying	-	0.37
Physiological	0.27	-
Impulse Control	-	0.22

* Significant at the .001 probability level
no measures indicating statistical significance of the IBI-study-problem-type-clusters have been provided (Barak et al., 2008; Marrs, 1995)
Abbreviation: Mean Effect-Size (***ES***)

Interestingly, the bibliotherapy-studies reported higher effect-sizes. The author outlined the possibility that the »*types of outcome measures*« used in the studies skew the magnitude of the problem types' effect-sizes, but argued that these did not affect their relative order (Marrs, 1995).

A meta-study of 17 RCTs examined the existing body of applications using WBIs to prevent mental disorders. The authors reported that the studies eligible for their inclusion criteria mainly focused on eating disorders, depression and anxiety (Sander et al., 2016).

Depression and anxiety are a common problem type addressed by various WBIs.

Another meta-analysis of 14 included RCTs focused on the use of WBIs to relieve university students' stress, distress, depression or anxiety (Davies et al., 2014).

Type of Control Condition

Different effect-sizes have been reported based on whether the intervention group was compared to (1) an inactive control, (2) an active control and (3) a comparable intervention group (e.g. a face-to-face version of the intervention; another WBI; online support group). Significant improvements in anxiety (ES=.56, $p < .001$), stress (ES=.73, p=.008) and depression (ES=.43, p=.11) were only found in studies that compared the outcome of their intervention with (1) an inactive control group (Davies et al., 2014).

Type of Outcome Measure

Barak *et al.'s* (2008) meta-analysis of IBIs showed that the used type of outcome measure was reflected in the studies reported effect-sizes. Assessments and diagnostics by experts (ES=.93) showed the highest mean effect-size, followed by reports of behaviours and activities (ES=.61), self-report-Questionnaires (ES=.43) and the lowest mean effect-size was measured by physiological measures (ES=.19) (Barak et al., 2008).

Another aspect has been shown in bibliotherapy studies. The strongest effects (ES=1.01, $p < .001$) had been reported for unstandardized self-report measures. The authors hypothesised that such measures might be prone to higher estimates, while self-reported behaviour and physiological measures might be prone to lower estimates (Marrs, 1995).

Therapist Contact

Marrs' (1995) bibliotherapy-meta-analysis showed that the effectiveness of bibliotherapy with less than 8 minutes of therapist-contact a week compared to psychotherapy without bibliotherapy showed no apparent differences in effect-size. Additionally, the amount of time spent with a therapist had only significant impact on the effect-size in studies of the problem types: anxiety and weight loss (Marrs, 1995).

Time of Measuring

92% of Barak *et al.'s* (2008) included IBI-studies recorded the effect-size directly after the intervention. The resulting post-therapy mean effect-size was 0.52, while only 36% of the studies reported follow-up measures. Interestingly, the average follow-up effect-size was 0.59, slightly higher than directly after the intervention. However, due to the few follow-up-reports, the result was not statistically significant ($p > .05$) (Barak et al., 2008).

A similar low percentage of 35% of the analysed bibliotherapy-studies provided a suitable follow-up measure which was measured on average six weeks post-treatment. But, in this meta-analysis, a slight erosion effect between Posttest-effect and follow-up-effect was found (Marrs, 1995).

Both meta-analyses support that only small measure changes occur at follow-up.

Therapeutic Approach

Recent meta-analyses on WBIs reported that most or even all of the interventions that met their inclusion criteria were based on »*cognitive behavioural therapy (CBT)*« (Davies et al., 2014; Sander et al., 2016).

Barak *et al.'s* (2008) meta-analysis of 92 IBI-studies clustered them into three types of therapeutic approaches, namely:

- **CBT interventions**, which focused on changing patterns and contents of thoughts including the training of specific behaviours; showing the highest average effect-size of 0.83;
- **psychoeducational interventions**, which focused on providing problem-oriented information, including explanations of emotions and behaviours and instructing clients how to change; showing an average effect-size of 0.46;

- **behavioural interventions**, which focused on changing the clients' behaviours; showing the lowest effect-size of 0.23

The authors even named one intervention-type after a single therapeutic approach, as many studies were based on CBT (Barak *et al.*, 2008).

Although multiple CCBT studies exist, other schools of psychotherapy appear to be underrepresented (e.g. None of the meta-analyses in this chapter reported the use of any existential therapy (see 2.1.1) as a study's therapeutic approach).

Barak *et al.* (2008, p.142) stated that *"it might be a question of time, skill, and method-development before a variety of clinical approaches is implemented online with a degree of effectiveness similar to CBT"*.

Guidance

A meta-analysis compared the in-between-group differences of guided and unguided IBIs to reduce symptom severity. The authors reported a non-significant difference in effect-size favouring guided interventions (ES=.27) over unguided interventions. In the meta-analysis, the non-significant results were explained due to the varying outcomes depending on treating either participants with depression or social phobia. The authors concluded that guidance has a positive impact on IBIs effectiveness, although it is not as strong as it was reported in previous studies (Baumeister et al., 2014).

Interestingly, one meta-analysis found even contradicting results of unguided interventions which showed higher effect-sizes as compared to guided interventions. However, the authors recommended using their findings with caution as they only included five unguided intervention studies in their analysis (Grist & Cavanagh, 2013).

Treatment Length

In a meta-analysis on WBIs, the authors described the most common time-frame of WBIs as being used once a week over ten weeks (Kelders, Kok, Ossebaard, & Van Gemert-Pijnen, 2012).

However, not one of the meta-analyses in this section analysed the modulation of effectiveness by treatment length.

Only a more general meta-analysis of various stress-management interventions (i.e. individual- and group-face-to-face instructions, counselling and self-administered interventions) compared the average effect-size across treatment length and reported a decreasing tendency of effect-size with the treatment's duration. Short interventions (i.e. 1-4 weeks) showed the highest overall effect-size (ES=.804, $p < .001$). The reported average effect-sizes of longer-lasting treatments halved. Only one of the analysed types of interventions, namely teaching relaxation-techniques, showed a constant medium effect regardless of the treatment length (Richardson & Rothstein, 2008).

Another study examined an existing WBI to reduce cannabis use and compared the results of 50 days of intervention access with a 28-day version. Within that RCT, no meaningful impact of reducing the treatment length on the intervention's effectiveness was found (Jonas, Tensil, Tossmann, & Strüber, 2018).

Website Characteristics

Interactive IBIs showed higher effect-sizes (ES=.65) than static sites (ES=.52) (Barak et al., 2008).

Closed-websites, which are characterised by restricted access that is granted by personnel who select participants based on prior filtering-criteria, showed higher effect-sizes

(ES=.68) than open-access-sites (ES=.48) (Barak et al., 2008).

Restricting the access by human-decision renders closed-websites more prone to selection bias, which could explain the 42% increase in their effect-sizes.

Incentives and Study Rewards

In a meta-analysis of university students, the comparison of reduction in symptom severity of anxiety in-between intervention and inactive-control groups showed larger effect-size for studies that did reward course credits (ES=.75, $p = .002$) than for those that did not (ES=.51, $p < .001$). However, this was only found to be true for the problem type anxiety. In case of depression the outcome was reversed (but non-significant) suggesting possible larger effect-sizes of interventions without rewarding credits (ES=.55, $p < .001$) as compared to those that did reward credits (ES=.16, $p = .18$) (Davies et al., 2014).

Participant Characteristic: Age

The strongest average effects of IBIs have been reported for the age group of 25-39 (ES=.64) and 19-24 (ES=.48). While older participants than 39 years showed a lower average effect-size (ES=.20) and the lowest effect size was found in participants younger than 19 years (ES=.15) (Barak et al., 2008).

Another meta-analysis found a negative relation between the participants mean age and the effectiveness of the 49 included RCTs based on CCBT (Grist & Cavanagh, 2013).

2.3.5 Adherence

Non-adherence is a common issue in WBI and "*refers to the fact that not all participants use or keep using the intervention in the desired way*" (Kelders et al., 2012, p. 2).

A stricter measure of adherence is the »*completion rate*« of a WBI, which shows how many users finished the whole intervention. Another used measure is the »*number of completed modules*« of an intervention (Baumeister et al., 2014).

Kelders *et al.'s* (2012) view on adherence depends on the intervention's intended use (e.g. finishing 6 out of 10 modules) and therefore renders it more flexible. This allows addressing more specific research questions, especially in using it as an additional measure of adherence.

A comparison of adherence for WBIs based on guided CBT with face-to-face CBT showed differences in their participants' drop-out behaviour. The authors reported that 84.7% of face-to-face CBT participants completed their treatment and only 65.1% completed the WBI (Van Ballegooijen et al., 2014). However, participants in the face-to-face setting were more likely to either drop-out in the beginning or to finish the whole treatment. In the online-setting, participants who dropped-out completed on average more parts of their treatment, than participants who dropped-out in the face-to-face setting. Measuring adherence as the »*number of completed modules*« resulted in a comparable average treatment adherence of 80.8% (Van Ballegooijen et al., 2014). This rate is similar to Swift and Greenberg's (2012) reported average adherence of 80.3% for clients to finish face-to-face psychotherapy-treatment. The drop-out rate was independent of the treatments therapeutic approach (i.e. CBT, cognitive-, behavioural-, integrative-, psychodynamic-, solution-focused- and supportive/client-centred therapies). However, on average patients of experienced therapists were more likely to finish treatment (82.8%) as compared to patients of therapists in training (73.4%) (Swift & Greenberg, 2012).

In a meta-analysis that included 49 RCTs of IBIs based on CBT 28% of the participants dropped-out prior to treatment completion (Grist & Cavanagh, 2013).

The completion rate varies in-between studies. Another systematic review of adherence in 83 WBIs reported a much lower average completion rate of only 50% (i.e. completion rates ranged from below 10% to above 90%) (Kelders et al., 2012).

Kelders *et al.* (2012) managed to explain 55% of the variance in the analysed studies adherence with the following significant predictors of increased adherence:

- using an RCT as study-design (i.e. over observational studies)
- higher frequency of interaction with a counsellor
- implementation of dialogue support (i.e. where the intervention reacted to the user's actions: e.g. sending reminders, providing suggestions, praising and rewarding)
- communicating a higher expected frequency of the user to interact with the WBI (i.e. most times these studies included more reminders)
- higher frequency of content updates (i.e. either new lessons that become available to certain users or new content that is uploaded and available for all users)

(Kelders et al., 2012)

Besides, the authors did not find any support for a positive impact of peer-interaction on adherence. Furthermore, higher frequencies of interaction with the WBI itself (i.e. not with counsellors and peers) non-significantly predicted lower adherence (Kelders et al., 2012).

If these findings are confirmed in future studies, a challenging guideline for developing a new WBI could be deduced. To increase adherence a WBI should transfer the expectation of frequent interaction to its participants, which showed a positive impact on adherence, while the actual frequency of participant interaction should remain lower, as this was a predictor of lower adherence.

However, the authors suggested that the lower adherence attributed to interaction with the WBI itself might be a side-effect of such WBIs, not including interaction with a counsellor (Kelders et al., 2012).

Additionally, the upfront communication of higher expected interaction rates could result in selection bias, excluding less motivated people who would not even start the intervention.

Type of Control Condition

In a meta-analysis of university students using WBIs, the authors reported that attrition of interventions was higher when it was compared to inactive-control groups (i.e. no differences were found when the intervention's attrition was compared to a comparison intervention or active-control group) (Davies et al., 2014). For interventions, the authors reported an average completion rate of 77.3% and for inactive-control groups 89.2%. The authors offered a pre-existing explanation from the literature, that attrition is common in active conditions and therefore, not explicable by the received treatment alone (Davies et al., 2014).

Guidance

Comparing guided and unguided IBIs showed that guidance led to significantly higher adherence (Baumeister et al., 2014; Van Ballegooijen et al., 2014).

Karyotaki *et al.* (2015) analysed the predictors of drop-out from WBIs and pointed out that adherence in self-guided WBIs is extraordinarily low.

In a meta-analysis of 19 RCT of computer-based treatments for depression, the authors reported lower completion rates to self-guided interventions (26%) compared to

interventions with administrative support (61.6%) or therapist support (72%) (Richards & Richardson, 2012).

A meta-analysis of IBIs with intensive guidance (i.e. three or more weekly email conversations) and less intensive guidance (i.e. one weekly email conversation) showed comparable completion rates of 79% for intensive guidance and 72% for less intensive guidance (Baumeister et al., 2014).

Interestingly, not only the intensity of guidance but also the qualification of the person providing guidance as well as the communication mode's synchronicity (i.e. synchronous: phone and asynchronous: forum) had no significant effect on the IBIs' completion rates and completed modules (Baumeister et al., 2014).

These findings could point to different causes for treatment attrition between face-to-face treatments and IBIs. In face-to-face settings, Swift and Greenberg's (2012) finding indicated that therapists who completed their training had significantly higher completion rates of their patients as opposed to therapists in training.

Treatment Length

Shorter interventions were associated with higher adherence (Davies et al., 2014).

Participant Characteristics

A meta-analysis specifically examined predictors of drop-out in unguided WBIs for depression. The strongest significant predictors, measured as the *»relative risks (RR)«* of dropout before completing 75% of the treatment-modules, were being male (RR=1.08), having only attained primary education (RR=1.26) and being older, which reduced the risk of dropping out with every 4 years of a participant's age (RR=.94) (Karyotaki et al., 2015). Interestingly, the authors outlined that employment status, relationship status and severity of depression did not significantly predict treatment adherence (Karyotaki et al., 2015).

However, the literature is not coherent in these findings. Another meta-analysis of IBIs of anxiety and depression found contradicting predictors of adherence. Participants with less severe depression and younger participants showed increased adherence, while the attained level of education did not predict adherence (Christensen, Griffiths, & Farrer, 2009).

These contradicting findings suggest the existence of a mediating variable of the predictors: age, depression severity and education level on participants' adherence.

Another yet not contradicted finding was that less knowledge of psychological treatments predicted increased adherence to IBIs (Christensen et al., 2009).

2.3.6 Limitations and Disadvantages

This section will show the limitations of WBIs that have been outlined by previous research and show the aspects of participants disapproval of using them. Addressing these issues is essential to target the low adherence rate found in studies of IBIs.

Treatment Preference

A paper-and-pencil survey in Sweden, with two samples, showed a strong preference for face-to-face treatment (i.e. 66.9% of participants, who either worked in a university setting or a rural factory and 65.1% of individuals, who were previously treated in a cancer clinic, preferred face-to-face treatment over an IBI.) In both populations a fifth of the participants reported no preference of any treatment modality over the other. Only a small percentage of participants (i.e. 6.5% of the occupational sample and 2.6% of the other) preferred IBIs over face-to-face treatment (Wallin, Mattsson, & Olsson, 2016).

The authors only found two significant predictors of preference for IBIs. The first was the previous use of the Internet to inform oneself about health-related issues. The other significant predictor was the country of birth. Participants born outside of Sweden were six times more likely to prefer IBIs (Wallin et al., 2016).

The latter might be explained by difficulties of speaking and understanding the spoken language and a pre-existing feeling of not belonging and not wanting to be any further marginalised. Wallin, Mattsson and Olsson (2016) hinted at ethnic minorities' deterrence of stigmatisation, especially when seeking mental health support.

Wallin, Mattsson and Olsson (2016) asked the survey's participants to list the disadvantages they perceive in using IBIs instead of face-to-face treatments, which are outlined in the following sub-sections:

Anonymity

The participants named their concerns of IBIs' impersonality, the lack of empathy and trust and the missing closeness, which can be established by human contact only. However, other participants perceived anonymity and other aspects of IBIs that some view as a disadvantage as an advantage which will be shown in the following section (Wallin et al., 2016).

Credibility

Some participants outlined that they would not take an IBI serious, view it as less effective and unprofessional, that they are concerned with the impossibility to involve family in the treatment and that they are concerned with incorrect decisions (i.e. the difficulty to diagnose and identify people that need more or different help) (Wallin et al., 2016).

Self-Motivation

Participants named their concern that they might not be able to motivate themselves and discontinue the treatment (Wallin et al., 2016).

Impoverished Communication

The communication within the IBI was viewed as impoverished due to the absence of body language, the lack of instant feedback and the risks in misunderstanding the treatment and not being understood or not able to express oneself (Wallin et al., 2016).

Some of the most healing therapeutic strategies cannot be used without another person (e.g. In cases where people lack self-understanding, a therapist can foster that by showing the client that he or she is understood. Being understood by another, in general, is one of the most healing and soothing human experiences (Längle, 1993).

Additionally, some patients feared to feel isolated and not to have anyone to talk to (Wallin et al., 2016).

Computer Literacy and Confidentiality

Participants reported the requirement of being able and willing to use a computer and accessing the internet as a disadvantage, alongside safety concerns of security breaks and disclosure of personal confidential information (Wallin et al., 2016).

Carroll and Rounsaville (2010, p. 7) outlined that *"no system is completely secure, and threats to confidentiality should be seriously considered by providers and patients"*.

2.3.7 Advantages

Interestingly, some aspects of IBIs that have been reported as disadvantages have been named as advantages by other participants of Wallin, Mattsson and Olsson's (2016) survey.

Anonymity

Self-guided WBIs "*maintain anonymity and overcome concern about stigmatization making them more acceptable to many people*" (Karyotaki *et al.*, 2015, p. 1).

This conclusion is in congruence with Wallin, Mattsson and Olsson's (2016) findings that being born in another country increased the chance of preferring IBIs. Some of their survey's participants reported to perceive the fact of not having to see a therapist as less embarrassing and underlined that nobody else needs to know about one seeking treatment, especially not one's family (Wallin et al., 2016).

While some participants viewed the anonymity as negative others viewed it as positive. The latter argued to feel more integrity, more private and to be more comfortable in a setting which does not require eye contact and therefore to experience less shame in using an IBI (Wallin et al., 2016).

