



UNIVERSITAT DE  
BARCELONA

## The Construction of Happiness in Depression

Juan Carlos Medina Alcaraz

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*“Ring the bells that still can ring  
Forget your perfect offering  
There is a crack in everything  
That's how the light gets in.”*

Leonard Cohen



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## **List of abbreviations**

- ANOVA: Analysis of Variance
- BDI-II: Beck Depression Inventory–II
- CBT: Cognitive-Behavioural Therapy
- CC: Cognitive Conflict
- CORE-OM: Clinical Outcomes in Routine Evaluation – Outcome Measure
- C-P-C: Circumspection-Preemption-Control
- DC: Dilemmatic Construct
- DD: Dysthymic Disorder
- DFT: Dilemma-Focused Therapy
- DSM: Diagnostic and Statistical Manual of Mental Disorders
- ES: Effect Size
- FMS: Fibromyalgia Syndrome
- GAF: Global Assessment of Functioning
- GDP: Gross Domestic Product
- ID: Implicative Dilemma
- MDD: Major Depressive Disorder
- PCT: Personal Construct Theory
- PDC: Percentage of Dilemmatic Constructs
- PICID: Percentage of Intensity of Conflict based on Implicative Dilemmas
- PID: Percentage of Implicative Dilemmas
- PP: Positive Psychology
- PVAFF: Percentage of Variance Accounted by the First Factor
- RGT: Repertory Grid Technique
- SCID: Structured Clinical Interview for DSM Disorders
- SRH: Self-Reported happiness
- SSS: Symptom Severity Scale
- WDH: World Database of Happiness
- WHR: World Happiness Report
- WPI: Widespread Pain Index
- YLDs: Years Lived with Disability

## Abstract

Depression is one of the most prevalent disorders and one of the leading causes of disability worldwide. Regarding economic implications, depressive disorders have also a large impact on health budgets through both direct and indirect costs. Studies on their clinical course have shown that they often become chronic, a phenomenon related to their high recurrence rates. In addition, it is usual to find other disorders co-occurring with depression. Such comorbidities not only increase its severity, but also decrease response to treatment, and produce further impairment in individuals' life. A physical disease highly prevalent among people with depressive disorders is fibromyalgia syndrome, a comorbidity that has already been shown to produce a significant impact on daily functioning and wellbeing, and to decrease response to treatment.

The main objective of this thesis was to advance the knowledge on the relationship between depression and self-reported happiness, analysing how several clinical conditions, and the cognitive system involved in the construction of self and others, influenced such relationship. Furthermore, we also tested whether psychotherapy was capable of increasing happiness in individuals with depression. To pursue these objectives, two interrelated studies were conducted. The first study (cross-sectional) gauged the relationship between depression and happiness by comparing a non-clinical sample with 81 participants, a sample of 91 patients with depression, and a sample of 61 with depression plus fibromyalgia syndrome. In the second study (a randomised controlled trial), we analysed how happiness evolved with psychotherapy, comparing two different therapeutic approaches (cognitive-behavioural therapy, and dilemma-focused therapy) delivered to 97 participants.

Results showed that participants with depression were significantly less happy than those in the non-clinical sample, whereas suffering fibromyalgia syndrome comorbid to depression did not have a further detrimental effect. After psychotherapy, large increases in

happiness were found among people with depression, regardless their gender, age, civil status, education, labour status, current use of psychotropic medication, and the treatment modality they received. Experiencing cognitive conflicts had a slightly detrimental influence on happiness, which, in addition, was negatively correlated with depression severity and psychological distress, and positively with global functioning. Negative self-evaluation and perceived self-isolation showed also a significant association with happiness among participants with depression, whereas having a negative view of others was relevant only for individuals suffering both depression and fibromyalgia syndrome. In turn, only among participants in the non-clinical group, higher levels of happiness were associated with more polarised and unidimensional thinking, and a weak relationship was also observed between the level of happiness attributed to their parents and their own. In general, participants construed being happy as similar to being cheerful, good, and hard-working, and at the same time very different to being sad, bad, and embittered. We also observed a tendency in all participants to construe disliked persons as not happy, while individuals with depression construed themselves similarly as not happy. Finally, increases in happiness with therapy were associated with higher resolution of cognitive conflicts, with more unidimensional thinking, and with improvements in depression severity, psychological distress, global functioning, negative self-evaluation, and perceived self-isolation.

To our knowledge, this thesis constitutes the first study analysing happiness in depressive disorders from a constructivist perspective, which pays especial attention to individuals' identity and personal meanings. In addition, our results contribute to estimate the effect of psychotherapy for depression in happiness, for which previous data was scarce. Overall, with this thesis we provide evidence for the role of several clinical and cognitive indicators in the experience of happiness, such as psychological distress or interpersonal

construct differentiation, and highlight happiness as a relevant focus of work that may be incorporated to the treatment of depression.

Keywords: depression, fibromyalgia, happiness, personal construct theory, positive psychology, psychotherapy.

## Resum

La depressió és un dels trastorns més prevalents i una de les principals causes de discapacitat a nivell mundial. Pel que fa a les seves implicacions econòmiques, els trastorns depressius també tenen un important impacte en els pressupostos sanitaris a través tant de costos directes com indirectes. Estudis previs sobre el seu curs clínic han mostrat que sovint aquests trastorns es cronifiquen, fenomen relacionat amb la seva elevada recurrència. A més a més, és comú trobar altres trastorns que es presenten de forma conjunta amb la depressió. Aquestes comorbiditats no només augmenten la seva severitat, si no que també disminueixen la resposta al tractament i augmenten la disfunció en la vida dels individus que les pateixen. Una malaltia física altament prevalent entre les persones amb depressió és la fibromiàlgia, comorbiditat que ja ha demostrat tenir un impacte significatiu en el funcionament i el benestar, així com produir un resposta al tractament significativament menor.

L'objectiu principal d'aquesta tesi era el d'avançar el coneixement sobre la relació entre la depressió i la felicitat autoinformada, analitzant com diverses condicions clíniques, així com el sistema cognitiu involucrat en la construcció d'un mateix i dels altres, influeixen tal relació. A més, també vam comprovar si la psicoteràpia era capaç d'augmentar la felicitat de les persones amb depressió. Per assolir aquests objectius, vam dur a terme dos estudis interrelacionats. El primer estudi (transversal) va mesurar la relació entre depressió i felicitat a través de comparar una mostra no clínica amb 81 participants, una mostra de 91 pacients amb depressió, i una altra de 61 pacients amb depressió i fibromiàlgia. Per altra banda, el segon estudi (un assaig controlat aleatoritzat) va analitzar com la felicitat evolucionava amb la psicoteràpia, comparant dues intervencions diferents (teràpia cognitivoconductual i teràpia centrada en dilemes), que es van administrar a 97 participants.

Els resultats van mostrar que els participants amb depressió eren significativament menys feliços que els de la mostra no clínica, mentre que patir fibromiàlgia comòrbida a la

depressió no produïa un efecte perjudicial addicional. Després de la psicoteràpia, es van trobar grans augments en la felicitat de les persones amb depressió, independentment del seu gènere, edat, estat civil, nivell educatiu, situació laboral, ús actual de medicació psicotròpica, i modalitat de tractament rebuda. Experimentar conflictes cognitius va tenir una lleugera influència perjudicial en la felicitat, la qual, a més, va estar negativament correlacionada amb la severitat de la depressió i el malestar psicològic, i positivament amb el funcionament global. L'autoavaluació negativa i l'aïllament percebut van mostrar una associació significativa amb la felicitat en els participants amb depressió, mentre que tenir una visió negativa dels altres va ser rellevant només en els individus que patien tant depressió com fibromiàlgia. Al seu torn, tan sols entre els participants del grup no clínic, majors nivells de felicitat van estar associats amb un pensament més polaritzat i més unidimensional, així com també es va observar una correlació petita entre el nivell de felicitat atribuït als seus pares i el seu propi. En general, els participants van construir ser feliç com a similar a ser alegre, bo/bona, i treballador/a, així com molt diferent a ser trist/a, dolent/a, i amargat/da. També vam observar una tendència en tots els participants a construir les persones que no els agraden com no felices, mentre els individus amb depressió es construïen també a ells mateixos com a no feliços. Finalment, augments en felicitat amb la teràpia van estar associats amb una major resolució de conflictes cognitius, amb un pensament més unidimensional, i amb millores en severitat de la depressió, malestar psicològic, funcionament global, autoavaluació negativa i aïllament percebut.

Aquesta tesi constitueix, pel que sabem, el primer estudi que analitza la felicitat en trastorns depressius des d'una perspectiva constructivista, la qual para especial atenció a la identitat i els significats personals de les persones. A més, els nostres resultats també contribueixen a estimar l'efecte de la psicoteràpia per a la depressió en la felicitat, per al qual hi havia poques dades prèvies disponibles. En resum, amb aquesta tesi proporcionem

evidència per al rol de diversos indicadors tant clínics com cognitius en l'experiència de felicitat, com ara el malestar psicològic o la diferenciació de constructes interpersonal, així com també presentem la felicitat com un focus de teràpia important i útil que pot ser incorporat al tractament de la depressió.

Paraules clau: depressió, fibromiàlgia, felicitat, teoria de constructes personals, psicologia positiva, psicoteràpia.

# 1. Introduction

## 1.1. Depression

### 1.1.1. Clinical characteristics.

Depression and depressive disorders are umbrella terms which, according to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013), cover the following conditions: disruptive mood dysregulation disorder, major depressive disorder (MDD), persistent depressive disorder (dysthymia), premenstrual dysphoric disorder, substance/medication-induced depressive disorder, depressive disorder due to another medical condition, other specified depressive disorder, and unspecified depressive disorder. Despite the differences between these diagnoses (mainly about duration, timing, and possible aetiology), all them share the presence of sad, empty, or irritable mood, accompanied by somatic and cognitive changes that significantly affect the individual's capacity to function. In addition, these conditions may also include symptoms such as diminished interest or pleasure; fatigue; feelings of worthlessness, guilt, or hopelessness; and recurrent thoughts of death; as well as other indicators related to changes in appetite/weight, sleep patterns, concentration capacity, and psychomotor activity.

It is worth noticing that dysthymic disorder (DD) in DSM-5 was included within the persistent depressive disorder section, together with chronic major depression, which involved a change with respect to the DSM-IV-TR (American Psychiatric Association, 2000). Nevertheless, since the research for this thesis was conducted using DSM-IV-TR criteria, the term DD will still be used. In addition, despite the variety of diagnoses included in the depressive disorders chapter of the DSM-5, often MDD and DD are referred as the two main syndromes of this kind, probably because they are the two most common, leaving unspecified depressive disorder apart. In fact, they constitute what the World Health Organisation regards as depressive disorders, and therefore statistics are often reported for both disorders together

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(e.g., World Health Organization, 2017). Consequently, the terms “depressive disorders” and “depression” will be used henceforward to refer to both conditions together, while MDD and DD will be specified when reporting information on only one of the two. Not for nothing, their clinical features are rather similar. The main differences between MDD and DD are related to duration and severity (American Psychiatric Association, 2013), being MDD typically shorter in time (i.e., minimum of two weeks) but it requires to suffer more symptoms (i.e., at least five), while DD implies a longer duration (i.e., two years minimum in adults) but a less severe manifestation (i.e., depressed mood plus two more symptoms).

Recurrence is a central characteristic in MDD since, although it becomes less likely as the duration of remission increases, most people showing a first episode will still experience more crisis in the future (American Psychiatric Association, 2013). In fact, when people suffering a first episode are followed-up for as long as 15 years, it has been shown that recurrence rates may be as high 85%. In addition, the likelihood of further recurrence seems to increase with the number of previous episodes (i.e., the more recurrences a person experiences the more likely he/she will experience further episodes afterwards), with every new episode increasing future likelihood by 18% (Mueller et al., 1999). Overall, people with depression have been estimated to experience between five and nine episodes throughout their lives (Burcusa & Iacono, 2007).

Recurrence is a phenomenon much less researched in DD given its more stable nature, but it is not uncommon at all that people with DD experience also episodes of MDD. In fact, this has been estimated to occur in around 75-90% of cases (Klein, Shankman, & Rose, 2008; Lin et al., 1998; Rhebergen et al., 2009). Therefore, some studies report recurrence for depressive disorders in general. Regardless this clinical feature, probably what best defines DD is chronicity, since it is long-lasting by definition (i.e., at least two years), but in fact it

often shows an early and insidious onset (American Psychiatric Association, 2013), with a mean duration of more than 20 years (Klein et al., 2008).

### 1.1.2. Epidemiology and burden of depression.

According to the last data made available from the Global Burden of Disease study, the worldwide prevalence of depressive disorders was of 311,147,600 affected individuals in 2015, and 268,172,000 in 2016 (Vos et al., 2016, 2017)<sup>1</sup>. With regard to Years Lived with Disability (YLDs), which is a measure used to estimate the burden of diseases that can be interpreted as the number of years lived with less than ideal health, their amount due to depression in the world was estimated to reach 54,255,400 in 2015, and 44,208,000 in 2016. This represents an increase in the past 10 years of 18.2% for 2015, and 13.2% for 2016. YLDs. Table 1 below shows the prevalence and YLDs for MDD and DD separately in 2015 and 2016.

Table 1

*Prevalence and Years Lived with Disability for Major Depressive Disorder and Dysthymic Disorder in 2015 and 2016*

	Prevalence		YLDs	
	2015	2016	2015	2016
MDD	216,047,000	167,836,000	44,224,400	34,105,000
DD	104,106,300	105,580,000	10,031,000	10,104,000

*Note.* YLDs = years lived with disability; MDD = major depressive disorder; DD = dysthymic disorder.

In terms of percentages, nowadays around 4.4% of world's population suffer from depressive disorders, although when looking at lifetime prevalence it is much higher for MDD (16.6%) than for DD (2.5%; Kessler, Berglund, Demler, Jin, & Walters, 2005). In general, depressive disorders are more prevalent among women (5.1%) than among men (3.6%) and,

<sup>1</sup> Due to the differences between these two last publications, which is probably related to the statistical improvements introduced and the new data sources added in 2016 edition, results for both years are reported.

#### 4 The construction of happiness in depression

although they can be experienced by people of all ages, they seem to be especially prevalent (between 7.5% and 8%) among older adult women (aged 55-74), while the percentage for men of the same age is around 5.5%. Regarding geographical areas, depressive disorders are especially prevalent among women in the African region (5.9%), while men living in the Western Pacific region (2.6%) are those showing the lowest prevalence. Worldwide, depressive disorders are the largest contributor to non-fatal health loss (7.5% of all YLDs), with more than 80% of their burden occurring in low- and middle-income countries (World Health Organization, 2017). In terms of decreases in quality of life, this means an impact comparable to other illnesses such as diabetes, cancer, or chronic pulmonary and cardiac diseases, results that are consistent across different countries and cultures (Simon, 2003).

In addition, depression has been linked with the co-occurring experience of many other mental diseases. Anxiety disorders are probably the most comorbid conditions in depression, being present in as many as 50% of the cases with MDD, with post-traumatic stress disorder, generalised anxiety disorder, obsessive-compulsive disorder, and social phobia being the most common, apart from substance abuse (Richards, 2011). The same may be said about physical disorders, whose prevalence has also been found to be higher in people with depression than in the general population. Nevertheless, some of these disorders have also been related to pharmacological treatments provided for depression (e.g., antidepressants and mood stabilisers). Some examples are obesity, diabetes mellitus, cardiovascular and musculoskeletal diseases, and sexual dysfunction (De Hert et al., 2011). These high rates of co-occurring diseases are especially important for depression, because they have proven to increase its severity, to decrease response to treatment, and to produce more social and occupational impairment (see Richards, 2011 for a review).

With regard to the economic implications of depressive disorders, previous research has shown a clear increase in the cost of health services related to these diagnoses compared

to non-depressed individuals. Such increase has been suggested to be around 50% after adjusting for other conditions (Simon, 2003). For example, nowadays the direct average cost (i.e., related to the prevention, diagnosis, and treatment) per year for treating a person with MDD in Europe varies widely, ranging from 1,433 EUR in Germany to 139 GBP in UK. This variability may be due to different causes, such as the types of treatment most commonly delivered in each region, the cost of living in that country, or the method used to estimate the costs. For example, the amount provided for UK results from dividing the total expense made by the National Health Service for MDD in a given year by the estimated prevalence of MDD in UK that year (Thomas & Morris, 2003). Therefore, the result provided may be biased by the number of individuals not seeking treatment, or attending very few visits, for instance. In fact, the global direct costs to manage depression in England have been estimated to be 1.7 billion GBP, and to reach 3 billion GBP by 2026 (McCrone, Dhanasiri, Patel, Knapp, & Lawton-Smith, 2008). Indirect costs (e.g., related to productivity loss) per year are not always available for every country, but their average ranges from 1,810 EUR in Spain to 3,217 GBP in UK (Gustavsson et al., 2011).

Worldwide, the yearly direct costs of depression is estimated to range from 1,543 USD to 2,746 USD per patient, while indirect costs may vary from 273 USD to 1,199 USD (Luppa, Heinrich, Angermeyer, König, & Riedel-Heller, 2007). Still on indirect costs, in terms of work productivity, depressed individuals have reported around as many as twice absenteeism (i.e., not going to work) and presenteeism (i.e., going to work but performing under sub-optimal conditions) days, and more than three times as many inefficient days, compared to non-depressed individuals (Sanderson, Tilse, Nicholson, Oldenburg, & Graves, 2007). This is not only an economic problem, but also a social one, since people with depression are significantly more likely to lose their job compared to control participants, and also to people with rheumatoid arthritis, for example (Lerner et al., 2004).

For all the aforementioned reasons, it is highly important to better understand depressive disorders, as well as to advance the knowledge on their aetiology and underlying mechanisms, in order to improve current theoretical models and to inform better treatment strategies for depressive disorders. So far, probably the best-known and most widely-used approach to conceptualise depression in psychological sciences is the cognitive model.

### **1.1.3. Cognitive model of depression.**

It has been more than 50 years since the cognitive model of depression was first proposed (Beck, 1963, 1964, 1987; Beck, Rush, Shaw, & Emery, 1979). According to this approach, depressed individuals show a variety of idiosyncratic distorted thoughts, which are automatic (i.e., they are involuntarily activated by either internal or external stimuli), and are presented as systematic cognitive errors (e.g., arbitrary inference, selective abstraction, over-generalisation). As suggested by this theory, automatic thoughts are anchored in more central, underlying assumptions and core beliefs, about oneself, others, and the world, forming what is known as the cognitive triad. In terms of organisation, thoughts and beliefs are framed in complex cognitive structures called schemas. Such schemas are proposed to be relatively inactive during non-depressed periods but, when activated, they assume a dominant role in directing cognitive processes. When this happens, automatic thoughts take control and generate unpleasant feelings congruent with the content of such cognitions, such as sadness, emptiness, or guilt. Therefore, according to this model, it may be said that the affective response is determined by the way an individual structures his/her experience (Beck, 1964).

Stemming from the aforementioned model, cognitive therapy for depression (Beck et al., 1979) was devised to increase clients' awareness of their distorted thoughts, with the therapist guiding them to evaluate the validity and accuracy of their cognitions, and to find alternative and more adaptive interpretations. In this approach, behavioural interventions were also included as a way to check and revise cognitions such as schemata and core beliefs. Later

these techniques were termed “cognitive restructuring” and integrated with other behavioural techniques (e.g., social skills training, exposition, relaxation) under a wider approach known as Cognitive-Behavioural Therapy (CBT).

CBT is currently the gold standard psychotherapy (David, Cristea, & Hofmann, 2018). While being the most researched psychological intervention, it has shown to be efficacious for treating MDD, although its efficacy for DD is less clear (Cuijpers, Cristea, Karyotaki, Reijnders, & Huibers, 2016; Hollon & Ponniah, 2010), and it is recommended by the most prestigious clinical guidelines for depression in the world (e.g., National Collaborating Centre for Mental Health, 2010; Scottish Intercollegiate Guidelines Network, 2010). Nevertheless, it has not shown to be consistently better than other approaches (Cuijpers et al., 2010), and the mechanisms underlying its efficacy are still subject of ongoing discussion (Hollon, Stewart, & Strunk, 2006; Longmore & Worrell, 2007).

Despite the breakthrough the cognitive model supposed for depression research and treatment, its own developers have already acknowledged the limitations of such approach (Beck & Dozois, 2011). For instance, new proposals are needed in order to decrease chronicity and the high recurrence rates currently associated to depression. As it has been mentioned, recurrence is a common characteristic of depressive disorders, which increases their complexity. Therefore, the impact of different treatments on the likelihood to experience more episodes is now one of the main focus of clinical research in depression (see Sim, Lau, Sim, Sum, & Baldessarini, 2016 for a systematic review).

Within this line of research, for instance, CBT has shown to be significantly better than medication in preventing recurrence, especially when follow-up visits were scheduled after acute-phase treatment. However, these results were not replicated in patients with DD and the most severe cases of MDD, for which combined treatment (e.g., psychotherapy plus

medication) produced better results. In fact, it is not clear yet whether differences exist or not for the effect of psychotherapy in different depression severities, since the existing disparities seem to be mediated by the experience of therapists (Hollon et al., 2005).

These findings are consistent with a meta-analysis conducted by Vittengl, Clark, Dunn, and Jarrett (2007), which showed that the percentage of people who relapsed (i.e., before complete remission) after CBT treatments was around 39%, while for people treated with pharmacotherapy was 61%. Moreover, although the number of studies was small, other psychotherapies showed recurrence prevention rates similar to CBT. Finally, when sessions were scheduled after the termination of the active-phase treatment, the percentage of recurrence in patients treated with CBT dropped to 12%. Nevertheless, follow-up sessions were discontinued after a mean of 41 weeks.

Despite these results, there is not uncommon to find also other studies suggesting that medication is more efficacious than psychotherapy in preventing recurrence. For instance, a recent meta-analysis by Sim et al. (2016) reported Response Rates of 1.90 for pharmacotherapy when it included continuation treatment (for less than a year), of 2.03 when it is prescribed for long-term (i.e., more than a year), and of 1.39 for psychosocial therapies, when compared to control group (most often treatment as usual). In this study though, psychosocial therapies included rather heterogeneous approaches.

Currently, it is not possible yet to conclude which treatment approach is better to prevent recurrence although, once the intervention is discontinued, psychotherapy seems to be more effective. This fact, together with the likelihood of less adverse events, might give psychological treatments some advantage in relation to pharmacotherapy, something that has even been acknowledged by the American College of Physicians (Qaseem, Barry, & Kansagara, 2016).

The cognitive model of depression has continued to evolve (see Beck & Bredemeier, 2016, for a recent rendition) and, everything considered, it seems clear that it is useful and appropriate, but it is still incomplete and has room for improvement. Several approaches have been proposed so far within the cognitive framework aimed at complementing the model and its therapeutic strategies. Especially, both the high rates of recurrence in MDD that have been presented and the, sometimes, lifelong course of DD, contribute to highlight potential identity factors underpinning depressive disorders. In this sense, research based on Personal Construct Theory (PCT) has underlined the potential relevance of cognitive conflicts (CCs) for the onset and maintenance of depression. For example, previous projects from our group have already shown the promising impact of treating Implicative Dilemmas (IDs) on unblocking change in psychotherapy for depressive disorders (Feixas et al., 2016). Later in this thesis, in section 1.3., this approach will be further developed.

#### **1.1.4. Depression and fibromyalgia syndrome.**

Fibromyalgia Syndrome (FMS) is a relatively recently developed diagnosis, whose aetiology and clinical characteristics are still under research, as it is shown by the multiple changes proposed to its diagnostic criteria in the last decade (Plesner & Vaegter, 2018). According to the last version of such criteria, to be diagnosed with FMS, a person must score over six in the Widespread Pain Index (WPI), and over four in the Symptom Severity Scale (SSS; Wolfe et al., 2016). To better account for the heterogeneity observed in clinical practice though, the proposed criteria allow also to diagnose FMS when a person scores over four in the WPI and over eight in the SSS. Both the WPI and the SSS are measures developed specifically to diagnose FMS. WPI is a distribution of body areas and ranges from 0 to 19, while the SSS is an assessment tool covering additional symptoms (i.e., fatigue, waking unrefreshed, cognitive symptoms, headaches, pain in lower abdomen, and depression) and

ranges from 0 to 12. Symptoms have to be generally present for at least three months (Wolfe et al., 2016).

Chronic widespread pain, which is the fundamental feature of FMS, is estimated to affect between 10% and 15% of the world's population. Its prevalence has been found to be higher among women (at least double than in men), and to increase from age 40 onwards (Mansfield, Sim, Jordan, & Jordan, 2016). Specifically, for FMS, which implies fulfilling additional criteria, the prevalence has been estimated to be between 2% and 8% worldwide (although with a wide variability between studies), ranking the second most common rheumatic disorder. As far as gender is concerned, the prevalence of FMS in women seems to be threefold in comparison to men, while the effect of age mirrors what has been already described in the literature for chronic widespread pain (Clauw, 2014; Queiroz, 2013). Regarding the gender ratio though, in some countries it has been estimated to be even more imbalanced. For instance in Spain, it has been suggested to be of one men for every 21 women (Mas, Carmona, Valverde, & Ribas, 2008).

Comorbidity between depression and FMS is reported to be very high. It is worth noticing that depression is even one of the clinical features included in the SSS to diagnose FMS (Wolfe et al., 2016). In fact, lifetime prevalence of depressive symptoms among people with FMS is estimated to be around 90%, while the specific prevalence of MDD is around 62-86%. It is widely believed that such comorbidity has a significant impact on health and wellbeing, such as more physical symptoms and lower level of functioning, compared to experiencing only one of the two conditions (Veltri et al., 2012). In addition, with regard to treatment, co-occurrence of depression and FMS has shown to result in poorer response to treatment, especially in terms of decreasing pain intensity, thus worsening the prognosis (Finset, Wigers, & Gøtestam, 2004).

Given the available evidence supporting the high prevalence of both depression and FMS, as well as suggesting the high co-occurrence of both conditions together, this thesis was also interested in testing whether experiencing comorbidity of depression and FMS had a significant impact on happiness compared to having depression but not FMS. This was done through the inclusion of different samples, as it is described in section 3.1.1.

## **1.2. Happiness**

### **1.2.1. Positive psychology.**

Positive psychology (PP) is probably one of the strongest movements in psychology since its formal presentation (Seligman & Csikszentmihalyi, 2000). It was introduced as an attempt to switch the focus of researchers and clinicians towards positive qualities and experiences, fulfilment, and talent. All these, they argued, were psychology missions neglected due to the (almost exclusive) emphasis given until then to healing mental illnesses.

The rise of PP two decades ago though, does not mean that “positive” aspects of life and human experience had not been studied before (e.g., Antonovsky, 1987; Deci & Ryan, 1985; Ryff, 1989; Scheier & Carver, 1985). In fact, even the name PP itself was coined much before (Maslow, 1954). The first broad scale studies about happiness and wellbeing can be traced back to the seventies of the last century, which was not casual. This interest in positive outcomes coincided with some milestones that probably invited to look beyond the focus on the treatment of diseases, for example: the creation of the welfare state in European and Scandinavian countries in the sixties, the cure of epidemic diseases that used to be lethal, or a general economic prosperity that was unprecedentedly high (Vázquez, 2006). What PP managed to achieve was to articulate and enhance the existing models, conforming a prolific field of study. Indeed, PP has been an extremely fertile area, embracing multiple new, interesting, useful, and well-known proposals, such as the study of positive traits, character strengths, and

virtues (Peterson & Seligman, 2004), hope (e.g., Snyder, 2000), positive emotions (Fredrickson, 1998), or wellbeing (e.g., Keyes & Waterman, 2003), to name only a few.

However, PP has also been the target of fierce criticism. For example, it has been blamed for offering facile, naively simplistic answers, being little more than self-help repackaged notions, and given the veneer of respectable science (Miller, 2008). This appreciation is probably related to the myriad of publications with rather dubious theoretical background that have appeared in bookstores, which claim to be grounded in this approach. In fact, it might be stated that PP has turned out to foster some non-empirical movements and proposals that were criticised by its own founders from the beginning (Seligman & Csikszentmihalyi, 2000). Other authors have also criticised PP for being too polarised, pushing people to pursue happiness at all costs, which can end up being counter-productive (e.g., Ehrenreich, 2010; McGuirk, Kuppens, Kingston, & Bastian, 2018), while others have highlighted its methodological flaws, such as the excessive reliance on correlational (not causal) analyses (e.g., Lazarus, 2003).

Although some of these negative remarks are probably well-founded, it is also true to say that PP has contributed to advance psychology research, and to embrace again aims that had been somehow disregarded by the mainstream scientific community, such as growth and wellbeing. In addition, the debate generated as a consequence of this criticism, has probably helped to root PP in more solid evidence, as well as to awaken interest of both professionals and the general public (well-known in for instance the discussion in Pérez-Álvarez, 2012, 2013; Vázquez, 2013). As a consequence of all these debates, what has been called second-wave PP has emerged in recent years, which is more focused on the balance between positive and negative phenomena (Lomas, 2016). It is still too soon to know how this second wave will evolve in the future, but many researchers have already proposed that a good ending for PP would probably be its complete integration with mainstream psychology (e.g., Linley,

Joseph, Harrington, & Wood, 2006; Vázquez, 2013). In fact, it may be argued that results on the role of positive emotions and cognitions are already being incorporated into dominant theories in the field (Vázquez, 2017).

From here onwards we focus on the main outcome measure of this thesis, which is happiness. For a review of the countless models, topics, and theories included within the PP framework see Carr (2011), or Snyder & López (2005), for example.

### **1.2.2. Approaching the definition of happiness.**

Since its origins, PP has been interested in happiness. In fact, one of the main developers of this movement, Martin Seligman, placed happiness right in the spotlight in his first attempt to develop a comprehensive theory of PP (Seligman, 2002). He proposed a model of three pathways to happiness: the pleasant life, the good life, and the meaningful life. The pleasant life was related to hedonics, such as experiencing bodily (e.g., tasty meals, orgasm, music) or higher (e.g., bliss, elation, thrill) pleasures, which are described as momentary “raw feels”. The good life was related to eudaimonics (i.e., leading a virtuous life, doing what is worth doing), such as experiencing gratification after doing an activity related to one’s strengths and virtues, and which has a purpose (e.g., helping a friend, reading a book, playing an instrument). The famous concept of “flow” (Csikszentmihalyi, 1975) would fit best in this pathway. Finally, the meaningful life took a step forward the good life by adding the feature of using one’s strengths and virtues in the service of something larger than oneself (e.g., goodness, knowledge, power). According to Seligman, living these three lives together leads to a “full life”.

Some years later though, he switched the focus to a broader model of wellbeing and flourishing (Seligman, 2011). In this update, he defined five factors leading to self-growth and wellbeing, aggregated in what he named “the PERMA model”. These factors were the

following: 1) Positive emotion, 2) Engagement, 3) Relationships, 4) Meaning, and 5) Accomplishments. It may be noticed that positive emotion, engagement, and meaning, are closely related to the three pathways to happiness proposed in 2002 (i.e., pleasant life, good life, and meaningful life respectively). Nevertheless, he considered these not to be enough and included relationships and accomplishments this time, concepts that were somehow present but more peripheral in the model of three pathways, especially within the good life. In effect, with the PERMA model, Seligman rejected happiness as the main focus of PP, but many components of his previous theory of happiness remained as key ingredients of the model. In fact, recent research suggest that this new model still captures a single factor of subjective wellbeing (Goodman, Disabato, Kashdan, & Kauffman, 2018). In addition, happiness has never ceased to be an appealing topic in research, according to the 10,456 publications that may be found in the largest scientific database of peer-reviewed literature, Scopus, when searching the word “happiness” and limiting the search from 2012 (after the PERMA model was launched) to 2017.

Due to its wide breath, it may be a challenge to define happiness. Indeed, there are several understandings about what it is. This heterogeneity probably stems from the different approaches to the topic already present in ancient Greece, which is believed to be the period when the study of happiness began. Up to four theories have been argued to exist at that time (McMahon, 2008): Aristippus proposed happiness as a sum of momentary pleasures, Epicurus suggested happiness as a sum of pleasures with life as a whole, Zeno defined happiness as a detachment from emotional life, and Aristotle described happiness as the exercise of virtuous activities. Today, it is easy to recognise modern models of happiness in these early proposals. For example, Kahneman’s theory of objective happiness (1999) in Aristippus’ definition, Diener’s life satisfaction (2006) in Epicurus’, or the current model of eudaimonic wellbeing (e.g., Huta & Ryan, 2010; Ryan & Deci, 2001) in Zeno’s and Aristotle’s.

Therefore, as a consequence (at least partly) of these different scopes, the overlap between different conceptualisations of happiness is still experienced today. In fact, there are a few constructs that have been referred to as happiness, such as subjective wellbeing or subjective quality of life (Hills & Argyle, 2002). Nevertheless, other authors have proposed that happiness is just one component of subjective wellbeing, instead of a synonym. Maybe the best example of this position is the tripartite model (later expanded to four domains), which included happiness within positive affect, one of the factors contributing to subjective wellbeing when high, together with low negative affect, life satisfaction as a whole, and life satisfaction with individual life domains (Diener, Scollon, & Lucas, 2009).

Another attempt to define happiness has come from the specification of its opposite/s (Pawelski, 2013). Nevertheless, it is also unclear whether happiness is part of a bipolar continuum with (for example) sadness or unhappiness as opposites, or it constitutes a factor of its own. In this sense, the two continua model proposed by Keyes (2005) considered mental health not as a single continuum (having mental illness as its opposite) but suggested that they are two independent, correlated continua instead. In his model, Keyes included happiness as part of mental health, and depression as part of mental illness. In the same sense, positive affect and negative affect, which include experiences related to happiness and sadness respectively, seem to be correlated but independent factors too. Nevertheless, when analysing happiness and sadness directly, this double structure is not that clear. Many authors have reported moderate to strong correlations between depression and happiness (e.g.,  $r = -.56$ , Abdel-Khalek, 2007;  $r = -.49$ , Headey, Kelley, & Wearing, 1993;  $r = -.61$ , Iani, Lauriola, Layous, & Sirigatti, 2014;  $r = -.62$ , Kotsou & Leys, 2017;  $r = -.49$ , Vera-Villaruel, Celis-Atenas, & Córdova-Rubio, 2011), what would support the two continua model for happiness and sadness. Furthermore, it has also been claimed that within the complex human experience it is possible to be happy and unhappy at the same time, about different life's domains, for

example (Pawelski, 2013). Nevertheless, others have argued that the (only) moderate to strong correlations found between happiness and depression are a consequence of measurement errors, and that once these are removed they can even exceed  $r = .90$ , thus suggesting a single bipolar continuum (Tellegen, Watson, & Clark, 1999). Therefore, it seems that the application of the two continua model to happiness might be controversial.

As it can be understood from the previous paragraphs, despite some attempts to disentangle the question, and to try to delimitate the meaning of happiness and its related constructs (Diener, 2006), both in research and in popular discourse, it continues to be a pretty heterogeneous term with not a single definition. Therefore, it is still relevant to advance our understanding on how people experience happiness, what it is for them, and with which characteristics and meanings it is related to.

To try to better understand what happiness is, it may be useful to depart from some of the classical attempts to describe it in psychological terms. One of such attempts is the proposal made by Wessman and Ricks (1966):

“(Happiness) appears as an overall evaluation of a quality of the individual’s own experience in the conduct of his vital affairs. As such, happiness represents a conception abstracted from the flux of affective life indicating a decided balance of positive affectivity over long periods of time.” (pp. 240-241)

Another well-known example was provided by Veenhoven (1984) some years later, who suggested that:

“Happiness is the degree to which an individual judges the overall quality of his life-as-a-whole favourably, ...it is not a simple sum of pleasures, but rather a cognitive construction which the individual puts together from his various experiences”. (pp. 22-28)

From these two definitions, it may be extracted that both an affective and a cognitive component are part of what happiness is. Not for nothing, happiness is often considered an umbrella term, which may contribute to clarify the heterogeneity observed in its definition. Researchers seem to discern at least these two aforementioned meanings, one more affective and another more cognitive. Argyle (2001) for instance proposed that one component of happiness refers to the brief transitory emotion or affection (maybe best referred as “joy”), while the other covers concepts such as meaning in life, self-actualisation, and life satisfaction. These two components of happiness (affective and cognitive) have also been labelled as “hedonic” and “eudaimonic” respectively in a reminiscence of the Greek philosophy, as well as “experienced wellbeing” and “life satisfaction”.

Most research has shown that these two factors are relatively independent (Carr, 2011). In fact, cross-cultural studies (e.g., Suh, Diener, Oishi, & Triandis, 1998) show that they are correlated only at about  $r = 0.5$  in individualistic cultures, and around  $r = 0.20$  in collectivist countries. However, due to the characteristics of measures typically used to appraise happiness, it is the cognitive component which has probably received more attention in the great amount of psychology research devoted to happiness (Power, 2016). Perhaps, the key to know what all these countless publications try to describe is to understand what a person is considering when providing an answer about how happy is he/she.

### **1.2.3. Measuring happiness.**

There are many instruments available to measure happiness, both as single- and multiple-item scales. In fact, the World Database of Happiness (WDH), one of the leading sources of information on happiness in the world, includes as many as 1,181 measures of happiness (Veenhoven, n.d.-b). As we have aforementioned, these questionnaires, inventories, and scales are thought to cover mainly the cognitive component of happiness, since they usually ask respondents to make judgements about their current (i.e., these days) general

happiness, subjective wellbeing, satisfaction with life, etc. Some well-known examples are: the Depression-Happiness Scale (McGreal & Joseph, 1993), the Extended Satisfaction with Life Scale (Alfonso, Allison, Rader, & Gorman, 1996), the Memorial University of Newfoundland Scale of Happiness (Kozma & Stones, 1980), the Oxford Happiness Questionnaire (Hills & Argyle, 2002), or the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985).

Despite this vast array of formal measures, in many of the major national surveys single questions are used to measure happiness instead. These questions are usually formulated as “How happy are you now?”, or “How satisfied are you with your life?”, and respondents are requested to provide a score as an answer, typically on 5-, 7-, or 10-point scales (Carr, 2011). The use of these single questions to appraise happiness has also been criticised by some researchers for their low reliability and validity when compared to more complex questionnaires (Power, 2016). Despite their probably lower psychometric properties though, single questions keep being very popular and are still recommended for measuring happiness and subjective wellbeing. This is due not only to their simple and low time-consuming nature, but also because they have been proposed to be theoretically more consistent than some multiple-item scales, which commonly cover an eclectic mix of concepts (Cummins, 2013).