Accessibility & Flexibility

Wallin, Mattsson and Olsson's (2016) survey's participants named the advantage of IBIs being always available, to not have to schedule appointments or deal with delays (i.e. no waiting lists or queues) and to be independent of place and time, which does not require any transportation and makes it both more comfortable and easier to fit into one's daily schedule (Wallin et al., 2016).

This kind of availability provides the possibility to use these interventions at times they are most needed, independent of location and clinical hours (Carroll, Rounsaville, & Haven, 2011).

Although these interventions are available all-time, it remains a challenge to someone who currently is in need of mental health support to take responsibility for one's well-being and to get the support one needs.

User empowerment

Wallin, Mattsson and Olsson (2016) reported that their participants valued the sense of empowerment as being able to deal with an issue more on their own. This included having the option to get help and terminate it at any time, to decide on the duration, to use the intervention were they feel comfortable and to have another treatment option available to choose from (Wallin et al., 2016).

Low Effort & Cost

Participants viewed IBIs as time-saving and cost-effective. The low effort was especially valued by employed individuals (i.e. as compared to previous cancer treatment patients who were on average older and more likely to have fewer time-constraints) (Wallin et al., 2016).

Implementation Cost

Baumeister *et al.* (2014) who compared guided with self-guided IBIs concluded that the reason for implementing self-guided interventions, instead of more effective guided interventions, are their lower implementation costs and the possibility to scale them up at a low cost. The authors viewed self-guided interventions as a possible asset to address the prevention of mental disorders up to the threshold to patients with mild disorders at a national scale (Baumeister et al., 2014).

In line with that, Karyotaki *et al.* (2015, p. 1) pointed out that self-guided WBI can *"be made available to a greater number of people at very low incremental cost, thus increasing access and availability"*.

Improved Communication

While some participants doubted that they would not be able to express themselves within IBIs, other participants had the opposite opinion. The latter argued that it would be easier for them to be open and

honest as they feel more comfortable to write something instead of telling or asking it face-to-face (Wallin et al., 2016).

Credibility

Interestingly, some participants viewed IBIs as credible while others especially stated that they would not trust IBIs. The former outlined to perceive the independence of a therapist as an advantage, providing a more standardised treatment. Further, they expected the treatment to achieve what it was designed for (Wallin et al., 2016).

The contradicting perceptions of IBIs' credibility and multiple other aspects, which have been viewed as an advantage and by others as a disadvantage, showed the vast spectrum of attitudes towards IBIs. At the current time, only a few participants reported a preference for IBIs in seeking mental health support. However, together with the ones without preference a fourth of the studies' participants would not mind undergoing treatment with an IBI (Wallin et al., 2016).

In Wallin, Mattsson and Olsson's (2016) survey, the most reliable predictor to prefer IBIs was explained by the experience of shame in seeking mental health support.

Therefore, especially those who experience too high levels of shame to seek face-to-face mental health support could benefit from available IBIs to take the first step. Further, such interventions could address the issue of shame and enable their participants to seek further support.

2.3.8 Future Directives

"Different features of web-based interventions may be appealing to different individuals, and it is important to find out what works best for whom" (Karyotaki et al., 2015, p. 8). This is in alignment with the finding that some participants of Wallin, Mattsson and Olsson's (2016) survey viewed the same aspects (e.g. anonymity and credibility) of computer-based interventions as advantages while other participants viewed them as disadvantages.

The use of various types of content could be used to address different participants. For example, the use of more audio-visual materials (e.g. videos, games) instead of only written materials could address individuals with lower levels of education. Additionally, the author suggested testing dropout against exposure to different types of content (Karyotaki et al., 2015).

The aim of computer-based interventions in the foreseeable future should not be to replace existing therapies but to complement them (Carroll & Rounsaville, 2010). Continuing this line of thought, Davies, Morriss and Glazebrook (2014) suggested extending face-to-face counselling and therapy with computer-based interventions in-between sessions and with clients on waiting lists.

Research Methodology

Carroll and Rounsaville (2010) outlined the importance of appropriate control conditions and hinted at a lack of studies which directly compare computer-based interventions with their face-to-face counterparts.

Sander, Rausch and Baumeister (2016) concluded that standardised interviews are needed to assess the effectiveness of IBIs.

Fry and Neff (2009) suggested to measure the intervention's effectiveness at different time points and aim to include more men.

In examining the differences between guided and unguided IBIs Baumeister *et al.* (2014) noted their concern that most present research on unguided interventions comprises some form of contact with the study-team (i.e. ensure eligibility, validate results, remind participants) which might

result in higher adherence during the trial as compared to a real-life mental-health care setting by including some »*mechanism of action of guidance*« (Baumeister et al., 2014, p. 213).

3 Research Methodology

3.1 Introduction

This chapter is organised into four sections. It starts with the chapter's overview and the outline of common research problems that needed to be addressed to undertake research in the context of WBI.

In the second section, the research question is introduced and linked to the current body of research on WBIs.

The next section describes the phases which were undertaken to develop the WBI, including a summary of the implemented interventions content.

The final section presents the methods used to evaluate the WBI, aiming to justify the chosen research methodologies regarding the research question.

3.1.1 Research Problems

A common issue of web-based surveys and internet-research is to deal with a biased sample. To address this issue Eysenbach's (2004, p. 1) advice was considered that "*Every biased sample is an unbiased sample of another target population, and it is sometimes just a question of defining for which subset of a population the conclusions drawn are assumed to be valid*".

In the literature on WBI, a common central issue is the lack of coherent evaluative reports. This issue was addressed by the CONSORT-EHEALTH (Consolidated Standards of Reporting Trials of Electronic and Mobile HEalth Applications and onLine TeleHealth) statement, which the Journal of Medical Internet Research (JMIR) adopted as an obligation to publish any eHealth RCT (Eysenbach & CONSORT-EHEALTH Group, 2011).

Besides providing comparability with other eHealth RCTs to enable future systemic reviews, complying with the CONSORT-EHEALTH statement guided in addressing common research problems of WBIs by increasing the research's re-traceability (e.g. of a recommendation: include comprehensible attrition reports to deal with the impact of attrition (see 2.3.5)).

Therefore, answering the items of the current CONSORT-EHEALTH checklist (V.1.6.1) served as the following sections and chapters' foundation.

3.2 Research Question

Examining the current body of research on WBIs showed the lack of variety in applied therapeutic approaches as the WBIs' foundations. Most WBIs have been based on CBT, and no studies were found that were based on any existential therapy (see 2.3.4 Therapeutic Approach). This lack led to the following general research question:

Can existential therapeutic approaches provide a suitable foundation for a self-guided WBI?

Barak *et al.* (2008) outlined that WBIs based on other therapeutic approaches might be as effective as WBIs based on CBT. The authors viewed the requirement of a particular set of skills to develop such WBIs as the critical success factor.

One of these required skills is a deep understanding of the specific therapeutic approach. Together with Alfried Längle, who developed the PEA (see 2.1.7), we aimed to specify the research question. Therefore, we focused on one specific therapeutic method the PEA with its

theoretical foundation, putting forth the research question:

Is the PEA suitable to be used as a self-guided WBI?

To answer the above question, we focused one of the method's strengths, that is to foster a client's authenticity. Therefore, the following specific research question resulted, which shall be answered within this thesis:

Is it possible to foster self-perceived authenticity with a self-guided WBI based on the PEA?

By answering the specific research question positively, an answer to the general research questions can be deduced.

However, the above research questions are not easily falsified as the attempt to answer them requires the implementation of a specific WBI and no general conclusion of a methods unsuitability can be drawn as it is always possible that solely the concrete implementation was unsuitable. It could be the case that another implementation would be more suitable and achieve different results. As a different wording would already result in a different implementation, the set of concrete implementations of WBIs based on the PEA is infinite. Therefore, the aim was to create an intervention which could be argued to be better than most other implementations.

The assumption was made that rooting the development in the experience and deep understanding of the PEA's developer would increase the chance of creating a concrete implementation is superior as compared to most other implementations. If that assumption holds, a negative result will show that inferior interventions (i.e. that are not based on a deep understanding of the PEA) would be unsuitable as well, if no other aspect of the intervention is superior.

3.3 Development of the WBI

The development of the WBI was oriented toward the stages of Whittaker *et al.'s* (2012) process for the development and testing of mobile-phone-based health interventions. These stages provided a set of consecutive steps to create an eHealth intervention from scratch.

This process aimed to create an intervention that can be evaluated regarding health-related outcomes, participants' satisfaction and adverse or unintended effects (Whittaker et al., 2012).

Whittaker *et al.'s* (2012) outlined stages of intervention development were:

1. Conceptualisation
2. Formative Research
3. Pretesting
4. Pilot Study

The following subsections outline the intended use and purpose as described by Whittaker *et al.* (2012) as well as how these stages were carried out in the development of this WBI. Due to the limitation of a master thesis, following Whittaker *et al.'s* (2012) complete procedure was not possible. Especially the stages formative research and pretesting were adapted to fit the limited timeframe.

3.3.1 Conceptualisation

In this phase, experts brainstorm and work out how the existing evidence and theory can be translated into practical methods and techniques applicable to the intervention's specific context (Whittaker et al., 2012).

A difference to Whittaker *et al.*'s (2012) general phase-description was that a concrete, practical method (i.e. the PEA) with various additional practical, applicable techniques already existed. The main task was to transfer the pre-existing methods into the context of a self-guided WBI.

In this process, the developer of the PEA, Alfried Längle, was considered the expert, providing a deep understanding and experience with the use of the method. He hinted towards the relevant literature from which a first intervention draft was created. In several discussions with him, this draft was refined and focused on the essential aspects of the PEA.

3.3.2 Formative Research

Whittaker *et al.* (2012) described the purpose of this phase to root the development of the intervention in the opinion and preferences of the intervention's target audience.

Due to the limited time-frame, instead of conducting online surveys and focus groups as Whittaker *et al.* (2012) suggested, the arising questions on how the PEA fits best with the target audience's usage of the internet was answered solely by literature review and informal discussions with peers belonging to the target audience (see 3.4.2).

One of these questions regarded the frequency of sending reminders. In alignment with Whittaker *et al.'s* (2012) formative research on the preferred frequency of text messages, reminders were sent daily to participants who did not respond within 24 hours to newly accessible content.

3.3.3 Pretesting

At this stage, the proposed contents of the intervention are tested regarding their acceptability by the target audience. The received feedback is collected and serves as the basis to refine the pre-existing intervention parts. The authors suggested the use of online surveys, focus groups and individual interviews. (Whittaker et al., 2012).

A slightly different approach was taken. Instead of testing single intervention parts as Whittaker *et al.* (2012) did in their studies, the whole draft intervention was tested in an online setup. This approach was chosen to deal with the limited resources of this thesis. It provided the opportunity to conduct a single test for all the different intervention's parts at once within similar conditions as they are going to be implemented in the final WBI. However, the stage of pretesting became intertwined with the next stage of conducting a Pilot Study, as it already included a first test of the intervention's procedure and the testers acceptance of it.

The testers were six peers (i.e. three males and three females in their late twenties who were either university students in their final year or had recently graduated and started to work) of whom five finished all the intervention's modules.

The intervention draft was first separated into four consecutive modules. The testers were told to test the intervention within four consecutive days. Every day, they gained access to one module and had to fill out a feedback form after completing the module.

The guiding questions of this phase were:

- Is the required time to complete each module accepted?
- Are the single parts within each module accepted and understood?

The central insight from this phase was to simplify the used language and shorten the duration of every module.

The testers were provided with a rough estimate of how long each module would take. However, two modules were strongly underrated and required depending on the individual tester two to three times longer. The underestimated duration was reported as demotivating to continue (i.e. some testers did not continue the next days after the

underestimated module and needed a personal reminder.).

The testers outlined confusing parts of the intervention, typos and unclear terminology. Additionally, two participants independently stated to prefer an intervention lasting for more days if the required time of every day is less, as that would fit easier into their everyday life. The other testers agreed to prefer the WBI to span over five days if it required less time each day when they were personally asked.

One intervention part required participants to do a short body-oriented-meditation. However, the participants reported struggling with the text-based instructions. Therefore, the meditation was spoken and recorded by a radio-speaker in her studio.

Regarding this phase's feedback, the two timewise underestimated modules were split into three modules, resulting in a five-day intervention. Further, the whole intervention was shortened and reworked (i.e. reducing the length of the texts; alternating various content types like videos, audio, text and interaction; reducing the sentence length; using little specific terminology and explaining them).

The resulting version of the intervention was thoroughly corrected by a German teacher regarding the used language. Afterwards, Alfried Längle corrected the intervention, ensuring that the reworked concrete implementation of the PEA as a WBI followed the methods intention and the experience of its therapeutic application.

3.3.4 Pilot Study

The Pilot Study aimed to test and receive feedback on the final intervention, including its technical aspects and the studies various procedures (e.g. recruitment, registration, data collection), from a small nonrandomised sample of the target population (Whittaker et al., 2012).

Whittaker *et al.'s* (2012) description of this phase is quite like the modified pretesting phase, which was used to develop the final version of the WBI. However, within this phase, the final intervention was tested as a 5-day intervention. Instead of daily feedback, participants were only asked at the end of the intervention to fill out one feedback-form to cohere to the procedure that will be used in the RCT as well. Additionally, the registration and data collection procedures were tested, including Pre- and Posttest-Questionnaires.

Due to the reported issues of the first Pilot Study, a second Pilot Study was conducted to test the adaptations, which resulted in the final intervention (see 3.3.5).

Pilot Study 1 (N=14)

The first Pilot Study was conducted with 14 peers with a completion rate of 43% (i.e. 6 participants completed the intervention). Henceforth, »*completion*« refers only to those participants who completed the whole intervention and filled out the feedback form on the final day.

A commonly reported issue within the first Pilot Study was the demotivating length of one of the three Questionnaires preceding the WBI. Therefore, the length of the Questionnaire, including its count of 56 Likert-scaled questions and the required average time of the Pilot Studies' participants to fill out that Questionnaire (i.e. 8 minutes) was calculated and displayed above the Questionnaire's items. The assumption was that increasing the studies procedures transparency would reduce the participants' annoyance not knowing for how long they will have to continue answering questions. Previously, the same assumption was applied to providing an estimate of the daily required time-effort. The Pretesting's feedback was considered not to underestimate the required time-effort. All time-estimates were refined for

the RCT with the Pilot-Studies' participants' daily average time-effort.

Additionally, slight changes were made within the text incorporating the first Pilot Studies' feedback (i.e. restructuring sentences, using simpler words and phrases if confusion was reported).

Some participants reported having used the WBI on their mobile phones while commuting. They reported that they could not sufficiently attend to all the intervention's parts as these did not fit the environment (e.g. an audio file of a guided-meditation). Therefore, on the first day of the WBI, participants were recommended to use it in an environment where they could concentrate and were not easily disturbed.

Pilot Study 2 (N=36)

The second Pilot Study was conducted with 36 students of the SFU Vienna (i.e. Sigmund Freud University Vienna) who voluntarily participated in response to an E-Mail asking for their participation in an effectiveness study researching the feasibility of the PEA as a self-guided WBI.

Only 8 participants completed the intervention, resulting in a lower completion rate of 22% as compared to the completion rate of 43% in the first Pilot Study. The lower completion rate could be attributed to the impersonal contact via e-mail and the fact that the participants of the second Pilot Study were not bound by peer obligations to complete it. The latter could have been the case in the first Pilot Study, as all participants were close peers.

However, the feedback (i.e. which was given at the end of the intervention, therefore, by completers only) was overwhelmingly positive. Some participants stated that they had already recommended the website.

Due to technical issues, the sending of reminders stopped working within this Pilot Study, which could attribute to the lower completion rate (see 3.3.6).

3.3.5 Intervention Description

This section describes the WBI *»authentischsein«* as it was used in the second Pilot Study and the RCT.

»Authentischsein« is a five-module self-guided online-intervention. It is based on the four consecutive steps outlined by the psychotherapy method of PEA (see 2.1.7). The procedural definition of that method served as the fundament of its translation into a self-guided intervention. Additionally, the intervention integrated all four *»Sources of Identity«* (see 2.2.5). These two provided the structure of the WBI.

Access

Participants could access the WBI via any modern web-browser (authentischsein.at). Although it was possible to access the WBI from anywhere, participants were recommended to use the WBI in a place where they were not disturbed and could concentrate.

Used Materials

The materials have been selected and written following the guiding questions for deciding on bibliotherapeutic relevance (see 2.3.2) and consisted of the types:

- **written text**
- **video-sequences** of an interview with Alfried Längle
- **audio-instructions** (i.e. a guided body-oriented meditation)
- **daily tasks** (i.e. short tasks which were instructed to be done until the start of the next module, somewhen during the day)

- **reflective-questions** (i.e. questions which asked participants to reflect and write down their answers)
- **therapeutic-conversations** (i.e. Dialogues between a therapist and a client which were displayed as a text-based chat-conversations with descriptions in-between (see Figure 2).

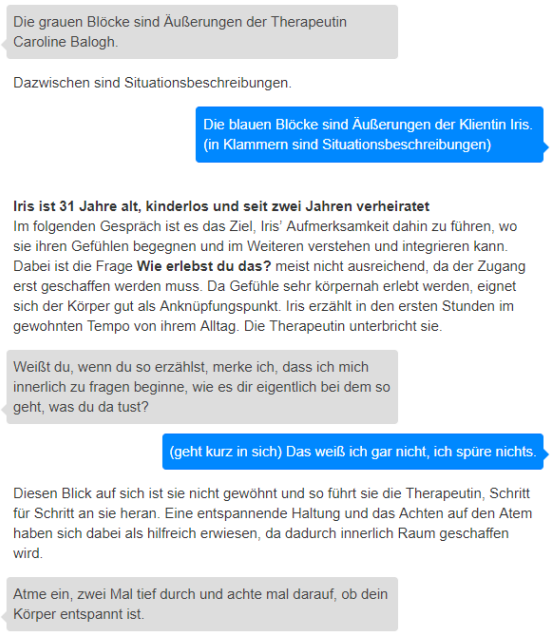


Figure 2: a short sequence of a therapeutic conversation as presented in the WBI

Updates

The content of the WBI was "frozen" during the RCT (i.e. no updates of the WBI's content were made) and used as presented in the following section.

Modules

The WBI was split into five consecutive modules. Every module consisted of multiple steps, which had to be completed step-by-step. Past steps could be revisited, but future content needed to be unlocked first. To be able to fit the WBI into the participants' schedules and to allow them to allocate enough time, participants were provided with the average required time (i.e. calculated from the time effort of the Pilot Studies' participants) of every module.

As participants completed all steps of a module, they were presented with a separate overview-page for the following module. On that page, they found a time-estimate of the following module with an outline of its steps. Additionally, on that overview-page participants could find a reminder of the module's daily task (i.e. which was already instructed within the module), repeating its instructions and the requirement to complete it until the start of the next module. A countdown indicated the time they had to wait until the next content was unlocked (i.e. the waiting time was calculated as the maximum value of either the time until the start of the next day or 12 hours). Participants were provided with the explanation for their waiting, namely that the WBI required time to be effective.

Day 1

Participants first registered on the website, providing demographic data and their first self-rating by answering the Pretest Questionnaires (i.e. the Authenticity Scale, Rosenberg's Self-Esteem Scale and the Test of Existential Motivations). After that, participants received information on the used definition of authenticity within this WBI, the basic principles of PEA and a general overview of the following four days. Besides textual content, the user could view a one-minute video-sequence of an interview with Alfried Längle explaining what it means to be authentic.

At the end of the first day, participants were asked to think of a situation in which they felt inauthentic until tomorrow's next session (i.e. the first daily task). Participants received a hint that the success of using the WBI depended on choosing a situation that is important to them, which is in the best case linked to intense emotions and occurred recently.

Day 2

On the second day, participants were introduced to the concepts of personal values and spontaneous feelings (see 2.1.4). A set of reflective-questions aimed to provide the chance to experience what is meant by spontaneous feelings.

Next, participants were taught how to endure unpleasant feelings by taking a more self-distanced perspective. Therefore, two approaches were taught. One was to reflect on the correlating personal value of a situation, and the other was to observe the bodily sensation connected to that feeling. Additionally, a short outline of a conversation between a therapist and a client was presented to show the connection between bodily sensations and feelings to gain access to one's feelings.

The following task was to direct the attention to the current feelings without judgement for five minutes. In a follow-up task, participants reflected on the occurred feelings. Next, participants were taught the connection between feelings and personal values and asked to reflect further on the occurred feelings.

Finally, participants were asked to describe the previously selected everyday-situation, in which they did not feel authentic, by focusing solely on the facts. Therefore, participants were requested to summarise the situation and to report only that what had happened (see 2.1.7: PEA 0: Description). To support the participants in focusing solely on the facts, they were given a note that the tasks of the following days are going to focus on the other aspects (i.e. the participant's subjective impression) of that situation.

As the module's daily-task, participants were asked to take short breaks during the day of 1-2 minutes to note how they are currently feeling.

Day 3

On that day, participants were provided with an introduction to the feeling of »Inner Coherence« (see 2.1.9) and the importance of their body awareness to gain access to it. They were provided with a chance to listen to an audio-file with subtitles and follow along with a guided 7.5-minute meditation (see 2.1.9: Body Oriented Access). Next, participants had to integrate the previously described situation's emotions through 4 consecutive tasks (see 2.1.7: PEA 1: Impression). In-between these tasks, participants were shown two interview-sections with Alfried Längle and short blocks of theory to guide the participants' attention to the essential aspects of answering the tasks' reflective questions.

As the module's daily-task, participants were asked to write down some of their »*Inner Dialogues*« (see 2.1.9) during the day, as preparation for the upcoming day.

Day 4

The previous daily-task served as an entry point for this module by asking participants to analyse the notes of their »*Inner Dialogues*«. Participants were given another daily-task to take notes of their inner dialogue, focusing the phenomenological aspect (i.e. asking them to note how they talk to themselves). To be able to reflect and foster a positive »*Inner Dialogue*«, participants were shown how they could distinguish between their »*inner voice«* and »*inner commentators«* (see 2.1.9).

Next, participants were introduced to the concept of »*Inner Positions*« and how to get to them (see 2.1.6).

To outline the importance of taking »*Inner Positions*« a conversation between a therapist and a client was presented, in which the client was troubled due to the lack of clarified »*Inner Positions*«.

In a 3-minute video-sequence from the interview with Alfried Längle, participants were explained a three-step-sequence of taking an »*Inner Positions*«. For each step, a task was given to help participants reflect the previously selected situation further (see 2.1.7: PEA 2: Inner Positioning).

Day 5

On the last day, participants were reminded of the importance of always regarding the current situation. Another short interview-clip was shown to outline what is essential in the expression of their »*Inner Positions*«.

In the following task, participants were asked to re-imagine the situation. Guiding questions asked the participants to incorporate the »*Inner Positions*« and express them in that situation (i.e. as if it would re-occur).

The final task was to concretely write down the interaction of the imagined situation in direct-speech incorporating the »*Inner Positions*« (see 2.1.7: PEA 3: Expression).

Next, participants were shown a short text, written by Längle (2011b), on allowing oneself to be who I am.

Finally, participants filled out the same Questionnaires as on Day 1, in the same order. Afterwards, participants were asked to provide feedback on a separate page.

In the end, participants were presented with the results of their Questionnaire-scores of both the pre- and Posttest-Questionnaires as was promised within the WBI.

Page Design Principles

A module consisted of multiple pages that structured its content. The content on every page was provided in a stepwise manner. Only after the current task was completed the next block of content (i.e. consisting of the next task with various »Used Materials« to communicate first what is essential to execute the task at hand) was faded in.

On every page, participants could view at the very top of the page in which module they were currently in with the option to navigate within the pages of the current module or to re-access a completed module. The required average time of the current module's pages and its total was displayed (see Figure 3).

Figure 3, Top-Navigation of the Module: Day 2 after having completed all the Module's pages

Additionally, on the right side of every page a sidebar (see Figure 4) was provided as an outline of the module's pages headings (i.e. displayed as links to navigate to previously accessed content and an outline of the next content displayed as disabled links that were activated once the content was unlocked) was provided.

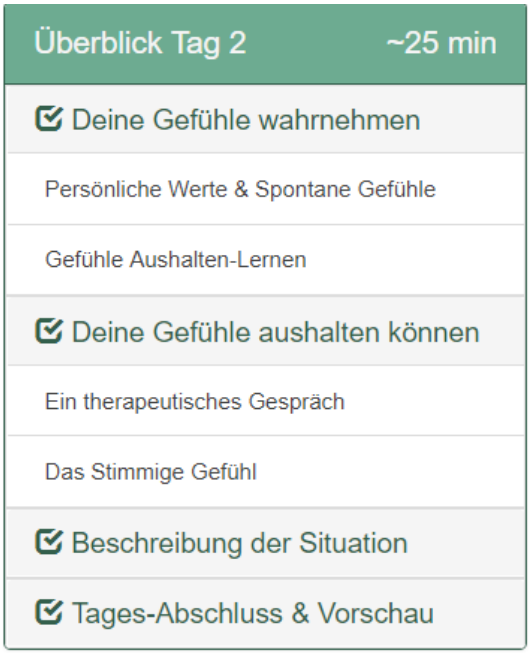


Figure 4, Sidebar-Navigation of the Module: Day 2 after all parts of the Module have been completed

At the bottom of any page participants were provided with external links to the online-

resources (Angermayr & Strassl, 2013; Balogh, 2012; Längle, 1998, 1999b, 1999a, 2000, 2003e, 2003d, 2003a, 2011b, 2011a, 2011c; Steinert, 2014) that served as the theoretical framework of the WBI. It was not obligatory to view any of these external resources. The primary purpose was to communicate the validity and transparency of the implemented underlying theoretical framework.

Reminder

Automatic reminders were integrated into the WBI (i.e. no additional reminders were sent in the RCT that would not be available in a routine application outside the context of the study). Whenever new content became available, participants were sent an e-mail notification addressed to the email account they used to register. Additional reminder-emails were sent, in case participants did not continue the WBI within 24 hours after the notification of the next available module was sent. At the bottom of every email, participants could deactivate the functionality of receiving emails by clicking on a deactivation-link.

3.3.6 Technical issues

Due to technical issues, no reminders were sent during the second Pilot Study and most of the RCT, as this was only noticed at the end of the RCT.

3.4 Evaluation of the WBI

Due to the limited time-frame of a master thesis and the expected low adherence which was predicted in the literature (see 2.3.5) and observed in the Pilot Studies (see 3.3.4) the evaluation study of the WBI was first planned as a single-group, pre- and Posttest-design to increase the group-sample-size. However, in line with Marsden and Torgerson (2012) who outlined the lack of single-group pre-experimental designs to address possible counterfactual inference (i.e. changes that would have happened without the intervention) and confounding variables such as test effects (i.e. improvements resulting from testing and re-testing) conducting such a trial design was dismissed.

3.4.1 Trial Design

Most meta-analyses recently conducted on WBIs included »*Randomised Controlled Trials (RCTs)*« only (see 2.3.4). RCTs have been referred to as *"the gold standard in evaluating the effects of treatments"* (Gartlehner et al., 2006, p. 3) and as "*the most rigorous way of determining whether a cause-effect relation exists between treatment and outcome"* (Sibbald & Roland, 1998, p. 201). Therefore, the study was designed as a two-arm »*Randomised Controlled Trials (RCTs)*« which was conducted entirely online. After registration and filling out the initial Questionnaires, participants got informed about which group they were assigned to, rendering it not blinded.

The strength of conducting an RCT is to "*minimise the risk of confounding factors influencing the results*" (Akobeng, 2005, p. 840), especially the risk of selection bias (Akobeng, 2005).

In the following sections, the implemented RCT's decisions are outlined and discussed.

Randomisation

Participants were distributed at a ratio of 1:1. Therefore, a randomised allocation sequence was generated, which assigned registering users to either the intervention or the control group. The randomisation dependent solely on the time of registration, assigning a new participant with the next entry of the sequence.

Although Kahan, Rehal and Cro (2015) argued in favour of always using a probability-based allocation (i.e. simple randomisation) to reduce selection bias, a fixed allocation sequence was used to ensure equal distribution to both groups. It was considered feasible regarding selection bias as participants decided on their account when they registered without the interference of any recruiter who was aware of the randomised allocation sequence.

Stratification

Although it was hypothesised that previous experience with psychotherapy would reduce the effect-size of the WBI, due to its simplicity no additional mechanism besides randomisation was used to ensure that the participants' characteristics were evenly distributed between control- and intervention group.

Intervention-Group

After registration, participants were allocated to either the control- or the intervention group.

Participants assigned to the intervention group received immediate access to the WBI's content and followed the procedure as it was described in the section Intervention Description (see 3.3.5 Intervention Description: Day 1 - Day 5). The minimum time to complete the intervention was five days.

Control-Group (Waiting List Condition)

While participants were filling out the first set of Questionnaires, they could not tell to which group they had been assigned. Afterwards, participants assigned to the control-group were asked to wait at least five days to reflect and select a specific situation from their everyday life in which they felt inauthentic. Additionally, participants were informed that selecting a suitable situation is beneficial to the WBI's effect (i.e. with the same description as the daily-task of Day 1 of the intervention, see 3.3.5).

This task was selected to occupy control-group participants with a similar topic (i.e. self-reflection and authenticity) in the meantime.

Succeeding the minimal waiting period of 5 days, control-group participants received a reminder e-mail and access to the intervention. At their next login, control-group users were asked to fill out the same Questionnaires they had filled out after their registration. Additionally, they were thanked for their effort and informed that it is going to help improve the WBI. By filling out this set of Questionnaires, control-group users provided the remaining data needed for comparison to the intervention-group.

However, these participants next gained access to the WBI as if they had been assigned to the intervention-group and just completed the Questionnaires of Day 1 (see 3.3.5). After completing the WBI, these participants have been presented the same Questionnaires as if they were in the intervention group (i.e. including the feedback Questionnaire). This was feasible as no follow-up Questionnaires were included in the trial design. It allowed to additionally analyse the results of participants who completed the control-group Questionnaires and the WBI without requiring more participants. However, the results of this sub-group need to be considered with caution. Their results might be biased due to extended test effects (i.e. filling out the Questionnaires thrice instead of twice) and the participants' self-selection (i.e. only the results of those participants who were as motivated as to wait, use the WBI and fill out the Questionnaires three times are available).

Blinding

"*Patients and trialists should remain unaware of which treatment was given until*

the study is completed—although such double blind studies are not always feasible or appropriate" (Sibbald & Roland, 1998, p. 201).

Although blinding was first intended, it was not included in the RCT. Possible distributors of the study outlined the lack of not knowing the studies procedure upfront. They criticised that receiving the information of having to wait after they had invested time to fill out the Questionnaires was frustrating. They named that frustration as one reason for not continuing the intervention or not sharing it with others.

To increase both the sample size and adherence to the intervention, the participants' blinding of their group-allocation was removed from the study. Eysenbach (2002, p.2) even stated that a web-based randomised "*trial cannot be conducted in a double-blind fashion as the patient always knows what intervention he receives*" (i.e. or at least it cannot be ensured that the participant does not know it). At the landing page of the WBI, participants were informed of the steps of the studies procedure as well as the random allocation. That increased the transparency of the study protocol, which was positively recognised in the participants' feedback.

3.4.2 Participants

Recruitment

Students and lecturers from the SFU (Vienna), University of Vienna and KFU (Graz) have been made aware of the study via e-mail and asked to participate and distribute the study. Additionally, bloggers who wrote about authenticity and online-newspapers that wrote about psychology-topics have been informed of the study and asked to write and distribute articles about the self-help WBI.

Further, the WBI was distributed via Facebook on Alfried Längle's Facebook-page and shared in various Facebook-groups (i.e. student-groups and groups focused on personality growth, self-help, counselling and therapy).

A professor at the KFU (Graz) shared the WBI in his course of pedagogics and rewarded students who wrote a reflection on their experience with the WBI.

After completing the intervention, participants were first asked how they would describe the intervention to others and how likely it is that they would recommend the intervention to their peers. The intention of that was to have participants think about recommending the WBI, fostering and extending its distribution by including a snowball sampling (i.e. some participants responded that they had already recommended the WBI to their peers).

Additionally, in every e-mail and post on Facebook, readers were asked to distribute the WBI to their peers.

<u>Recruitment Information</u>

At recruitment, participants were informed of the study's procedure and its aim of researching the feasibility of using the PEA as a self-guided WBI. The WBI was promoted as a self-help-tool to assist in becoming more authentic. It was outlined that the WBI was no substitute for psychotherapy (i.e. the difference to psychotherapy was described on the landing page, and contact information to suitable help in case of a psychological crisis or an emergency was provided).

Inclusion Criteria

The WBI was provided as an open-access website. Everyone of at least 18 years could participate. Participation required internet access and sufficient computer and internet-literacy (i.e. to be able to use an internet-

browser, register on a website and to access one's emails).

Exclusion Criteria

Participants who scored 100% on any of the Pre- or Posttest-Questionnaire's sub-scales were excluded from the Analysis as truthfully answering these questions rendered it impossible to score that high.

Anonymity

Participants did not have to provide their full name upon registration and were informed that they should pick a name with which they wanted to be addressed by the WBI. Additionally, participants had to enter a valid e-mail address which was used to send reminders and to add password-reset functionality. No measures were taken to prevent registration with multiple identities to ensure a high degree of anonymity.

Upon registration, participants had to accept the privacy policy (see 8 Appendices).

Self-Assessment

Participants' outcomes were completely online-self-assessed through online-Questionnaires, without any contact with the study team.

Estimated Sample Size

The estimated sample size was calculated based on the assumption that the effect-size of the WBI would be of similar magnitude as Barak *et al.'s* (2008) reported mean effect-size (ES=.54) of 65 WBI-studies (see 2.3.3 Effectiveness: Meta-Analyses).

The program »*G*Power 3*« was used to compute the A-priori required sample size for conducting t-tests on the difference between two independent means of the control- and intervention-groups pre- and Posttest-scores (Faul, Erdfelder, Lang, & Buchner, 2007). The minimally required participants in each group were computed to be 44 (i.e. as the effect-size was assumed to be of positive magnitude the minimal sample size was computed with a one-sided significance level of α=.05 and the Power 1-β=.8).

In accounting for potential drop-outs, the estimated sample size was calculated, including the drop-out-rate of the Pilot Studies (N=50) with 14 completers, resulting in a drop-out-rate of 72%. Therefore, the estimated minimum sample size was adjusted to incorporate potential drop-outs, resulting in a minimally required sample size of 158 participants in each group. To reach the Power of .95 with the same assumed effect-size and α would require 75 completers in each group (i.e. 268 participants in each group considering the previous drop-out-rate). However, as a minimum, the required sample size with the lower Power .8 was accepted.

Demographics

"It is important to study more precisely which existential intervention works the best for which individual client" (Vos, Cooper and Craig, 2015, p. 115).