The methodology to assess happiness in this thesis was based on a single item included in a constructivist assessment instrument, the Repertory Grid Technique (RGT), described in section 3.1.3.4. This measure asks individuals to rate themselves and other people in several personal characteristics (e.g., personality traits, attitudes, mindset), among which happiness was included. Therefore, although the person may take the affective component into account, the formulation of the question prioritises the cognitive component of happiness, since respondents are asked about (relatively stable) characteristics that define a

person, including him/herself, instead of brief transitory emotions. A 7-point Likert scale was used to provide a rating.

#### 1.2.4. The statistics of happiness.

Despite the unclear definitions reviewed in section 1.2.2., surveys on happiness, subjective wellbeing, and satisfaction with life have expanded in the last decades as an attempt to inform policies. Nevertheless, due to the different methods through which these constructs are assessed, and the cultural differences across nations, results should be interpreted cautiously (Tov & Au, 2013).

Every year a World Happiness Report (WHR) is published by the Sustainable Development Solutions Network, which uses data from the Gallup World Poll, and which has reached this 2018 its 6<sup>th</sup> edition (Helliwell, Layard, & Sachs, 2018). According to this recently updated data, gathered through the Cantril ladder (from 0 to 10) asking an average of 1,000 people per country how they evaluate their life, the world average happiness between the years 2015 and 2017 was 5.264. This result, together with the mean scores for the 10 regions they distribute the world population in, is provided on table 2.

Table 2

*Population-Weighted Happiness Mean Scores around the World 2015-2017 (Adapted from the World Happiness Report)*

Region	Happiness <i>M</i> ( <i>SD</i> )
Northern America, Australia & New Zealand	6.958 (1.905)
Western Europe	6.635 (1.813)
Latin America & Caribbean	6.193 (2.448)
Central and Eastern Europe	5.848 (2.053)
Commonwealth of Independent States	5.460 (2.178)
East Asia	5.343 (2.106)
Southeast Asia	5.280 (2.276)
Middle East & North Africa	5.003 (2.470)
Sub-Saharan Africa	4.425 (2.476)
South Asia	4.355 (1.934)
World	5.264 (2.298)

Looking at single nations, analysing data from 2014 to 2017 from 156 countries, results are rather consistent in the last two years, with the 10 happiest countries being the same than in the previous report (Helliwell, Layard, & Sachs, 2017). A gap of four points may be noticed between the 10 countries at the top of the list and the 10 countries at the bottom, with those at the top scoring twice as high (means are reported on table 3). Spain, the country from which data for this thesis was collected, ranks the 36<sup>th</sup>, with a mean score of 6.310.

Table 3

*Mean Happiness Score for the Top-Ranked and the Bottom-Ranked Countries in 2018  
According to the World Happiness Report*

Top-ranked countries	Happiness <i>M</i>	Bottom-ranked countries	Happiness <i>M</i>
Finland	7.632	Malawi	3.587
Norway	7.594	Haiti	3.582
Denmark	7.555	Liberia	3.495
Iceland	7.495	Syria	3.462
Switzerland	7.487	Rwanda	3.408
Netherlands	7.441	Yemen	3.355
Canada	7.328	Tanzania	3.303
New Zealand	7.324	South Sudan	3.254
Sweden	7.314	Central African Republic	3.083
Australia	7.272	Burundi	2.905

Results by country were compared to those of another reliable source of information, the WDH, which provides happiness scores for more than 160 societies from the year 1946 onwards, using data from cross-national surveys such as the Eurobarometer, the World Values Survey, or again the Gallup World Poll, but also from other small national studies. This more comprehensive database uses the same scale than the WHR, but the most updated findings available for happiness across nations are, to our knowledge, an average from 2005 to 2014 (Veenhoven, n.d.-a). In these, Spain ranked very similarly, in the 35<sup>th</sup> position with an average score of 7.0. In the WDH though, the 10 countries in the first and last positions (including some ties) showed some differences compared to the WHR, as can be seen in table 4. These discrepancies take place especially among the least happy countries, where only Burundi and

Tanzania appear in both rankings. Among the happiest nations in turn, as many as seven countries repeat at the top of the list. It must be acknowledged that the data from the WDH could be outdated at this moment, since in four years many changes have occurred in the world which can potentially impact happiness of individuals in places such as Syria, Colombia or Venezuela.

Table 4

*Mean Happiness Score for the Top-Ranked and the Bottom-Ranked Countries in 2005-2014 According to the World Database of Happiness*

Top-ranked countries	Happiness $M$	Bottom-ranked countries	Happiness $M$
Costa Rica	8.5	Mozambique	3.8
Denmark	8.4	Niger	3.8
Mexico	8.3	Madagascar	3.7
Iceland	8.1	Kenya	3.7
Canada	8.0	Congo	3.7
Switzerland	8.0	Sierra Leone	3.5
Norway	8.0	Benin	3.0
Finland	7.9	Burundi	2.9
Colombia	7.9	Togo	2.6
Venezuela/Sweden/Panama	7.8	Tanzania	2.5

Back to the analyses of the WHR, the authors estimated the values for a hypothetical region created for the sake of the interpretation of results, which was called “Dystopia”, and which equals the world’s lowest national scores for six key variables they analyse on the basis of previous research: Gross Domestic Product (GDP) per capita, social support, healthy life expectancy, freedom to make life choices, generosity, and freedom from corruption (Helliwell et al., 2018). Compared to Dystopia, and averaging scores for the 156 countries under study, the world is 3.45 points happier, with such difference being attributable to the aforementioned variables in the following order: social support (35%), GDP per capita (26%), healthy life expectancy (17%), freedom of choice (13%), generosity (5%), and corruption (3%). The weight of these six predictors follows the same order in the case of Spain.

The same authors conducted several equation models with worldwide happiness data from 2005 to 2017, using the same six variables as predictors. Their results suggest that these variables account for almost 75% of national average happiness score variation among countries. In addition, they provide support for the existence of positive emotions being far more important for happiness than the lack of negative ones. Nevertheless, as it happened with analyses for countries, the limited choice of predictors may lead to neglect some other relevant variables not studied (Helliwell et al., 2018).

Finally, in the last edition of the WHR, changes in happiness scores from 2008-2010 to 2015-2017 period are also provided for 141 countries. In this case, there seems to be a wide variation, with 58 countries experiencing significant increases, 59 significant decreases, and only 24 showing no significant changes. Among the 20 countries showing largest gains, 10 were in either the Commonwealth of Independent States, or Central and Eastern Europe, while among the 20 countries with the largest losses, seven were in sub-Saharan Africa. According to these results, Spain has experienced a decrease of 0.248 points, but it does not rank among the countries recording the worst losses anymore, once the levels previous to the economic crisis are no longer taken into account (Helliwell et al., 2018). These variations in happiness in a longer period of time may explain the differences between the most and least happy nations according to the WHR and WDH.

### **1.2.5. Factors contributing to happiness.**

Several factors have been studied in relation to which life circumstances (under voluntary control or not) lead to higher happiness. The six variables from the WHR are examples of that, but some of the most common factors explored in the literature are typically the following:

#### *1.2.5.1. Income.*

Probably the most notorious finding in previous research on happiness and economics is the Easterlin (1974) paradox, which found no increases in happiness among citizens of societies experiencing economic growth. This finding fostered a lot of research aimed at both confirming and challenging it. It was proposed that some kind of threshold might exist, suggesting that satisfaction with life and national purchasing power correlate until GDP exceeds an amount enough to ensure that basic needs are covered, and then disappears (Proto & Rustichini, 2013; Seligman, 2002). This phenomenon would mean that the effect of being richer is much larger in poorer countries than in wealthier ones. Nevertheless, as it has been mentioned, the Easterlin paradox has been criticised by several authors, for instance due to the poor control of potential mediating variables as well as for the methodological flaws when assessing it in different studies (e.g., Stevenson & Wolfers, 2008).

One way to clarify the impact of income on happiness may be to separate between two different areas: their relationship measured at a particular time in different places, and the effect of an income increase in happiness. We have already presented the second one when defining the Easterlin paradox, and we have seen that it does not lead to convincing conclusions. One possible explanation for this has been proposed to be the importance of the personal subjective consideration of such increase in income, in comparison to previous as well as others' income (Clark, Frijters, & Shields, 2008). In this sense, the effect of income decreases in happiness and wellbeing has also been studied, for instance during the recent worldwide economic crisis. Results in Spain suggested that even such an important recession had an impact on life satisfaction, but not on eudaimonic wellbeing (Chaves, Castellanos, Abrams, & Vázquez, 2018). Meanwhile, with regard to the relationship between income and happiness at a particular time in different places, robust results have reported that people in wealthier countries are on average happier than individuals in poorer nations (e.g., Helliwell

et al., 2018). These results are in line with those from Diener and Biswas-Diener (2008), who found that the correlations between the wealth of different countries and their happiness levels are strong, whereas within a specific country the relationship is much weaker, perhaps because income has different influences on various emotions related to happiness (Piff & Moskowitz, 2018).

In conclusion, according to the available literature, it does seem to exist a relationship between happiness and income when comparing different places at a given moment. Nevertheless, it is not possible to conclude that income increases influence happiness, as it may depend on the personal appraisal of such changes (Frey & Stutzer, 2013).

#### *1.2.5.2. Education.*

Education, together with some other variables such as employment or health, has been reported to have strong correlations with income and wealth (Diener & Biswas-Diener, 2008). Therefore, it needs to be carefully studied. For example, it has been suggested that education in general is not related to happiness, but it does increase it slightly among people with lower income (Diener, Suh, Lucas, & Smith, 1999; Seligman, 2002). Nevertheless, its weak impact on happiness seems to be a consequence of the several variables that mediate such relationship. In this sense, not only income matters, but also comparison to other people, or specific characteristics of students (e.g., academic self-efficacy) and teachers (e.g., promotion of autonomy and choice), seem to play a role (Carr, 2011). Intelligence is not necessarily related to the level of education, but the two are usually studied together. Nonetheless, intelligence has also failed to be a significant contributor to happiness (Veenhoven & Choi, 2012).

### *1.2.5.3. Employment.*

Like education, employment is a variable that keeps, obviously, a close relationship to income and wealth. Nevertheless, unemployed people have been shown to report happiness levels substantially below of what it could be expected from simply the loss of income (Clark, 2010). In fact, unemployment has even been suggested as the factor that affects wellbeing the most, even more than divorce, and it has also been estimated that it would require a sevenfold increase in income to compensate its impact on life satisfaction (Frey & Stutzer, 2013). This severe detrimental influence of unemployment on happiness has also been supported by meta-analytic results (McKee-Ryan, Song, Wanberg, & Kinicki, 2005), and it has been reported to last for years (Lucas, Clark, Georgellis, & Diener, 2004).

Furthermore, it seems that the implications of joblessness go even beyond those directly affected, decreasing life satisfaction in the whole region where it takes place, probably through its economic and social consequences in general, and the anticipation of job loss that may be triggered in other workers (Di Tella, MacCulloch, & Oswald, 2003).

### *1.2.5.4. Health.*

Like for some other factors, the relationship between happiness and health has extensively been studied in both directions: how different health conditions and statuses affect happiness, and how happiness affects health. Regarding the first direction, it has been suggested that, instead of objective good health, what matters the most for happiness is the subjective perception of health (Carr, 2011). Nevertheless disabling, long-lasting and severe illnesses have proven to decline happiness levels regardless perception (Diener et al., 1999). For example, in a recent study conducted in Spain, depression, concentration problems, anxiety, insomnia, cancer, and headache showed to have a negative impact on satisfaction with life (Vázquez, Rahona, Gómez, Caballero, & Hervás, 2015). Also, having one chronic health problem does not seem to have a large impact on happiness, while having more than

four apparently does. Therefore, severity of health status does seem to influence happiness (Seligman, 2002).

Meanwhile, with regard to the second direction (i.e., how happiness affects health), in section 1.2.2. we have already described the two continua model (Keyes, 2005), which conceptualises mental health (including happiness) as opposite to mental illness, and provided evidence for the association between them. As far as physical health is concerned, it has also been suggested that individuals induced into a happy mood may show lower blood pressure reactivity in response to stress (Smith, Ruiz, & Uchino, 2004). In addition, this positive mood may also result in lower blood pressure in general, better perception of one's physical health, and a lower stress level (Papousek & Schulter, 2008). An increased activity in the immune system has also been suggested to be associated to positive mood (Cohen, Doyle, Turner, Alper, & Skoner, 2003; McClelland & Cheriff, 1997), while happiness and life satisfaction have also been related to increases in pain thresholds (Alden, Dale, & DeGood, 2001), less mobility limitations (Collins, Goldmán, & Rodríguez, 2008), and a lower risk of suffering a stroke (Ostir, Markides, Black, & Goodwin, 2000) or committing suicide (Koivumaa-Honkanen et al., 2001).

Moreover, research has also shown that happiness might have an impact not only on health status, but also on longevity. In a well-known study conducted with nuns, for instance, those who reported more positive affects in their autobiographies were shown to have 2.5 lower risk of mortality beyond age 80 (Danner, Snowdon, & Friesen, 2001).

#### *1.2.5.5. Civil status and parenting.*

Most of the research carried out on social relationships and happiness has focused on marriage and intimate relationship. For example, Seligman (2002) highlighted that being married is closely related to happiness at least in the United States, where 40% of married

people reported to be “very happy”, while only 24% of unmarried people did. Similar findings have repeatedly been found in the literature supporting the contribution of marriage to happiness (Dush & Amato, 2005; Williams, 2003). Nonetheless, meta-analytic results have found only small effect sizes (ESs) for the impact of marital status, which has led some researchers to propose that, perhaps, the role of this factor has largely been overestimated (Lucas & Dyrenforth, 2005).

These mixed results raise the question of whether there are confounding variables influencing the results. Indeed, the simple fact of “being unmarried” does not differentiate between those people who never were married, were divorced, or widowed (Lucas & Dyrenforth, 2005). In addition, it has also been found that unhappy marriages undermine happiness. In fact, a review of more than 90 studies concluded that marital quality has a small to medium effect on happiness (Proulx, Helms, & Buehler, 2007).

Another topic related to marriage is parenting. The relationship between happiness and having children (or not) has also been extensively researched. However, mixed results have been found again, suggesting the complexity of parenting effect on happiness, which would depend on multiple factors (Nelson, Kushlev, & Lyubomirsky, 2014). Within this area as well, happiness experienced by parents has been reported to be related to that of their children. Several causes have been proposed for this phenomenon, such as a biological component of health that may be inherited and which might account for up to 50% of overall happiness (Lucas, 2008; Seligman, 2002), but also the impact that children’s problems and successes may have on parents’ wellbeing (Fingerman, Cheng, Birditt, & Zarit, 2012).

#### *1.2.5.6. Gender.*

Gender has also been extensively studied in terms of its implications for happiness and subjective wellbeing. Taken together, the results generally provide evidence for both genders

experiencing the same average happiness. Nevertheless, it has also been consistently reported that women in general have the potential to experience more very high and very low levels compared to men (Fujita, Diener, & Sandvik, 1991; Seligman, 2002).

#### *1.2.5.7. Age.*

For some years, age was believed to be negatively correlated with happiness, with lower levels in older adulthood (Bradburn & Caplovitz, 1965). Nonetheless, more recent studies have challenged these findings, with some suggesting that that positive and negative affects remain steady with age, and others indicating that both slightly decrease (Charles, Reynolds, & Gatz, 2001). Similarly, life satisfaction also seems to be stable, or to even increase slightly with age (Horley & Lavery, 1995). Finally, other results indicate that happiness might follow a U-shaped trajectory through years, with the lowest levels experienced in middle age (Blanchflower & Oswald, 2008). Again, intensity of emotions probably play a role in terms of less extreme levels being experienced in older ages (Diener et al., 1999; Seligman, 2002). Therefore, mixed results are found once again, with no clear relationship between happiness and age.

In conclusion, most of these variables (except employment) have failed to show by themselves a clear relationship with happiness. In fact, taken together, life circumstances like the ones reviewed have been suggested to account for only around 15% of happiness variance (Seligman, 2002). This phenomenon, which has intrigued researchers for many years, is believed to occur due to possible thresholds in the relevance of such factors, but mainly because people's subjective appraisal is considered to be more important than the objective circumstances to determine the consequent emotional state (Power, 2016). In addition, human adaptation capacity after most events, which might potentially impact our happiness and wellbeing, has also extensively been reported. This notion has been termed as the hedonic treadmill (Brickman, & Campbell, 1971). According to this model, both pleasant and

distressing events may have an initial impact on happiness, but their effect soon fades away and people return to their baseline level. This phenomenon may contribute to the lack of relevance of the aforementioned variables in happiness.

### **1.2.6. Happiness in depression.**

Earlier in this thesis, in section 1.1.1., we have already described the main clinical features of depressive disorders. In the light of what has also been depicted throughout this section 1.2., it may be stated that depression (i.e., both MDD and DD), by definition, impairs and disrupts happiness. It seems clear that positive emotions, either about the past (e.g., satisfaction), the present (e.g., pleasure), or the future (e.g., hope), are clearly affected by the sad, empty, or irritable mood, as well as the persistent anhedonia, associated to depressive disorders. In effect, it seems that depression leads people to engage in attempts to dampen or suppress positive emotional experiences instead of enjoying them (Eisner, Johnson, & Carver, 2008). Furthermore, individuals suffering from depression often show an attentional bias, with a preferential focus on sad rather than happy stimuli, which is thought to contribute to maintain depression (Gotlib et al., 2004). In fact, as reported in section 1.2.2., several studies have already shown clear inverse correlations between happiness and depressive symptoms, most of them with a high ES.

Not for nothing, it has been argued that, among all the psychological disorders, depression is the one triggering the most profound decreases in the capacity for positive psychological experiences (Ferssizidis, Kashdan, Marquart, & Steger, 2013). However, it has been suggested that individuals suffering from depressive disorders may not only be less responsive to positive experiences, but to all emotional cues (Rottenberg, 2005), supporting the hypothesis of a restricted emotional reactivity in depression.

As for the factors contributing to happiness, it has been reported the possible influence of marriage and intimate relationships. People with depression though, usually report less intimacy and enjoyment in social interactions, even with close relationships (Nezlek, Hampton, & Shean, 2000). Meanwhile, in section 1.1.2. it has also been clearly described the burden that depressive disorders cause on health, including distress and disability, for example. Some researchers have attributed part of this detrimental influence on health indicators to the aforementioned factor: the impairment in close relationships and the loneliness associated to depression. Some of the ways through which this lack of good relationships might impact health indicators have been suggested to be an increased inflammation (Kiecolt-Glaser, Gouin, & Hantsoo, 2010), and higher blood pressure (Hawkey, Thisted, Masi, & Cacioppo, 2010), for example.

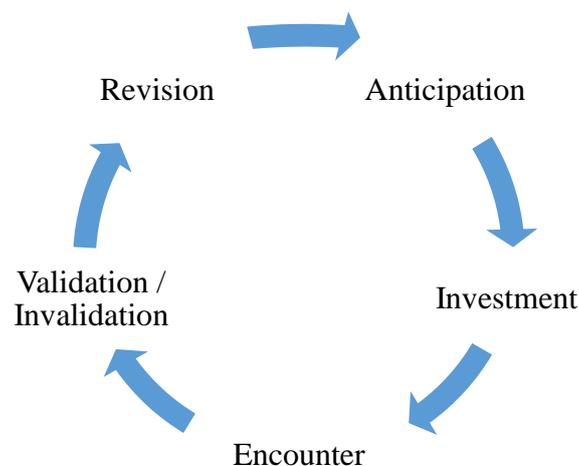
Finally, the decreased cognitive flexibility sometimes linked to depression has also shown to have health implications (Kashdan & Rottenberg, 2010), and it is worth mentioning that depressive disorders have also been related to mortality, accompanying physical illnesses such as cancer (Pinquart & Duberstein, 2010). Therefore, the effects of depression on health seem to be inverse to what has been reported for happiness. Nevertheless, as it has been aforementioned, whether this opposite relationship constitutes a single bipolar continuum or two continua, as proposed by Keyes (2005), is still unclear. We assume that an overall theoretical framework might contribute to advance the knowledge in all the issues presented so far, at least by addressing them in the context of a model of human functioning and by providing methodological alternatives to the research in this field. We explore this possibility with the theoretical approach presented hereafter.

### **1.3. Personal Construct Theory**

PCT is a general model, usually catalogued as a personality theory, proposed by the American professor George A. Kelly in the fifties in the form of two volumes, which were

republished some decades later, titled “The psychology of personal constructs” (Kelly, 1955/1991). Epistemologically, his proposal was framed in constructivism (Feixas & Villegas, 2000; Mahoney & Gabriel, 1987). This approach argues that we, as humans, cannot directly access reality, but that we construe it instead through the attribution of meaning to our experiences. Many references to this core principle can be found in Kelly’s ideas.

In order to describe his theory, Kelly resorted to the metaphor of the person as scientist. With this, he conveyed the fundamental postulate of his proposal: a person’s processes are psychologically channelized by the ways in which he/she anticipates events (Kelly, 1955/1991). In effect, he suggested that we constantly create hypotheses (in the form of personal constructs) about future events, and then we test these anticipations with our experience. Later, according to the outcomes we finally encounter in our lives, such hypotheses may be validated or invalidated, which leads to reconstruction of the system. We need to emphasise here that these anticipations and hypotheses are not necessarily conscious, but constitute the lens with which we look at the events we encounter minute to minute. Kelly even defined the process through which this testing procedure takes place when he described the cycle of experience (see figure 1 for a graphical representation).



*Figure 1.* The cycle of experience.

The process starts with an anticipation about a future event, as it has been aforementioned. The second phase is investment, which varies according to the centrality of the constructions implied in the anticipation (i.e., investment will be greater when constructions are more central for the individual). Then, the next step is the encounter with the real situation. With it, the person finds an outcome for the anticipation, according to which it will be confirmed or disconfirmed. In turn, the result of such validation process will affect the person's construction system. Concretely, the system will be likelier to be revised when the anticipation is invalidated, whereas it will be likelier to be preserved when it is validated. These cycles are always in action for the construction system to be dynamic (Kelly, 1970).

“Construction system” was a term coined by Kelly to name what is widely known as cognitive system, and it was further described in the eleven corollaries he provided to complement the fundamental postulate (adapted from Kelly, 1955/1991):

1. Construction corollary: A person anticipates events by construing their replications.
2. Individuality corollary: Persons differ from each other in their construction of events.
3. Organisation corollary: Each person characteristically evolves, for his/her convenience in anticipating events, a construction system embracing ordinal relationships between constructs.
4. Dichotomy corollary: A person's construction system is composed of a finite number of dichotomous constructs.
5. Choice corollary: A person chooses for him/herself that alternative in a dichotomised construct through which he/she anticipates the greater possibility for extension and definition of his/her system.

6. Range corollary: A construct is convenient for the anticipation of a finite range of events only.

7. Experience corollary: A person construction system varies as he/she successively construes the replications of events.

8. Modulation corollary: The variation in a person construction system is limited by the permeability of the constructs within whose range of convenience the variants lie.

9. Fragmentation corollary: A person may successively employ a variety of construction subsystems which are inferentially incompatible with each other.

10. Commonality corollary: To the extent that one person employs a construction of experience which is similar to that employed by another, his/her psychological processes are similar to those of the other person.

11. Sociality corollary: To the extent that one person construes the construction processes of another, he/she may play a role in a social process involving the other person.

With the endorsement of these eleven corollaries, together with the aforementioned postulate, Kelly defined how he believed our construction system operates. According to his theory, it is precisely through this construction system, which is different for each individual, that persons anticipate future events. As a consequence, people vary in their anticipations or hypotheses. On the structure of the system, he argued that it is composed by different constructs, which are opposite pairs of alternatives (e.g., kind – unkind, hard-working – lazy, good person – bad person), which are organised hierarchically, with some superordinate constructs defining their subordinate ones. Each of these constructs, as Kelly described, are useful for the anticipation of only a finite range of events, thus making organisation necessary. From the opposite alternatives or poles forming a construct, he added that we chose the one that allows us to further extend and define our construction system. In effect, he

suggested the construction system to have a dynamic nature, evolving as we validate or invalidate our hypotheses. Nevertheless, he detailed that not any kind of change is possible in a construction system, since such changes are delimited by the system itself, and depend on the permeability (i.e., flexibility) of its constructs. Furthermore, the construction system was defined as being complex enough to allow the simultaneous existence of different, even contradictory subsystems, although this situation may trigger the experience of some distress, as later research has shown. Finally, in terms of interpersonal interaction, he proposed that, as long as people use similar constructions, their psychological processes will also be similar. Then, he added that it is possible for a person to construe also the construction system of another individual, and that this capacity is what allows us to engage in social processes with others, a notion that preceded those of “theory of mind” and “metacognition”.

Once summarised the main theoretical features of PCT, its conceptualisation of psychopathology may be introduced. Kelly clearly expressed his reluctance to use the conventional nosological categories when he introduced his theory. He did not even consider his model a psychopathological system, but one around the problem of reconstructing life instead (Kelly, 1955/1991).

For Kelly, a disorder was conceptualised as any personal construction which is used repeatedly in spite of consistent invalidation, a process which he termed “hostility”. This may be interpreted in terms of the cycle of experience, whose optimal functioning has already been described (i.e., validation of anticipations leads to the preservation of the construction system but invalidation leads to revision). In this sense, problems seem to appear when this smooth process of testing and reviewing fails and is interrupted in one of its steps, since such blockage may hinder the person’s capacity for anticipation (Neimeyer & Feixas, 1989) by limiting the possibilities of the construct system to maximise its predictive capacity.

Nevertheless, Kelly also added that not any invalidation leads automatically to the replacement of the anticipation. Since the construction system is organised, the person is likely to consider the change in a specific construction in terms of its implications for the entire system. Therefore, the system might opt not to vary its constructions, especially in the case of core constructs (i.e., those by which he maintains his continuity), for the sake of preserving the person's identity. He even coined some terms in order to express some of the reasons this might happen, when describing emotions within PCT. For example, "guilt", in Kellian terms, means a person's apparent dislodgment from his/her core role structure (i.e., acting differently from what one's core constructs indicate). Similarly, "threat" refers to one's awareness of an imminent and comprehensive change in one's core structures (Kelly, 1955/1991). As the meanings of these concepts suggest, which are somehow different from the experiences associated with them in common language, these processes may shed some light to the ways "resistance" to change in psychotherapy takes place. Therefore, therapists should be aware that any intervention which activates guilt or threat is likely to be ineffective, and that any therapy should balance the need for change (for a better adaptation) and the need for continuity (to remain within the range of the client's identity). It is precisely this relevance given to identity which provides a differential value to PCT in clinical psychology and psychotherapy, since it allows both clinicians and researchers to understand clients' functioning not only in terms of psychological distress and problems, but also according to how they ascribe meanings to themselves, others, and the world.

Kelly also provided professionals with assessment tools to help them working with clients' constructions. Among all them, the RGT (Kelly, 1955/1991) is probably the most widely-known, with 3,169 publications found until December 2013 (López-González, 2016). This method examines the ways a person applies his/her constructs (i.e., pairs of opposite poles) to make sense of different aspects of the world, termed elements (Walker & Winter,

2007), by rating every element in each construct using a given scale. In this thesis, the interpersonal RGT has been used, in which elements are respondents' relatives and close friends, and the scale used ranges from 1 to 7. Unlike self-report questionnaires, often used to assess depressive cognitions and symptoms, this personal construct method allows the respondent to provide his/her own meaning dimensions instead of answering to those provided by the researcher or clinician. This particularity is argued to facilitate the identification of areas of distress and potential movements which are relevant for the person (Feixas, Erazo-Caicedo, Harter, & Bach, 2008). For a detailed description of the RGT please see section 3.1.3.4.

### **1.3.1. Personal construct theory and depression.**

Given its special emphasis in identity, PCT may be a useful approach to better understand depression. In fact, as has been aforementioned in section 1.1.3., the high rates of recurrence and the (sometimes) chronic course that have been reported for depressive disorders might be underlining the relevance of identity in the maintenance of such conditions.

Probably the most important term to understand depression from the PCT approach is constriction (as opposed to dilation). In the previous section, we have described how the cycle of experience modulates and updates the construction system. As it has been said, as a result of these experience cycles, incompatibilities between constructions may appear and reorganisation of the system is sometimes needed in order to improve its predictive capacity. In such cases in which the system requires revision, the person undergoes another process called the Circumspection-Preemption-Control (C-P-C) Cycle. The C-P-C cycle consists of a sequence of reconstruction starting with circumspection, a phase in which the individual considers different options which might be relevant to the specific experience at stake. Then, in the preemption stage, the person chooses one of those alternatives as valid (as described in

the choice corollary), and this choice is finally tested in the control phase, which involves the continuation of the experience cycle. This cycle, like the cycle of experience, is a cognitive process that is continuously taking place as the person keeps living experiences which serve as feedback to his/her construction system (Feixas, 1990). In this regard, the constriction – dilation axis has to do with the number of different options available in the circumspection phase of the C-P-C cycle. As the dilation prevails over constriction, the person broadens his/her perceptual field in order to look for different and varied alternatives. It is worth noticing though, that this process involves attempts to rearrange a wider number of events, with the subsequent risk of incurring new and more generalised incompatibilities. On the contrary, constriction is the relatively repetitive mental process that ensues after narrowing down the boundaries of one's perceptual field as an attempt to minimise incompatibilities in one's construction system and, thus, assure validation of current constructions. This is the case of people with depression, who are believed to have a rather restricted perceptual field which may be dysfunctional but still preferable to the to the chaos of a meaningless self or social world (Feixas, Erazo-Caicedo, et al., 2008). Suicide, in this case, can be understood as the ultimate aim of constriction (Kelly, 1961). Some implications of these narrow limits of one's perceptual field are, according to (Kelly, 1955/1991): limited interests, the need to deal with only one issue at a time, to discard potential relationships between widely varying events, to beat out the path of daily routine in smaller and smaller circles, or to stick to a sharply delimited version of one's problem. Undoubtedly, these characteristics remind of the ones described for depression in section 1.1.1., such as the diminished interests and the concentration problems.

According to PCT, this constriction present in individuals suffering from depression must be considered by therapists in clinical work. It has been argued, for example, that if the patient is faced with too much guilt, he/she may constrict his (inter)actions as a way to avoid

more invalidation after several failed attempts to reconstrue his/her experience. Nevertheless, it seems clear that dilation is necessary for a successful therapy, but within the limits and at the pace the patient feels is safe. At the beginning, the constricted person will have only a few alternatives available in the circumspection phase of the C-P-C cycle, but little by little more options are likely to be opened up (Kelly, 1955/1991).

Previous studies have also shown the relevance of some of the structures and indexes obtained with the RGT for the understanding of depressive disorders. Some of them are named herein to underline their role in depression (e.g., self now – ideal self discrepancy, cognitive polarisation, interpersonal construct differentiation), but for a comprehensive definition of all them please see section 3.1.3.4.

Probably the RGT indicator most researched by our research group has been the presence and number of Implicative Dilemmas (IDs, see section 3.1.3.4.2. for a description), which have already shown to be relevant for several clinical problems, such as eating disorders (Dada, Feixas, Compañ, & Montesano, 2012), anxiety disorders (Melis et al., 2011), or DD (Montesano et al., 2014). Nevertheless, the condition in which they seem to be most important is MDD, since its prevalence in these cases has been found to be particularly high, and to be related to increased severity, chronicity, suicide risk, and lower global functioning (Feixas et al., 2014).

Given their role in depression, it has been studied whether IDs are prone to change with psychotherapy. In effect, results have shown that they are likely to be resolved, with their number decreasing after the intervention. Such decrease has been found to be linked with more improvements in psychopathological symptoms (Feixas, Saúl, Winter, & Watson, 2008). Therefore, the importance of IDs in MDD and its maintenance seems clear. Indeed, as it has been suggested before, their study may contribute to better comprehend processes such

as the high recurrence of the disorder, since an ID is a form of identity conflict hindering the desired change, which is blocked due to its potential repercussions in other personal attributes (change in core constructs is resisted by the system in order to keep its coherence). For that reason, a psychotherapeutic approach, Dilemma-Focused Therapy (DFT; Feixas & Compañ, 2015, 2016), has been devised to work specifically with CCs such as IDs in depression.

This intervention was designed as a module of approximately eight sessions that may be added to any model of psychological therapy, whenever the role of CCs is deemed important for the case. According to its manual, in DFT both the client and the therapist work together towards the understanding of the role of such conflicts in several daily situations, review with which experiences they might have appeared, and finally engage themselves in tailored interventions to solve them respecting the client's identity, that is, protecting core constructs from invalidation (Feixas & Compañ, 2015). These interventions include techniques such as self-characterisation (Kelly, 1955/1991), in which the clients are asked to describe themselves as if they were theatre characters; laddering (Hinkle, 1966), in which the client is asked several questions about a specific construct to find other super or subordinate constructs; or the two-chair dialogue, an intervention created by Gestalt therapy (Perls, Hefferline, & Goodman, 1951) and currently used in experiential-constructivist approaches (e.g., Greenberg, Rice, & Elliott, 1993), in which the two sides of the ID are represented through two chairs where the client sits alternatively to have a dialogue among these parts. The DFT has already shown to be as effective as CBT in the treatment of depressive disorders (Feixas et al., 2016), and its impact on self-reported happiness (SRH) is analysed in section 4.4.1. of this thesis. The promising results on the clinical relevance of IDs for depression and other health conditions are being collaboratively investigated through an international project called "The Multi-Center Dilemma Project" (Feixas & Saúl, 2004) founded in 1999.

Apart from IDs, the RGT allows also to measure other characteristics of the construct system that may be of interest for depression. For instance, the self now – ideal self, self now – others, and ideal self – others discrepancies. These indexes represent the dissimilarity individuals perceive between themselves and their ideal self (i.e., ideally, how they would like to be), between themselves and people around them, and between these people and the person's ideal self, respectively. With regard to the self now – ideal self discrepancy, it may be understood as a measure of negative self-evaluation, a phenomenon typically covered in assessment instruments for depression. In fact, decades ago Beck already reported that negative self-evaluations were present in over 80% of persons with depression (Beck, Rush, Shaw, & Emery, 1979). Previous studies using the RGT have shown that people suffering from depressive disorders tend to show higher self now – ideal self discrepancies (Feixas, Erazo-Caicedo, et al., 2008). Similarly, it has already been aforementioned that depression usually has a detrimental impact on people's capacity to manage relationships. In this sense, the self now – others discrepancy may be interpreted as a measure of perceived self-isolation or, at least, of to what extent the person perceives him/herself as different from others (Feixas & Cornejo, 1996). Again, higher scores in this index have also been found in depressed individuals in comparison to non-depressed (Feixas, Erazo-Caicedo, et al., 2008). Finally, ideal self – others discrepancy may be understood as a measure of negative view of others. This is also relevant for depression since, as the severity increases, it has been suggested that the negative evaluation of oneself extends also to others (Neimeyer, 1985). Nevertheless, maybe precisely for the influence of severity, differences between people with and without depression in this index are less clear (Feixas, Erazo-Caicedo, et al., 2008). In the case of self now – ideal self and self now – others discrepancies, they have also been shown to decrease together with the improvement in depressive symptoms with therapy (Sheehan, 1985).

The RGT also provides a measure called cognitive polarisation, whose interpretation may be the tendency to make extreme or catastrophic constructions, a cognitive tendency commonly found in patients with depression (Beck et al., 1979). Also, the aforementioned constriction in construing typical from depression may also be assessed using the RGT. This constriction has traditionally been reported through several measures of cognitive differentiation (see Kovářová & Filip, 2015 for a review). Nevertheless, so far, neither for cognitive polarisation nor for interpersonal construct differentiation, differences have been found between people with and without depression (Feixas, Erazo-Caicedo, et al., 2008).

Therefore, everything considered, the RGT constitutes an useful and powerful instrument to assess cognitive characteristics of depression thanks to the wide variety of information it can provide. Furthermore, it offers high flexibility, adapting to each respondent's construction system and to each researcher/clinician's needs through its different formats (Feixas & Cornejo, 2002). As a consequence, it is a particularly useful tool to study the complex relationships between psychological or physical problems and identity, since it combines an idiographic approach (tailored to each person) with nomothetic measures, thus allowing for comparison among individuals (Compañ et al., 2011).

Apart from depression, there are other disorders that have been studied with the RGT, as it has been mentioned before within this section when describing the role of IDs (see Montesano, López-González, Saúl, & Feixas, 2015 for a review). This is also the case for people with FMS, who have shown to have a construction system quite similar to that of people with depression. Previous research from our group suggests that individuals (usually women) with FMS, show higher prevalence of IDs, as well as wider self now – ideal self and ideal self – others discrepancies, compared to control participants (Compañ et al., 2011). Such differences may be argued to be caused by the large comorbidity between depressive disorders and FMS, a phenomenon described in section 1.1.4.

### 1.3.2. Personal construct theory and happiness.

As far as we know, happiness has been examined from the PCT perspective only by a masters' thesis conducted in our research group (Pavón, 2010). In that piece of research, which has not been published, SRH was studied among non-clinical participants (one sample composed by 111 participants and another by 28, all of them students' relatives and friends) using scores in the construct "happy" and some indexes of the RGT (for a description of the variables mentioned herein please see section 3.1.3.4.). Therefore, no data is available yet for comparisons between people with MDD or FMS, or for changes with therapy. These are precisely the novelties which this thesis seeks to provide, apart from replicating findings in the non-clinical sample collected.

Results provided by Pavón (2010) need to be inversely interpreted (i.e., the lower the score the higher the SRH), and were equivocal with regard to the influence of gender on SRH, since she found statistically significant differences in her first sample ( $t(109) = 2.09, p = .03, d = .44$ ) suggesting that men ( $M = 2.51, SD = 1.43$ ) were happier than women ( $M = 3.11, SD = 1.56$ ), but this difference was not significant in the second sample ( $n = 28$ ), in which the researchers who administered the RGT were not family or friends of the participants. These contradictory results for gender are in line with what has been described in section 1.2.5.6., and do not allow to draw conclusions on higher happiness levels in one gender or another. Also, in her first sample, she found that participants with IDs showed lower SRH ( $M = 3.08, SD = 1.71$ ) than those without ( $M = 2.48, SD = 1.19$ ), a difference that was significant ( $t(109) = 2.17, p = .03, d = .41$ ). However, again this disparity was not corroborated by the second sample ( $n = 28$ ). She only studied the presence or absence of IDs, neither she analysed the percentages of such IDs nor she focused on Dilemmatic Constructs (DCs), analyses that are done in this thesis. Therefore, this enhanced study of CCs may shed more light on their influence on SRH.

Pavón (2010) analysed relationships between SRH and other RGT variables as well, separating by sex in the first sample but not in the second, in line with her results for the influence of this variable. In the first sample she found, among women, significant positive relationships between the scores in SRH and the happiness attributed to participants' fathers ( $\rho = .49, p < .001$ ) and mothers ( $\rho = .52, p < .001$ ). Among men, this correlation was significant only with happiness attributed to their mothers ( $\rho = .27, p = .04$ ), but almost also with the score for their fathers ( $\rho = .25, p = .06$ ). In the second sample, with both sexes together, the correlation between SRH and father's happiness was significant ( $\rho = .69, p < .001$ ), while it was on the verge of significance with mother's ( $\rho = .35, p = .07$ ). In sum, apparently the level of happiness a person experiences may be related to the happiness they think their parents feel, corroborating what has been reported in section 1.2.5.5.