At registration, participants were required to provide the following demographic information about themselves:

- **perceived gender**, as a selection of either male or female
- **age**, as a number-input restricted to numbers between 18 and 99
- **highest level of education**, as a selection (i.e. of either mandatory school, academic secondary school (AHS), apprenticeship/vocational school, secondary technical and vocational school (BMS), higher-level technical and vocational college (BHS), Bachelor, Master or PhD)
- **current occupation**, as a selection of either student, university student, self-employed, employed, unemployed, other (i.e. after selection a required and

unrestricted text-input was provided to specify the selection)

- **country of residue**, as a selection of either Austria, Germany, Switzerland or other (i.e. participant who selected other had to fill out an unrestricted text-input to further specify the selection)
- **previous experience with therapy**, as a selection of either: no experience, 30 hours or less, more than 30 hours or more than 100 hours

3.4.3 Primary Outcome Measures

The following Questionnaires have been reported following the CHERRIES statement for web-based surveys (Eysenbach, 2004). To avoid duplicate content, the CHERRIES statement's items which have already been answered are found in the previous sections.

The following Primary Outcome Measures are standard self-report Questionnaires taken at baseline (Pretest) and immediately after the intervention (Posttest). The control-group filled out the first Questionnaires without any noticeable difference to the intervention group directly after registration and the second time after the self-observation period, which lasted at least for as long as it took to complete the WBI (see 3.3.5 Intervention Description). Filling out the Questionnaires was mandatory to access the WBI.

In compliance with the Inclusion Criteria of a sufficiently high German skill and the sole langue the WBI was provided in (i.e. German), all scales were provided in their German version.

Following Vos, Cooper and Craig's (2015) recommendation: to select outcome measures which directly measure that which an intervention aims at changing (see 2.1.14 Future Directives), self-report instruments were chosen that measure authenticity, self-worth and existential motivation (see 2.1.11 Fundamental Motivations).

The Questionnaires were presented to all participants in the above order without any randomisation of the Questionnaires' items.

The Questionnaires were consecutively presented each on a separate page. At the top of the page, the Questionnaire's item-count and the Pilot-Studies' participants' average time-effort was communicated. To continue to the next Questionnaire and to access the WBI after the final Questionnaire, participants were required to provide an answer (i.e. selecting a radio-button) to all Questionnaire-items (i.e. this completeness check was done both on the clients end-point with Javascript and the server-side, only granting access if all items had been submitted). Once submitted the response of a single Questionnaire could not be altered.

All Questionnaires were presented with the same phrasing as their paper counterparts, except for the phrasing of gendered sentences which were phrased in accordance with the participants selected perceived gender at registration (e.g. an item of von Collani and Herzberg's (2003) German version of Rosenberg's global self-esteem scale: "*Alles in allem neige ich dazu, mich für eine Versagerin/einen Versager zu halten.*" was presented to participants who stated that their perceived gender was female as "*Alles in allem neige ich dazu, mich für eine Versagerin zu halten.*").

Authenticity Scale (AS)

Two self-report instruments, the Authenticity Inventory (Kernis & Goldman, 2006) and the Authenticity Scale (Wood et al., 2008) have been created to measure dispositional authenticity. In his dissertation, White (2011) compared these two and advocated the future use of the Authenticity Scale, pointing out strong empirical support he found for the Authenticity Scale and a

poor outcome of the factory analysis he performed on the Authenticity Inventories factor structure. He discouraged the future use of the Authenticity Inventory by raising the question of "*what the scale is actually measuring*" (White, 2011, p. 46). Following White's (2011) recommendation the Authenticity Scale was used which is based on the »*Authenticity Scale Model*« (see 2.2.3 Authenticity Scale Model and 2.2.2 »*Kernis and Goldman Authenticity (KGA) Model*« to find information and a comparison of both instruments' underlying models).

The Authenticity Scale is a 12-item self-rated instrument with three sub-scales: »*self-alienation*«, »*authentic living*« and »*external influence*«. Wood *et al.* (2008) aimed at developing a short scale with the intent of its applicability in the field of counselling psychology. Each sub-scale consists of 4 statements rated on a 7-Point Likert scale ranging from 1 ("*does not describe me at all*") to 7 ("*describes me very well*") (Wood et al., 2008, p. 387).

The authors showed that their self-rate measure test-retest stability ranged for each sub-scale from r =.78 to r = .84 in either a 2- and a 4-week test-retest reliability study (Wood et al., 2008).

The German version of this scale was used, which was previously translated, evaluated and used by Knoll *et al.* (2015) who kindly provided the translated scale for this thesis.

Rosenberg's Self-Esteem Scale (SES)

A German version of Rosenberg's global self-esteem scale was used, which was previously revalidated for its internal structure. The authors, von Collani and Herzberg (2003), promoted a bivariate structure, consisting of negative-self-esteem termed as »*self-deprecation*« and positive self-esteem referred to as »*self-acceptance*«. The scale consists of 10 statements which were rated on a 4-Point Likert scale ranging from 1 "*strongly disagree*" to 4 "*strongly agree*". As the authors explorative and confirmative factor analysis suggested, the five negative formulated statements construct the measure of »*self-deprecation*« and the five positive statements »*self-acceptance*« (von Collani & Herzberg, 2003).

The global self-esteem score (i.e. the result of the unidimensional version of the scale) is calculated by reverse scoring the dimension of »*self-deprecation*« and adding it to the *self-acceptance*« score (von Collani & Herzberg, 2003).

Test of Existential Motivations (TEM)

The »*Test of Existential Motivation (TEM)*« is a 56-item Questionnaire measuring a person's constitution of the four »*Fundamental Motivations (FM)*«. Each FM is represented as a sub-scale with 14-statements rated on a 6-Point Likert scale ranging from 6 ("*agree completely*", German: "*stimmt*") to 1 ("*disagree completely*", German: "*stimmt nicht*") (Eckhardt, 2001).

The TEM's four dimensions have been referred to in English by Shumsky, Osin and Ukolova (2017) as:

FM 1. »*Possibility of being in the world*«
(i.e. German: "*Grundvertrauen*")

FM 2. »*Value of life*«
(i.e. German: "*Grundwert*")

FM 3. »*Value of self*«
(i.e. German "*Selbstwert*")

FM 4. »*Meaning*«
(i.e. German: "*Sinn des Lebens*")

The TEM reflects the theoretical foundation of the WBI. Its third dimension: »*Value of self*« was expected to be closely related to the effects of the WBI due to its close relation to the concept of authenticity (see 2.1.11 Fundamental Motivations: The third condition).

However, Eckhardt (2001) already reported a high correlation between the four dimensions. This correlation suggests that changes in any dimension should result in changes in the same direction within the other dimensions.

While developing the TEM, Eckhardt (2000) tested the new instrument with participants (N=1013) across all age and occupational groups and reported to have found no significant impact of the participants' age, gender, marital status and education on the TEM's dimensions. However, Grabner (2008) compared Eckhardt's (2000) results with a mean score of 36 clinical patients, indicating a noticeable difference:

Table 4, mean scores of the TEM's four sub-scales in a normal population and a clinical population.

	FM1	FM2	FM3	FM4
normal population N=1013	4.8	5.3	4.8	5.0
clinical population N=36	3.0	3.7	3.2	3.5

A score below 3.5 on any sub-scale is considered as conspicuously low (Grabner, 2008).

3.4.4 Secondary Outcome Measures

Usage Metrics

For every logged-in-user, the following interactions with the Website were stored (i.e. including the user's identification number, the time and day of the interaction, the used browser and the interaction's unique identification label):

- Viewing a page
- Completing a task (i.e. some tasks required users to submit a written response, which was stored as well)
- Completing a Questionnaire

These interaction-logs allowed to calculate how long users needed to complete the Questionnaires, the single modules and the whole intervention, including how much time passed in-between the single modules (i.e. after the minimum waiting time had passed, users could decide on how long they waited to start with the next module, see 3.3.5 Intervention Description: Modules).

Feedback-Questionnaire

At the end of the WBI, after participants had filled out and submitted the Posttest-Questionnaires, they were redirected to another page asking them to provide feedback. The feedback-Questionnaire consisted of the participants' perceived change of having used the WBI, its perceived usefulness and the intention to use and recommend it (see Appendix: Feedback Questionnaire).

4 Results

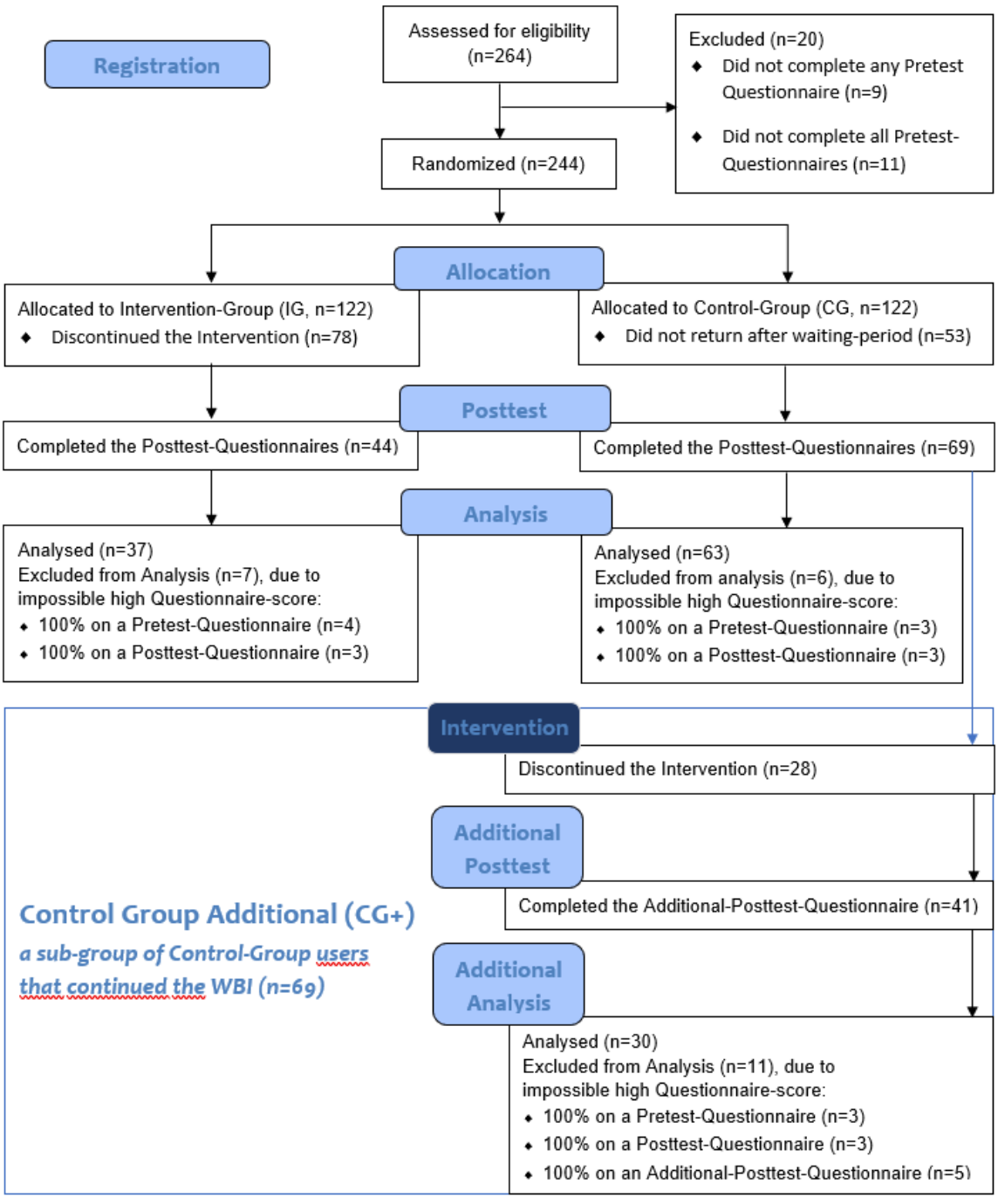
4.1 Participant Flow

The RCT was conducted between October 2017 and February 2019. In Figure 5, the RCT's participant flow is outlined.

As no follow-up measurements were taken, the follow-up section was removed from the diagram (i.e. as opposed to the adapted CONSORT Flow Diagram).

All participants assessed for eligibility stated at registration to fulfil the inclusion criteria (see 3.4.2). Participants who did not fill out all Pretest-Questionnaires were prevented from starting the WBI and therefore excluded from further participation.

Figure 5, Participant Flow Diagram, adapted from the CONSORT Flow Diagram (2010)



The 244 participants that filled out all three Pretest-Questionnaires were randomly assigned to either directly start with the five days WBI the »*Intervention Group (IG)*« or to the »*Waitlist Control Group (CG)*« (i.e. the waiting-condition was formulated as a preparation task of the intervention, namely: to think for at least 5 days of a situation where they did not feel authentic).

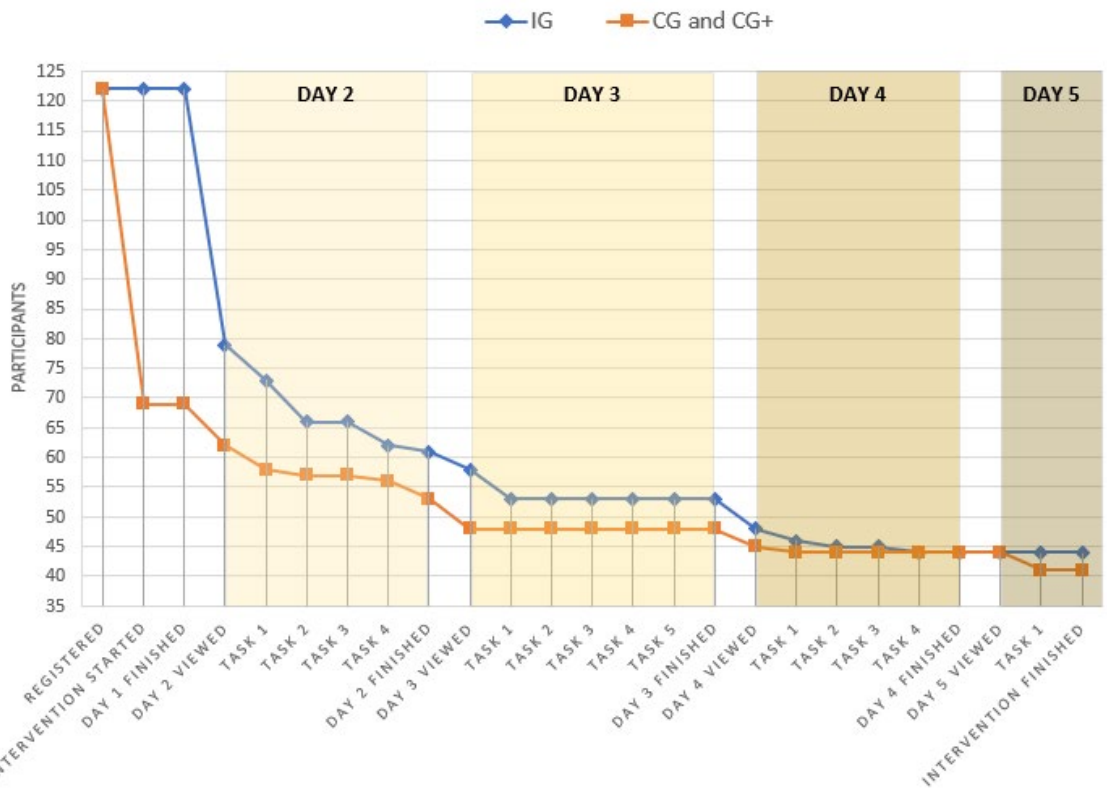
As outlined in the blue box »*Control Group Additional (CG+)* in Figure 5, CG users could start the intervention like IG users, but only after having completed the Posttest-Questionnaires. Therefore, CG+ users filled out the same set of Questionnaires (i.e. as the ones provided in Pretest and Posttest) one additional time as compared to the other groups. This rendered the results from the additional analysis as not comparable additional results, which must be viewed as separate from the RCT. However, the data provide further insight into the WBI's overall drop-out-behaviour.

The exclusion criteria were applied before each Analysis (see 3.4.2 Exclusion Criteria).

4.1.1 Attrition and Adherence

To address the typically high attrition within e-health trials, Eysenbach (2005, 2013) recommended the use of attrition curves as a complement to the participant flow diagram. Attrition curves should visualise the drop-out behaviour and enable the comparison of the RCT's groups. Further, Eysenbach (2005, p. 6) suggested that *"the shape of the*

Figure 6, Attrition Curve of the RCT's Groups



The first two data-points of the joined attrition curve (CG and CG+) outline the CG's drop-out of the participants that did not return after the waiting-period. The following data-points show the drop-out-behaviour of the CG+ participants, that continued with the intervention.

Abbreviations: Intervention Group(**IG**), Control Group (**CG**), Control Group Additional (**CG+**)

curve may indicate the underlying causes for attrition".

In Figure 6, the drop-out behaviours are resembled by L-shaped attrition curves. Eysenbach (2005, p. 7) outlined that this shape of attrition curve "*indicates an initial rapid weed-out process without preceding "curiosity plateau", possibly because many of the enrolled participants were the wrong user group who lose interest quickly".*

In the IG, 78 out of 122 (64%) participants dropped out. In the CG, 53 out of 122 (43%) participants dropped out by not returning after the waiting-period. All CG-users that returned filled out the Posttest-Questionnaires and started the intervention. 28 out of the 69 (41%) remaining CG+ participants dropped out of the intervention. In total, 81 out of 122 (66%) participants allocated to the CG dropped-out.

Although the joined effort of CG and CG+ was higher than the effort of completing the IG, the total attrition within both groups levelled out, showing a similar count of remaining participants. Eysenbach (2005, p.7) labelled such participants as »*hardcore user*« "*who continue to use the application over extended periods of time".*

4.2 Data Preparation

All data were imported from the WBI's database and analysed in IBM SPSS v. 25.

4.2.1 Handling of incomplete Questionnaire Data

Completing the Pretest-Questionnaires was a requirement to start the WBI. Therefore, only participants that completed all Pretest-Questionnaires were included in the RCT (i.e. 20 of 264 users who registered were excluded due to not completing the Pretest-Questionnaires). At Posttest, all participants that began to fill out the Posttest-Questionnaires completed them.

4.2.2 Questionnaire Exclusion-Criteria

All participants with too low response times were excluded, as a simple technique to deal with participants insufficient Questionnaire-response-effort. As advocated by Curran (2015), a conservative cut-time of 2 seconds per item was used, which was previously employed by Huang *et al. (*2012). However, only one participant's response time was below 2 seconds per Questionnaire-item, and that participant did not complete the IG.

Therefore, only participants that violated the exclusion criteria (i.e. excluding all participants that scored 100% on any sub-scale of any of the Pre- or Posttest's Questionnaire, see 3.4.2 Exclusion Criteria) were excluded from the analysis (i.e. 7 of 44 IG completers, 6 of 69 CG completers and 11 of 41 CG+ completers violated the exclusion criteria).

To provide a comparison, less stringent exclusion criteria were considered as well. Instead of excluding all participants that scored 100% on any sub-scale, only those participants were excluded that scored 100% on at least one total scale. By comparison, this was not violated by any completer in any group (see Appendix: Alternate Participant Flow

4.2.3 Prevention of Multiple Entries

No specific mechanisms were implemented to prevent participants from participating multiple times. However, the overall effort to participate multiple times was quite high, rendering it unlikely (i.e. besides completing a 5-day intervention, registration and filling out multiple Pre- and Posttest-Questionnaires was required to participate).

4.3 Baseline Data

Table 5 outlines the differences between the randomly assigned baseline demographic characteristics of the RCT-groups.

The average age was 37.0 years (SD = 12.3) in the IG and 36.7 years (SD = 13.1) in the CG. Half the participants (i.e. 47.1%) held a university degree, a third of the participants' main occupation was studying (i.e. 33.2%) while half the participants (i.e. 53.7%) were mainly occupied by working. 94.3% of all participants lived either in Austria or Germany. 65.6% of all participants reported having already had therapeutic self-experience and 42.2% to have had more than 30 hours of therapy.

Table 5, Baseline Demographic Characteristics of each Group at Randomisation

	IG (n=122)		CG (n=122)		Total (N=244)	
Characteristic	count	n %	count	n %	count	N %
Gender						
female	92	75.4%	100	82.0%	192	78.7%
male	30	24.6%	22	18.0%	52	21.3%
Age						
18-19 years	3	2.5%	0	0%	3	1.2%
20-29 years	41	33.6%	51	41.8%	92	37.7%
30-39 years	24	19.7%	26	21.3%	50	20.5%
40-49 years	29	23.8%	17	13.9%	46	18.9%
50-59 years	23	18.9%	22	18%	45	18.4%
60+ years	2	1.6%	6	4.9%	8	3.3%
Highest Level of Education						
compulsory schooling	2	1.6%	0	0.0%	2	0.8%
VET school	16	13.1%	9	7.4%	25	10.2%
secondary academic school	31	25.4%	39	32%	70	28.7%
VET college	16	13.1%	16	13.1%	32	13.1%
Bachelor	19	15.6%	20	16.4%	39	16%
Master	35	28.7%	33	27%	68	27.9%
PhD	3	2.5%	5	4.1%	8	3.3%
Current Occupation						
student	40	32.8%	41	33.6%	81	33.2%
self-employed	21	17.2%	16	13.1%	37	15.2%
employed	44	36.1%	50	41%	94	38.5%
unemployed	6	4.9%	7	5.7%	13	5.3%
other	11	9%	8	6.6%	19	7.8%
Country of Residence						
Austria	72	59%	76	62.3%	148	60.7%
Germany	41	33.6%	41	33.6%	82	33.6%
Switzerland	6	4.9%	2	1.6%	8	3.3%
other	3	2.5%	3	2.5%	6	2.5%
Therapeutic Self-Experience						
no experience	38	31.1%	46	37.7%	84	34.4%
0 < experience <= 30	26	21.3%	31	25.4%	57	23.4%
30 < experience <= 100	28	23%	22	18%	50	20.5%
experience > 100	30	24.6%	23	18.9%	53	21.7%

Abbreviations: Intervention Group (**IG**), Control Group (**CG**)

4.3.1 Numbers Analysed

Following a per-protocol analysis, only those participants were analysed that completed their assigned treatment, that filled out the group's respective final Posttest and that complied with the exclusion criteria. In Table 6, the baseline characteristics of the analysed participants within each group are outlined.

The population of the analysed participants is biased by encompassing mostly female Austrian students between 20-29 years who acquired at least the qualification for university entry and who had at most 30 hours of previous therapeutic self-experience.

Table 6, Baseline Demographic Characteristics of each Analysed Group

	IG (n=37)		CG (n=63)		CG+ (n=30)	
Characteristic	count	n %	count	n %	count	n %
Gender						
female	30	81.1%	54	86.1%	25	83.3%
male	7	18.9%	9	13.9%	5	16.7%
Age						
18-19 years	1	2.7%	0	0.0%	0	0%
20-29 years	19	51.4%	33	50.4%	20	66.7%
30-39 years	4	10.8%	12	20.0%	3	10%
40-49 years	8	21.6%	5	7.9%	3	10%
50-59 years	4	10.8%	10	16.4%	4	13.3%
60+ years	1	2.7%	3	5.4%	0	0%
Highest Level of Education						
compulsory schooling	1	2.7%	0	0.0%	0	0%
VET school	3	8.1%	1	1.4%	1	3.3%
secondary academic school	11	29.7%	20	30.7%	12	40%
VET college	8	21.6%	10	15.4%	4	13.3%
Bachelor	6	16.2%	15	24.3%	7	23.3%
Master	6	16.2%	14	23.2%	5	16.7%
PhD	2	5.4%	3	5.0%	1	3.3%
Current Occupation						
student	20	54.1%	30	45.4%	18	60.0%
self-employed	3	8.1%	6	10.0%	2	6.7%
employed	10	27%	22	36.4%	8	26.7%
unemployed	1	2.7%	3	4.6%	2	6.7%
other	3	8.1%	2	3.6%	0	0%
Country of Residence						
Austria	28	75.7%	45	70.0%	24	80%
Germany	2	5.4%	0	0.0%	0	0%
Switzerland	7	18.9%	17	28.2%	6	20%
other	0	0%	1	1.8%	0	0%
Therapeutic Self-Experience						
no experience	14	37.8%	27	41.4%	15	50%
experience <= 30	10	27%	20	32.5%	8	26.7%
experience <= 100	6	16.2%	11	18.6%	3	10%
experience > 100	7	18.9%	5	7.5%	4	13.3%

Abbreviations: Intervention Group (**IG**), Control Group (**CG**), Control Group Additional (**CG+**) a sub-group of the CG containing all participants that completed the control condition and intervention

4.4 Primary Outcomes

The three Questionnaires:

- Test of Existential Motivations (TEM)
- Authenticity Scale (AS)
- Self-Esteem Scale (SES)

were considered as the Primary Outcome Measures (see Research Methodology: 3.4.3, to find a description of each measure) which were filled out at Pretest and Posttest.

Gain-scores (i.e. calculated by subtracting the Questionnaires' Pretest-scores from the Posttest-scores) were used to measure the effect of each assigned treatment.

Independent samples t-tests were conducted on the gain-scores of all Primary Outcome Measures, To examine the difference between the IG's and CG's treatment effects.

Cohen's *d* was calculated by dividing the difference between both groups mean gain-scores by the groups pooled standard deviation SD_{pooled} (i.e. $d = (M_2\text{-}M_1)/SD_{pooled}$, with $SD_{pooled} = \sqrt{((SD_1^2 + SD_2^2)/2)}$).

The normality assumptions, a requirement of parametric statistical tests, were assessed as recommended by Ghasemi and Zahediasl (2012) using the Shapiro-Wilk test instead of the Kolmogorov-Smirnov test (see Appendix: Shapiro Wilk-Tests of Normality). In case the Shapiro-Wilk test failed to assume normality for any of the compared groups the gain-scores follow a normal distribution, the alternative non-parametric Mann-Whitney U-test was conducted. Additionally, in these cases, the independent t-tests are reported but highlighted in grey and marked with a reference-note.

As the parametric and non-parametric test results yield different effect-size-measures, the effect-size-measure Cohen's *d* has been calculated for the non-parametric tests as well, to enable their comparison. This was accomplished by following Fritz, Morris and Richler's (2012) guideline. Therefore, the effect-size-measure r (i.e. $r = Z/\sqrt{N}$) was calculated and afterwards translated to the effect-size Cohen's *d* (i.e. $d = 2r/\sqrt{(1\text{-}r^2)}$) (Fritz et al., 2012).

The homogeneity of variance assumption between the groups was assessed by Levene's Test for Equality of Variances. In case this test failed to show homogeneity of variances between the compared groups, SPSS' Satterthwaite approximation was employed reducing the degrees of freedom, while marking the outcome measure that did not meet the assumption with a note.

Table 7, Results of Independent t-Tests and Descriptive Statistics of all Primary Outcome Measures' Total-Scales' Gain-Scores by Assigned Group

Primary Outcome Measure	Assigned Group IG (n=37) M	IG (n=37) SD	CG (n=63) M	CG (n=63) SD	95% CI for the Mean Difference IG – CG	t	df	Sig. 2-tailed p	Effect-size Cohen's d
TEM[a,b]	11.6	30.8	3.03	18.3	-2.57, 19.7	1.55	51[a]	.13	.34
AS[a]	1.68	9.08	1.22	6.37	-2.94, 3.85	.27	57[a]	.79	.059
SES	1.65	4.18	1.02	3.08	-.82, 2.08	.87	98	.39	.17

[a] Satterthwaite approximation employed due to unequal group variances

[b] failed to assume normality using Shapiro-Wilk test

Abbreviations: Intervention Group (**IG**), Control Group (**CG**), Confidence Interval (**CI**), Mean (**M**), degrees of freedom (**df**), Standard Deviation (**SD**), Test of Existential Motivations (**TEM**), Authenticity Scale (**AS**), Self-Esteem Scale (**SES**)

First, the Primary Outcome Measures' total-scales' gain-scores between all eligible participants of the IG and CG were compared (see 4.3.1 Numbers Analysed).

However, normality could not be assumed for the comparison of the TEM's gain-scores as the Shapiro-Wilk test failed to show that the IG's gain-scores follow a normal distribution test (see Appendix: Shapiro Wilk-Tests of Normality: Table 20). The non-parametric alternative, the Mann-Whitney U-test indicated that the difference between the IG (Mdn = 3) and CG (Mdn = 1) in gain-scores on the TEM's total-scale were not statistically significant, U = 1036, p = .036, r = .17, Cohen's d = .34.

Furthermore, Levene's Test for Equality of Variances failed to assume equal variances between the IG and CG for both the gain-scores measured with the TEM and the AS. Therefore, the Satterthwaite approximation was employed to account for the t-tests with unequal group variances. Table 7 outlines that no significant differences between the IG and CG on any Primary Outcome Measure's total-scale was found.

4.4.1 Interaction-Effect Therapeutic Experience

As previous therapeutic experience was expected to impact the WBI's efficacy, its interaction effect with the gain-scores was examined. Therefore, participants were split into three experience-levels, namely participants with:

no experience: 0 hours of therapy,

low experience: 0 < experience ≤ 30 hours,

h**igh experience**: experience > 30 hours (i.e. At registration, participants with high experience were further distinguished as either having more than 30 hours of therapy or more than 100 hours of therapy. However, as most participants with high experience dropped-out, all participants with more than 30 hours of therapy were considered as participants with high experience).

Again, independent t-tests were conducted to compare the IG and CG, but within the three experience-levels. This resulted in 6 separate groups.

The Shapiro-Wilk tests showed that within each of these 6 groups all gain-scores of each of the primary measures' total-scales could be assumed to follow a normal distribution (see Appendix: Shapiro Wilk-Tests of Normality: Table 21). This is interesting, as the normal distribution of gain-scores could not be assumed for the TEM's total-scale within the overall IG. Furthermore, Levene's Test for Equality of Variances showed that equal variances could be assumed within each of these 6 groups.

However, only the difference in gain-scores between the IG and CG with low experience showed significant group-differences (see Table 8). Therefore, all further analysis focus on participants with low experience. To better understand these significant differences between the IG and CG with low experience, the Primary Outcome Measures' sub-scales were analysed.

While the total-scales' gain-scores could all be assumed to follow a normal distribution within each of the 6 groups, this was not true for the sub-scales' gain-scores. The gain-scores of the IG could not be assumed to follow a normal distribution for the TEM's sub-scale: FM 3 – the value of self and the SES' sub-scale: Self-Acceptance. The gain-scores of the CG could not be assumed to follow a normal distribution for the TEM's sub-scale: FM 2 – the value of life, the AS' sub-scale: Authentic Living and as well the SES' sub-scale: Self-Acceptance (see Appendix: Shapiro Wilk-Tests of Normality).

In Table 9, the difference between all IG's and CG's Primary Outcome Measures' sub-scale gain-scores are compared with

Table 8, Results of Independent t-Tests and Descriptive Statistics of all Primary Outcome Measures' Total-Scales' Gain-Scores by Assigned Group Outlining the Differences between Therapeutic Experience Levels

Primary Outcome Measure	Assigned Group IG M	IG SD	IG n	CG M	CG SD	CG n	95% CI of the Mean Difference IG - CG	t	df	Sig. 2-tailed p	Effect-size Cohen's d
	Participants with No Experience (0 hours of therapy)										
TEM	5	31.3	14	5.85	18.7	27	-16.6, 14.9	-.11	39	.91	-.033
AS[a]	-1.14	8.5	14	1.59	4.5	27	-7.87, 2.4	-1.13	17[a]	.28	-.4
SES	1.21	4.15	14	.67	2.95	27	-1.72, 2.81	.49	39	.63	.15
	Participants with Low Experience (0 < hours of therapy ≤ 30)										
TEM	34.2	36.9	10	1.1	18.4	20	12.8, 53.4	3.35	28	.002**	1.15
AS[a]	8.3	10	10	.4	5.4	20	.47, 15.3	2.33	12[a]	.039*	.98
SES	5	4.67	10	1.9	2.9	20	.27, 5.92	2.25	28	.033*	.8
	Participants with High Experience (hours of therapy > 30)										
TEM	1.38	14.1	13	.69	18	16	-11.9, 13.2	.11	27	.91	.04
AS	-.38	6.54	13	1.63	9.7	16	-8.48, 4.46	-.64	27	.53	-.24
SES	-.46	1.76	13	.5	3.44	16	-3.12, 1.2	-.91	27	.37	-.35

[a] Satterthwaite approximation employed due to unequal group variances

* Significant at the .05 probability level

** Significant at the .01 probability level

Acronyms: Intervention Group (**IG**), Control Group (**CG**), Confidence Interval (**CI**), Mean (**M**), degrees of freedom (**df**), Standard Deviation (**SD**), Test of Existential Motivations (**TEM**), Authenticity Scale (**AS**), Self-Esteem Scale (**SES**)

independent t-tests. In the case of failed normality assumptions, the corresponding t-tests are outlined in grey and were repeated using the alternative non-parametric Mann-Whitney U-test (see Table 10).

Levene's Test for Equality of Variances showed that equal variances could be assumed for all sub-scales but the SES' sub-scale: Self-Acceptance.

Multiplicity of Analyses

As multiple statistical tests were conducted on the same data (i.e. in total 21 tests), the chance of conducting a Type I error (i.e. a false positive) is increased. Therefore, the Bonferroni adjustment was employed. The adjusted significance level $\alpha' = .0024$ was calculated by dividing the original alpha level $\alpha = .05$ by the number of all conducted tests (i.e. $\alpha' = .05/21$) (Chen, Feng, & Yi, 2017). The Bonferroni adjustment is considered a "*very stringent criterion*" (Chen et al., 2017, p. 1727). Following Cohen's (1992) effect-size categorisation, all significant differences between the IG and CG are classified as strong effects (i.e. Cohen's $d > .8$). The strongest and most significant effects that sufficed the adjusted significance level $\alpha' = .0024$ were found by comparing the results of the TEM's sub-scales FM 3 and FM 4 (see Table 9 and Table 10).