Pavón (2010) also studied the relationship between SRH and self now – ideal self, self now – others, and ideal self – others discrepancies. However, the discrepancies between self now – others, and between ideal self – others, were not explored using really discrepancies, but correlations. Therefore, these results might not be directly comparable with the results of this thesis. In our case, the use of discrepancies instead of correlations was decided because they were deemed more appropriate. For example, a strong correlation between self now and others would mean that the scores in both of them follow the same pattern (i.e., when one increases, the other does so too), but their scores may still be far from each other. Discrepancies solve this issue by using Euclidian distances between the elements under study. In her first sample, for women she reported the relationship of SRH with self now – others correlation to be negative and significant ( $\rho = -.39, p < .001$ ), while with self now – ideal self discrepancy it was positive and almost significant too ( $\rho = .25, p = .06$ ), but not with ideal self – others correlation ( $\rho = .10, p = .46$ ). Differently, for men, the only significant correlation was between SRH and self now – ideal self discrepancy ( $\rho = .33, p = .01$ ), while

the relationship of SRH with self now – others correlation ( $r_{ho} = .04, p = .74$ ), and ideal self – others correlation ( $r_{ho} = .06, p = .64$ ) were far from significance. In turn, in her second sample, the relationship of SRH with none of these discrepancies was significant: self now – ideal self ( $r_{ho} = .35, p = .07$ ), self now – others ( $r_{ho} = .00, p = .99$ ), ideal self – others ( $r_{ho} = -.09, p = .65$ ). Taking all these results together, the only association that might be significant is the inverse correlation between SRH and self now – ideal self discrepancy.

As far as qualitative analyses of the RGT, she found that those poles most commonly elicited by participants as opposite to “happy” in the first sample were: unhappy ( $n = 54$ ), sad ( $n = 24$ ), and embittered ( $n = 7$ ). These same poles, differently ordered, were also found in the second sample: unhappy ( $n = 9$ ), embittered ( $n = 5$ ), sad ( $n = 3$ ). Finally, she also explored how participants construed happiness by analysing the four constructs which were most correlated with the happy pole, and its opposite. Again, this is a difference with regard to this thesis, in which it was decided to use chi-squared distances instead of correlations. Like for the self now – others, and ideal self – others relationships aforementioned, this change in the methodology was considered to increase accuracy. Correlations have the problem described above (they assess patterns more than discrepancies), and Euclidian distances inform of distance between constructs, losing information on which pole is close/far to/from which. Therefore, chi-squared distances among construct poles were used because they allow to measure distances between specific poles. Similarly, instead of analysing the distance between the opposite pole of happy and other poles, we focused on the happy pole also to study its farthest poles. This decision was taken to keep the interest in happiness, avoiding the interaction with other meanings that can be present in the opposites. Pavón (2010) found that the poles most correlated with happy in her first sample were: joyful ( $n = 18$ ), optimistic ( $n = 13$ ), sociable ( $n = 11$ ), generous ( $n = 10$ ), and quiet ( $n = 10$ ). Meanwhile, the poles most correlated with the opposite of happy were: boring ( $n = 17$ ), pessimistic ( $n = 11$ ), sad ( $n = 8$ ),

selfish ( $n = 8$ ), and unpleasant ( $n = 8$ ). In her second sample, poles most correlated with happy were joyful ( $n = 5$ ), reliable ( $n = 5$ ), and self-esteem ( $n = 5$ ), while those most correlated with its opposite were selfish ( $n = 5$ ), negative ( $n = 5$ ), and conformist ( $n = 5$ ).

Whether RGT or other constructivist indexes are used to assess happiness or not, PCT in general might be considered an early form of PP, in the sense that it does not take a pathological view of clients. For instance, it is not uncommon to hear from them, and even from some professionals, assertions such as “I am hopeless” or “He is a depressive person”. Instead of appraising the objectivity of such statements, PCT proposes to work with clients in the exploration of new alternatives. This is expressed by Kelly (1963) in the following quote:

“One way of life needs not be invalidated before the outcomes of another are examined. If a person in psychotherapy can free himself from the indicative moods of our language system long enough to entertain some novel hypotheses about other ways of living, he can save himself and his therapist a lot of trouble overcoming the “resistances” and “false premises” of his previous outlook. Therapy could then become concerned with alternatives instead of involving the participants in long, intricate, and reductionist analyses designed to disabuse the client of his “neurotic notions.”” (p. 55)

In this quote, we can appreciate how notions of pathology which were (and mostly still are) widely taken as “facts” about the patient are considered by Kelly just constructions (reified by the common use of the verb “to be”, e.g., “John is a psychotic patient”) which might not be very useful. And, more important for clinical practice, he even discourages therapy work oriented to convince the patient that his/her thoughts and beliefs were pathological (or erroneous), a common practice in CBT. Hence, PCT from its beginnings avoided the exclusive focus of therapy on pathology, which was, and mostly still is, present in

clinical psychology. Instead, Kelly was more interested in working with clients' constructions of their experiences. In doing this, he assumed that such constructions had a reason to exist and provide some meaning to the individual. It is in cases when individuals experience distress caused by their anticipations, when the therapist joins them in the pursue of new alternatives that allow to revise those meanings that have been invalidated, while respecting clients' identity. This emphasis in the existence of several alternatives to make sense of any situation is closely related to the invitational mood of PCT, which is adopted by the therapist when inviting the client to imagine various possibilities, fostering the adventurousness that Kelly advocated for both scientific thinking and everyday living (Walker & Winter, 2007).

Taking the approach embraced by personal construct psychologists, even when they don't label themselves as being PP, we can see that PCT is clearly congenial with it. And, with respect to happiness, PCT does not devote an especial section to it. Rather, it treats "happiness" as any other construction, that is, as a word which has personal meaning. Thus, all the procedures, assessments and interventions which personal construct researchers and practitioners use (e.g., the RGT) for studying the person's meanings, can be perfectly used for the study of happiness.

#### **1.4. Rationale for the Present Research**

Depressive disorders are a common and severe health problem which needs to be better understood and addressed, aims to which this thesis is intended to contribute. As it has been reported in the introduction of this thesis, depression is one of the most prevalent disorders in the world, even showing a clear increasing trend in the last years. In fact, it is one of the leading causes of disability worldwide, being the largest contributor to non-fatal health loss. The economic implications of depressive disorders have also been studied, and results show that they can increase health expenses as much as 50%.

Studies on the course of depression show that, in many cases, it becomes chronic, a phenomenon related to the high recurrence rates that people with depression often experience. Furthermore, it is common to find other disorders co-occurring with depression. Such comorbidities have shown to increase its severity, to decrease response to treatment, and to produce more impairment in individuals' life. A physical disease that has already been reported as highly prevalent among people with depressive disorders is FMS. This specific comorbidity has been found to produce a significant impact on health and wellbeing, through the experience of more physical symptoms and lower functioning, for example, as well to decrease response to treatment. Therefore, the inclusion of a group of participants with comorbidity of MDD and FMS seeks to represent a common clinical situation, trying to understand what nuances may exist in several cognitive, clinical, and wellbeing indicators when compared to people with MDD but without FMS comorbidity.

So far, the cognitive model is the psychological approach most widely used to study depression, which laid down the foundations for the current gold standard psychotherapy, CBT. Although it undoubtedly allowed to advance the understanding and treatment of depressive disorders, the cognitive model has several limitations, for example it has not been able to clearly prevent recurrence.

This sometimes life-long course of depression may be highlighting the important role of identity processes, especially in the maintenance of depression. Therefore, approaches such as PCT may contribute to the better understanding of depression and to develop interventions with better long-term efficacy, dealing with CCs and, thus, balancing the need for change (to decrease distress and allow for personal development) and the need for continuity (to preserve the person's identity), and for this reason it provides the main theoretical scope for this thesis.

As it has been aforementioned, current frameworks for the study and treatment of depressive disorders have still room for improvement. One way in which this may be pursued is by complementing traditional models and interventions with a focus on wellbeing and happiness, topics in vogue in the last decades due to the rise of PP. Depression has already shown to have a great detrimental impact on happiness. In fact, considering its clinical features, it may be argued that represents the opposite to happiness. Nevertheless, it must be acknowledged that happiness is still a rather heterogeneous concept, and it is not even clear whether both depression and happiness are part of the same continuum or are better described as two related continua. Hence, it is still needed to advance our understanding on how people experience happiness, and how it interacts with depressive disorders and its common comorbidities.

As it has been reported for many of the correlates studied so far for wellbeing and happiness, such as income or health, it seems that the subjective perception of individuals about their experiences is even more important than their objective circumstances. This clearly recalls the main constructivist idea that we construe our experiences and that, depending on the anticipations we make, very different actions, sensations, feelings and thoughts may follow. In this sense, it is foreseen that PCT may provide a novel approach to happiness, providing means to assess its personal meaning and contributing to understand what it means for all participants within this thesis. In turn, this is expected to also shed some light on the so far rather imprecise definition of happiness.

To our knowledge, no previous research has been carried out and published on this topic from the PCT perspective, what constitutes a novelty of the present work.

## 2. Objectives and Hypotheses

This thesis had a main objective (described in section 2.1.) which was further developed into several specific and complementary ones. To pursue these aims, two interrelated studies were conducted. The first study focused on the association between depression and SRH by comparing a non-clinical sample, a sample of patients with MDD, and a sample of patients with both MDD and FMS. The second study in turn, took a step forward by analysing how SRH changed with psychotherapy, comparing two different therapeutic approaches. Each study included its own specific and secondary aims and, after describing them, hypotheses are provided below for all objectives proposed in this thesis except O1.7. and O2.5., which were completely exploratory due to the lack of previous evidence to support any consistent anticipation (see section 2.3. and 2.5. below).

### 2.1. Main Objective

As we described in the introduction, a clear inverse relationship seems to exist between happiness and depression. However, less is known about the relevance of personal meanings about self and others for such relationship, and about how it evolves as a response to psychotherapy. We have also little knowledge on the effect of the various comorbid conditions to depression, which are so prevalent in common clinical practice. The main objective of this thesis was to advance the knowledge on the relationship between depression and SRH, analysing how various clinical conditions, and the cognitive system involved in the construction of self and others, affect such relationship (Study 1). In addition, we tested whether psychotherapy was capable of increasing SRH in depressed individuals, comparing two different modalities (Study 2). The relationship between SRH and other clinical and construal indicators was thoroughly analysed with the ultimate aim of informing future clinical interventions to treat depression by enhancing happiness and wellbeing in any therapeutic approach. This main objective is further developed in the objectives that follow.

## **2.2. Specific Objectives of Study 1**

**O1.1.** To weigh the influence of CCs on participants' SRH.

**O1.2.** To estimate the relationship of participants' SRH with depression severity, psychological distress, and global functioning.

**O1.3.** To estimate the association between participants' self now – ideal self, self now – others, and ideal self – others discrepancies and SRH.

**O1.4.** To estimate the relationship of participants' cognitive polarisation and interpersonal construct differentiation with SRH.

## **2.3. Complementary Objectives of Study 1**

**O1.5.** To gauge the influence of social, demographic, and clinical characteristics (e.g., use of psychoactive medication in the clinical samples) of participants on their SRH.

**O1.6.** To estimate the relationship between participants' SRH and happiness scores attributed to their parents.

**O1.7.** To qualitatively analyse the content of the opposite pole of happy, the poles closest to, and farthest from happy, as well as its closest and farthest elements.

All these objectives have an interest of their own, but in this thesis, they will be pursued further in aiming to understand the potentially differential role of depression with and without a comorbid condition mainly characterised by pain, such as FMS. For this reason, these objectives will be investigated separately in the three samples of study 1 and then compared across groups.

## **2.4. Specific Objectives of Study 2**

**O2.1.** To weigh the influence of solving (or not) CCs with therapy on the change of participants' SRH after therapy.

**O2.2.** To estimate the relationship of participants' change in SRH after therapy with their change in depression severity, psychological distress, and global functioning.

**O2.3.** To estimate the relationship between participants' change in SRH after therapy and their change in self now – ideal self, self now – others, and ideal self – others discrepancies.

**O2.4.** To estimate the relationship of participants' change in SRH after therapy with their change in cognitive polarisation and interpersonal construct differentiation.

## **2.5. Complementary Objective of Study 2**

**O2.5.** To study the influence of social, demographic, and clinical characteristics of participants on their change in SRH after therapy.

## **2.6. Hypotheses of Study 1**

**H1.1.** Significantly higher SRH was expected among non-clinical participants than among those with MDD. Among the latter, we anticipated significantly lower happiness scores in participants with FMS comorbid to MDD.

**H1.2.** We anticipated participants with more CCs to show significantly lower SRH than those with less CCs.

**H1.3.** We expected participants' SRH to be significantly and negatively correlated with their scores in depression severity and psychological distress, but positively with their scores in global functioning.

**H1.4.** Among the self now – ideal self, self now – others, and ideal self – others discrepancies, only the former was anticipated to be negatively and significantly correlated with participants' SRH.

**H1.5.** Participants' SRH was expected to be negatively and significantly correlated with their scores in cognitive polarisation and interpersonal construct differentiation.

**H1.6.** Among the social, demographic, and clinical characteristics of participants analysed herein, only labour status was expected to have a significant influence on their SRH in all samples.

**H1.7.** Participants' SRH was expected to be positively and significantly correlated with happiness attributed to their parents.

## **2.7. Hypotheses of Study 2**

**H2.1.** Psychotherapy was foreseen to significantly increase SRH in participants suffering from depression regardless of the type of therapy.

**H2.2.** Participants who solved their initial CCs at the end of therapy were anticipated to increase their SRH more than those who did not (those who did not have CCs at base line are not part of this hypothesis).

**H2.3.** We expected participants' change in SRH after therapy to be significantly and negatively correlated with their change in depression severity and psychological distress, but positively with global functioning.

**H2.4.** Among the change in self now – ideal self, in self now – others, and in ideal self – others discrepancies, only the former was anticipated to be negatively and significantly correlated with participants' change in SRH.

**H2.5.** Participants' change in SRH after therapy was expected to be negatively and significantly correlated with their change in cognitive polarisation and interpersonal construct differentiation.

## 3. Methods

### 3.1. Study 1

#### 3.1.1. Design.

This first study was observational, and had a cross-sectional design of the case-control modality. It included three groups: a non-clinical sample (composed by students and community participants), a MDD sample (composed by participants diagnosed with MDD), and a MDD plus FMS sample (composed by participants diagnosed with MDD and FMS).

#### 3.1.2. Participants.

Both the non-clinical and the MDD samples of study 1 were recruited in a previous study conducted by our research group, whose main results have already been published (Feixas et al., 2014), while the MDD+FMS sample has been recruited in the context of the research project “*Tratamiento psicológico de la depresión en mujeres con fibromialgia: eficacia diferencial y factores predictores de resultado*” (Psychological treatment of depression in women with FMS: differential efficacy and factors predictive of outcome; PSI2014-57957-R), also conducted by our research group and funded by the *Ministerio de Economía y Competitividad* (Spanish Ministry of Economy and Competitiveness).

The data relative to happiness had not been analysed in any of the samples until we began to do it for this study. Therefore, additional inclusion and exclusion criteria were set to fulfil the aims of this thesis, as follows.

##### 3.1.2.1. Inclusion and exclusion criteria.

With regard to the non-clinical sample, the inclusion criteria were: (a) age between 18 and 70 years; (b) score below 14 on the Beck Depression Inventory-II (BDI-II, Beck, Steer, & Brown, 1996; Spanish adaptation by Sanz, Perdigón, & Vázquez, 2003); (c) no history of

either psychiatric or neurological illnesses, and (d) having the happy construct scored in their RGT (Kelly, 1955/1991).

For the MDD sample, the inclusion criteria were: (a) age between 18 and 70 years; (b) meeting criteria from the DSM-IV-TR (American Psychiatric Association, 2000) for MDD,<sup>2</sup> (c) score above 19 on the BDI-II, and (d) having the happy construct scored in their RGT. Meanwhile, exclusion criteria were: (a) presence of bipolar disorders or psychotic symptoms, (b) current substance abuse, (c) organic mental disorder, brain dysfunction or developmental delay, (d) presence of FMS, (e) current severe suicidal ideation, and (f) current psychological treatment and refusal to suspend it during participation in the study.

Finally, the inclusion criteria for the MDD+FMS sample were: (a) age between 18 and 70 years; (b) meeting DSM-IV-TR criteria for MDD, (c) score above 19 on the BDI-II, (d) diagnosis of FMS done by a rheumatologist prior to entering the study, and (e) having the happy construct scored in their RGT. Exclusion criteria were: (a) presence of bipolar disorders or psychotic symptoms, (b) current substance abuse, (c) organic mental disorder, brain dysfunction or developmental delay, (d) current severe suicidal ideation, and (e) current psychological treatment and refusal to suspend it during participation in the study.

We used as a criterion different scores on the BDI-II for the non-clinical (i.e., <14) and for both clinical samples (i.e., >19) to make sure the characteristics of participants were clearly distinct with respect to their level of depression.

Due to the high comorbidity between FMS and depressive symptoms, eight participants in the MDD sample reported to be diagnosed with FMS. In the light of this information, we decided to exclude these participants from the MDD sample and include

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<sup>2</sup> When these research projects started, neither the DSM-5 nor the Structured Clinical Interview for DSM-5 Disorders (SCID-5, First, Williams, Karg, & Spitzer, 2016) were available yet. Therefore, as it is described in section 3.1.3., the SCID-IV was used instead for both study 1 and 2. This implied using criteria from the DSM-IV-TR, and not from the DSM-5, for participants' inclusion and exclusion criteria.

them in the MDD+FMS sample. This was a compromise decision which might increase heterogeneity in the latter sample, but it was deemed acceptable since the participants transferred to this sample fulfilled all its inclusion criteria and did not meet any exclusion criterion. In order to discard any potential difference between these participants and those recruited specifically for the MDD+FMS sample, they were compared in the following variables: Age; Civil status; Academic status; Employment status; Global Assessment of Functioning (GAF); BDI-II; Clinical Outcomes in Routine Evaluation – Outcome Measure (CORE-OM); Presence of DCs and IDs; Percentage of Dilemmatic Constructs (PDC); Percentage of Implicative Dilemmas (PID); Percentage of Intensity of Conflict based on Implicative Dilemmas (PICID); self now – ideal self, self now – others, and ideal self – others discrepancies; cognitive polarisation; and interpersonal construct differentiation (for a description of these indexes see section 3.1.3.). Following the criteria specified in sections 3.1.5. and 3.2.6. on data analyses, both parametric and non-parametrics methods were applied, and, for the former, analyses were conducted with and without outliers. Independent samples Student's *t* test and Mann-Whitney's *U* test were used for quantitative measures, and Cohen's *d* and point-biserial correlation ( $r_{pb}$ ) were used to estimate the ESs. Finally, for categorical variables, the chi-squared statistic and Cramér's *V* for ESs were used (Fritz, Morris, & Richler, 2012). All the ESs were interpreted as proposed by Cohen (1988).

These analyses revealed that there were only three significant differences between the eight participants who were relocated and those already in the MDD+FMS sample. The first one was the academic status ( $\chi^2(2, n = 61) = 6.840, p = .033, V = .335$ ), revealing that all relocated participants studied until secondary education, while among those already in the sample, 21 studied until primary education, 27 until secondary education, and five had tertiary studies. Nevertheless, the expected count in four out of the six cells was lower than five, and in one of them it was even lower than one, therefore, it must be acknowledged that this

specific result may be biased (Starnes, Yates, & Moore, 2010). The second difference was in the GAF score, since according to Mann-Whitney's  $U$  test ( $U = 98.5, p = .041, r_{pb} = .267$ ), the eight participants reallocated had significantly lower scores (mean rank = 16.81; median = 57.50;  $M = 56.13$ ;  $SD = 4.39$ ; range = 10) than those of their counterparts already in that sample (mean rank = 28.81; median = 60;  $M = 60.24$ ;  $SD = 6.17$ ; range = 35). This difference though, was not statistically significant using Student's  $t$  test ( $t(51) = 1.802, p = .078, d = .77$ ) despite the medium ES found, with no outliers identified. The last difference found was in interpersonal construct differentiation ( $t(55) = -3.826, p < .001, d = 2.17$ ) after removing three outliers (two among the relocated participants and one among those already in the sample), since participants being relocated showed a higher score ( $M = 53.15$ ;  $SD = 1.96$ ) than those already in the MDD+FMS sample ( $M = 40.27$ ;  $SD = 8.15$ ). This time the difference seemed clear, since analysis with outliers and non-parametric methods supported the results.

Given that only three variables showed significant differences, and such results are not even completely clear except for interpersonal construct differentiation, we considered that the eight participants who were reallocated to the MDD+FMS sample and the participants already assigned to it were essentially neither socially nor clinically different. Consequently, they were retained for the analyses in that sample. Nevertheless, these differences must be considered when interpreting the results reported in section 4.3. of this thesis.

It is impossible to estimate the number of people reached by the call to participate in the non-clinical sample, but up to 110 persons showed their interest in taking part and met all inclusion criteria. Of these, 29 individuals were excluded because they did not have the happy construct assessed in their RGT. In the MDD sample, 233 persons were referred to the study. Of those, 47 were excluded because through the telephone call it could be confirmed that they did not meet the inclusion criteria, because they refused to participate, or because they were impossible to contact. Therefore, 186 individuals were assessed, and this led to the exclusion

of 19 further people who did not meet the inclusion criteria. In addition, 6 individuals refused to further participate in the study at this stage. Of the 161 remaining participants, 70 were excluded of study 1 because they did not have the happy construct assessed in their RGT. Finally, in the MDD+FMS sample, 539 referrals were received. From these, 338 were excluded, either because it was impossible to contact them, they refused to participate, or they did not meet inclusion criteria for the study as it could be confirmed during the first telephone call. All the 201 remaining individuals were assessed, among whom 124 were excluded because they did not meet inclusion criteria, and 16 refused to further participate at this point.

### 3.1.2.2. *Sample characteristics.*

The main sociodemographic and clinical characteristics of the three samples of study 1 are depicted in table 5. As it can be seen, some disparities seemed to exist between groups. It was checked whether such differences were significant or not, as reported in section 4.2.1.

Table 5

#### *Sociodemographic and Clinical Characteristics of the Samples in Study 1*

	Non-clinical ( <i>N</i> = 81)	MDD ( <i>N</i> = 91)	MDD + FMS ( <i>N</i> = 61)
Gender <i>n</i> (%)			
Female	57 (70.4)	70 (76.9)	61 (100)
Male	24 (29.6)	21 (23.1)	0 (0.0)
Age <i>M</i> ( <i>SD</i> )	44.91 (17.34)	46.84 (11.04)	52.69 (9.05)
Civil status <i>n</i> (%)			
Single	34 (42)	16 (17.6)	4 (6.6)
Married/Living as a couple	32 (39.5)	46 (50.5)	41 (67.2)
Divorced/Separated	9 (11.1)	23 (25.3)	13 (21.3)
Widow/Widower	5 (6.2)	6 (6.6)	3 (4.9)
Unknown	1 (1.2)	0 (0.0)	0 (0.0)
Education <i>n</i> (%)			
Primary	3 (3.7)	21 (23.1)	21 (34.4)
Secondary	32 (39.5)	49 (53.8)	35 (57.4)
Tertiary	43 (53.1)	21 (23.1)	5 (8.2)
Unknown	3 (3.7)	0 (0.0)	0 (0.0)

	Non-clinical ( <i>N</i> = 81)	MDD ( <i>N</i> = 91)	MDD + FMS ( <i>N</i> = 61)
<b>Labour status <i>n</i> (%)</b>			
Student	15 (18.5)	0 (0.0)	0 (0.0)
Active worker	48 (59.3)	34 (37.4)	20 (32.8)
Work leave	0 (0.0)	22 (24.2)	10 (16.4)
Unemployed	3 (3.7)	24 (26.4)	16 (26.2)
Occupational disability	0 (0.0)	6 (6.6)	9 (14.8)
Retired	12 (14.8)	5 (5.5)	6 (9.8)
Unknown	3 (3.7)	0 (0.0)	0 (0.0)
<b>Psychotropic medication <i>n</i> (%)</b>			
Yes	3 (3.7)	66 (72.5)	55 (90.2)
No	78 (96.3)	21 (23.1)	3 (4.9)
Unknown	0 (0.0)	4 (4.4)	3 (4.9)
BDI-II <i>M</i> ( <i>SD</i> )	4.96 (3.67)	35.37 (10.03)	36.14 (8.97)
CORE-OM <i>M</i> ( <i>SD</i> )	.49 (.34)	2.20 (.50)	2.35 (.53)
GAF <i>M</i> ( <i>SD</i> )	n/a	57.71 (6.59)	59.62 (6.09)
<b>Presence of DCs <i>n</i> (%)</b>			
Yes	42 (51.9)	48 (52.7)	25 (41)
No	39 (48.1)	43 (47.3)	35 (57.4)
Unknown	0 (0.0)	0 (0.0)	1 (1.6)
<b>Presence of IDs <i>n</i> (%)</b>			
Yes	26 (32.1)	62 (68.1)	47 (77)
No	55 (67.9)	29 (31.9)	13 (21.4)
Unknown	0 (0.0)	0 (0.0)	1 (1.6)
PDC <i>M</i> ( <i>SD</i> )	6.60 (9.17)	6.98 (11.09)	5.72 (9.42)
PID <i>M</i> ( <i>SD</i> )	.60 (1.88)	2.41 (3.09)	3.95 (5.28)
PICID <i>M</i> ( <i>SD</i> )	10.64 (25.82)	47.26 (54.76)	79.05 (88.29)
<b>Discrepancies <i>M</i> (<i>SD</i>)</b>			
Self now – ideal self	.23 (.08)	.47 (.15)	.49 (.11)
Self now – others	.22 (.06)	.34 (.10)	.33 (.08)
Ideal self – others	.22 (.05)	.27 (.07)	.29 (.06)
Cognitive polarisation <i>M</i> ( <i>SD</i> )	25.31 (14.87)	32.83 (14.33)	37.55 (13.75)
Interpersonal construct differentiation <i>M</i> ( <i>SD</i> )	43.15 (11.92)	45.18 (11.98)	42.21 (9.60)

*Note:* MDD = major depressive disorder; FMS = fibromyalgia syndrome; n/a = not applicable; BDI-II = Beck depression inventory – II; CORE-OM = clinical outcomes in routine evaluation – outcome measure; GAF = global assessment of functioning; PDC = percentage of dilemmatic constructs; PID = percentage of implicative dilemmas; PICID = percentage of intensity of conflict based on implicative dilemmas.

### **3.1.3. Instruments.**

#### ***3.1.3.1. Structured clinical interview for DSM disorders.***

The Structured clinical interview for DSM disorders (SCID-I) clinician version (First, Spitzer, Gibbon, & Williams, 1996; Spanish adaptation by First, Spitzer, Gibbon, & Williams, 1999) is a semi-structured interview designed to diagnose psychological disorders according to American Psychiatric Association's DSM-IV-TR guidelines for axis I. This interview also allows to collect other information of interest, such as sociodemographic data, substance abuse, current and previous treatments, or social support. In this study 1, and also in study 2, the SCID-I was used for both purposes: to check participants' diagnosis and to collect personal information. In addition, we used this interview to assess the axis V of DSM-IV-TR diagnosis, so-called GAF. This axis is scored from 1 to 100 (0 is coded when the information collected is inadequate), with higher scores indicating better functioning. In order to increase the reliability of results, the SCID-I was always administered by two interviewers, who coded participants' answers independently. After the interview, they discussed about their scores and reached consensus in all cases. The SCID-I has well-established psychometric properties. It has shown moderate to excellent inter-rater reliability (Lobbestael, Leurgans, & Arntz, 2011), as well as a high internal validity (Ramirez-Basco et al., 2000; Shear et al., 2000), especially in the diagnosis of mood disorders. In turn, although the GAF may not be highly reliable in clinical settings, in research it has also shown an excellent inter-rater reliability (Hilsenroth et al., 2000).

#### ***3.1.3.2. Beck Depression Inventory-II.***

The BDI-II is probably the best-known instrument to assess depressive symptoms in adults. It is a self-reported inventory of 21 items scored using a 4-point Likert scale (0-3), which refer to the person's experiences, feelings, and attitudes in the past two weeks. Its overall result, which is obtained by simply summing all items' scores, ranges from 0 to 63,

and is interpreted as a global indicator of severity of depression. According to its authors, a score of 0-13 indicates minimum or not depression, a score of 14-19 indicates mild depression, a score of 20-28 indicates moderate depression severity, and a score of 29-63 indicates severe depression. The Spanish adaptation of the BDI-II (Sanz et al., 2003), which has been used in both study 1 and study 2, has shown good reliability ( $\alpha = .87$ ).

### ***3.1.3.3. Clinical Outcomes in Routine Evaluation – Outcome Measure.***

The CORE-OM (Evans et al., 1998; Spanish adaptation by Feixas et al., 2012) is a self-reported inventory to measure psychological distress in adults. Its 34 items scored using a 5-point Likert scale (0-4) explore respondent's state in the last two weeks, and are distributed into four subscales: Wellbeing (4 items), assessing subjective wellbeing; Problems/Symptoms (12 items), assessing depression, anxiety, trauma, and physical symptoms; Functioning (12 items), assessing interpersonal relationships and daily functioning; and Risk (6 items), assessing potential risk of hurting oneself and others. It has two global scores, one that includes all items, and another that does not take Risk items into account. The score of each subscale as well as of both global scores are computed by summing the score of their items and then dividing the result by the number of items answered. This procedure allows to control the influence of missing items. In all cases, higher scores indicate higher psychological distress. Therefore, the results of Wellbeing scale should be interpreted with caution, since higher scores indicate less wellbeing. The Spanish version of the CORE-OM, which has been used in study 1 and study 2, has shown good psychometric properties, with a reliability between  $\alpha = .71$  and  $\alpha = .94$  in its scales. The cut-off score in the overall scale has been set in 1.06 for males, and 1.13 for females (Trujillo et al., 2016).

### ***3.1.3.4. Repertory Grid Technique.***

The RGT, originally created by Kelly (1955/1991; see Feixas & Cornejo, 2002; Fransella, Bell, & Bannister, 2004; and Jankowicz, 2003, for more advanced accounts of the

RGT) is probably the most used instrument among researchers using the framework of PCT as well as by others who are interested in the systematic assessment of personal meanings. It consists of a semi-structured interview administered by a trained interviewer in three consecutive steps. First, the person is asked about people who are important for him/her, and whom he/she knows well. These are called elements in the interpersonal RGT, and in our study included the “self now” (i.e., how the person sees him/herself), the “ideal self” (i.e., how would the person like to be ideally), relatives, friends (in all cases avoiding underage persons), and a *non grata* person (i.e., someone the subject does not want to be like). The latter element is included in order to enrich the comparisons that may arise within the technique, since all these elements are compared later between them in terms of personal (not physical) characteristics as a procedure to elicit constructs, which are pairs of opposite poles.

These comparisons have been done dyadically, comparing two elements between them, one pair after the other. The typical questions asked here are, for example: “In which way you think your father and your mother are similar?”; or “To your mind, which personality aspect makes your sister different from your brother?”. Once a meaning is provided, its opposite is also requested. In this phase of the technique, the word “happy” (“feliç” in Catalan or “feliz” in Spanish) was suggested to respondents as a pole, and then they could provide any word or expression as its opposite to form what is called the “happy construct” within this thesis. This was intended to be done in all cases, but the instruction was not always followed by interviewers. This is the reason why some participants were excluded from analyses, as specified in sections 3.1.2. and 3.2.2. Finally, the person rates each element in each construct using a 7-point Likert scale (1-7), in which 4 is the middle point between the two opposite poles, scores towards 1 mean the element fits better the description of the left pole (1-very, 2-quite, 3-slightly like the left pole), and scores towards 7 mean more similarity with the right pole (5-slightly, 6-quite, 7-very like the right pole). In terms of SRH, within this

thesis, a score of 7 means “very happy”. The rating of all elements (columns) according to each construct (row) yields a grid data matrix. The RGT has shown a good test-retest stability of 71-77% for elements and 48-68% for constructs (Feixas & Cornejo, 2002).

From the analysis of the data matrix formed by the scores given by the respondent to each element in each construct, several cognitive indexes can be obtained. In both study 1 and study 2, the following variables were used:

*3.1.3.4.1. Score on the construct “happy” of participant’s self now, ideal self, father, and mother.*

The rating (in the 1 to 7 scale) in the provided construct “happy” (with whatever opposite pole was elicited) of the participant for the self now (i.e., SRH), ideal self, and his/her father and mother were computed as a measure of the happiness level attributed to these elements.

*3.1.3.4.2. Measures of cognitive conflict.*

The RGT results include different types of CC (Feixas, Saúl, & Ávila-Espada, 2009). Both in study 1 and study 2, two conflict types were studied: DC and ID. Any construct in the grid in which the ideal self is scored in the middle point (i.e., a score of 4 in this study) is considered a DC, because it does not provide the person with a clear course of action. IDs have a more complex structure. They appear whenever a congruent construct (i.e., one in which there is a maximum of 1-point difference between the person’s score for the self now and for the ideal self) is correlated with a discrepant construct (i.e., one in which there is a difference of 4 or more points between the person’s score for the self now and for the ideal self), so that the undesired pole of the congruent construct is correlated to the desired pole of the discrepant construct. Although both a Pearson correlation of .20 and of .35 have been proposed as a the minimal level of association, only the latter has been used in research (including this thesis),

with the aim to decrease the risk of type I error (Feixas, Saúl, & Sánchez-Rodríguez, 2000; Feixas & Cornejo, 2002; Feixas et al., 2009). An example of ID can be seen in figure 2 below.

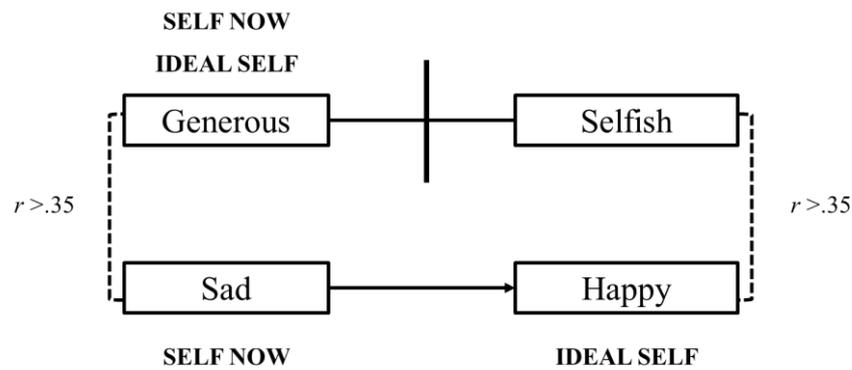


Figure 2. Example of implicative dilemma from the repertory grid technique of one of the participants in study 1.

In practical terms, an ID shows the contradiction experienced by one person when he/she feels that engaging in a desired change (that of the discrepant construct) would also trigger an undesired one (in the congruent construct). In the analyses of both studies of this doctoral thesis a special attention has been given to the percentages of these conflicts in participants' grids: PDC, and PID. Percentage measures take the size of the grid into account since, obviously, the more constructs elicited during the interview the more likely are conflicts to appear. The formula to obtain the PDC can be seen in Equation 1, while the formula for PID is displayed in Equation 2. In both cases, "n" represents the number of constructs in a grid (Feixas et al., 2009):

$$PDC = \frac{\text{Number of DCs}}{n} \times 100 \quad (1)$$

$$PID = \frac{\text{Number of IDs}}{\binom{n!}{2[(n-2)!]}} \times 100 \quad (2)$$

Although the percentage measures account for the number of conflicts considering also the size of the RGT, PID does not consider the intensity (strength) of the correlation of IDs. This has been considered a limitation since IDs with different intensity may have different implications in one person's experience. The last measure related to conflicts in the RGT that was used both in study 1 and study 2 is a recent development of our research group aimed at solving this limitation, the PICID (Rouco, Paz, Winter, & Feixas, in press). This measure accounts for both the number of IDs given a specific RGT size, and the intensity of these IDs. PICID has already shown to be equally effective in predicting major depression than PID (Rouco et al., in press) but more conceptually sound. The PICID formula is displayed in Equation 3, where “ $n$ ” represents the number of constructs in a grid and “ $r$ ” the Pearson correlation between the constructs involved in IDs:

$$PICID = \frac{\sqrt{\sum r^2}}{\binom{n!}{2[(n-2)!]}} \times 100 \quad (3)$$

In community samples, Trujillo (2016) estimated the mean of PCD to be  $M = 6.86$  ( $SD = 9.65$ ), while the mean of PID was  $M = .70$  ( $SD = 1.78$ ). The mean of PICID has not been established yet.

#### 3.1.3.4.3. *Self now – ideal self, self now – others, and ideal self – others discrepancies.*

As it has previously been specified within this section, when the RGT is administered, the elements “self now” and “ideal self” are always rated. Later, when the scores are analysed, the software automatically computes another element, called “others”, from the scores of all elements in the grid except the “self now” and the “ideal self”. This “others” element, represents how the person sees people around him/her, since it combines information from all individuals who have significance for the interviewee and have been included in the RGT as elements. The distances between these three elements (“self now”, “ideal self”, and “others”) are measured in order to assess how similar/different the person sees him/herself from his/her

ideal and from others, as well as how similar/different sees others from his/her ideal. These distances, then, can be interpreted (with caution) as measures of self-evaluation (self now – ideal self), perceived self-isolation (self now – others), and evaluation of others (ideal self – others), considering that the larger the value, the larger the difference between these elements.

The statistic chosen to express these discrepancies are standardised Euclidian distances (D), which are obtained from the difference between the scores of each of the three aforementioned elements in all constructs. The standardisation is used for the result not to depend on the total number of constructs in the grid. The formula for example for the self now – ideal self discrepancy is reported in Equation 4, and the total score always ranges from 0 (minimal discrepancy) to 1 (maximal discrepancy). In prior research, Pearson correlations were used to assess discrepancies instead. Nevertheless, their use was later criticised, since they are a measure of covariance and not of distance, and standardised Euclidian distances were proposed as a more accurate method (Corella, 2012). Their formula is as follows, where S represents the score of the “self now”, I the score of the “ideal self”, and C represents the number of constructs (the same logic can be applied to the other two discrepancy measures):

$$D = \frac{\sqrt{\sum_0^c (S-I)^2}}{6\sqrt{C}} \quad (4)$$

As can be supposed by the number “6” in the formula, this standardised distance considers a scale from 1 to 7 as the scoring system, which was the one used in the grids of this doctoral thesis. In community samples, the mean of self now – ideal self, self now – others, and ideal self – others discrepancies is considered to be  $M = .23$  ( $SD = .09$ ),  $M = .21$  ( $SD = .06$ ), and  $M = .22$  ( $SD = .06$ ) respectively (Trujillo, 2016).