Table 9, Results of Independent t-Tests and Descriptive Statistics of all Primary Outcome Measures' Gain-Scores' Sub-Scales by Assigned Group for Participants with Low Therapeutic Experience (0 < hours of therapy ≤ 30)

Primary Outcome Measure	Assigned Group IG (n=10) Mean	IG (n=10) SD	CG (n=20) Mean	CG (n=20) SD	95% CI for the Mean Difference IG - CG	t	df	Sig. 2-tailed p	Effect-size Cohen's d
	Subscales within the Test of Existential Motivations (TEM)								
FM 1	8.9	11.2	-.15	7.49	2.03, 16.1	2.64	28	.013*	.951
FM 2[b]	5.7	10.9	.8	5.27	-1.09, 10.9	1.68	28	.105	.572
FM 3[b]	11.4	9.3	.25	4.19	6.15, 16.2	4.57	28	.000***	1.547
FM 4	8.2	7.1	.2	5.02	3.42, 12.6	3.58	28	.001**	1.301
	Subscales within the Authenticity Scale (AS)								
AEI	2.5	4.33	1.35	2.30	-1.31, 3.61	0.96	28	.346	.332
AL[b]	1.8	3.16	-1.05	1.99	.93, 4.77	3.04	28	.005**	1.081
S-A	4	4.67	.1	4.01	.54, 7.26	2.38	28	.024*	.896
	Subscales within the Self-Esteem Scale (SES)								
S-AC[a,b]	2.6	2.8	.7	1.59	-.18, 3.98	1.99	12[a]	.07	.835
S-D	-2.4	2.59	-1.2	1.77	-2.84, 0.44	-1.5	28	.145	-.541

[a] Satterthwaite approximation employed due to unequal group variances

[b] failed to assume normality using Shapiro-Wilk test

* Significant at the .05 probability level

** Significant at the .01 probability level

*** Significant at the .001 probability level

Table 10, Results of the Mann-Whitney U-Test (2 Independent Samples) of the Primary Outcome Measures' Subscales' Gain-Scores by Assigned Group for Participants with Low Therapeutic Experience (0 < hours of therapy ≤ 30)

Primary Outcome Measure: Subscale	Assigned Group IG (n=10) Mean Rank	IG (n=10) Sum of Ranks	CG (n=20) Mean Rank	CG (n=20) Sum of Ranks	Test Statistics Mann-Whitney U	Z	Asymp. Sig. (2-tailed) p	Effect-size Cohen's d
TEM: FM 2	18.9	188.5	13.8	276.5	66.5	-1.49	.137	.564
TEM: FM 3	23.9	238.5	11.3	226.5	16.5	-3.69	.000***	1.82
AS: AL	21.6	216	12.5	249	39	-2.72	.006**	1.15
SES: S-AC	19.7	197	13.4	268	58	-1.91	.056	.744

** Significant at the .01 probability level

*** Significant at the .001 probability level

Acronyms: Intervention Group (**IG**), Control Group (**CG**), Confidence Interval (**CI**), degrees of freedom (**df**), Standard Deviation (**SD**),

Test of Existential Motivations (**TEM**): The TEM's four subscales refer to the four Fundamental Motivations (**FMs**), namely: the possibility of being in the world (**FM 1**), the value of life (**FM 2**), the value of self (**FM 3**) and Meaning (**FM 4**) (see 3.4.3),

Authenticity Scale (**AS**): Accepting External Influence (**AEI**), Authentic Living (**AL**), Self-Alienation (**S-A**), negative-items have been reverse scored (i.e. higher scores represent improvement)

Self-Esteem Scale (**SES**): Self-Acceptance(**S-AC**), Self-Deprecation (**S-D**, the only reported sub-scale where a more negative value represents improvement)

The Bonferroni adjustment is considered highly conservative and overly conservative for non-independent findings (i.e. which is the case in the present study). However, the Bonferroni adjusted alpha level can be used as an upper bound ensuring "*that the probability of rejecting at least one hypothesis when all are true is no greater than α*" (Simes, 1986, p. 751).

Conducting multiple t-tests and adjusting the acceptable significance level yields the possibility of Type II – Error (i.e. ignoring a statistically significant difference between IG and CG). Instead of conducting twelve independent t-tests to analyse the differences within the three Primary Outcome Measures' total-scales' and their interaction effects, only three two-way ANOVA's could be used to accomplish the same. This reduces the number of conducted tests (i.e. instead of 21 tests, only 12 tests), which increases the overall Bonferroni adjusted acceptable significance level to $\alpha'' = .0042$ (i.e. $\alpha'' = .05/12$). However, employing the less stringent α'' instead of α' would not

Figure 7, Graphical Analysis of Interaction Effects on the Test of Existential Motivations' Gain-Scores Between Assigned Group and Experience Level

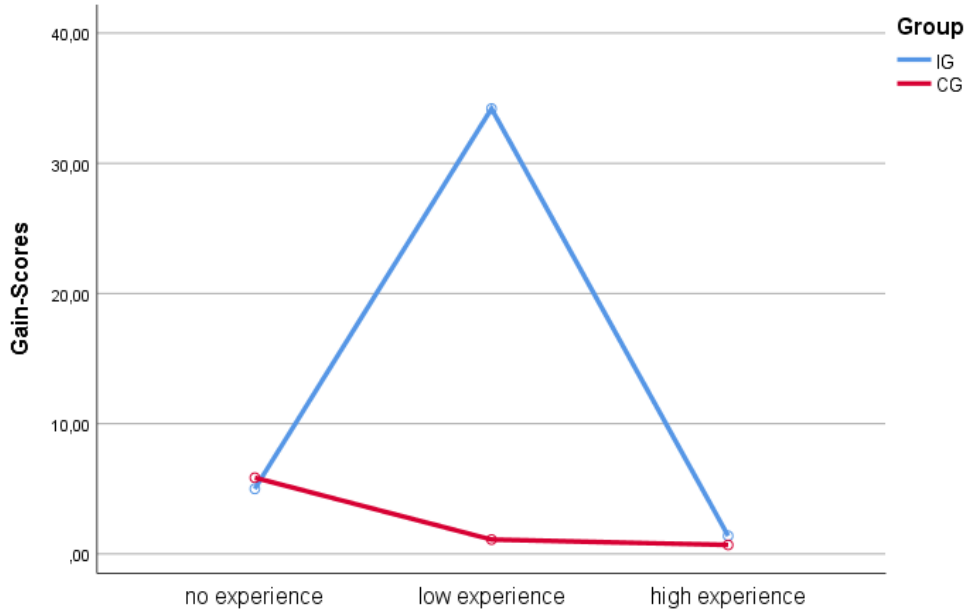


Table 11, 3x2 Two-Way-ANOVA of the Independent Variables Assigned Group and Experience Level on the Test of Existential Motivations' Gain-Scores

	df	Mean Square	F	p	Partial Eta Squared
Group	1	2727.9	5.415	.022*	.054
Experience Level	2	2051.9	4.073	.02*	.08
Group x Experience Level	2	2628.4	5.217	.007**	.1
Error	94	503.8			

* Significant at the .05 probability level

** Significant at the .01 probability level

Abbreviations: Intervention Group (**IG**), Control Group (**CG**), degrees of freedom (**df**)

accept more differences between IG and CG as significant. If only the total-scales' differences are considered the Bonferroni adjusted acceptable significance level would be computed as $\alpha''' = .0167$ (i.e. $\alpha''' = .05/3$).

To further examine the relationship between the three-levelled independent variable: therapeutic experience and the two-levelled independent variable assigned group, the gain-scores of each total-scale (i.e. TEM, AS and SES) were subjected to a 3x2 two-way Analysis of Variance (ANOVA) at an alpha level of $\alpha = .05$. As three tests have been conducted, the alpha level was corrected to $\alpha''' = .0167$.

The ANOVAs results are presented by a Figure (i.e. visually outlining the differences between the assigned groups within each experience-level) and a Table (i.e. outlining the statistical significance and effect-size [partial eta squared η2] of the independent variables main-effects and their interaction effect).

In Figure 7 and Table 11, the interaction effects within the TEM's total-scales' gain-scores are presented. While no statistically significant difference between the IG and

Figure 8, Graphical Analysis of Interaction Effects on the Self-Esteem Scale's Gain-Scores Between Assigned Group and Experience Level

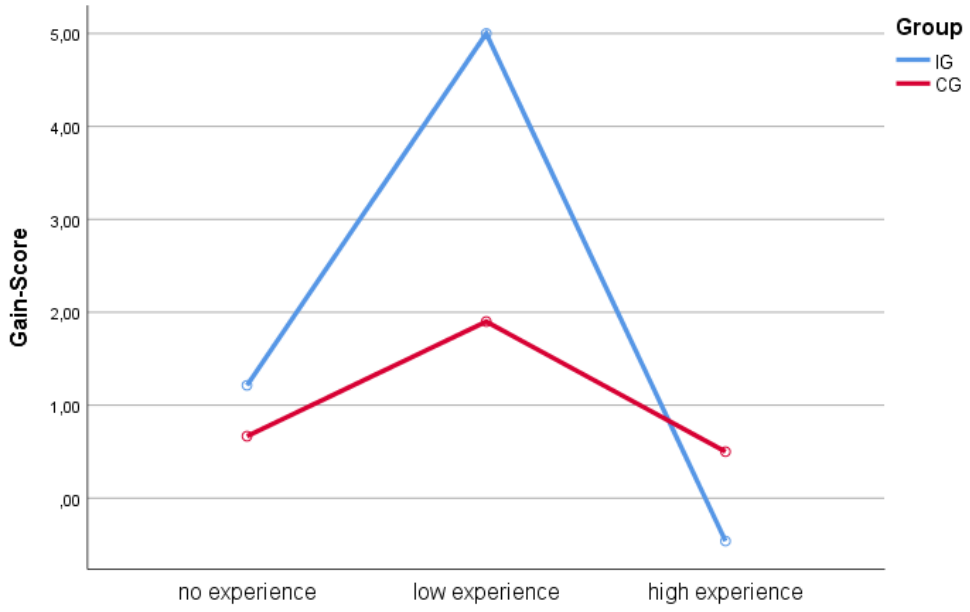


Table 12, 3x2 Two-Way-ANOVA of the Independent Variables Assigned Group and Experience Level on the Self-Esteem Scale's Gain-Scores

	df	Mean Square	F	p	Partial Eta Squared
Group	1	18.1	1.669	.200	.017
Experience Level	2	87.3	8.03	.000***	.146
Group x Experience Level	2	29.1	2.674	.074	.054
Error	94	10.9			

*** Significant at the .001 probability level

Abbreviations: Intervention Group (**IG**), Control Group (**CG**), degrees of freedom (**df**)

CG gain-scores within the TEM employing t-tests (see Table 7) were found, examining the group's differences with the Model of the 3x2 two-way ANOVA yielded a slightly different result. Both main effects assigned group and experience level were statistically significant at $\alpha = .05$, but not at $\alpha''' = .0167$. However, their interaction-effect was significant at the adjusted alpha level α''' (i.e. see Table 11).

In Figure 8 and Table 12, the interaction effects within the total Self-Esteem Scale's gain-scores are presented. The differences between the IG and CG are statistically significant only for the main-effect of the independent variable, while neither the main effect assigned group nor the interaction effect was statistically significant (i.e. see Table 12).

In Figure 9 and Table 13, the interaction effect within the total Authenticity Scale's gain-scores is depicted. While none of the main effects is statistically significant, the interaction effect of the assigned group and experience level is significant at the adjusted alpha level α''' (i.e. see Table 13).

Figure 9, Graphical Analysis of Interaction Effects on the Authenticity Scale's Gain-Scores Between Assigned Group and Experience Level

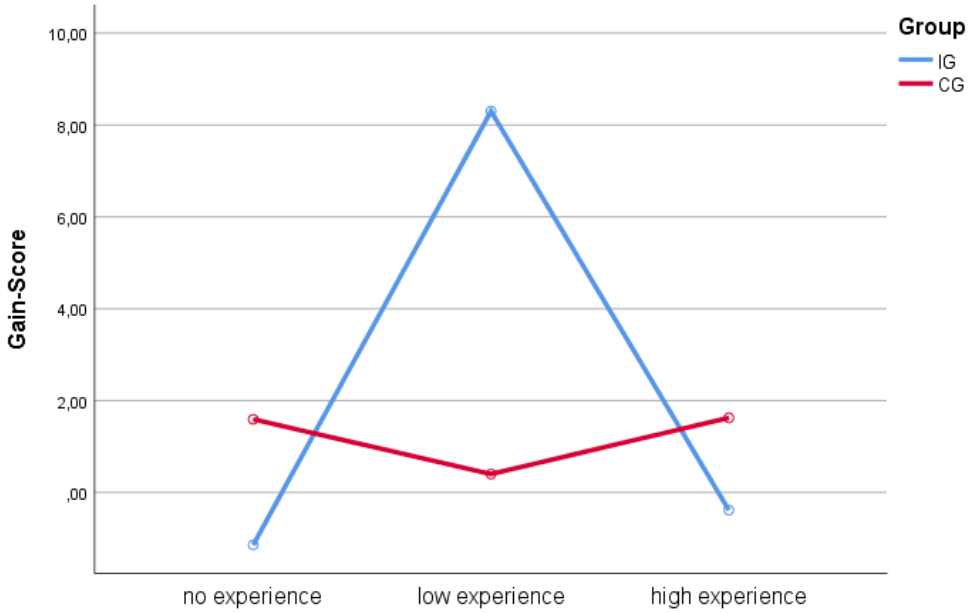


Table 13, 3x2 Two-Way-ANOVA of the Independent Variables Assigned Group and Experience Level on the Authenticity Scale's Gain-Scores

	df	Mean Square	F	p	Partial Eta Squared
Group	1	25.016	.484	.488	.005
Experience Level	2	149.309	2.891	.06	.058
Group x Experience Level	2	253.326	4.906	.009**	.095
Error	94	51.638			

** Significant at the .01 probability level

Abbreviations: Intervention Group (**IG**), Control Group (**CG**), degrees of freedom (**df**)

4.5 Secondary Outcomes

Multiple usage metrics (see 3.4.4 Usage Metrics) of logged-in users and a Feedback-Questionnaire served as the basis of the following secondary outcomes.

4.5.1 Usage Metric: Completion Time

In Figure 10 and Table 14, the required days to complete the assigned treatment are outlined. The required days are calculated as the time passed between starting to fill out the Pretest and the Posttest plus one, considering the initial day as one day. In general, participants within the IG required less time to complete their assigned treatment, compared to the CG.

An alternate analysis of the main findings has been added to the appendix, outlining that the additional exclusion of participants, who required more than 31 days to complete their assigned treatment, yielded no different results regarding the magnitude of effects, but were slightly less significant. (i.e. comparing the t-tests of Table 9 and Appendix: Alternate Evaluation with Exclusion Criterion of 31 Days Maximum Completion Time).

Figure 10, Boxplot of the Usage Metric: Required Days to Complete the Assigned Treatment by Assigned Group and Experience Level

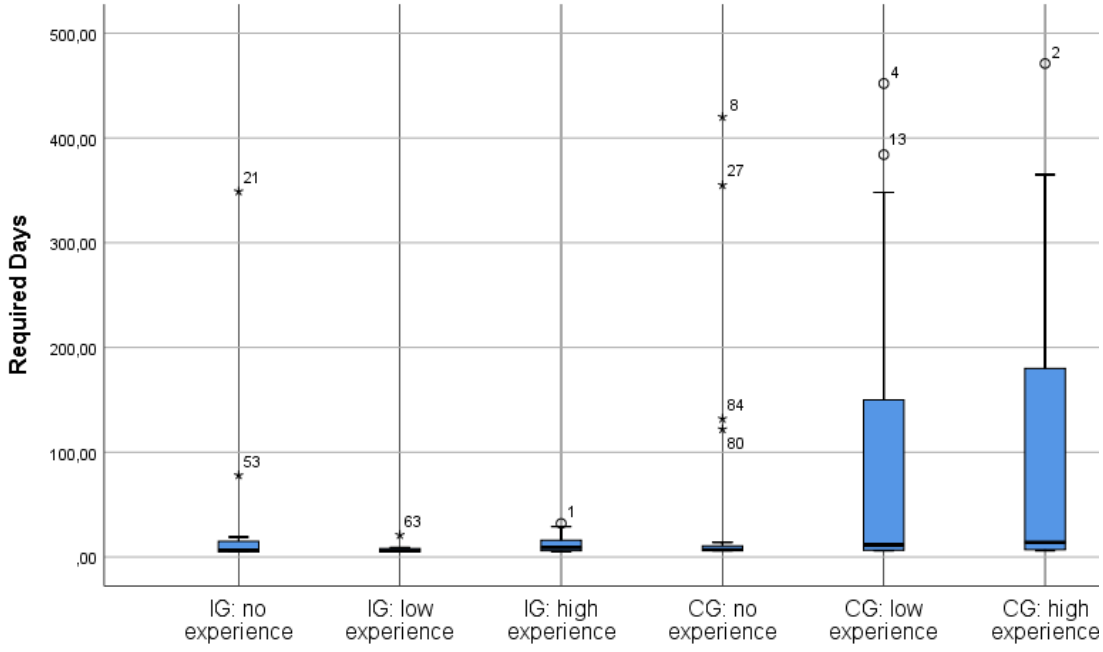


Table 14, Usage Metric: Required Days to Complete the Assigned Treatment

	Median	Mean	SD	95% CI	Minimum	Maximum
IG: Total Group	7	20.8	57	5, 39.8	5	349
IG: No Experience	6.5	37.4	91.7	5, 90.4	5	349
IG: Low Experience	6	7.7	4.88	5, 11.2	5	21
IG: High Experience	9	12.8	8.99	7.41, 18.3	5	32
CG: Total Group	8	78.3	132	45, 112	6	471
CG: No Experience	7	44.4	104	6, 85.7	6	420
CG: Low Experience	11.5	98.7	141	32.8, 165	6	452
CG: High Experience	14	110	157	26.5, 194	6	471

Abbreviations: Intervention Group (**IG**), Control Group (**CG**), Standard Deviation (S**D**), Confidence Interval for Mean (**CI**)

Table 15, Usage-Metric: Required Time (in Minutes) to Complete the Primary Outcome Measure Pretest and Posttest Questionnaires

	Pretest				Posttest			
Assigned Group	Mean	SD	MIN	MAX	Mean	SD	MIN	MAX
IG (n=29)[a]	9.3	6.36	3.53	39	8.79	8.7	3.55	51.6
CG (n=50)[a]	8.93	4.98	3.83	35	9.79	7.48	3.4	52.5

[a] Missing Data and outliers have been removed that required more than one hour to complete either one test (i.e. in both groups about every fifth participant has been removed; that is 8 participants of the IG and 13 participants of the CG).

Abbreviations: Standard Deviation (**SD**), Minimum (**MIN**), Maximum (**MAX**)

4.5.2 Usage Metric: Pre-Posttest

As the CG was a waitlist-condition, the time passed in-between the Pretest and Posttest was taken as the usage-metric to compare the IG and CG. While the average time to fill out the Pretest and Posttest varied only slightly in-between IG and CG, the tendency shifted. On average, it took participants of the CG more time to fill out the Pretest, while it took IG participants more time to fill out the Posttest (see Table 15).