#### 3.1.3.4.4. Cognitive polarisation.

Cognitive polarisation is a measure obtained from the total number of extreme scores in a specific grid data set, considering its size. Taking into account that, in this case, the scale

ranges from 1 to 7, the extreme scores are 1 and 7. The mathematical probability of both scores together accounts for the 28.57%, while its mean found in community samples (Trujillo, 2016) was  $M = 28.11$  ( $SD = 15.79$ ). These values can be used as a reference to interpret participants' score. High polarisation can be interpreted as an indicator of cognitive rigidity and dichotomous, "all or nothing" thinking; that is, a tendency to see things as black or white (Feixas & Cornejo, 1996; Feixas, Montebruno, Dada, del Castillo, & Compañ, 2010).

#### *3.1.3.4.5. Interpersonal construct differentiation.*

In previous research, several RGT indexes have been used to approach cognitive complexity (see Kovářová & Filip, 2015 for a review). From a theoretical perspective though, the definition of cognitive complexity is unclear, with several models proposed. In this doctoral thesis, cognitive complexity was regarded as composed by two independent dimensions (Adams-Webber, 1979), a model that has been widely adopted by the scientific community. These dimensions are differentiation and integration. Differentiation refers to the ability to use a higher number of independent cognitive dimensions to construe elements, this resulting in fine-grained discriminations among these dimensions of meaning (Fransella et al., 2004). On the other hand, integration refers to the hierarchical relationships between a person's constructs, in which superordinate constructs give unity and coherence to the system (Neimeyer, Neimeyer, & Landfield, 1983). Although some RGT indexes have been proposed to measure integration (e.g., intensity, a measure based on the sum of correlations among constructs), none of them has shown to be independent from differentiation (Kovářová & Filip, 2015). In addition, their interpretation did not lead to clear conclusions since, for instance, high intensity may indicate either high integration or unidimensional thinking (low differentiation). Therefore, to date, there is not a measure we can use to clearly assess integration yet. For that reason, only the differentiation component of cognitive complexity was used in study 1 and study 2. In order to measure differentiation, we used the Percentage

of Variance Accounted by the First Factor (PVAF). This measure results from the factorial analysis of the grid data matrix. In community samples, the mean of PVAF has been estimated to be  $M = 42.93$  ( $SD = 11.88$ ), according to Trujillo (2016). For the interpretation of results, it must be highlighted that the higher the PVAF, the lower the interpersonal construct differentiation.

#### **3.1.3.5. Sociodemographic questionnaire.**

A document was created to collect sociodemographic data and information on prior and current treatments from non-clinical participants, to whom the SCID-I was not administered. The latter was used, instead, in the two clinical samples.

#### **3.1.4. Procedure.**

Participants from the non-clinical and MDD samples were recruited between 2008 and 2011 in Barcelona metropolitan area. For the non-clinical sample, several civic and cultural associations were contacted. The call was also extended to undergraduate and graduate students from the Psychology Faculty of the *Universitat de Barcelona*, who were asked to disseminate the project among their relatives and friends. In turn, for the MDD sample, participants were referred by primary care and mental health centres. The same strategy was followed for the MDD+FMS sample, which was recruited from 2016 to 2018. The research was briefly presented to all potential participants and then they were offered the option to take part on it. In such case, they were asked to sign the informed consent before any data was collected. All assessments were carried out by trained graduate students of the *Universitat de Barcelona*. Information on previous or current psychiatric and neurological disorders in the non-clinical sample was requested from participants in the assessment interviews, whereas for the two clinical samples the SCID-I was applied to confirm the diagnosis of MDD. For this reason, in these two samples all sessions were carried out always by two persons, in order to increase reliability of SCID-I results. Assessments in the non-clinical sample would typically

be completed in one single, 2-hour session. On the contrary, in both clinical samples, it usually took two 2-hour sessions to administer all instruments. One week was left between the two assessment sessions.

### 3.1.5. Data analyses.

Normality checks were conducted separately for the outcome measures (i.e., SRH; BDI-II; CORE-OM; GAF; PID; PDC; PICDI; self now – ideal self, self now – others, ideal self – others discrepancies; cognitive polarisation, and interpersonal construct differentiation) in the three samples of study 1. Histograms, boxplots, and Q-Q plots were visually assessed, as well as the results of Shapiro-Wilk test (SW), as it is recommended in the literature (see Ghasemi & Zahediasl, 2012; or Razali & Wah, 2011 for some examples).

Results suggested that the main outcome, SRH, was clearly not normally distributed in the three samples of study 1 (non-clinical sample, skewness = -1.343, kurtosis = 2.331,  $SW = .783$ ,  $p < .001$ ; MDD sample, skewness = 1.137, kurtosis = .930,  $SW = .826$ ,  $p < .001$ ; MDD+FMS sample, skewness = .791, kurtosis = -.197,  $SW = .884$ ,  $p < .001$ ). The histograms of the distribution of SRH in the three samples of study 1 can be seen in Figure 3. Similarly, the same lack of normality also applied for the distribution of most variables of study 1.

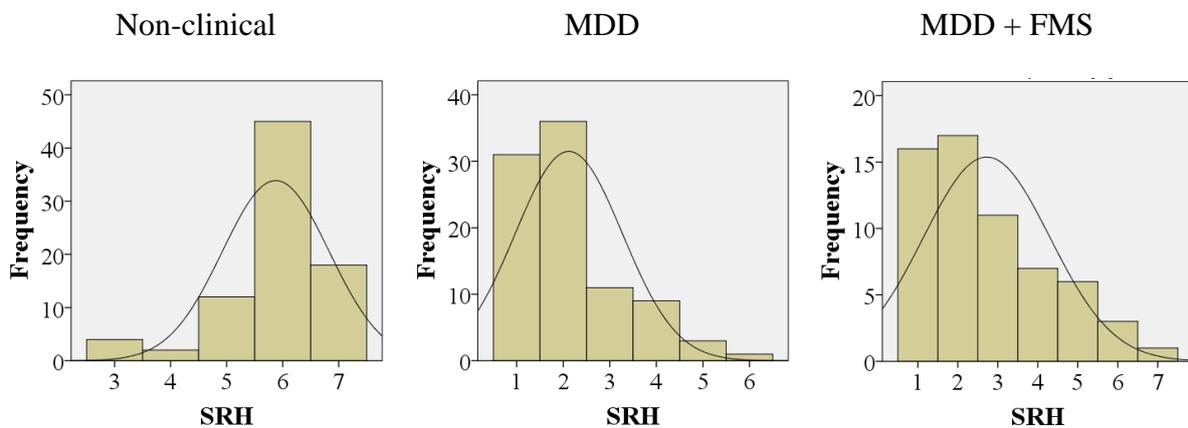


Figure 3. Distribution of self-reported happiness in the three samples of study 1.

MDD = major depressive disorder; FMS = fibromyalgia syndrome, SRH = self-reported happiness.

In the light of these results, the use of parametric methods may be questioned. Nevertheless, there is also evidence showing the robustness of parametric methods even with non-normally distributed variables (Norman, 2010). Hence, both parametric and non-parametric statistics were employed in the analyses whenever a non-parametric version of a parametric test did exist, in order to provide as much strength as possible to results' interpretation. Moreover, statistical corrections were applied to parametric tests to adjust any violation of their assumptions. For clarity purposes, only the results of parametric statistics were reported, except in the event of disparity between parametric and non-parametric tests. In that case, the results of both were provided.

Regarding outliers, there is a debate on the benefits and drawbacks of both including and excluding these extreme values from analyses. In this thesis, outliers were always graphically explored (e.g., boxplots, histograms, scatterplots) and removed before running statistical tests. However, since it was not possible to conclude if the outliers in our data were due to possible measurement errors or real phenomena, analyses were also conducted including outliers. When the results of both analyses coincided, only those without outliers were reported, otherwise any significant difference in the results was informed. In addition, since non-parametric methods are less sensitive to the influence of outliers, its use together with parametric methods was expected to increase the robustness of the results.

All statistical analyses applied to test the hypotheses of study 1 are reported in Table 6. In order to pursue the exploratory objective O1.7. (to qualitatively analyse the content of the opposite pole of happy, the poles closest to, and farthest from happy, as well as its closest and farthest elements), the chi-squared statistic to analyse the differences between groups in the content of the construct poles was used.

Prior to any of the analyses described in table 6, differences between samples were explored in the sociodemographic and clinical variables reported on table 5. The chi-squared test was used for categorical variables. For continuous variables, One-Way ANOVA (analysis of variance) with Welch (1947) adjustment and Games & Howell (1976) post-hoc test were used, given that variances were not homogeneous according to Levene's statistic, as well as Kruskal-Wallis with Dunn-Bonferroni (1961) post-hoc test as the non-parametric alternative.

Table 6

*Statistical Analyses Applied to Test the Hypotheses of Study 1*

Hypothesis	Analysis conducted
H1.1. Significantly higher SRH was expected among non-clinical participants than among those with MDD. Among the latter, we anticipated significantly lower happiness scores in participants with FMS comorbid to MDD.	Parametric analyses: One-way ANOVA with Welch (1947) adjustment and Games-Howell (1976) post-hoc test. Non-parametric analyses: Kruskal-Wallis with Dunn-Bonferroni (1961) post-hoc test.
H1.2. We anticipated participants with more CCs to show significantly lower SRH than those with less CCs.	Parametric analysis: Independent samples Student's <i>t</i> test for the presence/absence of CCs; Pearson correlation for their percentage. Non-parametric analysis: Mann-Whitney's <i>U</i> test for the presence/absence of CCs; Spearman correlation for their percentage.
H1.3. We expected participants' SRH to be significantly and negatively correlated with their scores in depression severity and psychological distress, but positively with their scores in global functioning.	Parametric analysis: Pearson correlation. Non-parametric analysis: Spearman correlation.
H1.4. Among the self now – ideal self, self now – others, and ideal self – others discrepancies, only the former was anticipated to be negatively and significantly correlated with participants' SRH.	Parametric analysis: Pearson correlation. Non-parametric analysis: Spearman correlation.
H1.5. Participants' SRH was expected to be negatively and significantly correlated with their scores in cognitive polarisation and interpersonal construct differentiation.	Parametric analysis: Pearson correlation. Non-parametric analysis: Spearman correlation.

Hypothesis	Analysis conducted
H1.6. Among the social, demographic, and clinical characteristics of participants analysed herein, only labour status was expected to have a significant influence on their SRH in all samples.	Parametric analyses: One-way ANOVA with Tukey's post-hoc test for civil status, education, and labour status, and Welch (1947) adjustment and Games-Howell (1976) post-hoc test when variances unequal; Independent samples Student's <i>t</i> test for gender and medication; Pearson correlation for age. Non-parametric analyses: Kruskal-Wallis with Dunn-Bonferroni (1961) post-hoc test for civil status, education, and labour status; Mann-Whitney's <i>U</i> test for gender and medication; Spearman correlation for age.
H1.7. Participants' SRH was expected to be positively and significantly correlated with happiness attributed to their parents.	Parametric analysis: Pearson correlation. Non-parametric analysis: Spearman correlation.

*Note.* SRH = self-reported happiness; MDD = major depressive disorder; FMS = fibromyalgia syndrome; ANOVA = analysis of variance; CC = cognitive conflict.

Both in study 1 and study 2, ESs were always provided for the results. Cohen's *d* and point-biserial correlation ( $r_{pb}$ ) were used for mean differences, using parametric and non-parametric methods respectively. For the mixed ANOVA we employed the partial eta-squared ( $\eta_p^2$ ), while for the chi-squared statistic the index chosen was the Cramér's *V*. All these ESs were interpreted as proposed by Cohen (1988). In turn, to estimate the strength of correlations, both Pearson (*r*) and Spearman (*rho*) statistics were used, which were interpreted as proposed by Evans (1996).

In study 1, there must also be acknowledged a risk of bias related with the gender of the MDD+FMS sample, since it is composed only by women. To exclude men from this sample was a decision based on previous findings showing that prevalence of FMS in Spain is much higher in women, with published ratios as high as 1 man for every 21 women (Mas et al., 2008), which makes very difficult to make statistical comparisons by gender. Section 4.3.6. testing the influence of social, demographic, and clinical characteristics of participants

in SRH shed light on differences between men and women in terms of SRH, showing no statistical significance in the non-clinical and the MDD samples. Therefore, there are no bases to assume that this gender bias influenced the results. In case this difference had been found significant, all analyses of study 1 would have been carried out separately by gender. All statistical analyses were conducted with the Statistical Package for the Social Sciences (SPSS) v.23 (IBM, 2015), while the RGT results were analysed using the RECORD v.5.0 (Feixas, Cornejo, & Laso, n.d.).

### **3.1.6. Ethical concerns.**

All participants in study 1 were asked to give their written informed consent before any data was collected from them. In addition, it was clearly stated that their participation was voluntary, they were informed on their right to access, modify and delete their information in the context of this study, as well as on their right to freely discontinue participation at any time. Graduate students who conducted assessment sessions were also requested to sign a confidentiality agreement with regard to personal data from study participants. All the collected paper-based information was securely stored in key-protected closets to which only the principal investigator of both studies could grant access. Similarly, the digital data (e.g., scans, databases) was stored in encrypted hard-drive disks within the principal investigator's office. To further protect participants' identity, the databases to conduct the analyses were anonymised, with an alphanumeric code assigned to each participant. Both research projects providing participants for study 1 were approved by the Bioethics Commission of the *Universitat de Barcelona* (number IRB00003099).

## **3.2. Study 2**

### **3.2.1. Design.**

In terms of design, study 2 was a Randomised Controlled Trial (RCT) aimed at testing the differential efficacy of two individual psychological interventions following a common

group therapy stage. This first phase of intervention, which was delivered to all participants, was group CBT, a treatment model that has already proved its efficacy for depression (see for example Hollon & Ponniah, 2010). Once completed this stage, subjects were randomised between CBT and DFT, both in individual format. DFT is a brief treatment module designed to be added to any psychotherapeutic approach whenever CCs (i.e., dilemmas or ambivalence) are considered an important clinical focus. Individual CBT was chosen as the active control group because it is widely considered (together perhaps with interpersonal therapy) the gold standard psychological treatment for depression (David et al., 2018).

### **3.2.2. Participants.**

Like in study 1, the sample of study 2 was collected in the context of a previous project of our research group (Feixas et al., 2013; Feixas et al., 2016). Again, the objective of this doctoral thesis was to analyse data from this project focusing on happiness results, which had not been done yet. Therefore, inclusion and exclusion criteria for participants were added to fit this research. In the original project, follow-up assessments were conducted after treatment termination. However, since no information on happiness was collected in such follow-ups, only data from pre- and post-intervention assessments was analysed herein.

#### ***3.2.2.1. Inclusion and exclusion criteria.***

The inclusion criteria for the sample of study 2 were: (a) age between 18 and 70 years; (b) meeting APA's DSM-IV-TR criteria for MDD or DD, (c) score above 19 on the BDI-II, (d) having at least one CC according to RGT results, and (e) having the happy construct scored in their RGT.

In turn, exclusion criteria were: (a) presence of bipolar disorders or psychotic symptoms, (b) current substance abuse, (c) organic mental disorder, brain dysfunction or

developmental delay, (d) current severe suicidal ideation, and (e) current psychological treatment and refusal to suspend it during participation in the study.

The decision to include only participants showing at least one CC in their RGT was based on the inclusion of DFT as intervention, aimed at solving such conflicts. Therefore, it would have been meaningless to deliver this treatment to subjects with no dilemmas. Moreover, previous research found evidence on the high prevalence, and clinical relevance, of CCs in depression (Feixas et al., 2014; Montesano, Feixas, Saúl, Erazo Caicedo, et al., 2014).

Figure 4 shows patient flow for study 2. Up to 460 referrals were received but only 315 could be assessed in the limited time frame of the study. Among them, 108 were excluded because they did not meet inclusion criteria, while 10 further subjects refused to continue their participation during pre-intervention assessments. From the 197 remaining individuals, 56 discontinued their participation before starting the first stage of treatment, group CBT. Reasons for this withdrawal included: refusal to participate, scheduling conflicts, impossibility to be contacted again, and refusal to postpone their participation in other psychological treatments. In consequence, 141 subjects started group CBT in the framework of the research project, but only 128 completed it and started individual treatments. Randomisation allocated 63 individuals to individual CBT and 65 to individual DFT. Four participants in the former and two in the later arm did not start the assigned treatment, while six and 10 further participants withdrew during the CBT or DFT intervention, respectively. Withdrawal reasons included: refusal to continue participation, loss of contact, therapy not following the study protocol, and moving to another city. Thus, 53 participants could be assessed at post-intervention in each treatment arm. Finally, among these, six subjects in the CBT group and three in the DFT group were excluded from the analyses because they did not have the happy construct scored in their RGT. The final sample of the CBT arm was composed by 47 participants, while the DFT arm included 50.

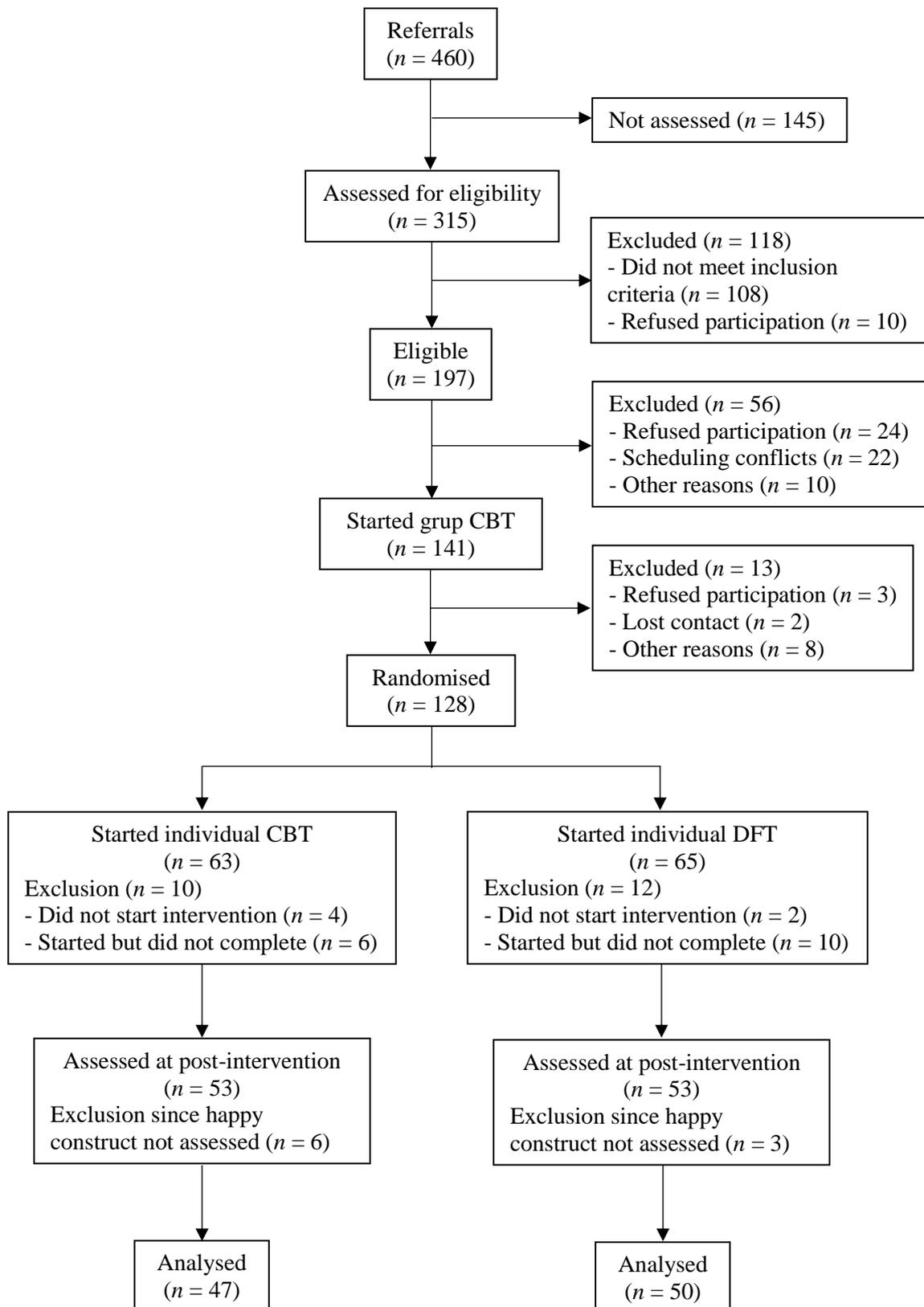


Figure 4. Study 2 participants' flow diagram according to the Consolidated Standards of Reporting Trials (CONSORT, Schulz, Altman, Moher, & Group, 2010).

CBT = cognitive behavioural therapy; DFT = dilemma-focused therapy.

### 3.2.2.2. *Sample characteristics.*

Given the emphasis of study 2 in measuring the impact of psychotherapy on SRH, only those participants who completed both stages of treatment and were assessed post-intervention (i.e., completers) were analysed ( $n = 47$  in the CBT arm, and  $n = 50$  in the DFT arm). Table 7 shows their main sociodemographic and clinical characteristics before the first stage of treatment started, which were later compared to check that randomisation had been successfully implemented (section 4.2.2.).

Table 7

#### *Pre-Intervention Sociodemographic and Clinical Characteristics of Both Therapy Groups in Study 2*

	Individual CBT ( $n = 47$ )	Individual DFT ( $n = 50$ )
Gender $n$ (%)		
Female	36 (76.6)	40 (80)
Male	11 (23.4)	10 (20)
Age $M$ ( $SD$ )	50.96 (11.09)	48.14 (11.55)
Civil status $n$ (%)		
Single	5 (10.6)	7 (14)
Married/Living as a couple	22 (46.8)	29 (58)
Divorced/Separated	17 (36.2)	11 (22)
Widow/Widower	3 (6.4)	3 (6)
Education $n$ (%)		
Primary	11 (23.4)	8 (16)
Secondary	28 (59.6)	30 (60)
Tertiary	8 (17)	12 (24)
Labour status $n$ (%)		
Active worker	13 (27.7)	14 (28)
Work leave	6 (12.8)	12 (24)
Unemployed	18 (38.3)	16 (32)
Occupational disability	6 (12.8)	3 (6)
Retired	4 (8.5)	5 (10)
Psychotropic medication $n$ (%)		
Yes	37 (78.7)	36 (72)
No	10 (21.3)	13 (26)
Unknown	0 (0.0)	1 (2)

	Individual CBT ( <i>n</i> = 47)	Individual DFT ( <i>n</i> = 50)
SRH <i>M</i> ( <i>SD</i> )	2.11 (1.32)	2.20 (1.23)
BDI-II <i>M</i> ( <i>SD</i> )	37 (9.71)	36.22 (8.55)
CORE-OM <i>M</i> ( <i>SD</i> )	2.10 (.58)	2.15 (.51)
GAF <i>M</i> ( <i>SD</i> )	56.27 (7.42)	57.86 (7.36)
Presence of DCs <i>n</i> (%)		
Yes	22 (46.8)	24 (48)
No	25 (53.2)	26 (52)
Presence of IDs <i>n</i> (%)		
Yes	36 (76.6)	41 (82)
No	11 (23.4)	9 (18)
PDC <i>M</i> ( <i>SD</i> )	6.13 (8.38)	5.74 (7.90)
PID <i>M</i> ( <i>SD</i> )	3.10 (4.38)	2.63 (2.40)
PICID <i>M</i> ( <i>SD</i> )	58.35 (62.97)	56.88 (44.88)
Discrepancies <i>M</i> ( <i>SD</i> )		
Self now – ideal self	.47 (.14)	.47 (.14)
Self now – others	.35 (.10)	.34 (.08)
Ideal self – others	.27 (.08)	.28 (.07)
Polarisation <i>M</i> ( <i>SD</i> )	35.97 (19.14)	35 (16.83)
Interpersonal construct differentiation <i>M</i> ( <i>SD</i> )	45.79 (11.75)	45.24 (10.04)

*Note:* CBT = cognitive-behavioural therapy; DFT = dilemma-focused therapy; SRH = self-reported happiness; BDI-II = Beck depression inventory – II; CORE-OM = clinical outcomes in routine evaluation – outcome measure; GAF = global assessment of functioning; PDC = percentage of dilemmatic constructs; PID = percentage of implicative dilemmas; PICID = percentage of intensity of conflict based on implicative dilemmas.

### 3.2.3. Instruments.

The same instruments described in the section 3.1.3. for study 1 were used in study 2. For reading purposes, and to avoid an unnecessary repetition of information, they were not described here again.

### 3.2.4. Interventions.

In order to consistently deliver the interventions to be tested in this study, all of them were manualised. The first phase of the treatment consisted of seven weekly, 2-hour long, group CBT sessions led always by two therapists. This intervention was implemented according to a protocol designed specifically to fit the characteristics of the study (Bados &

García-Grau, 2013), which was based on original work from Beck and colleagues (e.g., Beck, Rush, Shaw, & Emery, 1979). At the end of individual interventions, one last group session was left to close the therapy process. The same members joined again for this last appointment, which focused mainly on relapse prevention. Therefore, in total, eight group sessions were conducted.

Once completed this first therapy stage, participants were randomised to either individual CBT or individual DFT. In order to enhance the sense of continuity in the therapy process, the two therapists who led each CBT group conducted also the individual sessions with participants from their specific groups: one therapist assumed participants randomised to individual CBT, while the other assumed participants randomised to individual DFT. This could be done because the pair of therapists in each group was previously selected in advance according to their clinical experience, and always included one therapist trained in CBT and another in DFT. Both interventions of this second stage were delivered in 8-weekly, 1-hour long sessions. Individual CBT was delivered according to a treatment manual, again designed by two CBT experts for this study (Bados & García-Grau, 2015). Similarly, individual DFT followed a manual also elaborated for this study and which has been published afterwards (Feixas & Compañ, 2015, 2016).

The 44 therapists who took part in this study (22 per treatment arm) were recently graduated psychologists who had received the necessary training to deliver each of the two interventions through postgraduate programs. Moreover, additional training on the administration of the treatment manuals of this study was provided to them. Throughout the whole project, all therapists were closely supervised in small groups, which were led by senior therapists with more than five years' experience. These supervision groups met weekly for one hour. None of the therapists who administered the interventions participated in the assessments of the study.

### 3.2.5. Procedure.

The sample of study 2 was recruited between 2011 and 2014, and followed the same procedure described for the two clinical samples of study 1 in section 3.1.4. Subjects who met all inclusion criteria and accepted to start therapy were then distributed in therapy groups for the first stage of treatment. Up to 22 groups were set up, with an average of six participants per group. Those who completed this phase, were then randomised to one of the two different individual interventions in the study. Randomisation was conducted by a researcher from the former Department of Personality, Assessment, and Psychological treatments of the *Universitat de Barcelona* (now a section of the Department of Clinical Psychology and Psychobiology), who was completely independent from the study and was unaware of its characteristics. An online software was used for this purpose (Rankin, n.d.). Therefore, individual treatment randomisation was blind to both participants and therapists, who were only informed about the resulting assignment before starting individual sessions.

Once completed the second phase of the intervention process, and right after the last group session to close the therapy process, post-intervention assessments were conducted. The same instruments were administered again to analyse pre-post differences following the same procedure described above for the pre-intervention assessments. All treatment and assessment sessions were conducted in the referring healthcare centres. This was possible due to formal agreements between these participating centres and *Universitat de Barcelona*.

### 3.2.6. Data analyses.

Normality checks were also conducted for the same outcome measures than in study 1 for the two treatment groups of study 2. The Shapiro-Wilk test (SW) was applied again, and histograms, boxplots, and Q-Q plots were visually assessed. Results show that SRH was not normally distributed in both samples of study 2 (individual CBT, skewness = 1.563, kurtosis = 2.102  $SW = .767, p < .001$ ; individual DFT, skewness = 1.182, kurtosis = 1.294,  $SW = .829$ ,

$p < .001$ ). Figure 5 shows the histograms for the distribution of pre-intervention SRH in the two treatment groups of study 2.

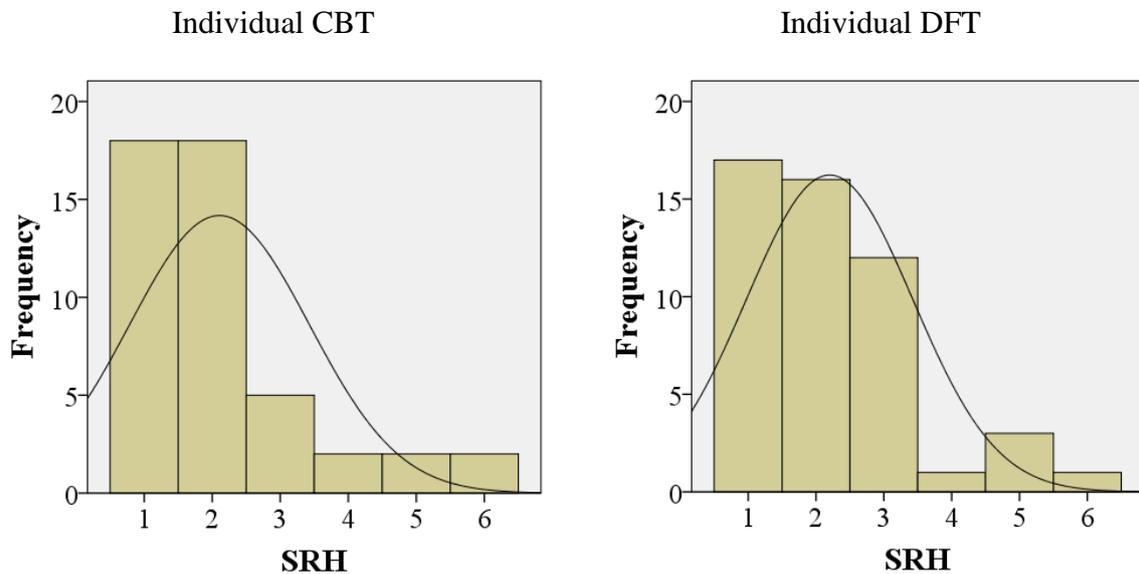


Figure 5. Distribution of self-reported happiness in the two arms of study 2.

CBT = cognitive-behavioural therapy; DFT = dilemma-focused therapy, SRH = self-reported happiness.

Like in study 1, most of the other outcomes analysed were non-normally distributed as well. Therefore, following the same criteria, both parametric and non-parametric statistics were used in the analyses, and statistical corrections were applied to parametric tests. Also in line with what has been described for study 1, analyses were conducted both excluding and including outliers. For clarity purposes, we only provided results from the non-parametric statistics, and from analyses including outliers, when they did not support parametric results excluding outliers. All statistical analyses applied in study 2 are reported in Table 8, together with the hypotheses which they were used to test.

With regard to the objective O2.5. (to study the influence of social, demographic, and clinical characteristics of participants on their change in SRH after therapy), which was exploratory, mixed ANOVAs were conducted for gender, civil status, education, labour

status, and medication; while the influence of age was tested with a repeated measures ANOVA including it as a covariate. In turn, the non-parametric analyses included Mann-Whitney's *U* for gender; Kruskal-Wallis for civil status, education, labour status, and medication; and Spearman correlation for age.

Table 8

*Statistical Analyses Applied to Test the Hypotheses of Study 2*

Hypothesis	Analyses conducted
H2.1. Psychotherapy was foreseen to significantly increase SRH in participants suffering from depression regardless of the type of therapy.	Parametric analyses: Mixed ANOVA. Non-parametric analyses: Wilcoxon signed-rank test for the effect of psychotherapy as a whole, Mann-Whitney's <i>U</i> test for differential effects.
H2.2. Participants who solved their initial CCs at the end of therapy were anticipated to increase their SRH more than those who did not.	Parametric analyses: Pearson correlation for the relationship between change in percentage of CCs and SRH; mixed ANOVA for the effect of solving CCs or not on SRH change. Non-parametric analyses: Spearman correlation for the relationship between change in percentage of CCs and SRH; Mann-Whitney's <i>U</i> test for the effect of solving CCs or not on SRH change.
H2.3. We expected participants' change in SRH after therapy to be significantly and negatively correlated with their change in depression severity and psychological distress, but positively with global functioning.	Parametric analyses: Pearson correlation. Non-parametric analyses: Spearman correlation.
H2.4. Among the change in self now – ideal self, in self now – others, and in ideal self – others discrepancies, only the former was anticipated to be negatively and significantly correlated with participants' change in SRH.	Parametric analyses: Pearson correlation. Non-parametric analyses: Spearman correlation.
H2.5. Participants' change in SRH after therapy was expected to be negatively and significantly correlated with their change in cognitive polarisation and interpersonal construct differentiation.	Parametric analyses: Pearson correlation. Non-parametric analyses: Spearman correlation.

*Note.* SRH = self-reported happiness; ANOVA = analysis of variance; CC = cognitive conflict.

To test all hypotheses using non-parametric methods, change scores were computed for SRH, as well as for the other continuous variables under study. These scores were calculated by extracting the score before therapy from the score after therapy. Regarding parametric analyses, change scores were also used for Pearson correlations in hypotheses H2.2., H2.3., H2.4., and H2.5.

Previously to any of the analyses reported in table 8, it was checked if significant differences existed between the two treatment arms in the variables reported on table 7. Student's *t* test and Mann-Whitney's *U* test were used for continuous variables. Meanwhile, for categorical variables, the chi-squared statistic was applied. The same ESs reported in section 3.1.5. were used in study 2.

### **3.2.7. Ethical concerns.**

All individuals contacted in the context of study 2 were described the characteristics of the study before they took any decision regarding their participation. This description included the clear statement that their inclusion was voluntary and no compensation was expected beyond the positive effect that treatments may have. They were also ensured that neither their acceptance nor their refusal had influence on the healthcare they received in their referring centres. Similarly, they were informed on their right to access, modify and request deletion of their data in the context of this study, as well as their right to freely discontinue participation at any time.

Graduate students participating in assessment sessions, as well as therapists delivering interventions, were also requested to sign a confidentiality agreement with regard to personal data from study participants. All paper-based information stemming from the study was securely stored in key-protected closets to which only the principal investigator of the study could grant access. Similarly, all digital data was stored in encrypted hard-drive disks inside

the principal investigator's office. In addition, databases to conduct the analyses were anonymised, with an alphanumeric code assigned to each participant.

The research project providing participants for the sample of study 2 was approved by the Bioethics Commission of the *Universitat de Barcelona* (number IRB00003099) as well as the Bioethics Committees of all participating centres. This study was registered in the website [ClinicalTrials.gov](https://clinicaltrials.gov) (NCT01542957) as well as in the [ISRCTN](https://www.isrctn.com/) registry (ISRCTN92443999).

## 4. Results

Although the samples used for this doctoral thesis had already been collected in the context of various research projects, it was considered necessary to know if the samples' sizes were large enough to pursue the main objective set, and to interpret its results with enough statistical power. Therefore, sample size estimations were conducted for study 1 and study 2, since both were involved in the main objective of this thesis, and are the first results reported (section 4.1.).

Afterwards, the next results are on the exploration of differences among the three samples of study 1, and the two subsamples of study 2 (section 4.2.), necessary to check for potential biases due to samples' characteristics. From there onwards, the results reported herein are organised in accordance to the hypotheses listed in section 2. The results for the complementary objectives O1.7. (to qualitatively analyse the content of the opposite pole of happy, the poles closest to, and farthest from happy, as well as its closest and farthest elements), and O2.5. (to study the influence of social, demographic, and clinical characteristics of participants on their change in SRH after therapy) are also provided.

Assumptions for the statistical analyses were always tested, and their results were always reported. The only exception was normality, which we have already reported to be violated by the distribution of most variables in this thesis as well as the strategy to tackle this issue (see sections 3.1.5. and 3.2.6.).

### 4.1. Sample Size Estimation

#### 4.1.1. Study 1.

As for study 1 is concerned, previous research has examined the differences in SRH between depressed and control adult participants. For example, Horner et al. (2014) reported a medium (but almost large) ES of  $d = .79$  for the difference in happiness using a five-point

visual scale, while more recently Spinhoven, Elzinga, Giltay, and Penninx (2015) found a large ES of  $d = 1.20$  using a self-rated seven-point scale. In both studies, the scores from control participants were higher than those from people with depression. However, little is known about the happiness experienced by people with FMS compared to either depressed or control individuals. To our knowledge, only one study has previously explored such differences among non-clinical, depression, and chronic pain samples (Finucane, Dima, Ferreira, & Halvorsen, 2012). Using the Basic Emotions Scale (Power, 2006), they found higher happiness scores in the non-clinical participants compared to those with chronic pain, with a medium to large ES ( $d = .77$ ). In turn, these were also happier than participants suffering from depression, with a large ES ( $d = 1.10$ ). This study also found a large ES for the difference between the non-clinical and the MDD samples ( $d = 2.05$ ), in line with the aforementioned studies.

According to these results, and as it has been stated in the hypothesis H1.1. of this thesis, we expected to find significantly higher happiness scores in the non-clinical sample than in both clinical samples, with a large ES. About differences between the MDD and MDD+FMS samples though, not a single study has been found providing data to make a grounded anticipation about the effect on SRH of having MDD and FMS as a comorbid condition. The study by Finucane et al. (2012) found that both participants with chronic pain and with depression were less happy than control subjects, with medium to large ESs. As it has been mentioned in the introduction, the severity of health status seems to impact happiness (Seligman, 2002), therefore, experiencing both conditions at the same time was expected to have a detrimental influence on SRH, compared to having MDD but not FMS. A medium ES was hypothesised for this difference. Using the program *G\*Power 3* (Faul, Erdfelder, Lang, & Buchner, 2007), the sample size needed for the main analysis of study 1 (one-way ANOVA between the 3 samples) was estimated. Since the minimum ES expected

was medium, between the two clinical samples, the parameter was set to  $f = .25$ , while the alpha and beta risks were set to  $\alpha = .05$  and  $\beta = .20$ . The output results concluded that a sample size of at least 159 subjects (53 per group) was needed. Therefore, it may be stated that the three samples of study 1 met the required minimum sample size.

#### **4.1.2. Study 2.**

To date, only few studies have examined the change in SRH in an adult clinical sample with depression. Perhaps the best example is the study by Chaves, López-Gomez, Hervás, and Vázquez (2017), who compared the efficacy of CBT versus a PP intervention in 96 women with MDD or DD, using the Pemberton Happiness Index (Hervás & Vázquez, 2013). Both treatment conditions were manualised, and consisted of 10 weekly, two-hour group sessions. They reported a small ES for the CBT treatment ( $d = .42$ ), and a medium ES for the PPI ( $d = .61$ ). With regard to the partial eta squared of the repeated measures multivariate analysis of variance (MANOVA) they conducted (Richardson, 2011), the ES found for therapy was large ( $\eta_p^2 = .26, p < .001$ ), while the type of treatment had no significant effect ( $\eta_p^2 = .006, p = 1$ ). O' Leary and Dockray (2015) also measured SRH, using the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999), in a sample of 35 women who were randomised to either a gratitude or a mindfulness intervention, or to a wait-list control group. Despite this was not clearly stated in the article, the sample of this study had the particularity of being probably composed by women who had given birth recently, and whom diagnosis of depression was also not reported. Nevertheless, their mean score in the instrument used to measure depression, the Edinburgh Postnatal Depression Scale (Cox, Holden, & Sagovsky, 1987), at the beginning of the study exceeded the cut-off score for depression. In this case, the interventions were delivered online four times per week during three weeks, and relied on the use of diaries and also brief meditation (only in the mindfulness group), following a methodology similar to self-help interventions. In this case, a mixed

ANOVA showed a medium ES, although not significant ( $\eta_p^2 = .07, p = .31$ ). The separate effect of time and type of intervention was not given, although the means and standard deviations (SD) of the three groups were provided. Therefore, a medium ES of  $d = .60$  can be estimated for the difference in SRH at the end of the intervention between the gratitude and mindfulness groups. Comparing the gratitude versus the control group, the ES was again medium ( $d = .54$ ), while for the difference between the mindfulness and control groups was large ( $d = 1.42$ ). These results suggest that mindfulness was more effective in increasing SRH compared to both the gratitude intervention and wait-list control, and that the gratitude intervention was in turn more effective than wait-list control, but we do not know if these differences were significant. Finally, Dowlatabadi et al. (2016) randomised 42 women diagnosed with breast cancer to either a 10 weekly, 90-minute, group PP sessions, or treatment as usual. Therefore, in this case they did not compare different interventions. Again, the sample of this study had some important particularities, but at least women were only included in the randomisation if they had mild to moderate depression according to the BDI-II. SRH was measured with the Oxford Happiness Inventory (Hills & Argyle, 2002). A MANCOVA analyses showed a large ES ( $\eta_p^2 = .54, p < .001$ ) for the efficacy of PP intervention to enhance SRH compared to treatment as usual.

Taking these results into account, and relying mainly on the results from Chaves et al. (2017), which seemed to be the study most similar to our study 2, it was expected to find a significant increase in SRH after therapy, with a large ES. On the contrary, no significant differences were expected between therapies. This anticipation was in line with the similar efficacy of different psychotherapies for depression reported in recent meta-analyses (e.g., Cuijpers et al., 2010), as well as in the similar efficacy of both interventions included in study 2, which had already been reported for depression and psychological distress (Feixas et al., 2016). Again, the sample size needed for the main analysis of study 2 was estimated using the

program *G\*Power 3*, choosing repeated measures ANOVA (within factors) as the statistical test in order to know how many participants are needed to find the large ES expected for time (i.e., the pre-post difference in SRH). Hence, the parameter for ES was set to  $f = .40$ , while the alpha and beta risks were set to  $\alpha = .05$  and  $\beta = .20$ . It was specified that the study had two groups which were measured twice. The correlation between measures was left set by default to  $\rho = .5$ , as well as the nonsphericity correction to  $\epsilon = 1$ . The output parameters concluded that a sample size of only 16 subjects (8 per group) was needed to find such a large ES. The sample size of study 2 clearly exceeded that number. Nevertheless, the sample size needed to find a small ES (for the interaction between time and type of treatment) was also estimated, in case the results suggested any difference between treatments. To this aim, repeated measures ANOVA (within-between interaction) was selected as the statistical test. The same parameters were used, but now setting the anticipated ES to  $f = .10$  (small). The output suggested that a sample of 200 participants was needed, with 100 subjects per group. Unfortunately, the sample of study 2 was below that size. Only when the alpha and beta risks were set to  $\alpha = .20$  and  $\beta = .70$  the sample size needed decreased to 84 participants (42 per group), which was met by study 2.

In conclusion, considering the literature review, no difference was anticipated in the efficacy of both interventions in increasing SRH. Nonetheless, considering the aforementioned power calculations, if any difference between treatments did exist, the sample of study 2 was not large enough to find it.

## **4.2. Between-Group Differences**

### **4.2.1. Study 1.**

With regard to the assumptions for statistical analyses, for the chi-squared statistic, in all cases there were less than 20% of cells with expected counts lower than five, and no cells had an expected count lower than one, which makes bias less likely (Starnes et al., 2010). For

the one-way ANOVAs, the observations were independent, and when there were significant outliers they were removed from the analyses. As far as the homogeneity of variances is concerned, given that this assumption was generally violated, Welch's adjustment and Games-Howell post-hoc test were applied. Finally, regarding the Kruskal-Wallis with Dunn-Bonferroni post-hoc test, again there was independence of observations. Given that distribution of dependent variables in each sample was generally different, mean ranks instead of medians were used for comparisons.

A significant difference was found in terms of gender across groups ( $\chi^2(2, N = 233) = 20.960, p < .001, V = .300$ ), in fact we already knew that the MDD+FMS group was composed only by females. Differences in age were also significant after removing two outliers from the MDD+FMS sample (*Welch's*  $F(2, 145.099) = 14.537, p < .001$ ), with participants in this group being older than those in the non-clinical (mean difference = 8.819,  $p < .001, d = .66$ ), and those in the MDD sample (mean difference = 6.897,  $p < .001, d = .74$ ). Age between these later two samples was not significantly different (mean difference = -1.922,  $p = .670, d = .13$ ). Civil status of participants in the three samples was also significantly different with a small to medium ES ( $\chi^2(6, N = 232) = 30.961, p < .001, V = .258$ ), with the non-clinical sample composed by mainly married/living in couple and single participants, and the two clinical samples composed by mainly married/living in couple and divorced/separated participants. Differences in distribution of education across groups were significant too ( $\chi^2(4, N = 230) = 47.009, p < .001, V = .320$ ), with a medium ES, with participants in the non-clinical sample studying mainly until higher education, while participants in the two clinical samples studied mainly until secondary education. Regarding labour status, there were also differences with a medium to large ES ( $\chi^2(10, N = 230) = 84.737, p < .001, V = .429$ ), since all student participants in the study were included in the non-clinical sample, and participants unemployed, in work leave, and with an occupational

disability were more common in the two clinical samples. Finally, the number of participants currently under psychopharmacological treatment was also different between samples ( $\chi^2(2, N = 226) = 138.512, p < .001, V = .783$ ), reaching a large ES, with most participants in the non-clinical sample receiving no intervention and most in the clinical samples being under psychopharmacological treatment.

Regarding outcome measures, differences were expected, especially between the non-clinical sample and the two clinical samples. Indeed, significant differences with large ESs were found for almost all of them. In the case of the BDI-II (*Welch's*  $F(2,114.404) = 605.418, p < .001$ ), results showed that the non-clinical sample had lower scores than both the MDD sample (mean difference =  $-30.411, p < .001, d = 4.03$ ), and the MDD+FMS sample (mean difference =  $-31.173, p < .001, d = 4.55$ ), while the difference between the two clinical samples was not significant (mean difference =  $-.762, p = .879, d = .08$ ). Similarly, after removing five outliers (one from the non-clinical and two from each clinical sample), in the CORE-OM (*Welch's*  $F(2,121.659) = 503.426, p < .001$ ) the non-clinical showed also lower scores than the MDD sample (mean difference =  $-1.737, p < .001, d = 4.48$ ), and than the MDD+FMS sample (mean difference =  $-1.924, p < .001, d = 4.87$ ). The difference between the two clinical samples was again not statistically significant, but had a small to medium ES (mean difference =  $-.186, p = .053, d = .39$ ) suggesting a tendency of the group with FMS to have more psychological distress. The GAF, which was only administered in the two clinical samples, after removing one outlier from the MDD sample, did not show statistically significant differences between them (*Welch's*  $F(1,112.925) = 2.554, p = .113, d = .27$ ), although the small ES indicated slightly higher scores in the MDD+FMS sample.

Regarding the RGT measures, the three samples had a similar proportion of participants showing DCs ( $\chi^2(2, N = 232) = 2.035, p = .361, V = .094$ ), but this was not the case for IDs ( $\chi^2(2, N = 232) = 36.368, p < .001, V = .396$ ), since most participants in both

clinical samples showed them. Differences were also found for the PDC (*Welch's*  $F(2,141.622) = 9.057, p < .001$ ) after removing 15 outliers: three in the non-clinical, three in the MDD, and nine in the MDD+FMS sample. Were precisely participants in the MDD+FMS sample who scored significantly lower than the non-clinical sample (mean difference = -3.153,  $p = .003, d = .56$ ), and the MDD sample (mean difference = -3.239,  $p = .001, d = .59$ ). Difference between the non-clinical and the MDD samples was not significant (mean difference = -.085,  $p = .997, d = .01$ ). Nevertheless, no differences between groups were found when including the outliers in the analysis ( $F(2,229) = .286, p = .751$ ). For the PID, up to 18 outliers were removed (11 in the non-clinical, four in the MDD, and three in the MDD+FMS sample), finding a significant difference between groups (*Welch's*  $F(2,96.304) = 39.974, p < .001$ ), with the non-clinical sample showing lower scores than the MDD sample (mean difference = -2.295,  $p < .001, d = 1.04$ ), and the MDD+FMS sample (mean difference = -3.834,  $p < .001, d = 1.02$ ). The two clinical samples did not show significant differences between them, although showed a small ES (mean difference = -1.540,  $p = .109, d = .36$ ), this indicating a tendency of the group with FMS to present a higher percentage of IDs. For the PICID 17 outliers were removed from analyses (11 in the non-clinical, four in the MDD, and two in the MDD+FMS sample) and significant differences were again found (*Welch's*  $F(2,94.318) = 64.752, p < .001$ ), with the non-clinical sample showing lower scores than the MDD sample (mean difference = -36.810,  $p < .001, d = 1.26$ ), and the MDD+FMS sample (mean difference = -65.261,  $p < .001, d = 1.48$ ). This time, the scores in both clinical samples were also significantly different (mean difference = -28.450,  $p = .008, d = .54$ ), higher for the group with FMS. With regard to the self now – ideal self discrepancy, three outliers were removed (one from each sample) and differences were also found (*Welch's*  $F(2,131.016) = 200.386, p < .001$ ). That is, the non-clinical sample had lower scores than the MDD sample (mean difference = -.249,  $p < .001, d = 2.14$ ), and the MDD+FMS sample (mean difference =

-268,  $p < .001$ ,  $d = 3.13$ ). On the contrary, the difference between the two clinical samples was not significant (mean difference =  $-.019$ ,  $p = .622$ ,  $d = .16$ ). The same results were found for the self now – others discrepancy, removing also three outliers (two in the non-clinical and one in the MDD sample), with significant differences between groups (*Welch's*  $F(2,131.956) = 81.597$ ,  $p < .001$ ) due to the lower scores of the non-clinical sample in comparison to the MDD sample (mean difference =  $-.119$ ,  $p < .001$ ,  $d = 1.65$ ), and the MDD+FMS sample (mean difference =  $-.116$ ,  $p < .001$ ,  $d = 1.80$ ). Again, no significant differences were found between the two clinical samples (mean difference =  $-.003$ ,  $p = .969$ ,  $d = .00$ ). As far as the ideal self – others discrepancy, results showed again significant differences between groups with two outliers removed in the MDD sample (*Welch's*  $F(2,140.378) = 28.183$ ,  $p < .001$ ), with the non-clinical sample scoring lower than the MDD sample (mean difference =  $-.05$ ,  $p < .001$ ,  $d = .91$ ), and the MDD+FMS sample (mean difference =  $-.067$ ,  $p < .001$ ,  $d = 1.27$ ). Once more, the difference between the two clinical samples was not significant, although it reached a small ES (mean difference =  $-.017$ ,  $p = .241$ ,  $d = .33$ ), signalling slightly higher scores in the MDD+FMS sample. Regarding cognitive polarisation, four outliers were removed from the non-clinical sample and results also showed significant differences between groups (*Welch's*  $F(2,140.704) = 21.779$ ,  $p < .001$ ), with the non-clinical sample showing lower scores compared to the MDD sample (mean difference =  $-9.483$ ,  $p < .001$ ,  $d = .71$ ), and the MDD+FMS sample (mean difference =  $-14.200$ ,  $p < .001$ ,  $d = 1.08$ ). In turn, the difference between the MDD and the MDD+FMS samples was non-significant despite its small ES (mean difference =  $-4.717$ ,  $p = .109$ ,  $d = .34$ ) indicating higher scores in the MDD+FMS sample. Finally, no significant differences between samples were found for interpersonal construct differentiation with one single outlier removed from the MDD sample (*Welch's*  $F(2,146.394) = 1.075$ ,  $p = .344$ ).

In general, non-parametric statistics supported all results, except for the difference between the two clinical samples in the PICID, which was not significant according to the Dunn-Bonferroni post-hoc test following Kruskal-Wallis ( $p = .061$ ,  $r_{pb} = .21$ ).

Given the differences between all samples, as it has been mentioned in section 2, all analyses of study 1 were conducted separately in the three samples. The only exception was the comparison in SRH in section 4.3.1.

#### 4.2.2. Study 2.

With regard to the chi-squared statistic, whenever more than 20% of cells had expected counts lower than five, or when any cell had an expected count lower than one, groups were merged to reduce the risk of bias. As far as the Student's  $t$  test was concerned, there was independence of observations, and whenever outliers were found they were removed from the analyses. When variances were not homogenous, results were provided for equality of variances not assumed. Finally, for the non-parametric Mann-Whitney's  $U$  test, the same independence of observations from the Student's  $t$  test applied. Given that the distributions had generally different shapes between groups, mean ranks instead of medians were compared.

Gender distribution was similar between the two therapy groups, CBT and DFT ( $\chi^2 (1, N = 97) = .166, p = .684, V = .041$ ), as it was the mean age of participants after removing 2 outliers from the CBT group, although with a small ES ( $t(93) = 1.873, p = .064, d = .39$ ) suggesting that those allocated to the CBT treatment were a bit older than those in the DFT group. Civil status ( $\chi^2 (3, N = 97) = 2.489, p = .477, V = .160$ ), education level ( $\chi^2 (2, N = 97) = 1.251, p = .535, V = .114$ ), and labour status ( $\chi^2 (4, N = 97) = 3.176, p = .529, V = .181$ ) were similarly distributed in the two treatment arms. Nevertheless, both for civil and labour status, groups had to be merged to avoid more than 20% of cells with expected counts lower

than 5. For civil status, the following groups were created: has partner (married/living as a couple) and does not have partner (single, divorced, and widow/widower). The same procedure was followed for labour status, creating the groups: currently working (active worker) and currently not working (work leave, unemployed, occupational disability, and retired). These regroupings did not lead to significant differences anyway, neither for civil status ( $\chi^2(1, N = 97) = 1.217, p = .270, V = .112$ ), nor for labour status ( $\chi^2(1, N = 97) = .001, p = .970, V = .004$ ), despite the small ES of the former caused by a slightly higher number of married people in the DFT therapy group. The number of participants who took psychotropic medication at the beginning of the study was also compared between groups, and no significant differences were found ( $\chi^2(1, N = 96) = .363, p = .547, V = .062$ ).

Regarding the outcome variables, pre-intervention differences between groups were also explored. Results showed that both arms were different in terms of SRH with six outliers removed from the CBT arm ( $t(79.348) = -2.532, p = .013, d = .52$ ), this indicating that patients in the DFT group rated higher their level of happiness. Nevertheless, neither parametric when including outliers ( $t(95) = -.361, p = .719, d = .07$ ) nor non-parametric ( $U = 1083, p = .485, r_{pb} = .03$ ) procedures did support such difference. For the BDI-II no difference was found ( $t(95) = .420, p = .675, d = .09$ ). Meanwhile, for CORE-OM with 2 outliers removed from the DFT group, there was no difference either ( $t(92) = -.107, p = .915, d = .02$ ). As far as the GAF is concerned, one outlier was removed from each subsample and no difference was found ( $t(91) = -.338, p = .736, d = .07$ ).

Finally, regarding the RGT measures (apart from SRH), none was significantly different between arms: Presence of DCs ( $\chi^2(1, N = 97) = .014, p = .907, V = .012$ ) and IDs ( $\chi^2(1, N = 97) = .432, p = .511, V = .067$ ), PDC removing two outliers from the CBT group and one from the DFT ( $t(92) = -.206, p = .837, d = .04$ ), PID with three outliers removed from the CBT group and one from the DFT ( $t(91) = .752, p = .454, d = .16$ ), PICID with three

outliers removed from the CBT group ( $t(92) = -1.280, p = .204, d = .27$ ), self now – ideal self discrepancy with seven outliers removed from the CBT group ( $t(79.284) = -.363, p = .718, d = .00$ ), self now – others discrepancy with one outlier removed from the CBT group and two from the DFT ( $t(92) = -.667, p = .506, d = .12$ ), ideal self – others discrepancy with one outlier removed from the CBT group and two from the DFT ( $t(92) = -.708, p = .481, d = .15$ ), cognitive polarisation with no outliers removed ( $t(95) = .265, p = .792, d = .05$ ), and interpersonal construct differentiation with three outliers removed from the CBT group ( $t(92) = -.694, p = .489, d = .14$ ).

In conclusion, the only significant difference between the two treatment groups seemed to be SRH. However, this was not considered decisive since non-parametric analyses, and parametric when including outliers, did not support it. As for the other variables, they provided generally the same results, finding no significant differences between groups. Therefore, analyses were conducted for the whole sample of study 2, not separating by type of treatment, therefore increasing statistical power. The only exception was section 4.4.1., since it is related to the main objective of this thesis (to test whether two different psychotherapies showed different efficacies in terms of increasing SRH), for which we conducted separate analysis.

### 4.3. Results of Study 1

#### 4.3.1. Differences in self-reported happiness according to clinical condition

##### (H1.1.)

Regarding assumptions for the one-way ANOVA, observations were independent, and significant outliers were removed prior to the analyses. Given that variances were heterogeneous according to Levene's test, Welch's adjustment and Games-Howell post-hoc test were applied. As for the Kruskal-Wallis test, again independence of observations allowed its use. Given that distribution of dependent variables in each subsample was different, mean

ranks instead of medians were used for comparisons. Dunn-Bonferroni test was chosen for post-hoc comparisons. A boxplot of happiness distribution in the three samples may be seen in figure 6.

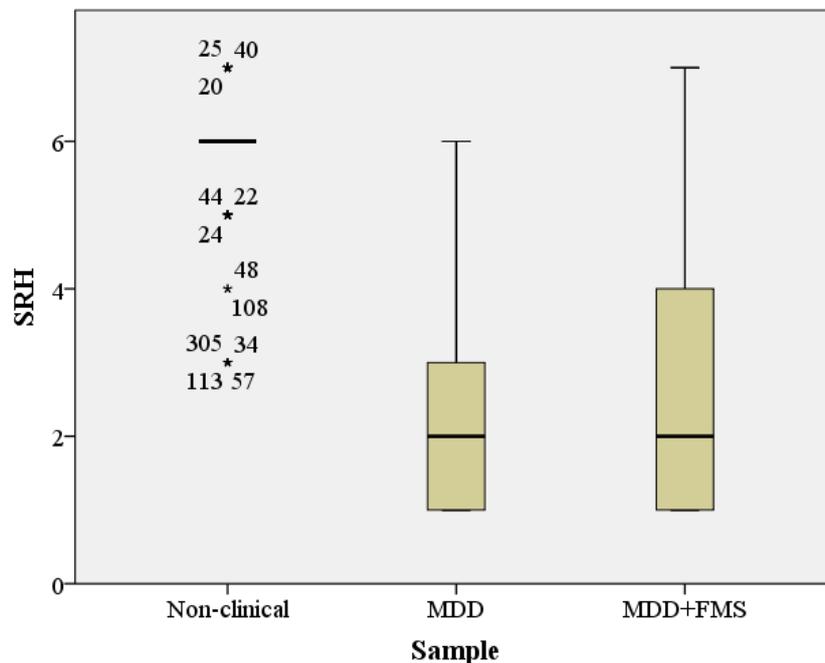


Figure 6. Distribution of self-reported happiness in the three samples of study 1.

SRH = self-reported happiness; MDD = major depressive disorder; FMS = fibromyalgia syndrome.

The result of the one-way ANOVA after removing 12 outliers (all from the non-clinical sample, as shown in figure 6), found significant differences between the three samples (*Welch's*  $F(2,121.429) = 456.353, p < .001$ ).

As can be seen in table 9, the non-clinical sample had higher SRH scores than both the MDD (mean difference = 3.967,  $p < .001, d = 4.34$ ), and the MDD+FMS (mean difference = 3.367,  $p < .001, d = 2.82$ ) samples. Between the two clinical samples the difference was also significant, with the MDD+FMS sample showing higher SRH (mean difference = .600,  $p = .033, d = .43$ ). Although Kruskal-Wallis plus Dunn-Bonferroni post-hoc test also found

significant differences between the non-clinical sample and both clinical, it did not between these two ( $p = .236$ ,  $r_{pb} = .21$ ).

Table 9

*Means and Standard Deviations of Self-Reported Happiness in the Three Samples of Study 1 Once Removed the Outliers*

	Non-clinical ( $N = 69$ )	MDD ( $N = 91$ )	MDD+FMS ( $N = 61$ )
SRH $M$ ( $SD$ )	6.09 (.59)	2.12 (1.15)	2.72 (1.58)

*Note.* SRH = self-reported happiness; MDD = major depressive disorder; FMS = fibromyalgia syndrome.

#### **4.3.2. Influence of having cognitive conflicts on self-reported happiness (H1.2.).**

The influence of CCs in SRH was studied with two different analyses. First, independent samples Student's  $t$  test was used to gauge the difference in SRH between participants showing at least one DC and those with none. The same was done for participants with at least one ID. Afterwards, Pearson correlation was used to measure the relationship between participants' SRH and their score in three RGT indexes: PDC, PID, and PICID. After checking test's assumptions, clear outliers detected in plots were removed from analyses. For Student's  $t$  test, there was independence of observations and results were provided for equality of variances not assumed whenever they were heterogeneous. Regarding Pearson correlation, again, it must be acknowledged that relationships between variables were not always linear. Mann-Whitney's  $U$  test and Spearman correlation were used as the non-parametric alternatives. With regard to Mann-Whitney's  $U$ , mean ranks were compared because the distributions had different shapes between groups, while for Spearman correlation the relationships between variables in some cases were not clearly monotonic either. In consequence, results should be interpreted with caution. It must be noticed that in one of the participants from the MDD+FMS sample, RGT analyses could not be performed with the RECORD v.5.0 because its administration was incomplete. Therefore, this subject was not

included in the results of sections 4.3.2., 4.3.4., 4.3.5., and (some of) 4.3.8. In all other sections it could be included because the participant provided scores for the happy construct.

Once removed 24 outliers (20 in the non-clinical sample and four in the MDD sample), a significant difference was found between those participants showing at least one DC and those with none in the MDD sample ( $t(74.690) = -2.179, p = .032, d = .46$ ), with those with at least one DC being in general happier than those with none (see table 10). Significant differences were not found in the non-clinical ( $t(59) = 1.088, p = .281, d = .28$ ) and the MDD+FMS ( $t(58) = 1.639, p = .107, d = .45$ ) samples, although small to medium ESs indicated higher SRH in participants without DCs. When including outliers in the analyses though, the difference found in the MDD sample vanished both with parametric ( $t(84.968) = -1.151, p = .253, d = .24$ ), and non-parametric analyses ( $U = 1109, p = .518, r_{pb} = .12$ ).

Table 10

*Means and Standard Deviations of Self-Reported Happiness for Participants with and without Dilemmatic Constructs in the Three Samples of Study 1 Once Removed the Outliers*

	Non-clinical ( $N = 61$ )		MDD ( $N = 87$ )		MDD+FMS ( $N = 60$ )	
	With	Without	With	Without	With	Without
SRH $M$	6.03	6.17	2.25	1.77	2.36	3.03
( $SD$ )	(.54)	(.47)	(1.31)	(.71)	(1.29)	(1.72)

*Note.* MDD = major depressive disorder; FMS = fibromyalgia syndrome; SRH = self-reported happiness.

For the difference in SRH between participants showing at least one ID and those with none, 26 outliers were removed (19 in the non-clinical sample, six in the MDD sample, and one in the MDD+FMS sample), and no significance was found in any of the samples: non-clinical ( $t(60) = -.492, p = .625, d = .15$ ), MDD ( $t(39.639) = 2.006, p = .052, d = .48$ ), MDD+FMS ( $t(57) = 1.532, p = .131, d = .49$ ). However, as it can be seen, the ES of this difference was approximately medium for the two clinical samples, indicating higher scores in participants without IDs except for the slight difference in the non-clinical sample. Means

and *SDs* in the three samples can be seen in table 11. This time, when including outliers and applying non-parametric analyses the same results were found.

Table 11

*Means and Standard Deviations of Self-Reported Happiness for Participants with and without Implicative Dilemmas in the Three Samples of Study 1 Once Removed the Outliers*

	Non-clinical ( <i>N</i> = 62)		MDD ( <i>N</i> = 85)		MDD+FMS ( <i>N</i> = 59)	
	With	Without	With	Without	With	Without
SRH <i>M</i>	6.11	6.02	1.79	2.31	2.52	3.23
( <i>SD</i> )	(.47)	(.70)	(.80)	(1.29)	(1.49)	(1.42)

*Note.* MDD = major depressive disorder; FMS = fibromyalgia syndrome; SRH = self-reported happiness.

As far as correlations are concerned, after removing one outlier from each sample, no significant relationship was found between participants' scores in the PDC and their SRH in the non-clinical ( $r = .003, n = 80, p = .982$ ), and the MDD ( $r = .012, n = 90, p = .912$ ) samples. On the contrary, correlation was negative and significant in the MDD+FMS sample ( $r = -.267, n = 59, p = .041$ ). Nevertheless, neither Pearson correlation when including outliers ( $r = -.180, n = 60, p = .170$ ), nor Spearman correlation ( $\rho = -.189, n = 60, p = .147$ ) found this association significant.

Regarding the PID, after removing five outliers (three in the non-clinical sample and two in the MDD+FMS), scores in all samples were not significantly correlated with SRH either: non-clinical ( $r = -.024, n = 78, p = .836$ ), MDD ( $r = .009, n = 91, p = .933$ ), MDD+FMS ( $r = -.114, n = 58, p = .394$ ). Analyses with Spearman correlation corroborated these results.

With regard to participants' scores in the PICID, after removing seven outliers (four in the non-clinical, two in the MDD, and one in the MDD+FMS sample), scores again were not significantly correlated with SRH in any sample: non-clinical ( $r = .037, n = 77, p = .750$ ),

MDD ( $r = -.097, n = 89, p = .364$ ), MDD+FMS ( $r = -.223, n = 59, p = .089$ ). Spearman correlation supported these results.

#### 4.3.3. Relationship of self-reported happiness with depression severity, psychological distress, and global functioning (H1.3.).

Pearson correlation was used to measure the relationship between participants' SRH and their score in the BDI-II, the CORE-OM, and the GAF. After checking test's assumptions, clear outliers were detected only in scatterplots for the CORE-OM and were removed. Relationships between variables were approximately linear, except perhaps between BDI-II and SRH in the non-clinical sample. Spearman non-parametric correlation was also used, although it must be acknowledged that the relationship of SRH with the BDI-II in the non-clinical sample was not clearly monotonic either. Therefore, this result needs to be interpreted cautiously.

Participants' scores in the BDI-II were negatively and significantly correlated with SRH in all samples: non-clinical ( $r = -.280, n = 81, p = .011$ ), MDD ( $r = -.448, n = 91, p < .001$ ), MDD+FMS ( $r = -.337, n = 59, p = .009$ ). Spearman correlations supported these results. A graphical representation of these correlations may be seen in figure 7.

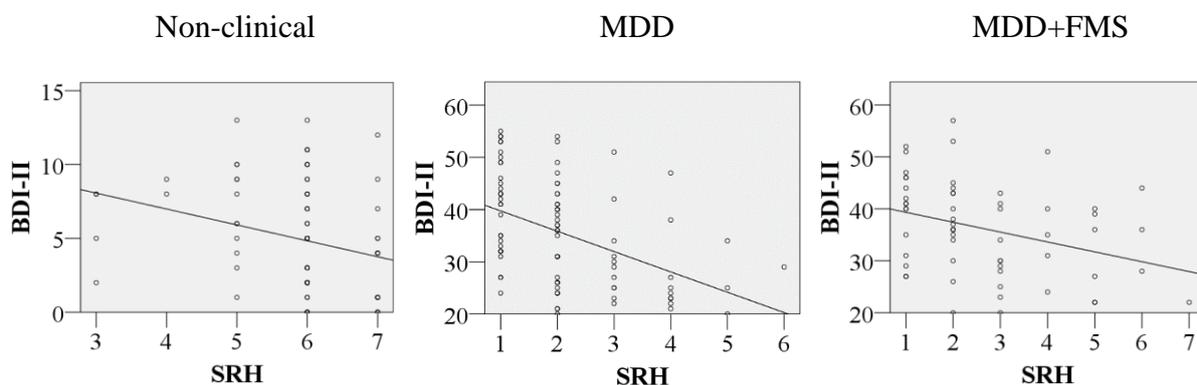


Figure 7. Scatterplots of the relationship between self-reported happiness and the scores in the Beck depression inventory-II in the three samples of study 1.

MDD = major depressive disorder; FMS = fibromyalgia syndrome; BDI-II = Beck depression inventory-II; SRH = self-reported happiness.

With regard to the CORE-OM, once removed four outliers (one in the non-clinical and the MDD samples, and two in the MDD+FMS sample), its scores were in general negatively and significantly correlated with those in SRH in all samples, except perhaps those for the Risk scale. Results can be observed in table 12.

Table 12

*Pearson Correlation Values for the Relationship between Self-Reported Happiness and each Scale of the Clinical Outcomes in Routine Evaluation – Outcome Measure Once Removed the Outliers*

	W	P	F	R	Total	Total-R
Non-clinical ( $N = 51$ )	-.463**	-.420**	-.464**	-.053	-.441**	-.427**
MDD ( $N = 85$ )	-.303**	-.304**	-.203	-.265*	-.325**	-.309**
MDD+FMS ( $N = 59$ )	-.590**	-.257*	-.489**	-.176	-.507**	-.520**

*Note.* W = wellbeing; P = problems/symptoms; F = functioning; R = risk; Total = total score; Total-R = total score except risk; MDD = major depressive disorder; FMS = fibromyalgia syndrome.

\* $p < .05$ . \*\* $p < .01$ .

When outliers were included in the analyses though, the correlation of SRH with Functioning in the MDD sample became significant, both with Pearson ( $r = -.233$ ,  $n = 86$ ,  $p = .031$ ), and Spearman ( $\rho = -.235$ ,  $n = 86$ ,  $p = .030$ ). Meanwhile, the correlation with Problems/Symptoms in the MDD+FMS sample lost significance also with Pearson ( $r = -.242$ ,  $n = 61$ ,  $p = .060$ ), and Spearman ( $\rho = -.218$ ,  $n = 61$ ,  $p = .097$ ).

As far as the GAF is concerned, its correlation with SRH could only be measured in the two clinical samples, since the SCID-I was not administered in the non-clinical one. Results were mixed, because both scores were always positively correlated but only significantly in the MDD sample ( $r = .224$ ,  $n = 91$ ,  $p = .033$ ) and not in the MDD+FMS ( $r = .177$ ,  $n = 53$ ,  $p = .204$ ). Non-parametric Spearman correlations supported these results.

#### **4.3.4. Relationship between self-reported happiness and self now – ideal self, self now – others, and ideal self – others discrepancies (H1.4).**

Regarding RGT measures, bivariate correlations were used again to measure the relationship between SRH and self now – ideal self, self now – others, and ideal self – others discrepancies. Assumptions were tested for Pearson correlation and the relationship of SRH with each discrepancy was approximately linear. After checking scatterplots, clear outliers were removed from the analyses. Assumptions were also met for Spearman correlation, with approximately monotonic relationships between variables.

For the correlation between SRH and self now – ideal self discrepancy, no outliers were identified and results showed no statistically significant correlation in the non-clinical sample ( $r = -.165, n = 81, p = .142$ ). Nonetheless, the correlation was negative and significant in the MDD ( $r = -.487, n = 91, p < .001$ ), and in the MDD+FMS sample ( $r = -.474, n = 60, p < .001$ ). Spearman correlation also found significant the correlation in the non-clinical sample ( $\rho = -.242, n = 81, p = .029$ ).

As far as the self now – others discrepancy, once removed three outliers in the non-clinical sample and one in the MDD, its correlation with SRH was again not significant in the non-clinical sample ( $r = .064, n = 78, p = .576$ ). Differently, in the MDD ( $r = -.538, n = 90, p < .001$ ) and in the MDD+FMS ( $r = -.475, n = 60, p < .001$ ) samples it was. This time non-parametric correlation found equivalent results.

Finally, to estimate the relationship between SRH and ideal self – others discrepancy no clear outliers were identified. Results showed negative correlations in all cases, but it was only significant in the MDD+FMS sample ( $r = -.286, n = 60, p = .027$ ), and not in the non-clinical ( $r = -.016, n = 81, p = .889$ ) nor in the MDD ( $r = -.063, n = 91, p = .554$ ) samples. Spearman correlations yielded similar results.

#### **4.3.5. Relationship of self-reported happiness with cognitive polarisation, and interpersonal construct differentiation (H1.5).**

To measure the relationship of SRH with cognitive polarisation, and interpersonal construct differentiation, Pearson and Spearman correlations were used as well. The relationships between them were approximately linear and monotonic, and clear outliers were removed from Pearson analyses.

Results showed that, removing two outliers from the non-clinical sample, cognitive polarisation was positively and significantly correlated with SRH in the non-clinical sample ( $r = .454, n = 79, p = .001$ ). Meanwhile, both in the MDD ( $r = -.027, n = 91, p = .800$ ) and in the MDD+FMS ( $r = -.129, n = 60, p = .324$ ) samples the relationship was negative and non-significant. Spearman correlations supported these results.

Regarding interpersonal construct differentiation, after removing three outliers (one in the MDD sample and two in the MDD+FMS), results showed a positive and significant correlation in the non-clinical ( $r = .327, n = 81, p = .003$ ), and the MDD ( $r = .216, n = 90, p = .041$ ) samples, but not in the MDD+FMS ( $r = -.135, n = 58, p = .312$ ). Nonetheless, when including outliers, both Pearson ( $r = .154, n = 91, p = .144$ ) and Spearman ( $\rho = .118, n = 91, p = .269$ ) correlations did not find statistical significance for the relationship in the MDD sample. It must be considered that, the higher the PVAFF scores, the lower the interpersonal construct differentiation. In consequence, the relationships found with SRH need to be inversely interpreted.

#### **4.3.6. Influence of social, demographic, and clinical characteristics on self-reported happiness (H1.6).**

Assumptions were tested for all the analyses conducted in this section. As far as Student's  $t$  test, which was used to assess the influence of gender and use of psychotropic

medication on SRH in each sample, there was independence of observations, and outliers found were removed. When variances were heterogenous, results were provided for equality of variances not assumed. For the non-parametric Mann-Whitney's  $U$  test, the same assumption on independence of observations applied. The distribution varied both by gender and medication, therefore, mean ranks instead of medians were compared. As for Pearson correlation, used to measure the influence of age on SRH, again clear outliers detected in scatterplots were removed, and the relationship between variables was approximately linear. Spearman correlation was also used, since the relationship between them was monotonic. Finally, with regard to one-way ANOVA, used to assess the influence of civil, academic, and labour status, the observations were independent, and significant outliers were always removed from the analyses. The homogeneity of variances assumption was violated in some occasions, and then Welch's adjustment and Games-Howell post-hoc test were applied. On the contrary, when there was homogeneity, Tukey's post-hoc was used. For the non-parametric alternative, Kruskal-Wallis with Dunn-Bonferroni post-hoc test, the same assumption on independence of observations applied. The distribution varied by civil, academic, and labour status, hence, comparisons were made between mean ranks instead of medians.

Gender was only studied in two of the samples, since in the MDD+FMS sample all participants were women. Nevertheless, after removing 16 outliers (13 in the non-clinical sample and three in the MDD), neither in the non-clinical ( $t(66) = .536, p = .593, d = .13$ ), nor in the MDD ( $t(86) = -1.416, p = .160, d = .42$ ) samples did it show a significant effect, despite the small to medium ES reached in the latter. In addition, in the non-clinical sample were men ( $M = 6.13, SD = .68$ ) who scored higher than women ( $M = 6.05, SD = .53$ ), while in the MDD women ( $M = 2.13, SD = 1.15$ ) scored higher than men ( $M = 1.72, SD = .75$ ). Non-parametric analyses supported these results.

After removing 2 clear outliers from the MDD+FMS sample, age was not significantly correlated with SRH in any sample: non-clinical ( $r = .041$ ,  $n = 81$ ,  $p = .717$ ), MDD ( $r = .029$ ,  $n = 91$ ,  $p = .787$ ), MDD+FMS ( $r = .111$ ,  $n = 56$ ,  $p = .416$ ). Spearman correlation found equivalent results. The scatterplots for age and SRH once removed outliers can be seen in figure 8.

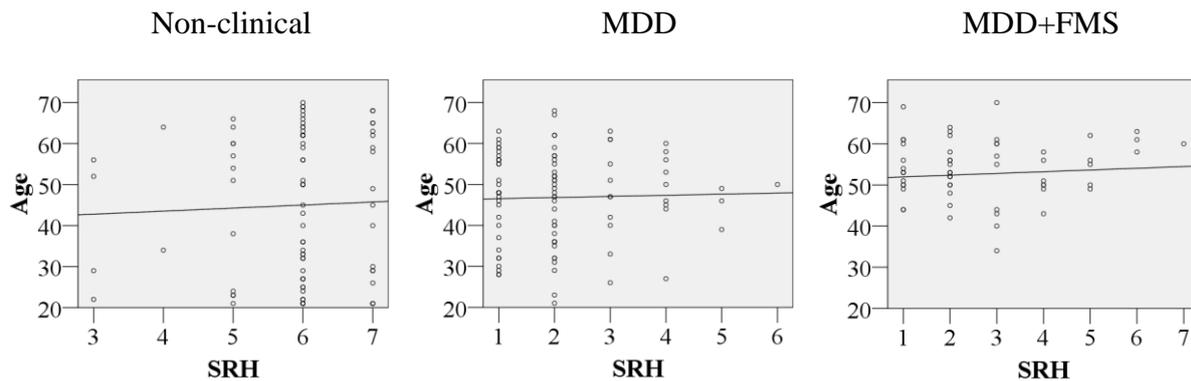


Figure 8. Scatterplots for the relationship between age and self-reported happiness in the three samples of study 1 once removed outliers.