4.5.3 Usage Metric: Session Lengths

Average Session Length

A session is considered as the timespan of completing one module. The WBI was designed as a set of five consecutive modules.

The following measure outlines the average required time of completing each of the five modules. The session length indicates the time passed between starting and finishing a module (i.e. calculated as the time passed in-

Table 16, Usage Metric: Session Lengths (in Minutes) of each Module of Participants that Completed the Module within the range of 10 to 90 Minutes

	Experience Level								
	No Experience N=14			Low Experience N=10			High Experience N=13		
	n (N%)	Mean	SD	n (N%)	Mean	SD	n (N%)	Mean	SD
Module 1	4 (28.6)	30	33.6	6 (60)	23.6	11.5	4 (30.8)	19.1	6
Module 2	9 (64.3)	29.5	21.6	7 (70)	37.4	22.9	7 (53.8)	36.1	9.6
Module 3	7 (50)	25	9.76	7 (70)	30.5	10	5 (38.5)	35.2	10.8
Module 4	6 (42.9)	32.5	16.4	8 (80)	37.1	20.1	5 (38.5)	37.9	29.2
Module 5	6 (42.9)	20.8	8.4	8 (80)	30.4	13.4	9 (69.2)	32.3	20.7

Abbreviations: Standard Deviation (**SD**)

Table 17, Usage Metric: Session Lengths (in Minutes) of each Module of Participants (n=16) that Completed all Modules within 90 Minutes

	Median	Mean	SD	95% CI	Minimum	Maximum
Module 1	10.4	18.6	19.5	8.2, 29.0	4.38	80.3
Module 2	28.5	31.8	18	22.2, 41.3	13.9	83.4
Module 3	25.2	24	10.2	18.6, 29.4	4.67	43.1
Module 4	22.9	26.9	17.5	17.6, 36.2	2.88	59.3
Module 5	22.4	24.1	17.7	14.7, 33.6	8.28	77.4

Abbreviations: Standard Deviation (**SD**), Confidence Interval for Mean (**CI**)

between viewing the first page and viewing the last page of the module). Each module was designed to require at most one hour. However, some participants paused the WBI in the middle of a module (i.e. 16 participants did not complete every module they started within 24 hours). Such outliers would sharply increase the average length. Considering only participants (n=21) that completed every module within 24 hours, results in an average session length of 55.3 minutes. However, this average session length still includes participants that paused the WBI and does not indicate how long the participants were interacting with the WBI. Therefore, a second more stringent average session length of 25.1 minutes was calculated considering only participants (n=16) that completed the WBI within 90 minutes (i.e. Table 17 outlines the corresponding session lengths of each module which served as the basis to calculate the average interaction time).

Minimum Session Length (10 Minutes)

Table 17 indicates that some participants spent only a few minutes to complete some of the modules. Only 7 of the 16 participants that completed every module within 90 minutes spent at least 10 minutes to complete every module (i.e. 10 minutes are considered the bare minimum to complete a module conscientiously).

To further analyse the module's usage, each module is examined separately (i.e. a participant that completed one module either too slow or too fast is still considered for the usage-analysis of the other modules). In Table 16, the participant-count and the average session length of every module are outlined for those participants that completed that module within the range of 10 minutes to 90 minutes.

4.5.4 WBI's Feedback-Questionnaires

Participants of the IG filled out an additional Feedback-Questionnaire which concerned their experience with and attitude towards the WBI. Participants were redirected to another page to provide feedback after they had completed the Posttest-Questionnaire, to ensure that the Feedback-Questionnaire did not confound the RCT's Primary Outcome Measures. Only one participant of the IG's completers did not provide feedback.

The Feedback-Questionnaire resembled the satisfaction of the respondents with the WBI. It consisted of the participants' perceived change of having used the WBI, the WBI's perceived usefulness and their intention to recommend it (see Appendix: Feedback Questionnaire

for a detailed outline of the Questionnaire).

Quantitative Feedback

While two-thirds of the respondents (n= 24) reported that the length of the WBI was just right, 19% have experienced the WBI as too long and 14% as too short.

Table 18, Feedback-Questionnaire: Satisfaction with the WBI (n=36)

Item	Liker Scale	Mean	SD	Disagree	Neutral	Agree
Gained more insight[a]	7 point	5.31	1.26	3	0	33
Gained more confidence[a]	7 point	4.90	1.36	6	3	27
Comprehensible	7 point	6.14	1.05	1	3	32
Useful	7 point	5.50	.826	1	6	29
Well spent time	7 point	5.53	1.46	4	7	25
Recommend to others	4 point	3.33	.717	3	-	33

[a] computed average score of 3 items of the Session Evaluation Questionnaire

All items have been recoded to represent agreement as high values.

Abbreviations: Standard Deviation (**SD**)

The Likert-scaled results of the Feedback-Questionnaire are outlined in Table 18 and show an overall positive attitude on all measured aspects towards the WBI. However, these outcomes need to be considered with caution as they result solely from feedback given by completers (i.e. No feedback has been collected from dropouts).

Qualitative Feedback

Completers were asked to describe with what the WBI has helped them and what they think changed by using the WBI.

Excluding four respondents, all completers outlined only the positive change they noticed after having used the WBI.

Two of the exceptional responses could not be categorised as either negative or positive change (i.e. one respondent stated to have learned how little the person knows about oneself; the other stated that the WBI was an intense occupation with the PEA and reflection).

The other two of them clearly stated not to have gained anything from the WBI. While one participant solely neglected any change, the other outlined to have chosen a situation without any perceived scope for action and to have felt too much emotional pain thinking about and occupying oneself with the chosen situation.

All other respondents solely outlined the positive impact of the WBI. Following Mayring (2012), a set of German inductive categories were created from half of their responses. Next, these categories were translated into English and combined to more general categories. Then, all responses were assigned anew with up to three of these categories. Only once assigned categories were joined with another category, and its nuance was reflected within the category's description. Table 19 summarises the positive change as the assigned categories ordered by their highest frequency of assignment to the respondents.

Table 19, Inductive Categories of the Self-Reported Positive Impact of the WBI

Category	Count	Description of the Positive Impact on the …
Self-Perception	13	…awareness of one's inner voice, body, feelings and emotions
Reflective Skill	9	…ability to reflect oneself, others and situations
Self-Knowledge	8	…knowledge of one's inner landscape and personal values
Situational Clarity	6	…clarity of the situation; understanding the situational background; order and structure of one's thoughts and feelings about the situation
New Perspective	5	…ability to view situations differently - either from others' perspectives and/or with a new attitude
Agency	5	…empowerment to act, ability to take inner positions, enlarged scope of actions, self-responsibility
Self-Acceptance	3	…feeling to be allowed to be oneself, more confident and accepting of how one is
Therapy Attitude	3	…motivation to start/continue therapy or become a therapist; own therapeutic practice (additional knowledge and methods)

4.6 Harms

4.6.1 Reported Shortcomings

Choosing a fitting situation to examine it within the WBI was considered crucial in the WBI's design. Surprisingly, one of the completers mentioned having chosen a situation that caused him or herself too much emotional pain to reflect the situation. Regardless, this participant completed the WBI instead of dropping out. It is unclear how many participants dropped out of the WBI due to choosing a situation that would instead require a face-to-face therapy setting. The WBI was missing an evaluation step of the chosen intervention, ensuring that participants chose a suitable situation for an unguided WBI.

4.6.2 Group Differences

The minimal completion time varied between IG and CG due to an erroneous programmatic restriction. While participants of the CG had to wait five days after having completed the Pretest to fill out the Posttest, participants of the IG could start the intervention directly after having completed the Pretest. This resulted in a minimum required time of five days for participants of the IG and six days for participants of the CG to complete their assigned trial arm.

In general, completers of the IG required less time to complete their assigned treatment. This might have had an impact on the analysis as no exclusion criteria ensured that the completion time was within a reasonable timeframe to attribute the effects to the assigned treatment. Only the main findings of completers with low therapeutic experience has been re-evaluated with an additional exclusion criterion of a maximum required completion time. Although these results have been quite similar (see Appendix: Alternate Evaluation with Exclusion Criterion of 31 Days Maximum Completion Time) the lack of such an exclusion criterion needs to be considered in the findings interpretation.

4.6.3 Technical Issues

The high attrition rate could have been affected by technical issues (i.e. the lack of sending reminders to participants to continue using the WBI the following day) that prevailed during most of the study. At the end of the study, it was noticed that no reminders were sent after the first Pilot Study, due to a server-side issue.

In hindsight, this might have attributed to the substantial difference between the Pilot Studies' completion rates (see 3.3.4) and the overall high level of attrition within the RCT.

5 Discussion

While many studies have examined the effectiveness of »*web-based interventions (WBIs)*« based on »*cognitive behavioural therapy (CBT)*«, to our knowledge, this is the first study to explore the effectiveness of a WBI based on an existential therapeutic approach. In a meta-analysis of internet-based psychotherapeutic interventions, Barak *et al.* (2008) suggested that interventions based on other therapeutic approaches might be as effective as CBT-interventions, which showed on average an overall large effect-size (i.e. Cohen's d = .83, see 2.3.4 Moderators of Effectiveness).

The present study examined the effectiveness of a brief WBI based on »*Personal Existential Analysis (PEA)*« intending to foster participants self-perceived authenticity within a non-clinical population.

5.1 Principal Findings and Considerations

The following effects refer to the RCT's group-differences between their gain-scores (i.e. that were calculated as the difference between the scores of the Pretest- and Posttest-Questionnaires measured directly before and after the assigned intervention).

5.1.1 Interaction-Effect, Low Therapeutic Experience

Statistically significant effects were only found for participants with prior therapeutic experience, but not more than 30 hours (i.e. henceforth referred to as low therapeutic experience). Following Cohen's (1992) classification of effect-size-magnitude, the WBI's participants with low therapeutic experience showed multiple strong effects (i.e. Cohen's $d \geq .80$). Indeed, the gain-scores of all Primary Outcome Measures total-scales showed strong effects, while the strongest effect ($d = 1.15$, $p = .002$) was found in the overall »*Test of Existential Motivations (TEM)*«.

Further examination of the TEM's constituting four sub-scales showed that the strongest and most significant effect ($d = 1.82$, $p < .001$) was attributed to the third fundamental motivation, the »*value of self*«. This dimension reflects one's perceived ability to be oneself, including to value and accept the unique person that one is. These aspects are closely related to the concept of authenticity and resemble the change, the WBI aimed to achieve, observing the most substantial impact of the WBI has been expected.

Surprisingly, a similarly striking effect ($d = 1.30$, $p = .001$) was observed in the sub-scale attributed to the fourth fundamental motivation, labelled as »*meaning*«. This was unanticipated, as the WBI did not directly aim to change participants' perceived purpose in life. Although the correlations between the TEM's sub-scales have been known since the development of the instrument (Eckhardt, 2000), the observed intensity of that change within the fourth dimension remains surprising especially as the other two sub-scales did not show similarly strong and significant effects. These findings indicate that leading an authentic life is highly correlated with a meaningful one.

Additionally, a strong but less significant effect ($d = .95$, $p = .013$) was found within the first fundamental motivation, which is referred to as the »*possibility of being in the world*« and concerns the acceptance of how one's life is and feeling at ease with it.

One unanticipated finding was that no significant change was observed within the second sub-scale, measuring participants' »*value of life*«.

The findings within the TEM's subscale suggest that the specific implementation of the PEA as a WBI is suitable to improve the self-perceived »*value of self*« and »*meaning*«, at least for participants with previous low therapeutic experience.

Substantial but less significant results ($d \geq .80$, $p < .05$) were found for the total-scales' gain-scores of the »*Authenticity Scale (AS)*« and »*Self-Esteem Scale*«.

However, the strongest and most significant change ($d = 1.15$, $p = .006$) within the AS was attributed to the sub-scale of »a*uthentic living*«, which concerns expressing one's emotions, values and beliefs and to live congruent with them. The other strong ($d = .90$, $p = .024$) change within the AS was found in the sub-scale of »*self-alienation*«, which asks participants how much they feel in touch with themselves and their feelings. This change supports the PEA's claimed key strength to help patients get in touch with their emotions (Längle, 2003e).

5.1.2 Further Considerations

While striking effects have been found within the sub-group of participants with low therapeutic experience, no statistically significant effects were found between the overall »*intervention group (IG)*« and »*control group (CG)*«.

Before conducting the study, the therapeutic experience was considered to yield interaction effects. It was speculated, that the WBI would have little or no impact on participants with a lot of prior therapeutic experience as the WBI was designed to be basic and suitable for the use by therapeutically inexperienced participants. As expected, no significant differences between participants within the IG and CG that had more than 30 hours of prior therapeutic experiences have been observed. Multiple aspects could explain that participants with high therapeutic experience did not yield significant effects (e.g. they might have already been familiar with this process and performed it within their therapy; they might have had stronger problems/disorders; their prior therapeutic experience is not in line with an existential procedure).

Surprisingly, comparing participants with no prior therapeutic experience yielded no significant effects either. It could be the case that this specific WBI was too complicated and not correctly used or misunderstood by participants that were not familiar with therapeutic processes. Personal contact with a therapist could be a prerequisite for participants to adopt the presented methodology to themselves and their situations. As claimed in EA theory, it may be that this inner work requires the outer encounter with other persons (see 2.1.8 Person). However, it could also be the case that existential therapies, in general, are better suited to participants with at least a little prior therapeutic experience or that other methods are needed to guide inexperienced participants first.

The overwhelmingly strong effect-sizes observed in participants with low therapeutic experience could partially be attributed to the fact that the outcome measures were selected to measure the aims of the intervention directly. However, this was suggested by Vos, Cooper and Craig (2015) and is previously outlined in the literature review.

Additionally, in the examined literature, multiple problem types have been addressed by WBIs, but none focused on improving self-perceived authenticity. This could be related to the overwhelming use of CBT and the lack of various therapeutic approaches with a set of different core strengths. The

study's findings support Barak *et al.'s* (2008) claim that other therapeutic approaches can be as effectively employed as CBT as the fundament of a WBI. In line with Vos, Cooper and Craig (2015), it is crucial to gain a deeper understanding of which intervention suits which client best.

The presented results support the claim that a WBI based on the PEA can yield a suitable approach to foster participants' self-perceived authenticity. As outlined in the literature review, the findings support the negation of Wood *et al.'s* (2008) postulated assumption that trait authenticity, as measured by the AS, might not be prone to change. This is in line with Boyraz and Kuhl's (2015) findings that increasing self-reflection while reducing self-rumination can foster authenticity.

It remains an open question if such a WBI can be designed to be fit for participants with different previous therapeutic experience. While only participants with low therapeutic experience showed significant improvements in this study, adapting the intervention to other experience levels could yield different results.

5.2 Limitations

The observed effects only reflect the results of IG's completers and need to be considered in the face of the IG's low completion rate of 36%. Most participants did not return after the first day, rendering it likely that the non-completers dropped-out of the intervention, as they experienced not to gain what they expected of the WBI. The arising self-selection bias must be considered while interpreting the strikingly strong effects of the WBI. However, the observed adherence is in line with the average completion rate of 26% for unguided internet-based interventions (Richards & Richardson, 2012).

In general, these findings need to be considered with caution due to the small sample size of completers with low therapeutic experience in both the IG (n=10) and CG (n=20).

5.2.1 Multiplicity of Analyses

As the study encompassed a multiplicity of statistical analyses, a Bonferroni adjusted significance level $\alpha' = .0024$ was calculated (see 4.4.1 Multiplicity of Analyses). While only the p-values within the TEM's sub-scales' were lower than α', the other reported findings need to be considered with caution. However, the most striking findings have been reported as well to provide a balance between Type I and Type II errors.

5.2.2 Generalisability

In a routine application this WBI would not differ from the employment within the RCT (i.e. there was no additional human involvement nor were any study-specific reminders sent). Therefore, the study's results are expected to be similar without the encompassing RCT's setting.

Generalising the study's findings towards the whole internet population is more critical. The studies population of completers is biased towards consisting mostly of female Austrian students between 20-29 years who acquired at least the qualification for university entry. However, participation was not controlled and open to anyone older than 18 years. Therefore, the studies participants represent those that are likely to be interested in using the WBI as an open routine application as well.

The WBI was designed as an unguided intervention targeted at a healthy population. Therefore, this intervention should not be provided to a clinical population without providing additional guidance due to its lack of therapist support in case of an emergency.

5.3 Future Directions for Research

The results of this study encourage the further development of WBIs based on existential therapies within non-clinical and healthy populations. Especially as some results yielded striking effects, it would be interesting to conduct a multitude of follow-up studies.

Within future studies, it appears to be promising to examine previous therapeutic experience as the moderator of such interventions' effectiveness more closely. It would be interesting to gain more insights into what type of previous therapeutic experience yields a positive impact. Furthermore, it is of high interest what those participants acquire within their little therapeutic experience to exhibit such striking changes from using the WBI. As the WBI was designed for both participants with no and little prior therapeutic experience, it would be interesting to conduct a study exploring why only the latter benefitted from the WBI. Of specific interest would be a study examining the hypothesis that participants with no therapeutic experience require personal contact with a therapist and if that is the case, what amount and what kind of personal contact is sufficient to benefit from the WBI.

While this study examined only the short-term effects of a brief WBI, the long-term effects have yet to be studied. In further studies, the inclusion of follow-up-Questionnaires is advocated to gain further insights on the changes over time. In the literature review, a study by Längle *et al.* (2005) was outlined that showed that the impact of face-to-face existential therapy increased after the first 10 hours. It would be interesting if this is the case for WBIs as well, or if these effects can be solely attributed to the increased therapeutic experience.