MDD = major depressive disorder; FMS = fibromyalgia syndrome; SRH = self-reported happiness.

Civil status required 19 outliers to be removed (16 in the non-clinical sample and three in the MDD), and then mixed results were found. In the non-clinical sample, variances were heterogeneous, but Welch's adjustment could not be applied because in the widow/widower group there were only four participants and all scored six in SRH, producing no variance. Therefore, the one-way ANOVA results should be interpreted with caution. A significant difference was found ( $F(3,60) = 3.001$ ,  $p = .037$ ), but Games-Howell post-hoc only found one comparison significant (mean difference =  $.308$ ,  $p = .013$ ,  $d = .09$ ), with participants in the "married/living as a couple" group ( $M = 6.31$ ,  $SD = .47$ ) scoring higher than those in the "widow/widower" group ( $M = 6$ ,  $SD = .00$ ). Nevertheless, it did not even reach a small ES, and analyses including outliers did not find any difference ( $F(3,76) = .191$ ,  $p = .902$ ). In the MDD sample, variances were statistically homogeneous, and the one-way ANOVA found no

significant differences between groups ( $F(2,84) = 2.636, p = .055$ ). Similarly, in the MDD+FMS sample, again variances were homogeneous and results showed no statistically significant differences between groups ( $F(3,57) = .939, p = .430$ ). Kruskal-Wallis did not find statistically significant differences according to civil status in any sample: non-clinical ( $\chi^2(3, N = 80) = 1.467, p = .690$ ), MDD ( $\chi^2(3, N = 91) = 3.377, p = .337$ ), MDD+FMS ( $\chi^2(3, N = 61) = 2.548, p = .467$ ). Given the low sample size in some of the levels of the civil status variable, the analyses were run again merging the participants in only two groups: has partner (married/living as a couple) and does not have partner (single, divorced, and widow/widower), in this case, Student's  $t$  test was used and assumptions checked and met. After removing 16 outliers (12 in the non-clinical sample and four in the MDD), results were mixed again. In the non-clinical sample, the difference between the two groups was not significant ( $t(66) = -1.975, p = .052, d = .49$ ), but it was in the MDD sample not assuming equal variances ( $t(75.402) = -2.979, p = .004, d = .63$ ), since participants with partner scored higher in SRH ( $M = 2.30, SD = 1.19$ ) than those without ( $M = 1.68, SD = .72$ ). This difference was not significant including outliers ( $t(89) = -1.546, p = .126, d = .32$ ). Finally, in the MDD+FMS sample the difference was not significant ( $t(59) = -1.648, p = .105, d = .38$ ). Mann-Whitney's  $U$  test, which was used as the non-parametric alternative comparing, did not find significance in any difference, although married participants were happier in all cases with small to medium ESs: non-clinical ( $U = 828, p = .515, r_{pb} = .24$ ), MDD ( $U = 1231, p = .100, r_{pb} = .30$ ), MDD+FMS ( $U = 510, p = .115, r_{pb} = .23$ ).

To estimate the differences according to education, 18 outliers were removed (13 in the non-clinical, four in the MDD, and one in the MDD-FMS sample), and mixed results were again found. In the non-clinical sample variances were homogeneous and the one-way ANOVA did not find statistically significant differences ( $F(2,62) = .649, p = .626$ ). In the MDD sample, variances were heterogeneous and the adjusted one-way ANOVA found

significant differences (*Welch's*  $F(2,32.826) = 3.574, p = .017$ ), mainly because the difference between participants with higher studies and those with secondary was on the verge of significance with a medium to large ES (mean difference = .743,  $p = .050, d = .73$ ), with the former scoring higher in SRH ( $M = 2.48, SD = 1.29$ ) than the later ( $M = 1.73, SD = .65$ ). Nevertheless, this significant difference was not found by the analysis including outliers ( $F(2,88) = 1.382, p = .257$ ). Meanwhile, in the MDD+FMS sample, the variances were heterogeneous but the Welch's adjustment could not be used because there was no variance in the higher education group, in which the four participants scored one. The results of the one-way ANOVA, which must be interpreted with caution due to the bias risk, showed a significant difference between groups ( $F(2,57) = 4.590, p = .014$ ). In this case, participants with both primary ( $M = 3.33, SD = 1.83$ ) and secondary education ( $M = 2.54, SD = 1.36$ ) scored higher than those with tertiary studies ( $M = 1, SD = .00$ ; mean difference with primary education = 2.333,  $p < .001, d = 1.80$ ; mean difference with secondary education = 1.543,  $p < .001, d = 1.60$ ), while there was no difference between the former (mean difference = .790,  $p = .213, d = .49$ ). In this sample, including outliers, the only significant difference (*Welch's*  $F(2,13.509) = 5.695, p = .016$ ) indicated that participants with primary studies ( $M = 3.33, SD = 1.83$ ) were happier than those with tertiary studies ( $M = 1.40, SD = .89$ ; mean difference = 1.933,  $p = .011, d = 1.34$ ). Kruskal-Wallis did not find statistically significant differences in non-clinical ( $\chi^2(2, N = 78) = .978, p = .613$ ) and the MDD ( $\chi^2(2, N = 91) = 2.311, p = .315$ ) samples, but it did in the MDD+FMS ( $\chi^2(2, N = 61) = 7.161, p = .028$ ), supporting again that participants with primary education (mean rank = 15.19; median = 3; range = 6) scored significantly higher in SRH ( $p = .028, r_{pb} = .67$ ) than those with tertiary studies (mean rank = 6.40; median = 1; range = 2), with no other comparison being significant. In this case, no merging of groups was decided because they represented three different levels of education.

Nevertheless, it must be noticed that only five participants had tertiary studies in the MDD+FMS group.

As far as labour status is concerned, 19 outliers were removed (14 in the non-clinical sample and five in the MDD). This time, one-way ANOVA showed consistent results in all samples, with homogeneity of variances and no significant differences between groups found: non-clinical ( $F(3,60) = .241, p = .868$ ), MDD ( $F(4,81) = 2.032, p = .098$ ), MDD+FMS ( $F(4,56) = 880, p = .482$ ). Kruskal-Wallis test supported these results. Again, given the low sample size in some of the levels of labour status category, analyses were repeated combining all categories into two: currently working (active worker) and currently not working (student, work leave, unemployed, occupational disability, and retired). Student's  $t$ , and Mann-Whitney's  $U$  tests were used, and assumptions were checked again. Up to 23 outliers were removed this time (17 in the non-clinical sample and six in the MDD), and results showed significant differences in SRH only in the MDD sample, with those currently working ( $M = 2.26, SD = 1.24$ ) being happier than those who did not work ( $M = 1.76, SD = .79$ ), with equality of variances not assumed ( $t(50.845) = -2.088, p = .042, d = .48$ ). This difference was not found when including outliers ( $t(89) = -.918, p = .361, d = .19$ ). Both groups were not significantly different in the non-clinical ( $t(59) = -.301, p = .765, d = .08$ ), and the MDD+FMS sample ( $t(59) = 1.283, p = .203, d = .36$ ), with equality of variances assumed. Non-parametric tests did not find significant differences in any sample: non-clinical ( $U = 727.500, p = .932, r_{pb} = .08$ ), MDD ( $U = 1075.500, p = .356, r_{pb} = .23$ ), MDD+FMS ( $U = 328, p = .197, r_{pb} = .17$ ).

Finally, for psychotropic medication, 13 outliers were removed from the non-clinical sample, and results showed that being under this type of medication did not have a significant effect in any sample: non clinical ( $t(66) = .223, p = .825, d = .10$ ); MDD ( $t(85) = .130, p = .897, d = .03$ ); MDD+FMS ( $t(56) = -.468, p = .641, d = .23$ ). Non-parametric analyses

supported these results. Both in the non-clinical and the MDD+FMS samples results must be interpreted with caution, since only three participants were in treatment in the former and, contrastingly, only three had no treatment in the latter.

Although in section 4.2.1. we reported that samples differed in many sociodemographic variables, they have generally failed to show a significant impact on SRH, as it is described in this section. Therefore, it becomes less likely that the differences between samples in happiness reported in section 4.3.1. are biased by such variables.

#### **4.3.7. Relationship between self-reported happiness and happiness attributed to parents (H1.7.).**

Pearson correlation was used to measure the relationship between participants' SRH and the happiness score that they attributed to their parents. Assumptions were checked and all data was used because clear outliers were not detected in scatterplots. Nevertheless, sometimes relationships between variables were not linear. Spearman non-parametric correlation was also used. In this case, the relationships between them were not clearly monotonic either in some samples. Therefore, results must be interpreted with caution due to bias risk.

In the non-clinical sample, SRH was positively and significantly correlated with happiness perceived in both participants' father ( $r = .296, n = 69, p = .014$ ) and mother ( $r = .291, n = 75, p = .011$ ). On the contrary, these correlations were not significant neither in the MDD (father,  $r = -.139, n = 84, p = .208$ ; mother,  $r = .037, n = 91, p = .730$ ), nor in the MDD+FMS (father,  $r = .021, n = 58, p = .876$ ; mother,  $r = .021, n = 55, p = .878$ ) samples. Spearman correlations corroborated these results.

**4.3.8. Content of the opposite pole of, the poles closest to, and farthest from happy, as well as its closest and farthest elements (O1.7.).**

The last analysis conducted for study 1 was an exploration of the content of the happy construct. This was done by analysing the opposite pole provided by participants to “happy”, its three closest and farthest poles, as well as its three closest and farthest elements. Although previous work from our research group had already tried to qualitatively analyse such construction (Pavón, 2010), no hypotheses were formulated for this section because we used a different methodology for this thesis as described in section 1.3.2. In addition, in that previous piece of research, only non-clinical participants were recruited. Hence, no data was available yet for individuals with MDD or FMS. Since the selection of only three poles and elements is an arbitrary decision, the results included in this section must be considered preliminary.

The chi-squared distances provided by RECORD v.5.0 were used herein, and whenever there was a tie between several poles’ distances requiring the retention of more than three close poles per participant, those with lower correlations with the happy construct were discarded. When the tie occurred with the poles far from happy, those with higher correlations were the ones discarded. Similarly, whenever ties occurred between elements, those with lower direct scores given by the subject in the happy construct in case of close elements, and those with higher direct scores in case of far elements, were also discarded. Whenever these procedures were not enough to retain only three constructs/elements per subject, a maximum of four was allowed. For those participants with more than four constructs/elements, the tied ones were discarded, leaving only two in such case. The number of participants in which these situations were observed are reported. This delimited range of two to four constructs/elements per participant was set in order to prevent some subjects to be overrepresented in the results. Finally, elements were analysed according to their role (e.g.,

parent, friend, ideal self), but whenever a given element was also elicited as the *non grata* person, it was coded twice, one for each role.

Within this section only the most repeated constructs/elements are reported due to space constraints, but the whole lists can be seen in the annexes. To keep the original meaning of all poles, they were analysed in the mother tongue of participants (i.e., Catalan/Spanish). In consequence, the lists in the annexes show the poles in these two languages while, for readability purposes within this section, the Catalan version of all words plus their translation into English are provided.

Apart from the tables with the poles/elements elicited by participants and the times they were found in each sample, the chi-squared statistic was used to assess if their presence was different between samples. Assumptions were tested and met, but in order to avoid more than 20% of cells with expected counts lower than five, or the inclusion of some cells with expected counts lower than one, in some cases the analyses were repeated excluding the less repeated poles/elements to minimise the risk of bias.

Later, in order to search for specific differences in the distribution of each pole or element, they were also tested separately comparing samples between them. When doing this, all poles/elements except the one studied in each analysis were grouped in a category named “other”. As it has been mentioned in section 4.3.2., for one of the participants in the MDD+FMS sample analyses could not be performed with the RECORD v.5.0, since its administration was incomplete. Nevertheless, happy opposite pole was provided and it was included in this section.

Regarding the poles opposite to happy, those which were elicited by more than just one participant can be seen in table 13, together with their number of repetitions and the percentage they accounted for in each sample.

Table 13

*Construct Poles Most Commonly Found as Opposite to Happy*

	Non-Clinical ( <i>n</i> = 81)	MDD ( <i>n</i> = 91)	MDD + FMS ( <i>n</i> = 61)	Total ( <i>n</i> = 233)
<i>Infeliç</i> [Unhappy] <i>n</i> (%)	46 (56.79)	44 (48.35)	37 (60.66)	127 (54.51)
<i>Trista</i> [Sad] <i>n</i> (%)	8 (9.88)	20 (21.98)	16 (26.23)	44 (18.88)
<i>Amargada</i> [Embittered] <i>n</i> (%)	9 (11.11)	10 (10.99)	3 (4.92)	22 (9.44)
<i>Desgraciada</i> [Miserable] <i>n</i> (%)	6 (7.41)	6 (6.59)	1 (1.64)	13 (5.58)
<i>Deprimida</i> [Depressed] <i>n</i> (%)	4 (4.94)	2 (2.20)	1 (1.64)	7 (3.00)
<i>Insatisfeta</i> [Unsatisfied] <i>n</i> (%)	1 (1.23)	1 (1.10)	1 (1.64)	3 (1.29)

Note. MDD = major depressive disorder; FMS = fibromyalgia syndrome.

Chi-squared tests showed no significant differences between samples ( $\chi^2$  (12, *N* = 233) = 14.458, *p* = .272, *V* = .176) when analysing the poles reported on the previous table. Nevertheless, in order to meet the assumption of at least 80% of cells with expected counts higher than five, “Depressed” and “Unsatisfied” poles had to be excluded. This analysis found no significance either ( $\chi^2$  (8, *N* = 233) = 13.039, *p* = .111, *V* = .167). Specific analyses for differences in distribution of each opposite pole only provided significant differences for “Sad”, which was significantly less common in the non-clinical sample compared to the MDD ( $\chi^2$  (1, *N* = 172) = 4.605, *p* = .032, *V* = .164), and the MDD+FMS ( $\chi^2$  (1, *N* = 142) = 6.625, *p* = .010, *V* = .216).

Moving to the closest and farthest elements to happy, only those with more repetitions than the “Other” category were reported and analysed herein. This category included all those elements whose role is not related to close family or friends (e.g., neighbours, in-laws, workmates). Hence, table 14 shows the six most common roles found among the three closest elements to happy, as well as how many times they were repeated and the percentage they accounted for in each sample.

In this case, chi-squared test ( $\chi^2$  (10, *N* = 468) = 6.693, *p* = .754, *V* = .085) showed again no statistically significant differences between samples. In fact, specific analyses element by element did not find any difference between samples either.

Table 14

*Types of Element Most Commonly Found as Closest to Happy*

	Non-Clinical ( <i>n</i> = 81)	MDD ( <i>n</i> = 91)	MDD + FMS ( <i>n</i> = 60)	Total ( <i>N</i> = 232)
Ideal self <i>n</i> (%)	53 (20.78)	58 (20.79)	36 (19.46)	147 (20.45)
Friend <i>n</i> (%)	42 (16.47)	54 (19.35)	26 (14.05)	122 (16.97)
Son/daughter <i>n</i> (%)	22 (8.63)	21 (7.53)	20 (10.81)	63 (8.76)
Sibling <i>n</i> (%)	19 (7.45)	22 (7.89)	18 (9.73)	59 (8.21)
Parent <i>n</i> (%)	19 (7.45)	15 (5.38)	14 (7.57)	48 (6.68)
Partner <i>n</i> (%)	12 (4.71)	8 (2.87)	9 (4.86)	29 (4.33)

*Note.* MDD = major depressive disorder; FMS = fibromyalgia syndrome.

It must be acknowledged that up to 83 (11.54%) elements could not be given a certain role, since the participant only provided their names. Their distribution between the samples was as follows: 42 (16.47%) in the non-clinical, 34 (12.19%) in the MDD, and 7 (3.78%) in the MDD+FMS sample. In addition, four elements were retained from 25 participants due to ties, while only two elements were kept from three subjects for the same reason. Only one element was coded with a role (i.e., mother) and as the *non grata* person.

As far as the farthest elements from happy are concerned, those most usually found in participants' grids (three for each grid) can be observed in table 15, together with their number of repetitions and the percentage they accounted for in each sample. Chi-squared test did show a significant difference in the distribution of these elements between samples this time ( $\chi^2(6, N = 482) = 53.177, p < .001, V = .235$ ).

Table 15

*Types of Element Most Commonly Found as Farthest from Happy*

	Non-Clinical ( <i>n</i> = 81)	MDD ( <i>n</i> = 91)	MDD + FMS ( <i>n</i> = 60)	Total ( <i>N</i> = 232)
<i>Non grata n</i> (%)	82 (31.18)	62 (20.88)	41 (19.81)	185 (24.12)
Parent <i>n</i> (%)	41 (15.59)	57 (19.19)	37 (17.87)	135 (17.60)
Self now <i>n</i> (%)	3 (1.14)	57 (19.19)	40 (19.32)	100 (13.04)
Sibling <i>n</i> (%)	18 (6.84)	25 (8.42)	19 (9.18)	62 (8.08)

*Note.* MDD = major depressive disorder; FMS = fibromyalgia syndrome.

Specific analyses for each element were conducted and revealed that the proportion of the *non-grata* person among elements farthest from happy was significantly higher in the non-clinical sample than in the MDD sample ( $\chi^2(1, N = 345) = 23.499, p < .001, V = .261$ ), and also than in the MDD+FMS sample ( $\chi^2(1, N = 281) = 20.822, p < .001, V = .272$ ). Similarly, the self now was also differently distributed, being significantly less common in the non-clinical sample than in the MDD sample ( $\chi^2(1, N = 345) = 40.315, p < .001, V = .342$ ) and in the MDD+FMS sample ( $\chi^2(1, N = 281) = 39.822, p < .001, V = .376$ ). This time, 37 (4.82%) elements could not be assigned a role: 25 (9.51%) in the non-clinical, 10 (3.37%) in the MDD, and 2 (.97%) in the MDD+FMS sample. As a consequence of ties between elements' distances, four elements were included from up to eight participants, as well as only two from one subject. In this case, as many as 64 elements were assigned a specific role plus the *non grata* person. This led to 27 participants providing two *non-grata* persons, and one even providing up to three, this being the reason for the 82 subjects reported for the non-clinical sample in table 15.

Finally, with regard to the construct poles closest to, and farthest from, happy, only the first 10 poles were analysed due to the long and rich list of different poles emerged from participants RGTs. Table 16 below shows the closest poles to happy. The times each pole was found and the percentage it accounted for in each sample were also reported. No significant differences were found by the chi-squared test for the distribution of all poles taken together ( $\chi^2(18, N = 237) = 15.230, p = .646, V = .179$ ). Nevertheless, specific analyses revealed that the pole "intelligent" was significantly more common in the non-clinical sample than in the MDD+FMS sample ( $\chi^2(1, N = 150) = 4.518, p = .034, V = .174$ ). For up to 10 participants, four poles were included due to ties.

Table 16

*Construct Poles Most Commonly Found as Closest to Happy*

	Non-Clinical (n = 81)	MDD (n = 91)	MDD + FMS (n = 60)	Total (N = 232)
<i>Alegre</i> [Cheerful] n (%)	13 (5.24)	20 (7.27)	12 (6.56)	45 (6.37)
<i>Bona</i> [Good] n (%)	12 (4.84)	12 (4.36)	14 (7.65)	38 (5.38)
<i>Treballadora</i> [Hard-working] n (%)	7 (2.82)	14 (5.09)	8 (4.37)	29 (4.11)
<i>Afectuosa</i> [Loving] n (%)	10 (4.03)	8 (2.91)	8 (4.37)	26 (3.68)
<i>Generosa</i> [Generous] n (%)	5 (2.02)	9 (3.27)	6 (3.28)	20 (2.83)
<i>Sociable</i> [Sociable] n (%)	7 (2.82)	6 (2.18)	4 (2.19)	17 (2.41)
<i>Familiar</i> [Family person] n (%)	4 (1.61)	6 (2.18)	6 (3.28)	16 (2.27)
<i>Intel·ligent</i> [Intelligent] n (%)	10 (4.03)	4 (1.45)	2 (1.09)	16 (2.27)
<i>Optimista</i> [Optimistic] n (%)	6 (2.42)	4 (1.45)	6 (3.28)	16 (2.27)
<i>Positiva</i> [Positive] n (%)	7 (2.82)	4 (1.45)	3 (1.64)	14 (1.98)

Note. MDD = major depressive disorder; FMS = fibromyalgia syndrome.

Regarding the poles farthest from happy, they can be seen in table 17 together with the times they were found in each sample and the percentage they accounted for. This time, 12 poles were analysed because from the tenth to the twelfth poles the number of repetitions was equal.

Table 17

*Construct Poles Most Commonly Found as Farthest to Happy*

	Non-Clinical (n = 81)	MDD (n = 91)	MDD + FMS (n = 60)	Total (N = 232)
<i>Infeliç</i> [Unhappy] n (%)	16 (6.56)	14 (5.13)	25 (13.89)	55 (7.89)
<i>Dolenta</i> [Bad] n (%)	13 (5.33)	12 (4.40)	7 (3.89)	32 (4.59)
<i>Trista</i> [Sad] n (%)	2 (.82)	13 (4.76)	15 (8.33)	30 (4.30)
<i>Gandula</i> [Lazy] n (%)	5 (2.05)	15 (5.49)	6 (3.33)	26 (3.73)
<i>Dèbil</i> [Weak] n (%)	7 (2.87)	7 (2.56)	4 (2.22)	18 (2.58)
<i>Egoista</i> [Selfish] n (%)	4 (1.64)	4 (1.47)	5 (2.78)	13 (1.87)
<i>Amargada</i> [Embittered] n (%)	5 (2.05)	5 (1.83)	2 (1.11)	12 (1.72)
<i>Amb dolor</i> [With pain] n (%)	0 (0.00)	0 (0.00)	12 (6.67)	12 (1.72)
<i>Negativa</i> [Negative] n (%)	7 (2.87)	1 (.37)	3 (1.67)	11 (1.58)
<i>Infidel</i> [Unfaithful] n (%)	7 (2.87)	3 (1.10)	0 (0.00)	10 (1.43)
<i>No familiar</i> [Not a family-oriented person] n (%)	3 (1.23)	4 (1.47)	3 (1.67)	10 (1.43)
<i>Tonta</i> [Fool] n (%)	1 (.41)	8 (2.93)	1 (.56)	10 (1.43)

Note. MDD = major depressive disorder; FMS = fibromyalgia syndrome.

The chi-squared test showed statistically significant differences between samples ( $\chi^2(22, N = 239) = 71.784, p < .001, V = .387$ ). Nevertheless, 21 out of the 36 cells had expected counts lower than five. Therefore, in order to meet all assumptions and minimise risk of bias, the same analysis was repeated including only the first five poles: “Unhappy”, “Bad”, “Sad”, “Lazy”, and “Weak”. Again, differences between samples were significant, although with a smaller ES ( $\chi^2(10, N = 239) = 22.374, p = .013, V = .216$ ).

Specific analyses revealed a significant difference in the distribution of the pole “unhappy”, being more common among participants in the MDD+FMS sample than among those in the MDD sample ( $\chi^2(1, N = 169) = 4.558, p = .033, V = .164$ ). The pole “sad” was also unevenly distributed, being significantly less common in the non-clinical sample than in the MDD ( $\chi^2(1, N = 156) = 6.808, p = .009, V = .208$ ), and the MDD+FMS ( $\chi^2(1, N = 153) = 9.068, p = .003, V = .243$ ). Similarly, “lazy” was significantly more common among subjects in the MDD+FMS sample than among those in the MDD sample ( $\chi^2(1, N = 169) = 4.048, p = .044, V = .155$ ). For this analysis, only from one participant four poles were retained and analysed due to ties.

#### **4.4. Results of Study 2**

##### **4.4.1. Effect of psychotherapy on self-reported happiness in depressed individuals**

###### **(H2.1.)**

Regarding the mixed ANOVA for the effect of therapies, sphericity did not apply since there were only two observations (pre and post). The Levene’s test showed homogeneity of variances both at pre-and post-intervention, and Box’s *M* test also showed equality of covariance matrices. Up to six outliers were detected in the CBT group and removed from analyses. Regarding non-parametric statistics, first, Wilcoxon signed-rank test was used to estimate pre-post change in the whole sample since, as has been mentioned, observations were independent. Afterwards, a Mann-Whitney’s *U* test for the difference between groups in

the change score (i.e., post-intervention score – pre-intervention score) was also carried out, whose assumptions were met as well. Given that the distributions had generally different shapes between groups, mean ranks instead of medians were compared.

In table 18, we reported descriptive statistics and ESs for the differences between assessment times, and between types of treatment, once excluded the six outliers. As it was mentioned in section 4.2.2., randomisation allocated participants with higher average SRH in the DFT group compared to the CBT group.

Table 18

*Means, Standard Deviations, and Effect Sizes for Self-Reported Happiness in Both Treatment Groups at Both Assessment Times Once Excluded Outliers*

	Pre-intervention	Post-intervention	Pre-Post <i>d</i>
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	
CBT ( <i>n</i> = 41)	1.68 (.69)	3.46 (1.86)	1.27
DFT ( <i>n</i> = 50)	2.20 (1.23)	3.94 (1.79)	1.13
Between-treatments <i>d</i>	.52	.26	

*Note.* CBT = cognitive-behavioural therapy; DFT = dilemma-focused therapy.

The mixed ANOVA results confirmed the significant main effect of psychotherapy in increasing SRH, with a large ES ( $F(1,89) = 79.480, p < .001, \eta_p^2 = .472$ ). On the contrary, the interaction between the time (within-subjects) and type of therapy (between-subjects) failed to provide statistical significance ( $F(1,89) = .011, p = .919, \eta_p^2 < .001$ ). Despite the lack of interaction, this result must be interpreted with caution due to the insufficient sample size of study 2 in this regard.

Figure 9 shows the graphical representation of change in SRH between pre- (1) and post-treatment (2).

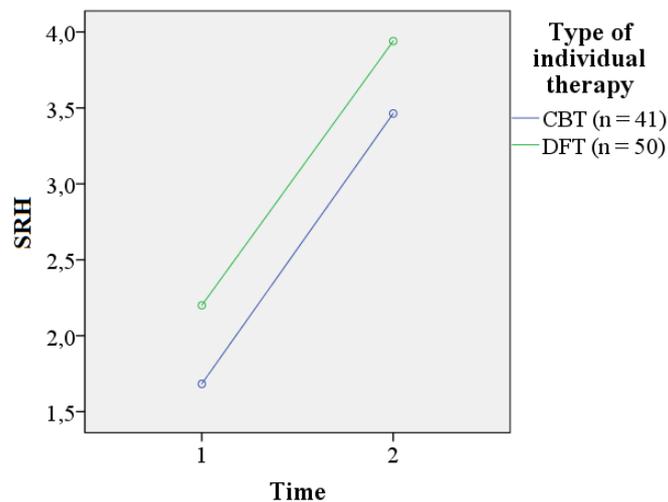


Figure 9. Change in self-reported happiness with therapy in both treatment groups.

SRH = self-reported happiness; CBT = cognitive behavioural therapy; DFT = dilemma-focused therapy.

As can be seen, the lines for both treatment conditions were almost parallel, with participants in the DFT group being happier than those in the CBT group throughout the whole study (what was also displayed in table 18).

Non-parametric analyses also showed the non-significant influence of the type of therapy on the significant pre-post change in SRH. Therefore, these results further support conducting the rest of analyses for study 2 with the whole sample, not separating by type of therapy, as it has been introduced in section 4.2.2.

#### **4.4.2. Influence of solving (or not) initial cognitive conflicts with therapy on participants' self-reported happiness change after therapy (H2.2).**

Pearson correlations were used to test if the change score (i.e., post-intervention score – pre-intervention score) of PDC, PID, and PICID were related to the change score of SRH. Later, mixed ANOVAs were also used to see if, in those participants with DCs or IDs at pre-intervention, the resolution of such CCs led to different trends in SRH change. Like in the previous section, these last analyses must be interpreted with caution and considered only

preliminary given the sample size of study 2. They were conducted only with exploratory intentions. Assumptions for all parametric tests were met except sphericity, which did not apply due to the analysis of only two groups in the within-subjects factor. When outliers were found, they were removed before any statistical test was conducted. As non-parametric alternatives, Spearman correlation was used to measure the association between change in SRH and change in PDC, PID, and PICID. Mann-Whitney's *U* test was also implemented for the exploratory analysis of differences in SRH change score depending on resolution or not of DCs and IDs with therapy. Assumptions for non-parametric tests were also met, and since distributions across groups were generally different, mean ranks instead of medians were used for comparisons.

At the beginning of the study, 22 participants had at least one DC in the CBT group and 24 in the DFT group. In turn, 36 individuals showed at least one ID in the CBT group and 41 in the DFT group. Descriptive statistics and ESs before removing any outlier for the differences between assessment times, and between participants who solved CCs and those who did not, can be seen in table 19. Although the analyses were run for the whole sample, statistics and ESs are provided for both types of therapy for informative purposes.

These ESs revealed that participants who solved their DCs in the CBT arm increased their SRH twice as much as participants in the DFT group. On the contrary, with regard to solving IDs, participants in the DFT group experienced a boost in their SRH larger than those in the CBT.

Table 19

*Means, Standard Deviations, and Effect Sizes for Self-Reported Happiness in Participants with Cognitive Conflicts from Both Treatment Groups at Both Assessment Times*

CC	Solved	CBT <i>M (SD)</i>		<i>d</i>	DFT <i>M (SD)</i>		<i>d</i>	Overall <i>M (SD)</i>		<i>d</i>
		Pre	Post		Pre	Post		Pre	Post	
DCs ( <i>n</i> = 46)	Yes ( <i>n</i> = 12)	1.60 (.55)	4.20 (1.48)	2.33	1.86 (.69)	3.57 (2.07)	1.11	1.75 (.62)	3.82 (1.80)	1.54
	No ( <i>n</i> = 34)	2.41 (1.46)	2.88 (1.65)	.30	2.35 (1.54)	4.18 (1.67)	1.14	2.38 (1.48)	3.53 (1.76)	.71
IDs ( <i>n</i> = 77)	Yes ( <i>n</i> = 28)	1.85 (1.41)	3.92 (2.10)	1.16	1.80 (.86)	4.00 (1.60)	1.71	1.82 (1.12)	3.96 (1.82)	1.42
	No ( <i>n</i> = 49)	2.00 (1.21)	3.26 (1.79)	.82	2.50 (1.42)	3.50 (1.94)	.59	2.27 (1.34)	3.39 (1.86)	.69

*Note.* CBT = cognitive-behavioural therapy; DFT = dilemma-focused therapy; DC = dilemmatic construct; ID = implicative dilemma.

With no clear outliers being found, change in the PDC with therapy showed to be negatively and significantly correlated with change in SRH ( $r = -.238, n = 97, p = .019$ ), but the change in PID ( $r = -.041, n = 97, p = .688$ ), and PICID were not ( $r = -.084, n = 97, p = .414$ ). This significant relationship between change in PDC and in SRH was not supported by Spearman correlation ( $\rho = -.164, n = 97, p = .109$ ).

Regarding the resolution or not of DCs with therapy, no outliers were found either among participants solving them or among those who did not. A mixed ANOVA (see figure 10) showed that this variable did not significantly interacted with time ( $F(1,44) = 2.046, p = .160, \eta_p^2 = .044$ ). Regarding the resolution or not of IDs with therapy, this time one outlier was removed among those who solved their IDs. Results showed that this variable did significantly interact with time, with a medium ES ( $F(1,74) = 5.835, p = .018, \eta_p^2 = .073$ ), as it can be graphically seen in figure 10 again. With the only exception that has been specified in the text, non-parametric analyses generally supported these results.

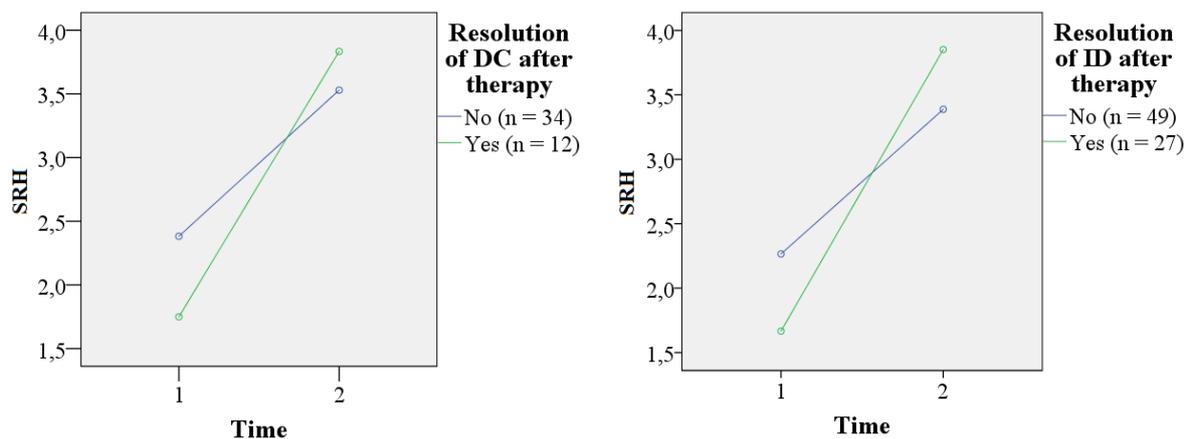


Figure 10. Change in self-reported happiness with therapy according to the resolution of cognitive conflicts.

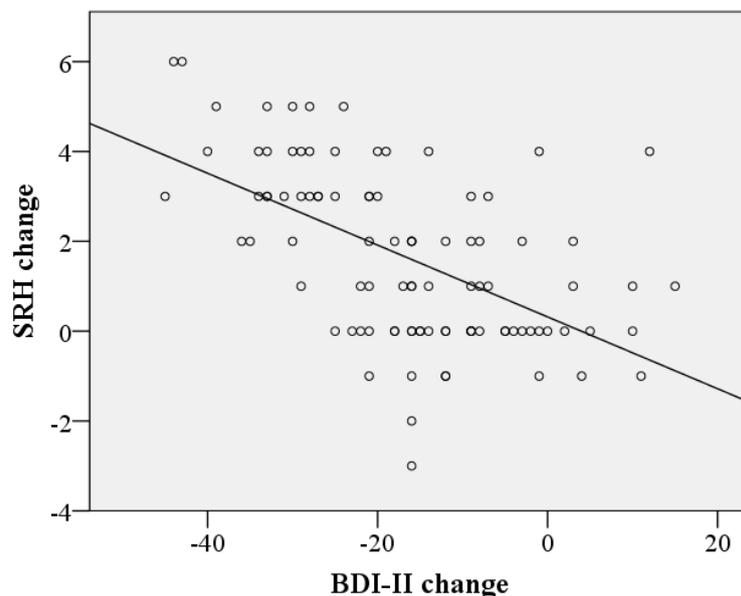
SRH = self-reported happiness; DC = dilemmatic construct; ID = implicative dilemma.

#### 4.4.3. Relationship of participants' change in self-reported happiness after therapy with change in depression severity, psychological distress, and global functioning (H2.3).

Pearson correlations between the change score (i.e., post-intervention score – pre-intervention score) in SRH and the three psychological measures were carried out.

Assumptions were checked and met, since there were not clear outliers, and relationships between variables were approximately linear. As the non-parametric alternative, Spearman correlation was used, and its assumptions were also met, with approximately monotonic relationships between variables.

Results showed that change in both SRH and the BDI-II were negatively and significantly correlated ( $r = -.554$ ,  $n = 96$ ,  $p < .001$ ). A graphical representation of this correlation may be seen in figure 11. Non-parametric analyses found the same result for this relationship.



*Figure 11.* Scatterplot for the correlation between change in self-reported happiness and in the Beck depression inventory-II.

SRH = self-reported happiness; BDI-II = Beck depression inventory-II.

Regarding the CORE-OM, changes after therapy in all its scales were negatively and significantly correlated with change in SRH, as can be seen in table 20. Only the Risk scale showed a weaker relationship, but still significant. Non-parametric tests found the same results than parametric analyses.

Table 20

*Pearson Correlations between the Change Score in Self-Reported Happiness and the Change Score in each Scale of the Clinical Outcomes in Routine Evaluation – Outcome Measure*

	Change in SRH
Change in W	-.571**
Change in P	-.535**
Change in F	-.617**
Change in R	-.252*
Change in Total	-.596**
Change in Total-R	-.618**

*Note.* SRH = self-reported happiness; W = Wellbeing; P = Problems/Symptoms; F = Functioning; R = Risk; Total = Total score; Total-R = Total score except Risk.  $N = 96$ .  
\* $p < .05$ . \*\* $p < .01$ .

Finally, the change in the GAF after therapy showed a positive statistically significant correlation with the change in SRH ( $r = .501$ ,  $n = 88$ ,  $p < .001$ ). Non-parametric tests supported again these results.

#### **4.4.4. Relationship between participants' change in self-reported happiness after therapy and change in self now – ideal self, self now – others, and ideal self – others discrepancies (H2.4.).**

Pearson correlation was used to study if the change score (i.e., post-intervention score – pre-intervention score) for self now – ideal self, self now – others, and ideal self – others discrepancies after therapy correlated with happiness change score. All assumptions were met, with clear outliers being removed from correlation analyses. Assumptions were also met for Spearman correlation, the non-parametric test used to check the results.

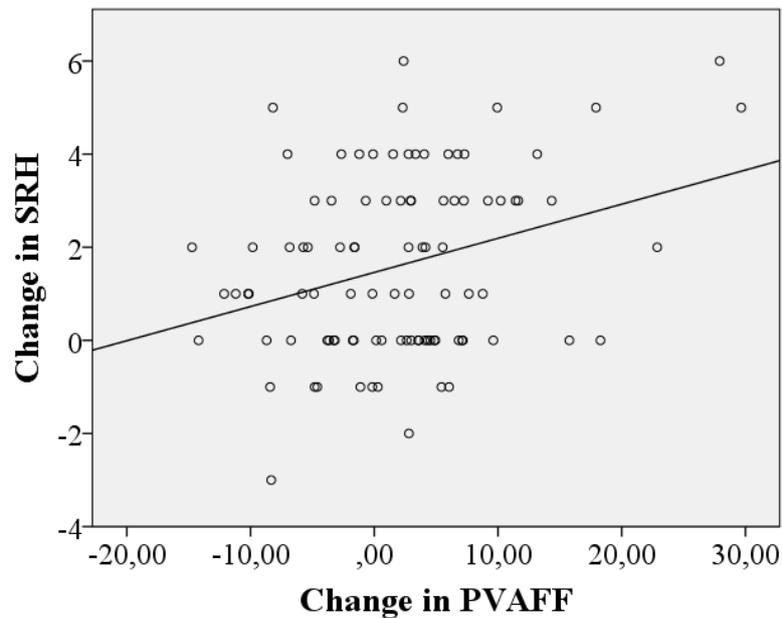
All correlations between change score in SRH and in the three discrepancies were negative and significant: self now – ideal self ( $r = -.659, n = 97, p < .001$ ), self now – others removing one outlier ( $r = -.574, n = 96, p < .001$ ), ideal self – others removing one outlier ( $r = -.203, n = 96, p = .047$ ). Non-parametric analyses supported these results but, if outliers were included, the correlation of SRH and ideal self – others discrepancy change scores was not significant ( $r = -.133, n = 97, p = .194$ ).

#### **4.4.5. Relationship between participants' change in self-reported happiness after therapy and change in cognitive polarisation and interpersonal construct differentiation (H2.5).**

Like in the previous sections, Pearson correlation was used to measure the relationship of the change score (i.e., post-intervention score – pre-intervention score) in SRH with change in cognitive polarisation and interpersonal construct differentiation. All assumptions were met for both analyses with only one clear outlier for cognitive polarisation identified and removed from the correlation. The non-parametric alternative was Spearman correlation, whose assumptions were also met.

Results suggested that change in cognitive polarisation after therapy was not significantly correlated to happiness change ( $r = .176, n = 96, p = .086$ ). Nevertheless, this time Spearman correlation contradicted this result, showing a positive significant correlation between both changes ( $\rho = .206, n = 97, p = .043$ ).

Regarding the change score for the PVAFF, it was positively and significantly correlated to the change score for SRH ( $r = .309, n = 97, p = .002$ ), which in fact represented a negative correlation between increases in SRH and decreases in interpersonal construct differentiation. Non-parametric analyses supported these results. A scatterplot for this relationship may be seen in figure 12 below.



*Figure 12.* Scatterplot for the relationship between change in self-reported happiness and in the percentage of variance accounted by the first factor.

SRH = self-reported happiness; PVAFF = percentage of variance accounted by the first factor.

#### **4.4.6. Influence of social, demographic, and clinical characteristics of participants on their change in self-reported happiness after therapy (O2.5).**

In section 4.3.6. it was analysed whether sociodemographic and clinical variables influenced SRH in study 1. In this section, what is intended is to show if such variables significantly interacted with the change produced in SRH after the psychological interventions in study 2.

Mixed ANOVAs were used again herein to estimate the interaction of gender, civil status, education, labour status, and current use of psychotropic medication separately with time (i.e., pre-post difference in SRH). Assumptions were checked prior to all analyses. Sphericity did not apply because there were only two measurements, there was generally equality of covariance matrices (it was reported when not), and variances were usually homogeneous at post-intervention but not at pre-intervention, which should be taken into account when interpreting the results. Finally, significant outliers were removed. The use of

alternative non-parametric methods involved Mann-Whitney's  $U$  and Kruskal-Wallis to study differences between levels of the independent variables in participants' change scores in SRH (i.e., post-intervention score – pre-intervention score). As it has been reported, observations were independent, and since distributions tended to differ in terms of their shape between groups, mean ranks instead of medians were compared. To assess the effect of age, a repeated measures ANOVA was conducted with age as covariate. Assumptions were met and outliers were removed, while sphericity did not apply. As the non-parametric alternative, Spearman correlation between age and the change score in SRH was used. Assumptions were again met, with approximately monotonic relationships between variables.

Like in study 1, gender did not have a significant influence on SRH change with therapy after removing one outlier among men, as shown by its interaction with time ( $F(1,94) = .368, p = .545, \eta_p^2 = .004$ ). For age, no clear outliers were found and its interaction with time also showed to be non-significant ( $F(1,95) = .650, p = .422, \eta_p^2 = .007$ ). Regarding civil status, one outlier was removed (in the group of participants divorced/separated) and results showed a lack of significance for the interaction with time ( $F(3,92) = .552, p = .648, \eta_p^2 = .018$ ). Given the small sample size in some levels of the civil status variable, they were merged into two categories: has partner (married/living as a couple) and does not have partner (single, divorced/separated, and widow/widower). After removing three outliers among participants without partner, the interaction of this merged variable with time was not significant either ( $F(1,92) = .264, p = .609, \eta_p^2 = .003$ ). These results must be interpreted with caution since covariance matrices were not equivalent (*Box's M* = 22.936,  $p < .001$ ). Nonetheless, when including outliers *Box's M* test was not significant (*Box's M* = 4.445,  $p = .227$ ) and the same result was obtained. As far as education is concerned, after removing four outliers (three among participants with secondary education and one among those with higher studies), its interaction with SRH change was again not significant ( $F(2,90) = .688, p = .505$ ,

$\eta_p^2 = .015$ ), as it was for labour status ( $F(4,85) = .052, p = .995, \eta_p^2 = .002$ ) after removing seven outliers (two, four, and one among participants with occupational disability, retired, and active workers respectively). These categories were also merged into two to increase groups' sample size: currently working (active worker) and currently not working (work leave, unemployed, occupational disability, and retired). This analysis, once again, did not show a statistically significant interaction of labour status and time ( $F(1,94) = .105, p = .746, \eta_p^2 = .001$ ). Finally, current use of psychotropic medication did not require any outlier to be excluded and results showed no significant interaction with pre-post change in SRH ( $F(1,94) = 3.526, p = .064, \eta_p^2 = .036$ ). The non-parametric tests applied in this section supported all these results.

## 5. Discussion

### 5.1. General Discussion

This thesis had the overall objective of advancing the knowledge on the relationship between depression and SRH. This aim was pursued in study 1 by analysing how different clinical conditions, and the cognitive system involved in the construction of self and others, interacted with this relationship; and in study 2 by testing whether psychotherapy was capable of increasing SRH in people with depression, and gauging the factors associated to this change, comparing two different interventions.

In addition to this general objective, both study 1 and study 2 had their own specific and secondary aims. Therefore, the results obtained when testing each of the hypotheses outlined in sections 2.6. and 2.7. are discussed below, while conclusions are drawn from such results. As it has been mentioned before, the only objectives without any previous hypothesis were O1.7. and O2.5., whose results are also discussed herein.

Regarding the differences in happiness between various clinical conditions, we expected significantly higher SRH in non-clinical participants compared to both clinical groups: MDD and MDD+FMS. In addition, among these two clinical samples, we anticipated significantly higher SRH in the former (H1.1.). Results confirmed only the first part of this hypothesis by showing a significantly higher SRH in the non-clinical sample compared to both the MDD and the MDD+FMS samples, with very large ESs. These results are in line with those of previous studies (Finucane et al., 2012; Horner et al., 2014; Spinhoven et al., 2015), with our ESs being even larger, which may be related to the specific characteristics of the instruments and samples in each study (in fact our participants with FMS had also MDD). In turn, against what we had foreseen, we found significantly higher SRH scores in the MDD+FMS sample compared to the MDD, with a small to medium ES. Although this

significant difference was not supported by non-parametric analyses, the ES was small to medium again. Therefore, our results concluded that suffering MDD does have a detrimental impact on SRH, but that the co-occurrence of FMS in addition to MDD does not result in lower SRH. In fact, those participants with FMS might experience slightly higher SRH compared to those without. This result is surprising and contradictory with previous research, which shows that comorbidity between depression and chronic pain leads to the experience of more physical symptoms and worse functioning compared to suffering only one of the two syndromes (e.g., Veltri et al., 2011) and, therefore, it must be interpreted cautiously. Since it suggests that such comorbidity has a weaker (or even inverse) influence on happiness, it might be for instance that the experience of pain shifts the cognitive focus away from the recurrent and automatic depressive thoughts typical from depressive disorders (Beck, 1964). Another possible reason for this finding is that, as it has been proposed before (Carr, 2011), the actual health status is not as important as the subjective perception of it, which in our case might have been slightly better among participants in the MDD+FMS sample. Nevertheless, this specific result needs to be replicated before any solid conclusion is drawn, since several methodological issues may also account for it, such as the influence of other uncontrolled comorbidities, or an insufficient sample size (our estimation was based on a medium ES for the difference between both clinical samples and it might not be enough to reliably detect a small to medium ES). It is worth noticing also that the mean score in the non-clinical sample (i.e., 6.09), extrapolated to Cantril ladder scores, would be of 8.7, which is higher than those previously reported for happiness in Spain, ranging from 6.31 (Helliwell, Layard, & Sachs, 2018) to 7 (Veenhoven, n.d.-a). This difference may be caused by the samples of these surveys not excluding disorders such as depression, something we did for this specific sample.

As far as the influence of CCs in SRH is concerned, we hypothesised that participants with more CCs would show significantly lower SRH than those with less CCs (H1.2.), but results did not allow to validate this hypothesis. Regarding DCs, in the MDD sample removing outliers we unexpectedly found individuals with at least one DC being happier than those with none, with an almost medium ES. On the contrary, in the non-clinical and the MDD+FMS samples, participants with at least one DC were less happy (this difference was not significant but reached a small to medium ES in both cases). If outliers were included in the analyses, no significant differences were found in any of the samples, therefore, we interpret the result found in the MDD sample simply as a spurious effect of removing outliers. In terms of percentages, results revealed that a higher PDC was significantly associated with lower SRH in the MDD+FMS sample when excluding outliers, while the relationship was almost inexistent in the non-clinical and MDD samples. Again, when including outliers, no significant correlation was found between PDC and SRH. Turning to IDs, no differences were found between participants with and without them in any of the samples. Nevertheless, ESs were almost medium in the MDD and the MDD+FMS samples, suggesting higher SRH among individuals without IDs compared to those with at least one. These ESs are very similar to those reported by Pavón (2010) in one of her non-clinical samples. Finally, when analysing percentages, we found no significant relationship of SRH with either PID or PICID in any sample. However, in the MDD+FMS group, a higher PICID was weakly associated with lower happiness. Overall, and contrarily to what has been reported for IDs and depression severity (Feixas et al., 2014), CCs do not seem to have a crucial influence on happiness, although they generally seem to have a detrimental effect of almost medium size in some comparisons. Perhaps the group where this effect is clearest is the MDD+FMS sample, with IDs being also detrimental in the MDD group.

We also anticipated higher SRH among participants to be significantly associated with lower depression severity and psychological distress, but with higher global functioning (H1.3.). This time, results confirmed this anticipation. Indeed, higher SRH was found to be significantly related to lower BDI-II scores in all groups, with a weak correlation in the non-clinical and the MDD+FMS samples, and a moderate correlation in the MDD. These results are in the same direction that those found by recent articles (e.g., Iani, Lauriola, Layous, & Sirigatti, 2014; Kotsou & Leys, 2017), but less strong. Again, this may be due to the characteristics of the instruments used to assess depression and happiness in each study, or the samples recruited in each case. Our overall (only) weak to moderate relationships between happiness and depression severity provided support to the two continua model (Keyes, 2005), suggesting that they are two related but still different factors. Regarding the CORE-OM, higher total scores were also associated with lower SRH in all samples, with a weak correlation in the MDD group, and moderate in the non-clinical and the MDD+FMS. When analysing CORE-OM scales separately, most of them showed that higher scores were significantly associated with lower SRH as well. Perhaps the scale least related to SRH was Risk, probably because its items refer to very specific situations (aggressive thoughts and behaviours towards oneself and others) that many participants could have not experienced the week they were assessed. It calls also our attention that, considering results both with and without outliers, the relationships of SRH with the scale Functioning in the MDD sample, and with Problems/Symptoms in the MDD+FMS sample, were weaker compared to the other correlations. This might flag a difference between both clinical groups, suggesting that decreases of happiness in depression are mainly related to symptoms but, when FMS co-occurs, functioning becomes more relevant for happiness impairment, which is congruent with previous research (Veltri et al., 2012). As far as the GAF is concerned, in the two samples in which it was administered (MDD and MDD+FMS), higher levels were associated

with higher SRH, although the correlation was only significant and at least weak in the former, being this result contradictory with what was found for the Functioning scale of the CORE-OM. Such incongruence may reflect differences between what the person experiences and what is perceived by others (the CORE-OM is self-administered while the GAF is filled in by the professional conducting the SCID-I interview), although it should also lead to take these interpretations with caution. Everything considered, it may be concluded that happiness is positively related to global functioning, and negatively to depression severity (these two relationships being especially important in the MDD sample) and psychological distress (particularly in the MDD+FMS sample). This last finding seems to indicate that, when comorbidity between depression and generalised chronic pain is experienced, what impairs happiness the most is psychological distress in general, not only depression severity, suggesting that unhappiness in individuals with FMS is accounted for by a wider range of sources, such as pain and physical problems.

In turn, for the relationship of participants' SRH with their self now – ideal self, self now – others, and ideal self – others discrepancies, a significant and negative association was only anticipated for the former (H1.4.). Our results varied across samples, but provided some support for the relationship between SRH and the three discrepancies especially in the clinical samples. To begin with, higher levels of SRH were associated with a lower self now – ideal self discrepancy in all samples and, although this relationship was not significant in the non-clinical group according to the parametric analysis, it was with the non-parametric. Similarly, higher levels of SRH were significantly associated with a lower self now – others discrepancy, but only in the MDD and the MDD+FMS samples. In fact, this relationship was almost inexistent in the non-clinical sample. Finally, higher levels of happiness were also significantly associated with a lower ideal self – others discrepancy, but this time only in the MDD+FMS sample, while the relationship was marginal in the non-clinical and the MDD.

Overall, these results show that negative self-evaluation had an important detrimental interaction with happiness mainly among participants with depression (its relevance has already been highlighted for instance by Beck, Rush, Shaw, & Emery, 1979). The same may be concluded about perceived self-isolation, which seemed to be clearly inversely linked to happiness only in both clinical samples, in line with findings from the WHR underlining social support as an important contributor to happiness (Helliwell et al., 2018). Among people without depression though, this relationship apparently did not seem to be substantial or consistent, maybe because such discrepancy is lower by default and thus their happiness does not depend on it anymore. In turn, a negative view of others seemed to impair happiness only among individuals suffering from both MDD and FMS, which suggests some cognitive differences between participants with and without generalised chronic pain, with the former perhaps paying more attention to how other people behave. These findings expand what Pavón (2010) reported, whose results only found the relationship between SRH and self now – ideal self discrepancy to be clearly relevant.

Regarding the relationship of participants' cognitive polarisation and interpersonal construct differentiation (i.e., PVAFF) with SRH, higher levels in these two indexes were expected to be significantly associated with lower happiness (H1.5.). However, our results were surprising in finding that, in fact, higher levels of SRH were significantly associated with higher cognitive polarisation and lower interpersonal construct differentiation in the non-clinical sample. It is worth noticing again that a higher score in the PVAFF means, in fact, lower differentiation. Taking together results with and without outliers, SRH did not show clear significant associations with any of these two indexes in both clinical samples. These results concluded that, among non-clinical individuals, having a more polarised thinking (e.g., interpreting events as black or white) apparently increases happiness, while among people with depression it does not. In fact, cognitive polarisation has been proposed to be typical

from depressive states (Beck et al., 1979). A possible reason for this finding is that such a polarised interpretation of events tends towards positive views in healthy, non-depressed individuals, while is more balanced (and maybe even accurate) in depressed subjects, in line with the depressive realism hypothesis (Alloy & Abramson, 1979; see Moore & Fresco, 2012 for a recent review). Similarly, the relationship between SRH and interpersonal construct differentiation may indicate that, again in non-depressed individuals, a more unidimensional thinking is associated with higher happiness, maybe because it simplifies interpretation of events, but this is not the case for depressed subjects, for which the only available anticipations are likely to be negative. Indeed, constriction has also been proposed as a central feature for depression (Kelly, 1955/1991). These results on happiness may shed some light on why no previous differences have been found in these two cognitive indexes between people with and without depression (Feixas, Erazo-Caicedo, et al., 2008). For example, it may be hypothesised that, although their scores are similar in non-clinical and clinical groups, it is actually the content of cognitions in such a polarised or unidimensional system what matters the most for the individual experience.

Moving to the complementary objectives of study 1, we anticipated labour status to be the only variable among the social, demographic, and clinical characteristics studied to have a significant influence on participants' SRH in all samples, with unemployed participants being less happy (H1.6.). Taking together all results though (i.e., parametric and non-parametric, with and without outliers), it may be concluded that only education might have a significant influence on SRH and only in the MDD+FMS sample, in which participants who studied until primary education scored higher than those who had higher studies, with large ESs. It must be considered that chronic pain hinders the capacity to work in individuals who suffer FMS and, in consequence, we had a greater proportion of participants with an occupational disability in this group compared to the other two samples of study 1. It might be this incapacity to work

what impairs happiness more among people with a higher academic level, for example because they can no longer perform the duties they studied for (i.e., more vocational), or it might also be that they received a higher income for a position they can no longer occupy. In fact, both employment status and income have been suggested to mediate the effect of education in happiness (Clark & Oswald, 1994; Diener et al., 1999), with people with higher education being more likely to be employed, to have higher income, and finally to be happier. In addition, it may also be that our (traditional) codification of education (i.e. primary, secondary, and tertiary) did not allow us to identify differences between those participants with any level of study, and with no studies at all, which has been suggested to be the most important (Cuñaño & Pérez de Gracia, 2012). Whatever the case may be, only 5 individuals in the MDD+FMS sample had higher studies and, therefore, this finding needs to be replicated before any solid conclusion is outlined. Another interesting finding was that, although not always significantly, in general married people were slightly happier than those unmarried, with small to medium ESs, which supports some previous evidence (Dush & Amato, 2005; Williams, 2003). With regard to labour status, for which we anticipated a significant effect on happiness according to the literature reviewed, the categories analysed did not find it. When such categories were merged in two groups (currently working and currently not working) and outliers were removed, in fact those who were working were significantly happier than those who were not, but only in the MDD sample, with an almost medium ES. Nevertheless, when including outliers this significant difference vanished. This lack of clear relevance for labour status fails to provide strong support for previous evidence highlighting the important influence of employment on happiness (e.g., McKee-Ryan, Song, Wanberg, & Kinicki, 2005), but the small to medium ESs in the MDD group suggests that it could be more important in individuals with depression. The close ties that have been described for these social indicators with income (Diener & Biswas-Diener, 2008) make advisable to control economic status in

future studies. This is more relevant in our times, in which some of the people employed have low salaries and temporary contracts (Lam, Fan, & Moen, 2014).

We hypothesised that participants' SRH was positively and significantly associated with happiness attributed to their parents (H1.7.). However, this was only confirmed for participants in the non-clinical sample, both with their fathers and their mothers. In the two clinical samples these relationships were not significant, and negligible in most cases. These results supported those provided by Pavón (2010) in non-clinical samples as well, although the correlations we found are generally weaker. Since the same instrument was used to gather information, this difference is likely to be related to the characteristics of the samples recruited in each study. In turn, the almost inexistent association between happiness attributed to oneself and to one's parents in both clinical samples may be related to the higher self – others discrepancy observed in individuals with depression by previous studies (Feixas, Erazo-Caicedo, et al., 2008), and which was corroborated in ours (see section 4.2.1.). Overall, the mixed results found across samples are in line with the mixed results published in the literature, reflecting the complexity of the parenting effect on happiness (Nelson et al., 2014).

Finally, the qualitative content analysis of elements and poles (O1.7.) revealed also several interesting findings. Focusing on construct poles first, the most elicited as opposite to happy was indeed “unhappy” in all samples, followed by “sad” and “embittered”. Specifically for “sad”, analyses found that it was significantly less common in the non-clinical in comparison to both clinical samples, with small to medium ESs. Regarding the poles construed as closest to happy, the most common were “cheerful”, “good”, and “hard-working” while, analysing differences between samples in the 10 poles considered, it was found that the pole “intelligent” was significantly more common in the non-clinical sample than in the MDD+FMS, with a small ES. In turn, the poles construed as farthest from happy were “unhappy”, “bad”, and “sad”. Again, specific analyses were conducted for the 10 most

repeated poles and showed that “unhappy” and “lazy” were significantly more common in the MDD+FMS sample than in the MDD, while “sad” was more common in both clinical samples than in the non-clinical. In all these cases, ESs were between small and medium. These results are generally in line with those provided by Pavón (2010). For instance, the three most common poles elicited as opposite to happy are the same and, although she used correlations instead of chi-squared distances to identify the poles most and least similar to happy, we coincided in “cheerful/joyful”, “optimistic”, “sociable”, and “generous” among the former, and in “sad”, “selfish”, and “negative” among the latter. Several conclusions may be drawn from these findings. For instance, with regard to the definition of happiness, for participants in study 1 it seems to be something opposite to, and very distant from, being unhappy (which is likely to be the etymologically closest antonym), sad, bad, and embittered; as well as to be something very similar to being cheerful, hard-working, and good. These last attributes remind us about the model of three pathways to happiness (Seligman, 2002), since they may be representative of the pleasant, good, and meaningful lives respectively, although we lack more detailed information to conclude so. In addition, among all these construct poles there are adjectives that may be related to both affective and cognitive components of happiness (Argyle, 2001), such as (again) “cheerful”, and “unsatisfied”. Therefore, it seems that participants might take both components into account when appraising their happiness, supporting its conception as an umbrella term. The aforementioned differences between samples may shed additional light on the meaning of these poles for happiness. Perhaps the most interesting has to do with the pole “sad”, which clearly conveys one of the central characteristics of depression. This pole appeared as opposite to, as well as among the farthest poles from, happy in both clinical samples more often than in the non-clinical. These results suggested that individuals with depression may construe happiness as the contrary of their current state, but whether they conceptualise the relationship between happiness and

depression as two poles of the same continuum (Tellegen et al., 1999) or as two related continua (Keyes, 2005) is still unclear. In fact, we cannot discard the idea of more than two continua, given the different relationships found between the happy pole and a wide variety of other construct poles, in line for example with what the circumplex model of affect proposes (Posner, Russell, & Peterson, 2005; Russell, 1980). Precisely regarding other poles, it is interesting how some attributes found throughout these qualitative analyses recall the feelings of worthlessness also typical from depressive disorders (American Psychiatric Association, 2013), for example “bad”, “lazy”, or “fool”. It is relevant to pay attention to one of these poles, “lazy”, which was construed as far from happy more commonly by participants with MDD and FMS than by participants with MDD but not FMS. This finding suggests that the experience of generalised chronic pain leads to relate laziness with not being happy, which is in line with previous research describing people with FMS as prone to perfectionism and oriented to the fulfilment of duties in the family, labour, and social spheres (Villegas, 2006). Therefore, their decreased capacity to perform such duties due to pain may be hypothesised to impair happiness. Moving to the construction of relationships, which are also worth exploring according to the updated (i.e., PERMA) model proposed by Seligman (2011), the elements that participants construed as closest to the happy pole were, in all samples, the “ideal self” followed by “friend”, and “son/daughter”, with no significant differences this time. In turn, the elements construed as farthest from the happy pole were the “*non-grata*”, “parent”, and “self now”, for which significant differences between groups did exist, since the “*non-grata*” appeared more often in the non-clinical sample than in the MDD and the MDD+FMS, with small to medium ESs. On the contrary, the “self now” was more common in the MDD and MDD+FMS samples than in the non-clinical group, with medium ESs. These differences are essential to better understand the relationship of some elements with happiness. In particular, it is interesting how non-clinical individuals construed people they dislike (i.e., *non-grata*

person) as clearly the most common figure among the farthest from happy, while individuals with depression did the same but with the “self now” in a near position, which is probably related to the higher self now – ideal self discrepancy among these participants.

As far as the study 2 is concerned, we anticipated psychotherapy to significantly increase SRH, with no differences between both types of therapy studied (H2.1.). This hypothesis was corroborated by our results, which showed that both therapies were equally effective in increasing SRH, with large ESs and no differences between them. These results are in line with those reported by Chaves, López-Gomez, Hervás, and Vázquez (2017), who found CBT and PPI to increase happiness, also with no significant differences between interventions. As can be noticed, our ESs are substantially higher, which can be a consequence of samples’ characteristics, of the instruments administered, or of the interventions delivered in each study (they provided 10 weekly, two-hour group sessions, while in our study we offered eight weekly, two-hour group sessions, plus eight weekly, one-hour individual sessions). For the interpretation of this result, it must be considered that all participants in our study 2 shared the first stage of the intervention (group CBT), as described in section 3.2.4. Therefore, the almost inexistent difference between both therapies might also be due to the fact that half of the treatment was equal for both conditions.

With regard to the influence of CCs in SRH, we expected participants solving their initial CCs at the end of therapy to increase their SRH more than those not solving them (H2.2.). Results though, showed that changes with therapy in PDC, PID, and PICID were not clearly associated with change in SRH. The only exception was for PDC, in which decreases were significantly related to increases in happiness with parametric methods, and reaching only a weak correlation. This significance vanished with non-parametric methods. Exploratory analyses on differences in happiness change with therapy according to solving CCs, or not, revealed that those who solved them increased their SRH more, but this

difference was only significant for IDs with a medium ES. In conclusion, decreasing DCs and solving IDs with therapy seems to be related with a slightly greater happiness boost, which complements the better outcomes that have already been reported for solving IDs in terms of psychopathological symptoms (Feixas, Saúl, Winter, & Watson, 2008). Finally, and only as a note for future research, according to the ESs for each type of therapy shown in table 19, apparently participants who solved DCs in the CBT group could have experienced greater happiness increases, and the reverse effect can be observed for solving IDs, with greater happiness boosts among those in the DFT group. Nevertheless, studies with more participants are needed to confirm these results.

Regarding change in SRH after therapy, we anticipated its increase to be significantly associated with decreases in depression severity and psychological distress, but with increases in global functioning (H2.3.). In this case, results clearly verified the hypothesis. As expected, increases in SRH with therapy were found to be significantly related to decreases in the BDI-II and the total score of the CORE-OM. Among the scales of the later instrument, the relationship was even stronger with Functioning, but weaker with Risk. Again, the lower correlation with Risk may be related to the high specificity of these items, while the higher correlation with Functioning suggests a specifically important relationship between increasing one's happiness and improvements in terms of relationships and daily functioning. With regard to the GAF, as said, its increase with therapy was found to be significantly associated with increases also in SRH. This result strengthens the finding for the Functioning scale of the CORE-OM, with participants increasing more in happiness also enhancing their capacity to lead a healthy, functional, and autonomous life. Overall, these results expand what has already been reported before on the relationship of SRH with depression severity, psychological distress, and global functioning in study 1, of cross-sectional nature, providing support not only for their association at a given point in time, but also suggesting that their

changes are related longitudinally. This result was also in line with previous evidence, suggesting that, in general, symptom scores significantly decrease with therapy, while positive functioning scores significantly increase (e.g., Chaves et al., 2017).

With regard to the relationship of participants' change in SRH with their change in self now – ideal self, self now – others, and ideal self – others discrepancies, a significant and negative association was only anticipated for the former (H2.4.). Nevertheless, like it happened for the correlation of these three indexes with SRH in the study 1, their decrease with therapy was also significantly related with increases in happiness with therapy in all cases, at least when excluding outliers, although the correlations were strong, moderate, and weak respectively. In fact, when including outliers, the significance for the relationship between change in SRH and change in ideal self – others discrepancy vanished. Therefore, it may be concluded that increases in happiness with therapy are associated with reductions in perceived self-isolation, and especially in negative self-evaluation, but not clearly with decreases in negative evaluation of others. These results for happiness complemented those obtained by Sheehan (1985), who proposed that self now – ideal self, and self now – others discrepancies decrease together with the improvement in depressive symptoms with therapy.

Still discussing about RGT indexes, participants' decreases in cognitive polarisation and the PVAFF (i.e., increases in interpersonal construct differentiation) were also expected to be significantly associated with their increase in SRH (H2.5.). This time though, results invalidated the hypothesis. Mixed results were found for the relationship between change in SRH with therapy and change in cognitive polarisation, since parametric analyses did not find it significant removing an outlier but non-parametric did. Nevertheless, they revealed that increases in SRH were indeed related to increases in cognitive polarisation. Similarly, increases in SRH were also significantly associated with increases in the PVAFF. Therefore, in line with what has been discussed for the analyses of these cognitive indexes in the non-

clinical sample of study 1, moving towards a more unidimensional thinking with therapy seems to be associated with increases in happiness. Such finding may indicate that individuals who undergo cognitive changes in psychotherapy resulting in a simpler worldview experience a greater boost in happiness than those who do not, which is possibly mediated by their aforementioned improvement in depression severity as well, while this effect is less clear but could also exist for cognitive polarisation. Nevertheless, both results are somehow contradictory with contributions from the cognitive model of depression and PCT, since cognitive polarisation and constriction have been traditionally related to depression (Beck et al., 1979; Kelly, 1955/1991). Therefore, our findings should be considered far from conclusive, with further research needed to clarify the relationship of these indexes with happiness.

Finally, with regard to the complementary objective of study 2 (O2.5.), results showed that none of the social, demographic, and clinical variables analysed in this study had a significant influence on the change in SRH after therapy. Education, which had a significant influence on happiness in study 1, did not have it in happiness change with therapy, although the ES was small. Taken together, these results suggest that individuals with depression receiving (and completing) psychological therapy generally increase their happiness levels, regardless their gender, age, civil status, education, labour status, and current use of psychotropic medication.

## **5.2. Strengths and Limitations**

Although depression had already been extensively researched from PCT in recent years (e.g., Feixas et al., 2014; Feixas, Erazo-Caicedo, Harter, & Bach, 2008), to the best of our knowledge, no previous study had been conducted on happiness in depression from this constructivist perspective. In consequence, this thesis may be considered a novelty, which aims to contribute to both strengthen previous findings in the area using different

methodologies, and to advance the understanding of the complex experience of happiness taking individuals' own terms and identity into account. In this sense, with our results, we have been able to provide some support for the role that negative self-evaluation, perceived self-isolation, CCs, or a polarised and unidimensional thinking may play in happiness among depressed individuals, and to show how laziness may also be important for people with FMS, for example.

With regard precisely to the clinical samples whose data has been analysed for this thesis, it must be noticed that previous research on happiness is almost inexistent for individuals with FMS. Therefore, our results may help to shed some light not only on how people with depression construe their happiness and wellbeing, but also on how a comorbidity such as generalised chronic pain affects this experience. Similarly, regarding our study 2, previous evidence on how happiness evolves with therapy among depressed individuals is also scarce. In consequence, we expect the results reported in this thesis will contribute to shape a more all-encompassing view of psychological therapies that focus not only on symptomatology, but also on wellbeing and growth.

To conclude with the strengths, the use of careful different statistical analyses (i.e., parametric and non-parametric, with and without outliers) was certainly time-consuming, but they were deemed important in order to minimise potential biases in the results. As a consequence, whenever a finding was supported by all analyses, there was more ground to trust such effect or difference. On the contrary, in cases where analyses provided mixed results, such inconsistency has been considered in the discussion and more uncertainty is attributed to that particular finding. Finally, although we relied on correlations for many of the hypotheses, which has been criticised for PP (e.g., Lazarus, 2003), we also performed other analyses such as mean differences, and even analysed longitudinal data, what may help to explore possible causal relationships.

With regard to limitations, first of all, sample size estimation for study 1 showed that enough participants were available to test the expected differences between samples in the main hypothesis. Nevertheless, it may not be the case for some of the other analyses conducted. Similarly, for study 2, the estimation suggested that sample size was large enough to test the influence of psychotherapy on SRH, but not to detect possible differences between the two interventions included, and the same applies for some of the other analyses carried out. In consequence, conclusions need to be interpreted cautiously.

In addition, as we reported in section 4.2.1., the three samples of study 1 differed in most of the variables examined. Some of these disparities were expected and necessary for the objectives of this thesis, like the higher depression severity or psychological distress in both clinical samples compared to the non-clinical. Nevertheless, others were not, like the differences in age or civil status and, although many of these variables have failed to show a significant influence on happiness, it is not possible to completely discard their influence on the results. The same may be said for the differences in education, global functioning, and interpersonal construct differentiation between the individuals that were transferred from the MDD to the MDD+FMS sample prior to analyses due to their FMS diagnosis. Such differences in variables that have shown to be relevant might have influenced our results. Still discussing about study 1, another weakness is the lack of control of both physical and psychological comorbidities in both clinical samples beyond FMS, which have been shown to be frequent (De Hert et al., 2011; Richards, 2011), and to be potentially detrimental for happiness (Seligman, 2002). Therefore, a more careful coding and analysis of all health comorbidities may help to clarify the relationship between happiness and health. The control of such comorbidities would also help to test the unexpected slightly higher SRH found in the MDD+FMS sample in comparison to the MDD.

With regard to the instruments employed, some limitations on the measurement of SRH must be highlighted. To begin with, the RGT it is not a tool specifically designed to measure happiness and, although its flexibility allows the inclusion of a construct to appraise happiness, its results may not be completely comparable to previous evidence. In addition, the post-intervention results may be compromised by the use of the same constructs and elements elicited in the pre-intervention assessment, which were presented to participants to rate them once therapy concluded. The decision to use the same constructs and elements was taken in order to preserve internal validity but, if an important change in the individual's cognitive system did take place with therapy, variations in the meanings he/she used to make sense of the world could have also taken place. However, such possible new alternatives were not appraised by the methodology used.

Finally, in terms of the generalisation of our results, a previous study (Feixas et al., 2014) found that 68.3% of patients with MDD experienced IDs, compared to 34.5% of controls. However, when both types of CC (i.e., ID and DC) are considered, the percentage of participants having at least one CC raised to 81.4% and 66.4% in the MDD and control group respectively. Considering that having at least one CC was an inclusion criterion in our study 2, its results should be interpreted with caution, since they may not be extrapolated to the approximately 20% of people with depression who do not have CCs.

### **5.3. From Research to Practice**

Overall, our results support happiness as a valid and useful construct to analyse in psychological research, and to work with in the study of psychotherapy processes. Is with this purpose that we propose the following brief guidelines for potentially interested clinicians to use the results provided by this thesis.

Given the ties happiness has shown with different clinical and cognitive indicators, incorporating it as a focus of work in psychotherapy for depression may have a beneficial influence on:

- depression severity
- psychological distress
- global functioning
- negative self-evaluation
- perceived self-isolation
- the presence of CCs and their resolution

This potential attributed to happiness is especially promising if we consider that our results have shown that psychotherapy can successfully increase happiness in individuals with depression regardless their gender, age, civil status, education, labour status, current use of psychotropic medication, and type of psychological intervention. To this aim, clinicians are advised to pay attention to the content of their clients' thinking, since meanings related to joy, goodness, effort, satisfaction, or weakness are likely to appear in the therapeutic dialogue, which may help to better understand how each client construes happiness and to design tailored interventions.

Finally, in terms of specific nuances for the treatment of FMS comorbid to MDD, to address the broader experience of psychological distress instead of depressive symptoms in particular, may become more relevant for increasing happiness. Furthermore, dealing with clients' views of people around them, such as their relatives and friends, may provide a fruitful focus of work. In this specific clinical scenario, meanings related to laziness may emerge, which should be listened to carefully due to their potential relevance for happiness among these clients.

#### 5.4. Future Research

To begin with, as it has been mentioned in the previous section, our sample size in both studies may not be enough for some of the analyses conducted. Therefore, the collection of larger samples in future studies are needed to replicate the findings provided in this thesis, such as significant influence on happiness showed by education in the MDD+FMS sample of study 1. In fact, one of the results that we deem most necessary to validate is related to our main hypothesis: the unexpected slightly higher SRH found among participants with MDD plus FMS in comparison to participants in the MDD group. In this sense, in addition to the use of a larger sample, a better control of other comorbidities would also contribute to verify such finding, since previous research highlights that severity of health status (such as more than four chronic health problems) impairs happiness (Seligman, 2002). Similarly, a greater sample size in all groups could also contribute to a more balanced distribution of sociodemographic variables such as gender and age, although the wide difference for example in the prevalence of FMS between males and females has already been described (e.g., Mas, Carmona, Valverde, & Ribas, 2008). In any case, a better control of these variables, as well as the inclusion of an indicator for income, which has been suggested to be a mediating factor (Diener & Biswas-Diener, 2008), would probably increase accuracy of results.

As far as the study of the comorbidity between MDD and FMS, the data analysed for this thesis allowed to make only cross-sectional comparisons. In the future, it would be interesting to analyse also longitudinal data to test whether this comorbidity leads to worse responses to treatment in terms of happiness compared to suffering MDD without FMS. Indeed, this may be done in the near future, when all data from the project “*Tratamiento psicológico de la depresión en mujeres con fibromialgia: eficacia diferencial y factores predictores de resultado*” becomes available.

As it has been mentioned before, the result showing that a more unidimensional (and even polarised) thinking as a result of therapy was linked to greater happiness in study 2 was fairly surprising, especially because these indexes had already shown to be related to SRH in the non-clinical sample of study 1. In this sense, the change with therapy may suggest that depressed participants increased their similarity with those in the non-clinical sample. However, content analysis of construct most polarised, and of those included in the first factor of the construction system (as measured by the PVAFF), could help to understand why such changes are related to happiness.

With regard to CCs, in study 2, results suggested that solving IDs with therapy could be related with increases in happiness. But, looking at the influences of both DCs and IDs in greater detail, they seem show differences depending on the type of therapy (CBT or DFT). Therefore, analyses on the role of both kinds of CCs in happiness need to be replicated in future studies comparing the same therapeutic approaches, and with larger samples, in order to clarify their relevance. Additionally, it would also be interesting to conduct a content analysis of the IDs including the happy construct, since this might provide a better understanding of what meanings may block happiness. Previous studies with depressed individuals have already shown interesting results in this regard, suggesting that they face dilemmas in which they must choose, for instance, between being depressed but human, and being happy but unpleasant (Montesano et al., 2014). Furthermore, in order to have data as tailored as possible to each individual, future studies might change the methodology used herein to administer the RGT by allowing the elicitation of new elements and constructs after therapy. This could facilitate the identification of possible new meanings and the study of how they relate to changes in happiness. Finally, it has already been mentioned that results from the study 2 of this thesis could not be applicable to people with depression but without CCs, since all participants had at least one. Therefore, the same analyses could be carried out

in future studies in which CCs are not an inclusion criterion, in order to maximise generalisation of the conclusions presented herein.

## 5.5. Conclusions

The objectives of this doctoral thesis were several and variate, although complementary. In the pursuit of such goals, both confirmatory and challenging results have been found and have been extensively described and discussed in the previous sections. As a summary of all these results, and considering also all the limitations described in section 5.2., the following conclusions on the relationship between depression and SRH were proposed:

1. The experience of depression largely impaired happiness as has been shown by the comparison of clinical and non-clinical samples in Study 1, while the comorbidity with FMS apparently did not have an additional impact.

2. Results suggested that having CCs did not significantly influence happiness, although they seemed to be slightly detrimental. Therefore, solving, or at least decreasing their number, might result in greater happiness improvements among depressed individuals.

3. Happiness was negatively correlated with depression severity and psychological distress, while positively with global functioning. In addition, it could be observed that lower levels of happiness in individuals with MDD and FMS seemed to be more related to higher psychological distress in general than just to depression severity. In turn, with regard to longitudinal analyses, increases in happiness with therapy for depression were associated with improvements in these three clinical measures, results that further support the relationship between them.