In general, it would be interesting to conduct a study with a greater sample size of participants with low therapeutic experience to test if these findings are replicable.

While this study's findings result from the comparison with a waiting-list control trial arm, it would be interesting to conduct another study comparing the results with an equal amount of face-to-face treatment. Such a study should aim to understand if a WBI based on existential therapy could yield additional benefits as compared to its face-to-face counterpart. However, a WBI should not try to replace face-to-face treatment. As observed in some of the open-ended questions responses and as deduced from the high drop-out rate it is crucial to gain a better understanding for whom an unguided WBI is a good fit and which client needs what kind of additional support. Instead, future studies should examine how WBI's could accompany traditional face-to-face treatment best.

6 Conclusion

In this RCT, the effectiveness of an unguided »*web-based intervention (WBI)*« based on existential therapy was examined. Participation was open to every internet-user above 18 years. Gain-scores of multiple self-rate Questionnaires were compared between the WBI's completers and a waiting list control group with a reflection task. As usual in unguided WBI, only 36% of the participants that started the intervention completed it.

While the overall statistical analyses showed no significant effects, striking effects were observed considering the interaction-effect with therapeutic experience. Participants with at least some therapeutic experience, but not more than 30 hours showed highly significant and strong effects regarding their positive change in their self-perceived »*value of self*« and »*meaning*« as measured with the »*Test of Existential Motivation*«.

Further strong effects have been observed in two dimensions of the »*Authenticity Scale*« (i.e. an instrument designed to measure authenticity as a three-partite construct). Participants within the outlined therapeutic experience range rated their »a*uthentic living*« (i.e. perceiving oneself as more competent in expressing one's emotions, values and beliefs and living congruently with them) and »*self-alienation*« (i.e. feeling in touch with oneself and one's feelings) as higher as before the WBI. However, the Authenticity Scales' results did not suffice the Bonferroni adjusted alpha level (i.e. which was employed to deal with the multiplicity of conducted statistical analyses) and therefore, need to be considered with caution.

The observed effect-sizes greatly surpassed the average effect-sizes for previously reported WBIs. However, these findings need to be verified as the sample size of participants within this specific range of therapeutic experience was low (n=30).

The other analysed participant groups outside the specific therapeutic experience range did not show any significant effects.

Future researchers and developers of WBI should consider examining participants' previous therapeutic experience more closely. Finding the suitable target population for a WBI could yield stronger effects as outlined by previous effectiveness studies. Therefore, understanding the participants' required prior knowledge and insights to gain the most of a WBI is as vital as understanding what can change by using the WBI. As outlined in previous research, it is crucial to understand which intervention suits which client best.

Regarding the prevalent discussion of whether authenticity can be fostered, the study's findings suggest that self-perceived trait authenticity can be fostered.

This study supports the claim found within the literature that WBIs based on other therapeutic approaches than CBT can be similar or even more effective.

While these results indicate the applicability of existential therapy and in specific the »*Personal Existential Analysis*« as the fundamental basis of a WBI, it should not be the aim to replace its face-to-face counterpart, but to examine how to accompany it best.

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8 Appendices

APPENDIX: PRIVACY POLICY

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Änderungen oder Widerruf von Einwilligungen können durch eine Mitteilung an uns vorgenommen werden. Dies ist auch für zukünftige Aktionen möglich.

Änderung der Datenschutzbestimmungen

Unsere Datenschutzerklärung können in unregelmäßigen Abständen angepasst werden, damit sie den aktuellen rechtlichen Anforderungen entsprechen oder um Änderungen unserer Dienstleistungen umzusetzen, z. B. bei der Einfügung neuer Angebote. Für Ihren nächsten Besuch gilt dann automatisch die neue Datenschutzerklärung.

Kontakt zum Datenschutzmitarbeiter

Für Fragen zum Datenschutz schicken Sie uns bitte eine Nachricht an kontakt@authentischsein.at mit dem Betreff „Datenschutz“.

APPENDIX: FEEDBACK QUESTIONNAIRE

The feedback-Questionnaire was provided on a single page in the order of the below bullets.

The three topics:

1. Change (i.e. German: “Veränderung”)
2. Perceived usefulness (i.e. German: “Einschätzung”)
3. Intention to Use (i.e. German: “Empfehlung”)

clustered and structured the feedback-sections outlined as the heading of a surrounding box.

CHANGE

The first section of the feedback consisted of an open-ended question and the Session Evaluation Questionnaire (Schindler, 1984).

- “Was denkst du hat sich bei dir durch die Website verändert, bzw. was hat die Website bewirkt? Wobei hat dir die Website geholfen?”
- Answer (unrestricted text-input)

The Session Evaluation Questionnaire (i.e. »*Stundenbeurteilungsbogen*«) is a German 6-item test-instrument used in psychotherapy to provide feedback of a therapy session. It consists of the following statements which are rated on a 7-point Likert scale ranging from 1 (i.e. “*disagree completely*”) to 7 (i.e. “*agree completely*”):

- “Ich habe mit dieser Hilfestellung mehr an Verständnis und Einsicht in meine Situation gewonnen.”
- “Mit dieser Hilfestellung sind mir Zusammenhänge klar geworden, die ich bisher nicht gesehen habe.”
- “Ich sehe nun bestimmte Dinge in neuem Licht.”
- “Ich glaube, dass ich mich jetzt besser so verhalten kann, wie ich möchte.”
- “Ich traue mir jetzt mehr zu, meine Probleme aus eigener Kraft zu lösen.”
- “Ich fühle mich Situationen besser gewachsen, denen ich mich bisher nicht gewachsen gefühlt habe.”

The German Likert scale was labelled as:

überhaupt nicht - kaum - eher nicht - teils/teils - eher - stark - voll & ganz

PERCEIVED USEFULNESS

The following items have been used to rate the dimension of »*perceived usefulness*« of the »*Technology Acceptance Model*«, which Ammerlaan *et al.* (2016) have used to evaluate the Usability of a WBI. The questions of Ammerlaan *et al.* (2016) have been translated to German and adapted to fit this WBI:

- “Die Inhalte und Übungen waren verständlich.”

  Original question: “Did you perceive the content of the intervention as understandable?”

  Answer (7-point-likert-scale):

  überhaupt nicht - kaum - eher nicht - teils/teils - eher - stark - voll & ganz

- “Die Inhalte und Übungen waren nützlich.”
  Original question: “Did you perceive the content of the intervention to be useful?”
  Answer (7-point-likert-scale):
  überhaupt nicht - kaum - eher nicht - teils/teils - eher - stark - voll & ganz
- “Die vermittelten Inhalte der Hilfestellung, mit der dafür benötigten Zeit waren:”
  Answer (5-point-likert-scale):
  viel zu lang - etwas zu lang - genau richtig - etwas zu kurz - viel zu kurz
- “Die Hilfestellung zu verwenden war gut genützte Zeit.”
  Answer (7-point-likert-scale):
  überhaupt nicht - kaum - eher nicht - teils/teils - eher - stark - voll & ganz

Intention to Use

The following items have been used to rate the dimension of »*intention to use*« of the »*Technology Acceptance Model*« and are based on and adapted from the question “*Would you recommend the Web-based self-management intervention to others (knowing now the content and structure)?*” (Ammerlaan et al., 2016, p. 7).

- “Würdest du einem Freund, einer Freundin diese Website empfehlen?”
  Answer (4-point-likert-scale): ja, ganz sicher - wahrscheinlich - eher nicht - mit Sicherheit nicht
- “Wofür würdest du einem Freund, einer Freundin diese Website empfehlen?”
  Answer (unrestricted text-input)
- “Wie würdest du einem Freund, einer Freundin diese Website beschreiben?”
  Answer (unrestricted text-input)

Appendix: Alternate Participant Flow

Figure 11 below shows an alternate participant flow diagram applying a less stringent exclusion-criteria (i.e. only excluding participants who scored 100% on any total scale of the Pre- and Posttests' Questionnaires instead of all the sub-scales). While the RCT's implemented exclusion-criteria led to fewer analysed participants in each group, the less stringent criteria had no impact on the number of analysed participants.

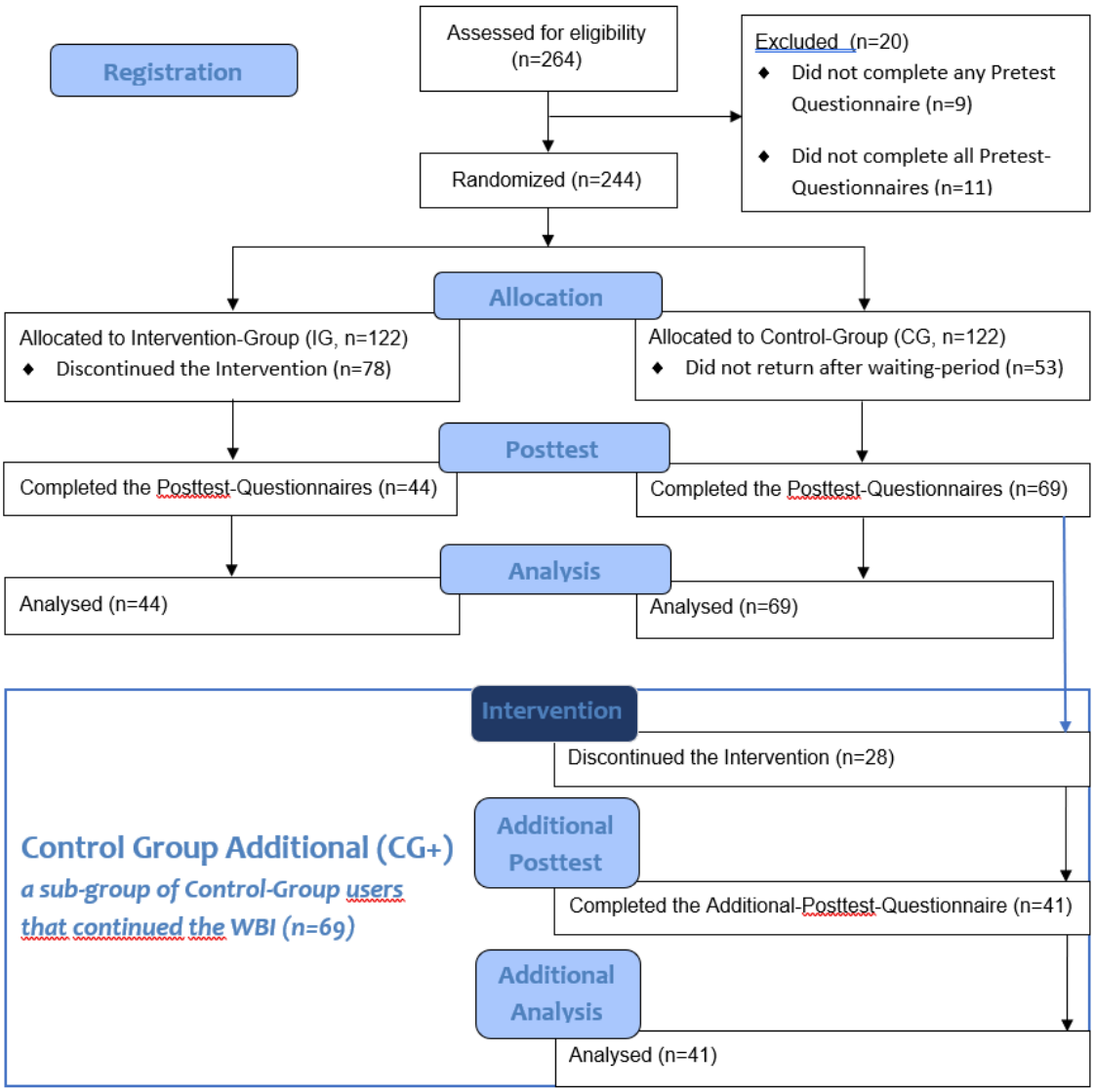

Figure 11, Alternate Participant Flow Diagram, adapted from the CONSORT Flow Diagram (2010)

APPENDIX: SHAPIRO WILK-TESTS OF NORMALITY

Table 20, Shapiro Wilk Test of Normality of all Primary Outcome Measures' Total-Scales' Gain-Scores by Assigned Group

Primary Outcome Measure Scale	IG (n=37)			CG (n=63)		
	Shapiro Wilk Statistic	df	Sig. p	Shapiro Wilk Statistic	df	Sig. p
TEM	.895	37	.002**	.98	63	.409
AS	.964	37	.278	.967	63	.087
SES	.945	37	.065	.97	63	.126

Abbreviations: Intervention Group (**IG**), Control Group (**CG**), Degrees of Freedom (**df**), Test of Existential Motivations (**TEM**), Authenticity Scale (**AS**), Self-Esteem Scale (**SES**)

Table 22, Shapiro Wilk Test of Normality of all Primary Outcome Measures' Gain-Scores' Sub-Scales by Assigned Group for Participants with Low Therapeutic Experience (0 < hours of therapy ≤ 30)

Primary Outcome Measure Sub-Scale	IG			CG		
	Shapiro Wilk Statistic	df	Sig. p	Shapiro Wilk Statistic	df	Sig. p
	Subscales within the Test of Existential Motivations (TEM)					
FM 1	.888	10	.162	.964	20	.630
FM 2	.883	10	.14	.843	20	.004**
FM 3	.765	10	.005**	.941	20	.254
FM 4	.941	10	.562	.95	20	.368
	Subscales within the Authenticity Scale (AS)					
AEI	.957	10	.753	.929	20	.148
AL	.875	10	.113	.873	20	.013*
S-A	.961	10	.799	.938	20	.219
	Subscales within the Self-Esteem Scale (SES)					
S-AC	.837	10	.041*	.892	20	.029*
S-D	.950	10	.666	.94	20	.237

* Significant at the 0.05 probability level

** Significant at the 0.01 probability level

Acronyms: Intervention Group (**IG**), Control Group (**CG**), Confidence Interval (**CI**), Mean (**M**), degrees of freedom (**df**), Standard Deviation (**SD**), Fundamental Motivation (**FM**), Accepting External Influence (**AEI**), Authentic Living (**AL**), Self-Alienation (**S-A**), Self-Acceptance(**S-AC**) , Self-Deception (**S-D**)

The TEM's four subscales refer to the four Fundamental Motivations, namely: the possibility of being in the world (**FM 1**), the value of life (**FM 2**), the value of self (**FM 3**) and Meaning (**FM 4**) (see 3.4.3).

APPENDIX: ALTERNATE EVALUATION WITH EXCLUSION CRITERION OF 31 DAYS MAXIMUM COMPLETION TIME

Some participants required more than 200 days to complete the assigned tasks. The observed effects might not be caused due to the intervention. As this could have confounded the results, an additional analysis of the most relevant findings was performed in which an additional exclusion criterion concerning the completion time was added.

All participants that required more than 31 days to complete the assigned tasks and fill out the pre- and posttest questionnaires have been removed. In Table 23, the results of the remaining completers with low experience are outlined (i.e. in this comparison only participants from the CG did not comply with this new exclusion criteria).

Table 23, Results of Independent t-Tests and Descriptive Statistics of all Primary Outcome Measures' Gain-Scores' Total-Scales and their Sub-Scales by Assigned Group for Completers with Low Therapeutic Experience (0 < hours of therapy ≤ 30) and ≤ 31 days Completion Time

Primary Outcome Measure	Assigned Group IG (n=10) Mean	IG (n=10) SD	CG (n=10) Mean	CG (n=10) SD	95% CI for the Mean Difference IG - CG	t	df	Sig. 2-tailed p	Effect-size Cohen's d
	Subscales within the Test of Existential Motivations (TEM)								
FM 1	8.9	11.2	-.3	6.0	.77, 17.6	2.29	18	.034*	1.025
FM 2	5.7	10.9	0	4.35	-2.1, 13,5	1.54	18	.142	.687
FM 3	11.4	9.3	.4	3.72	4.35, 17.7	3.47	18	.003**	1.553
FM 4 [a]	8.2	7.1	-.7	2.95	3.61, 14.2	3.66	12	.003**	1.638
Total	34.2	36.3	-.6	11.5	9.5, 60.1	2.89	18	.01**	1.293
	Subscales within the Authenticity Scale (AS)								
AEI	2.5	4.33	1.6	2.01	-2.27, 4.1	.596	18	.558	.267
AL	1.8	3.16	-1.7	1.34	1.22, 5.78	3.23	18	.005**	1.444
S-A	4	4.67	0	4.22	-.18, 8.18	2.01	18	.06	.899
Total	8.3	10	-.1	5.45	.81, 16	2.33	18	.032*	1.04
	Subscales within the Self-Esteem Scale (SES)								
S-AC	2.6	2.8	.7	1.83	-.32, 4.12	1.80	18	.089	.804
S-D	-2.4	2.59	-1.3	2.16	-3.34, 1.14	-1.03	18	.316	-.461
Total	5	4.67	2	3.46	-.86, 6.86	1.63	18	.120	.73

[a] Satterthwaite approximation employed due to unequal group variances

* Significant at the .05 probability level

** Significant at the .01 probability level

Acronyms: Intervention Group (**IG**), Control Group (**CG**), Confidence Interval (**CI**), degrees of freedom (**df**), Standard Deviation (**SD**),
Test of Existential Motivations (**TEM**): the possibility of being in the world (**FM 1**), the value of life (**FM 2**), the value of self (**FM 3**) and Meaning (**FM 4**) (see 3.4.3),
Authenticity Scale (**AS**): Accepting External Influence (**AEI**), Authentic Living (**AL**), Self-Alienation (**S-A**), negative-items have been reverse scored (i.e. higher scores represent improvement)
Self-Esteem Scale (**SES**): Self-Acceptance(**S-AC**), Self-Deprecation (**S-D**, the only reported sub-scale where a more negative value represents improvement)