4. Negative self-evaluation and perceived self-isolation showed to have an important impairing interaction with happiness only among participants with depression, and their decrease with therapy was related to a greater happiness boost. In addition, according to our

results, a negative view of others may also impair happiness but only among individuals suffering both MDD and FMS.

5. Contrarily to our expectations, a more polarised and unidimensional thinking was associated with higher levels of happiness among non-clinical individuals. However, this effect was not observed among people with depression. Also, a more unidimensional thinking as a result of therapy for depression did seem to be associated with greater gains in happiness.

6. Education might play a role in the experience of happiness, with individuals completing higher studies experiencing less SRH than those with lower education, but only among people suffering FMS comorbid to MDD. In addition, this influence is likely to be mediated by labour status and/or income.

7. Among non-clinical individuals, there was an (at least) weak relationship between their own happiness and happiness perceived in their parents', but this was not the case for people with depression.

8. According to participants' constructions, happiness was related to being cheerful, good, and hard-working, and at the same time very unlike being sad, bad, and embittered. Sadness seemed to be especially relevant as opposite to happiness for people with depression, while laziness became also important when FMS co-occurred. Apparently, there was also a tendency to construe disliked persons as not happy in all cases, while individuals with depression applied also this construction to themselves.

9. Finally, as shown in Study 2, psychotherapy was found to largely increase happiness among people with depression, with no differences between CBT and DFT, and regardless their gender, age, civil status, education, labour status, and current use of psychotropic medication.

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## 7. Annexes

Table A 1

*Complete List in Catalan and Spanish of Poles Elicited by Participants in Study 1 as Opposite to “Happy”*

Pole	Repetitions	Pole	Repetitions
<b>Non-clinical sample</b>			
Infeliç/Infeliz	46	Incòmode/Incòmoda	1
Amargada	9	Insatisfeta/Insatisfecha	1
Trista/Triste	8	No be amb si mateixa/No bien consigo misma	1
Desgraciada	6	Ploranera/Llorona	1
Deprimida	4	Rondinaire/Gruñona	1
Abandonada	1	Turmentada/Atormentada	1
Avorrida/Aburrida	1		
<b>Major depressive disorder sample</b>			
Infeliç/Infeliz	44	Contra tothom/Contra todo el mundo	1
Trista/Triste	20	Decebuda/Decepcionada	1
Amargada	10	Insatisfeta/Insatisfecha	1
Desgraciada	6	Negativa	1
Deprimida	2	No ment sana/No mente sana	1
Apagada	1	Sense ganes/Sin ganas	1
Buida/Vacía	1	Tortuosa	1
<b>Major depressive disorders + fibromyalgia sample</b>			
Infeliç/Infeliz	37	Apàtica/Apática	1
Trista/Triste	16	Deprimida	1
Amargada	3	Desgraciada	1
Amb preocupacions/Con preocupaciones	1	Insatisfeta/Instisfecha	1

Table A 2

*Complete List in Catalan and Spanish of Elements Construed by Participants in Study 1 as Closest to “Happy”*

Element	Repetitions	Element	Repetitions
<b>Non-clinical sample</b>			
Ideal self	53	Tiet/a/Tío/a	6
Amic/ga/Amigo/a	42	Avi/Àvia/Abuelo/a	5
Rol desconeget/Rol desconocido	42	Altres/Otros	2
Self ara/Self ahora	25	Nebot/da/Sobrino/a	2
Fill/a/Hijo/a	22	Exparella/Expareja	0
Germà/ana/Hermano/a	19	Nét/a/Nieto/a	0
Pare/Mare/Padre/Madre	19	Persona non-grata	0
Parella/Pareja	12	Self abans/Self antes	0
Cosí/ina/Primo/a	6		
<b>Major depressive disorder sample</b>			
Ideal self	58	Tiet/a/Tío/a	10
Amic/ga/Amigo/a	54	Parella/Pareja	8
Rol desconeget/Rol desconocido	34	Avi/Àvia/Abuelo/a	7
Germà/ana/Hermano/a	22	Cosí/ina/Primo/a	7
Fill/a/Hijo/a	21	Nebot/da/Sobrino/a	5
Self abans/Self antes	18	Exparella/Expareja	4
Altres/Otros	16	Nét/a/Nieto/a	1
Pare/Mare/Padre/Madre	15	Self ara/Self ahora	0
Persona non-grata	10		
<b>Major depressive disorders + fibromyalgia sample</b>			
Ideal self	36	Self abans/Self antes	7
Amic/ga/Amigo/a	26	Avi/Àvia/Abuelo/a	5
Fill/a/Hijo/a	20	Nebot/da/Sobrino/a	5
Germà/ana/Hermano/a	18	Exparella/Expareja	4
Pare/Mare/Padre/Madre	14	Tiet/a/Tío/a	3
Altres/Otros	11	Persona non-grata	2
Parella/Pareja	9	Self ara/Self ahora	1
Cosí/ina/Primo/a	7	Nét/a/Nieto/a	0
Rol desconeget/Rol desconocido	7		

Table A 3

*Complete List in Catalan and Spanish of Elements Construed by Participants in Study 1 as Farthest from “Happy”*

Element	Repetitions	Element	Repetitions
<b>Non-clinical sample</b>			
Persona non-grata	82	Fill/a/Hijo/a	8
Pare/Mare/Padre/Madre	41	Parella/Pareja	8
Amic/ga/Amigo/a	25	Tiet/a/Tío/a	8
Rol desconegut/Rol desconocido	25	Nebot/da/Sobrino/a	3
Altres/Otros	18	Self ara/Self ahora	3
Germà/ana/Hermano/a	18	Cosí/ina/Primo/a	1
Avi/Àvia/Abuelo/a	11	Ideal self	1
Exparella/Expareja	11	Self abans/Self antes	0
<b>Major depressive disorder sample</b>			
Persona non-grata	62	Parella/Pareja	9
Pare/Mare/Padre/Madre	57	Avi/Àvia/Abuelo/a	8
Self ara/Self ahora	57	Fill/a/Hijo/a	8
Germà/ana/Hermano/a	25	Cosí/ina/Primo/a	4
Altres/Otros	22	Tiet/a/Tío/a	4
Exparella/Expareja	14	Nebot/da/Sobrino/a	2
Amic/ga/Amigo/a	12	Self abans/Self antes	2
Rol desconegut/Rol desconocido	10	Ideal self	1
<b>Major depressive disorders + fibromyalgia sample</b>			
Persona non-grata	41	Amic/ga/Amigo/a	7
Self ara/Self ahora	40	Avi/Àvia/Abuelo/a	4
Pare/Mare/Padre/Madre	37	Ideal self	3
Germà/ana/Hermano/a	19	Self abans/Self antes	3
Fill/a/Hijo/a	18	Tiet/a/Tío/	2
Altres/Otros	11	Rol desconegut/Rol desconocido	2
Parella/Pareja	10	Cosí/ina/Primo/a	1
Exparella/Expareja	9	Nebot/da/Sobrino/a	0

Table A 4

*Complete List in Catalan and Spanish of Poles Construed by Participants in Study 1 as Closest to "Happy"*

Pole	Repetitions	Pole	Repetitions
<b>Non-clinical sample</b>			
Alegre	13	Senzilla/Sencilla	2
Bona/Buena	12	Tendra/Tierna	2
Afectuosa/Cariñosa	10	Tolerant/Tolerante	2
Intel·ligent/Inteligente	10	Tranquil·la/Tranquila	2
Positiva	7	Accepta altres/Acepta otros	1
Social/Sociable	7	Adaptable	1
Treballadora/Trabajadora	7	Admirada	1
Divertida	6	Agnòstica/Agnóstica	1
Otimista	6	Agradable	1
Generosa/Desinteresada	5	Ajuda/Ayuda	1
Activa	4	Amena	1
Afable	4	Animada	1
Equilibrada	4	Arriba a acords/Llega a acuerdos	1
Familiar	4	Atrevida	1
Respectuosa/Respetuosa	4	Aventurera	1
Simpàtica/Simpática	4	Capaç d'estimar/Capaz de querer	1
Bona autoestima/Buena autoestima	3	Col·labora/Colabora	1
Comprensiva	3	Complicitat/Complicidad	1
Confiable	3	Comunicativa	1
Empàtica/Empática	3	Confiana	1
Fidel/Fiel	3	Conscient/Consciente	1
Honesta	3	Constant/Contante	1
Oberta/Abierta	3	Creativa	1
Sincera	3	Cuidadora/Prooctora	1
Solucionadora/Resolutiva	3	Decent/Decente	1
Tenaç/Tenaz	3	Deixada/Dejada	1
Vital/Vitalista	3	Detallista	1
Amable	2	Dialogant/Dialogante	1
Atenta	2	Dinàmica/Dinámica	1
Autèntica/Auténtica	2	Dona feedback/Da feedback	1
Autoritat/Autoridad	2	Eixelebrada/Alocada	1
Curiosa	2	Enèrgica/Enérgica	1
Disposada/Dispuesta	2	Entenedora/Entendedora	1
Educada	2	Escolta/Escucha	1
Esperança/Esperanza	2	Espontània/Espontánea	1
Graciosa	2	Estable	1
Humana	2	Estimuladora	1
Pràctica/Práctica	2	Expressiva/Expresiva	1
Riallera/Risueña	2	Extravertida/Extrovertida	1
Segura	2	Fa coses de casa/Hace cosas de casa	1

Pole	Repetitions	Pole	Repetitions
Fa coses per si mateixa/Hace cosas por sí misma	1	Bon rotllo/Buen rollo	0
Fada/Hada	1	Bona mare/Buena madre	0
Ferma/Firme	1	Bromista	0
Fiestera	1	Carismàtica/Carismática	0
Forta/Fuerte	1	Centrada	0
Franca	1	Compassiva/Compasiva	0
Freda/Fría	1	Conformista	0
Il·lusionada/Ilusionada	1	Consciència social/Consciencia social	0
Independent/Independiente	1	Consellera/Consejera	0
Intel·ligència emocional/Inteligencia emocional	1	Contenta	0
Juganera/Jugetona	1	Cordial	0
Lliure/Libre	1	Coses clares/Cosas claras	0
Lluitadora/Luchadora	1	Curosa/Cuidadosa	0
Magnífica	1	Dèbil/Débil	0
Mimada	1	Deixa viure/Deja vivir	0
No rencorosa	1	Derrotista	0
Organitzada/Organizada	1	Dòcil/Dócil	0
Pacient/Paciente	1	Dolenta/Mala	0
Parladora/Habladora	1	Dura	0
Passiva/Pasiva	1	Emocional	0
Passota/Pasota	1	Encantadora	0
Posa límits/Pone límites	1	Endreçada/Ordenada	0
Precisa	1	Es posa on no li demanen/Se pone donde no la llaman	0
Preocupada	1	Es sent bé/Se siente bien	0
Present/Presente	1	Està pendent/Está pendiente	0
Propera/Cercana	1	Estalviadora/Ahorradora	0
Puntualitat/Puntualidad	1	Exigent/Exigente	0
Receptiva	1	Flexible	0
Responsable	1	Ganes de canvi/Ganas de cambio	0
Sacrificada	1	Garrepa/Tacaña	0
Sentit humor/Sentido humor	1	Gaudeix/Disfruta	0
Serena	1	Humil/Humilde	0
Superació/Superación	1	Igualtat/Igualdad	0
Triomfadora/Triunfadora	1	Insensible	0
Valenta/Valiente	1	Íntegre/Honrada	0
Valora amistat/Valora amistad	1	Irresponsable	0
Amb caràcter/Con carácter	0	Jovial	0
Amb dolor/Con dolor	0	Líder	0
Amb sort/Con suerte	0	Llançada/Lanzada	0
Apassionada/Apasionada	0	Lletja/Fea	0
Assenyada/Sensata	0	Lliberal/Liberal	0

Pole	Repetitions	Pole	Repetitions
Madura	0	Reservada	0
Mandrosa/Vaga	0	S'accepta/Se acepta	0
Manipuladora	0	Salvadora	0
Mentidera/Mentirosa	0	Sana	0
Moderna	0	Sap el que vol/Sabe lo que quiere	0
Neta/Limpia	0	Satisfeta/Satisfecha	0
No caràcter/No carácter	0	Sense dolor/Sin dolor	0
No enveja/No envidia	0	S'hi pot parlar/Se le puede hablar	0
No patidora/No sufridora	0	Té cor/Tiene corazón	0
No pensa/No piensa	0	Té interès/Tiene interés	0
No protectora	0	Tira endavant/Tira adelante	0
Noble	0	Tossuda/Tozuda	0
Normal	0	Transparent/Transparente	0
Perdona	0	Trapella/Traviesa	0
Presumida	0	Útil	0
Prudent/Prudente	0	Va a la seva/Va a la suya	0
Raonable/Razonable	0	Valorada	0
Realista	0	Vida plena/Vida llena	0
Recolza/Apoya	0		
<b>Major depressive disorder sample</b>			
Alegre	20	Parladora/Habladora	3
Treballadora/Trabajadora	14	Satisfeta/Satisfecha	3
Bona/Buena	12	Sincera	3
Generosa/Desinteresada	9	Tolerant/Tolerante	3
Afectuosa/Cariñosa	8	Valenta/Valiente	3
Lluitadora/Luchadora	7	Agradable	2
Familiar	6	Amable	2
Forta/Fuerte	6	Amb sort/Con suerte	2
Simpàtica/Simpática	6	Animada	2
Social/Sociable	6	Bromista	2
Tranquil·la/Tranquila	6	Conscient/Consciente	2
Il·lusionada/Ilusionada	5	Consellera/Consejera	2
Realista	5	Cuidadora/Prooectora	2
Activa	4	Deixa viure/Deja vivir	2
Escolta/Escucha	4	Dolenta/Mala	2
Intel·ligent/Inteligente	4	Endreçada/Ordenada	2
Otimista	4	Extravertida/Extrovertida	2
Positiva	4	Gaudeix/Disfruta	2
Preocupada	4	Íntegre/Honrada	2
Afable	3	Madura	2
Comuncativa	3	Normal	2
Divertida	3	Pràctica/Práctica	2
Estable	3	Respectuosa/Respetuosa	2
Independent/Independiente	3	S'accepta/Se acepta	2
Llançada/Lanzada	3	Sana	2
Oberta/Abierta	3	Sap el que vol/Sabe lo que quiere	2

Pole	Repetitions	Pole	Repetitions
Segura	2	Manipuladora	1
Senzilla/Sencilla	2	Mentidera/Mentirosa	1
Triomfadora/Triunfadora	2	No caràcter/No carácter	1
Vital/Vitalista	2	No patidora/No sufridora	1
Accepta altres/Acepta otros	1	No pensa/No piensa	1
Apassionada/Apasionada	1	No protectora	1
Arriba a acords/Llega a acuerdos	1	Noble	1
Atenta	1	Pacient/Paciente	1
Bon rotllo/Buen rollo	1	Perdona	1
Carismàtica/Carismática	1	Raonable/Razonable	1
Compassiva/Compasiva	1	Recolza/Apoya	1
Confiable	1	Reservada	1
Confuada	1	Responsable	1
Consciència	1	Salvadora	1
social/Consciencia social			
Constant/Contante	1	Sentit humor/Sentido humor	1
Contenta	1	S'hi pot parlar/Se le puede hablar	1
Cordial	1	Té interès/Tiene interés	1
Coses clares/Cosas claras	1	Tira endavant/Tira adelante	1
Curosa/Cuidadosa	1	Útil	1
Dèbil/Débil	1	Adaptable	0
Derrotista	1	Admirada	0
Dinàmica/Dinámica	1	Agnòstica/Agnóstica	0
Disposada/Dispuesta	1	Ajuda/Ayuda	0
Educada	1	Amb caràcter/Con carácter	0
Emocional	1	Amb dolor/Con dolor	0
Empàtica/Empática	1	Amena	0
Es posa on no li demanen/ Se pone donde no la llaman	1	Assenyada/Sensata	0
Estalviadora/Ahorradora	1	Atrevida	0
Estimuladora	1	Autèntica/Auténtica	0
Exigent/Exigente	1	Autoritat/Autoridad	0
Expressiva/Expresiva	1	Aventurera	0
Ferma/Firme	1	Bona autoestima/Buena autoestima	0
Ganes de canvi/Ganas de cambio	1	Bona mare/Buena madre	0
Garrepa/Tacaña	1	Capaç d'estimar/Capaz de querer	0
Honesta	1	Centrada	0
Igualtat/Igualdad	1	Col·labora/Colabora	0
Insensible	1	Complicitat/Complicidad	0
Jovial	1	Comprensiva	0
Líder	1	Conformista	0
Lliberal/Liberal	1	Creativa	0

Pole	Repetitions	Pole	Repetitions
Curiosa	0	Mandrosa/Vaga	0
Decent/Decente	0	Mimada	0
Deixada/Dejada	0	Moderna	0
Detallista	0	Neta/Limpia	0
Dialogant/Dialogante	0	No enveja/No envidia	0
Dòcil/Dócil	0	No rencorosa	0
Dona feedback/Da feedback	0	Organitzada/Organizada	0
Dura	0	Passiva/Pasiva	0
Eixebrada/Alocada	0	Passota/Pasota	0
Encantadora	0	Posa límits/Pone límites	0
Enèrgica/Enérgica	0	Precisa	0
Entenedora/Entendedora	0	Present/Presente	0
Equilibrada	0	Presumida	0
Es sent bé/Se siente bien	0	Propera/Cercana	0
Esperança/Esperanza	0	Prudent/Prudente	0
Espontània/Espontánea	0	Puntualitat/Puntualidad	0
Està pendent/Está pendiente	0	Receptiva	0
Fa coses de casa/Hace cosas de casa	0	Riallera/Risueña	0
Fa coses per si mateixa/Hace cosas por sí misma	0	Sacrificada	0
Fada/Hada	0	Sense dolor/Sin dolor	0
Fidel/Fiel	0	Sensible	0
Fiestera	0	Serena	0
Flexible	0	Solucionadora/Resolutiva	0
Franca	0	Superació/Superación	0
Freda/Fría	0	Té cor/Tiene corazón	0
Graciosa	0	Tenaç/Tenaz	0
Humana	0	Tendra/Tierna	0
Humil/Humilde	0	Tossuda/Tozuda	0
Intel·ligència emocional/Inteligencia emocional	0	Transparent/Transparente	0
Irresponsable	0	Trapella/Traviesa	0
Juganera/Jugetona	0	Va a la seva/Va a la suya	0
Lletja/Fea	0	Valora amistat/Valora amistad	0
Lliure/Libre	0	Valorada	0
Magnífica	0	Vida plena/Vida llena	0
<b>Major depressive disorders + fibromyalgia sample</b>			
Bona/Buena	14	Otimista	6
Alegre	12	Lluitadora/Luchadora	5
Sense dolor/Sin dolor	10	Social/Sociable	4
Afectuosa/Cariñosa	8	Vital/Vitalista	4
Treballadora/Trabajadora	8	Bona mare/Buena madre	3
Familiar	6	Extravertida/Extrovertida	3
Forta/Fuerte	6	Normal	3
Generosa/Desinteresada	6	Positiva	3

Pole	Repetitions	Pole	Repetitions
Responsable	3	Mandrosa/Vaga	1
Tranquil·la/Tranquila	3	Mentidera/Mentirosa	1
Activa	2	Neta/Limpia	1
Amable	2	No enveja/No envidia	1
Animada	2	Oberta/Abierta	1
Bona autoestima/Buena autoestima	2	Passota/Pasota	1
Bromista	2	Pràctica/Práctica	1
Dura	2	Presumida	1
Encantadora	2	Prudent/Prudente	1
Flexible	2	Satisfeta/Satisfecha	1
Intel·ligent/Inteligente	2	Segura	1
Moderna	2	Sensible	1
Riallera/Risueña	2	Serena	1
Simpàtica/Simpática	2	S'hi pot parlar/Se le puede hablar	1
Ajuda/Ayuda	1	Sincera	1
Amb caràcter/Con carácter	1	Té cor/Tiene corazón	1
Amb dolor/Con dolor	1	Tossuda/Tozuda	1
Assenyada/Sensata	1	Transparent/Transparente	1
Atenta	1	Trapella/Traviesa	1
Autoritat/Autoridad	1	Va a la seva/Va a la suya	1
Centrada	1	Valenta/Valiente	1
Compassiva/Compasiva	1	Valorada	1
Comprensiva	1	Vida plena/Vida llena	1
Comunicativa	1	Accepta altres/Acepta otros	0
Conformista	1	Adaptable	0
Contenta	1	Admirada	0
Cuidadora/Prooctora	1	Afable	0
Deixada/Dejada	1	Agnòstica/Agnóstica	0
Detallista	1	Agradable	0
Divertida	1	Amb sort/Con suerte	0
Dòcil/Dócil	1	Amena	0
Educada	1	Apassionada/Apasionada	0
Empàtica/Empática	1	Arriba a acords/Llega a acuerdos	0
Enèrgica/Enérgica	1	Atrevida	0
Es sent bé/Se siente bien	1	Autèntica/Auténtica	0
Està pendent/Está pendiente	1	Aventurera	0
Humana	1	Bon rotllo/Buen rollo	0
Humil/Humilde	1	Capaç d'estimar/Capaz de querer	0
Íntegre/Honrada	1	Carismàtica/Carismática	0
Irresponsable	1	Col·labora/Colabora	0
Llançada/Lanzada	1	Complicitat/Complicidad	0
Lletja/Fea	1	Confiable	0
Madura	1	Confiada	0

Pole	Repetitions	Pole	Repetitions
Consciència	0	Ganes de canvi/Ganas de cambio	0
social/Consciencia social		Garrepa/Tacaña	0
Conscient/Consciente	0	Gaudeix/Disfruta	0
Consellera/Consejera	0	Graciosa	0
Constant/Contante	0	Honesta	0
Cordial	0	Igualtat/Igualdad	0
Coses clares/Cosas claras	0	Il·lusionada/Ilusionada	0
Creativa	0	Independent/Independiente	0
Curiosa	0	Insensible	0
Curosa/Cuidadosa	0	Intel·ligència	0
Dèbil/Débil	0	emocional/Inteligencia emocional	
Decent/Decente	0	Jovial	0
Deixa viure/Deja vivir	0	Juganera/Jugetona	0
Derrotista	0	Líder	0
Dialogant/Dialogante	0	Lliberal/Liberal	0
Dinàmica/Dinámica	0	Lliure/Libre	0
Disposada/Dispuesta	0	Magnífica	0
Dolenta/Mala	0	Manipuladora	0
Dona feedback/Da feedback	0	Mimada	0
Eixelebrada/Alocada	0	No caràcter/No carácter	0
Emocional	0	No patidora/No sufridora	0
Endreçada/Ordenada	0	No pensa/No piensa	0
Entenedora/Entendedora	0	No protectora	0
Equilibrada	0	No rencorosa	0
Es posa on no li demanen/ Se pone donde no la llaman	0	Noble	0
Escolta/Escucha	0	Organitzada/Organizada	0
Esperança/Esperanza	0	Pacient/Paciente	0
Espontània/Espontánea	0	Parladora/Habladora	0
Estable	0	Passiva/Pasiva	0
Estalviadora/Ahorradora	0	Perdona	0
Estimuladora	0	Posa límits/Pone límites	0
Exigent/Exigente	0	Precisa	0
Expressiva/Expresiva	0	Preocupada	0
Fa coses de casa/Hace cosas de casa	0	Present/Presente	0
Fa coses per si mateixa/ Hace cosas por sí misma	0	Propera/Cercana	0
Fada/Hada	0	Puntualitat/Puntualidad	0
Ferma/Firme	0	Raonable/Razonable	0
Fidel/Fiel	0	Realista	0
Fiestera	0	Receptiva	0
Franca	0	Recolza/Apoya	0
Freda/Fría	0	Reservada	0

Pole	Repetitions	Pole	Repetitions
Respectuosa/Respetuosa	0	Superació/Superación	0
S'accepta/Se acepta	0	Té interès/Tiene interés	0
Sacrificada	0	Tenaç/Tenaz	0
Salvadora	0	Tendra/Tierna	0
Sana	0	Tira endavant/Tira adelante	0
Sap el que vol/Sabe lo que quiere	0	Tolerant/Tolerante	0
Sentit humor/Sentido humor	0	Triomfadora/Triunfadora	0
Senzilla/Sencilla	0	Útil	0
Solucionadora/Resolutiva	0	Valora amistat/Valora amistad	0

Table A 5

*Complete List in Catalan and Spanish of Poles Construed by Participants in Study 1 as Farthest from “Happy”*

Pole	Repetitions	Pole	Repetitions
<b>Non-clinical sample</b>			
Infeliç/Infeliz	16	Introvertida	2
Dolenta/Mala	13	Irrespectuosa/Irrespetuosa	2
Dèbil/Débil	7	Maleducada	2
Infidel/Infiel	7	Manipuladora	2
Negativa	7	Pessimista/Pesimista	2
Dependent/Dependiente	6	Religiosa	2
Amargada	5	Solitària/Solitaria	2
Gandula/Vaga	5	Superficial	2
Antipàtica/Antipática	4	Trista/Triste	2
Deprimida	4	Absent/Absente	1
Dona desconfiança/Da desconfianza	4	Agressiva/Agresiva	1
Egoista/Egoísta	4	Apalancada	1
Irresponsable	4	Avorrida/Aburrida	1
Tancada/Cerrada	4	Boja/Loca	1
Deslleial/Desleal	3	Cabrona	1
Distant/Distante	3	Calculadora	1
Incomprensiva	3	Caràcter/Carácter	1
Insegura	3	Classista/Clasista	1
Intolerant/Intolerante	3	Col·leccionista/Coleccionista	1
Mentidera/Mentirosa	3	Còmoda/Cómoda	1
No familiar	3	Comparteix/Comparte	1
Passiva/Pasiva	3	Complicada	1
Passota/Pasota	3	Continguda/Contenida	1
Rígida	3	Covarda/Cobarde	1
Antiquada/Anticuada	2	Desagradable	1
Apagada	2	Desapercebuda/ Desapercibida	1
Borde	2	Desengany/Desengaño	1
Callada/Muda	2	Desequilibrada	1
Conformista	2	Desgraciada	1
Deshonesta	2	Desmotivada	1
Desorganitzada/ Desorganizada	2	Desorientada	1
Dramàtica/Dramática	2	Despreocupada	1
Envejosa/Envidiosa	2	Desvergonyida/ Desvergonzada	1
Esquerpa/Arisca	2	Dificultat comunicació/Dificultad de comunicación	1
Freda/Fría	2	Dona voltes/Da vueltas	1
Garrepa/Tacaña	2	Estafadora	1
Impulsiva	2	Estancada	1
Influenciable	2	Evitativa	1

Pole	Repetitions	Pole	Repetitions
Explica tot a tothom/Explica todo a todo el mundo	1	Turmentada/Atormentada	1
Fa tard/Llega tarde	1	Xafardera/Chafardera	1
Falsa	1	Abobada	0
Gelosa/Celosa	1	Amb dolor/Con dolor	0
Hipòcrita/Hipòcrita	1	Angoixada/Angustiada	0
Immoral/Inmoral	1	Apàtica/Apática	0
Impacient/Impaciente	1	Baixa autoestima/Baja autoestima	0
Incompetent/Incompetente	1	Basta/Bruta	0
Incongruent/Incongruente	1	Bebedora	0
Inconscient/Inconsciente	1	Busca baralla/Busca pelea	0
Incorrecta	1	Cansada	0
Indecisa	1	Capriciosa/Caprichosa	0
Indiferent/Indiferente	1	Casolana/Casera	0
Ineficaz/Ineficaz	1	Col·labora/Colabora	0
Injusta	1	Contemplativa	0
Inquieta/No para	1	Decepciona	0
Insensata	1	Dedicada als altres/Dedicada a los demás	0
Insensible	1	Deixada/Dejada	0
Interessada/Interesada	1	Desagraïda/Desagradecida	0
Masclista/Machista	1	Desanimada	0
Monotèmatica/Monotemática	1	Desconfiada	0
Monòtona/Monótona	1	Desesperançada/Desesperanzada	0
Nerviosa	1	Despistada	0
No ajuda/No ayuda	1	Dispersa	0
No mimada	1	Emprenedora/Emprendedora	0
No social/Asocial/Insociable	1	Enemiga	0
Pansida/Mústia	1	Enfonsada/Derrumbada	0
Pesada	1	Enrevessada/Enrevesada	0
Ploranera/Llorona	1	Estirada	0
Preocupada	1	Estricta	0
Presumida	1	Fashion	0
Problemàtica/Problemática	1	Feridora/Hiriente	0
Quadrada/Cuadrada	1	Generosa	0
Rencorosa	1	Guerrera	0
Reprimida	1	Immadura/Inmadura	0
Repulsiva	1	Independent/Independiente	0
Reservada	1	Inestable	0
Sedentària/Sedentaria	1	Inhumana	0
Simple	1	Inocent/Inocente	0
Sosa	1	Insatisfeta/Insatisfecha	0
Tímida	1	Inútil	0
Tonta/Estúpida	1	Irreflexiva	0
Traïdora/Traidora	1	Lladre/Ladrona	0
Tramposa	1	Mala mare/Mala madre	0
Tranquil·la/Tranquila	1	Malalta/Enferma	0

Pole	Repetitions	Pole	Repetitions
Maltractada	0	Pacífica	0
Maniàtica/Maniática	0	Paranoica	0
Màrtir/Mártir	0	Parladora/Habladora	0
Mesquina/Mezquina	0	Patidora/Sufridora	0
Morta/Muerta	0	Perdona	0
No aconsegueix el que vol/ No consigue lo que quiere	0	Pilota/Pelota	0
No aguanta	0	Poruga/Miedica	0
No anima	0	Recta	0
No casolana/No casera	0	Relaxada/Relajada	0
No comparteix/No comparte	0	Responsable	0
No coneix les persones/No conoce las personas	0	Rondinaire/Gruñona	0
No detallista	0	S'amaga/Se esconde	0
No dona consells/No da consejos	0	Sense ganes de viure/Sin ganas de vivir	0
No fa el que diu/No hace lo que dice	0	Sense idees/Sin ideas	0
No fa res/No hace nada	0	Sense sang/Sin sangre	0
No facilita la comunicació/No facilita la comunicación	0	Sensible	0
No gaudeix/No disfruta	0	Seria	0
No instinct maternal/No instinto maternal	0	Somiadora/Soñadora	0
No pràctica/No práctica	0	Submisa/Sumisa	0
No s'estima/No se quiere	0	Tossuda/Tozuda	0
No té cara/No tiene cara	0	Trepa	0
No valora les coses/No valora las cosas	0	Vanitosa/Vanidosa	0
Obscuritat/Oscuridad	0	Vençuda/Vencida	0
Odiosa	0	Víctima	0
Ordenada	0	Vulgar	0
Orgullosa	0	Xafada/Chafada	0
<b>Major depressive disorder sample</b>			
Gandula/vaga	15	Cansada	3
Infeliç/Infeliz	14	Deprimida	3
Trista/Triste	13	Desgraciada	3
Dolenta/Mala	12	Desorganitzada/ Desorganizada	3
Tonta/Estúpida	8	Envejosa/Envidiosa	3
Dèbil/Débil	7	Esquerpa/Arisca	3
No social/Asocial/Insociable	6	Garrepa/Tacaña	3
Amargada	5	Infidel/Infiel	3
Passota/Pasota	5	Maleducada	3
Despreocupada	4	Masclista/Machista	3
Egoista/Egoísta	4	Mentidera/Mentirosa	3
Freda/Fría	4	Pessimista/Pesimista	3
No familiar	4	Rencorosa	3
Passiva/Pasiva	4	Seria	3

Pole	Repetitions	Pole	Repetitions
Solitària/Solitaria	3	Emprenedora/Emprendedora	1
Antipàtica/Antipática	2	Enfonsada/Derrumbada	1
Apàtica/Apática	2	Enrevesada/Enrevesada	1
Busca baralla/Busca pelea	2	Estancada	1
Caràcter/Carácter	2	Estirada	1
Conformista	2	Falsa	1
Dependent/Dependiente	2	Fashion	1
Desesperançada/	2	Feridora/Hiriente	1
Desesperanzada			
Deslleial/Desleal	2	Generosa	1
Desorientada	2	Hipòcrita/Hipócrita	1
Dona desconfiança/Da	2	Indecisa	1
desconfianza			
Gelosa/Celosa	2	Influenciable	1
Impacient/Impaciente	2	Inocent/Inocente	1
Inestable	2	Inquieta/No para	1
Insegura	2	Introvertida	1
Intolerant/Intolerante	2	Inútil	1
Irresponsable	2	Irreflexiva	1
Manipuladora	2	Irrespectuosa/Irrespetuosa	1
Mesquina/Mezquina	2	Maniàtica/Maniática	1
Paranoica	2	Morta/Muerta	1
Poruga/Miedica	2	Negativa	1
Sosa	2	Nerviosa	1
Submisa/Sumisa	2	No aconsegueix el que vol/No	1
		consigue lo que quiere	
Tancada/Cerrada	2	No aguanta	1
Tossuda/Tozuda	2	No ajuda/No ayuda	1
Abobada	1	No comparteix/No comparte	1
Agressiva/Agresiva	1	No coneix les persones/No	1
		conoce las personas	
Angoixada/Angustiada	1	No fa el que diu/No hace lo	1
		que dice	
Antiquada/Anticuada	1	No fa res/No hace nada	1
Apagada	1	No facilita la comunicació/No	1
		facilita la comunicación	
Callada/Muda	1	No gaudeix/No disfruta	1
Capriciosa/Caprichosa	1	No instint maternal/No	1
		instinto maternal	
Col·labora/Colabora	1	No pràctica/No práctica	1
Decepciona	1	No s'estima/No se quiere	1
Dedicada als altres/Dedicada	1	No té cara/No tiene cara	1
a los demás			
Desagradable	1	No valora les coses/No valora	1
		las cosas	
Desconfiada	1	Ordenada	1
Desengany/Desengaño	1	Pacífica	1
Deshonesta	1	Pansida/Mústia	1
Dispersa	1	Parladora/Habladora	1

Pole	Repetitions	Pole	Repetitions
Perdona	1	Desapercebuda/Desapercibida	0
Pilota/Pelota	1	Desequilibrada	0
Preocupada	1	Desmotivada	0
Quadrada/Cuadrada	1	Despistada	0
Recta	1	Desvergonyida/ Desvergonzada	0
Relaxada/Relajada	1	Dificultat comunicació/Dificultad de comunicación	0
Reprimida	1	Distant/Distante	0
Rondinaire/Gruñona	1	Dona voltes/Da vueltas	0
S'amaga/Se esconde	1	Dramàtica/Dramática	0
Sedentària/Sedentaria	1	Enemiga	0
Sense ganes de viure/Sin ganas de vivir	1	Estafadora	0
Sense idees/Sin ideas	1	Estricta	0
Sense sang/Sin sangre	1	Evitativa	0
Somiadora/Soñadora	1	Explica tot a tothom/Explica todo a todo el mundo	0
Superficial	1	Fa tard/Llega tarde	0
Tranquil·la/Tranquila	1	Guerrera	0
Trepa	1	Immadura/Inmadura	0
Vençuda/Vencida	1	Immoral/Inmoral	0
Vulgar	1	Impulsiva	0
Xafardera/Chafardera	1	Incompetent/Incompetente	0
Absent/Absente	0	Incomprensiva	0
Amb dolor/Con dolor	0	Incongruent/Incongruente	0
Apalancada	0	Inconscient/Inconsciente	0
Avorrida/Aburrida	0	Incorrecta	0
Baixa autoestima/Baja autoestima	0	Independent/Independiente	0
Basta/Bruta	0	Indiferent/Indiferente	0
Bebedora	0	Ineficaç/Ineficaz	0
Boja/Loca	0	Inhumana	0
Borde	0	Injusta	0
Cabrona	0	Insatisfeta/Insatisfecha	0
Calculadora	0	Insensata	0
Casolana/Casera	0	Insensible	0
Classista/Clasista	0	Interessada/Interesada	0
Col·leccionista/Coleccionista	0	Intransigent/Intransigente	0
Còmoda/Còmoda	0	Lladre/Ladrona	0
Comparteix/Comparte	0	Mala mare/Mala madre	0
Complicada	0	Malalta/Enferma	0
Contemplativa	0	Maltractada	0
Continguda/Contenida	0	Màrtir/Mártir	0
Covarda/Cobarde	0	Monotemàtica/Monotemática	0
Deixada/Dejada	0	Monòtona/Monótona	0
Desagraïda/Desagradecida	0	No anima	0
Desanimada	0	No casolana/No casera	0

Pole	Repetitions	Pole	Repetitions
No detallista	0	Reservada	0
No dona consells/No da consejos	0	Responsable	0
No mimada	0	Rígida	0
Obscuritat/Oscuridad	0	Sensible	0
Odiosa	0	Simple	0
Orgullosa	0	Tímida	0
Patidora/Sufridora	0	Traïdora/Traidora	0
Pesada	0	Tramposa	0
Ploranera/Llorona	0	Turmentada/Atormentada	0
Presumida	0	Vanitosa/Vanidosa	0
Problemàtica/Problemática	0	Víctima	0
Religiosa	0	Xafada/Chafada	0
Repulsiva	0		
Major depressive disorders + fibromyalgia sample			
Infeliç/Infeliz	25	Contemplativa	1
Trista/Triste	15	Deprimida	1
Amb dolor/Con dolor	12	Desagraïda/Desagradecida	1
Dolenta/Mala	7	Desanimada	1
Gandula/vaga	6	Desmotivada	1
Egoïsta/Egoísta	5	Dona desconfiança/Da desconfianza	1
Dèbil/Débil	4	Enemiga	1
Deixada/Dejada	4	Esquerpa/Arisca	1
Desorganitzada/Desorganizada	4	Estricta	1
Envejosa/Envidiosa	4	Freda/Fría	1
Callada/Muda	3	Guerrera	1
Despistada	3	Hipòcrita/Hipócrita	1
Garrepa/Tacaña	3	Inmadura/Inmadura	1
Negativa	3	Impacient/Impaciente	1
No familiar	3	Independent/Independiente	1
Amargada	2	Indiferent/Indiferente	1
Baixa autoestima/Baja autoestima	2	Ineficaç/Ineficaz	1
Mala mare/Mala madre	2	Inhumana	1
Mentidera/Mentirosa	2	Inquieta/No para	1
No ajuda/No ayuda	2	Insatisfeta/Insatisfecha	1
Passiva/Pasiva	2	Insensible	1
Patidora/Sufridora	2	Introvertida	1
Tranquil·la/Tranquila	2	Inútil	1
Agressiva/Agresiva	1	Lladre/Ladrona	1
Antipàtica/Antipática	1	Malalta/Enferma	1
Apàtica/Apática	1	Maleducada	1
Basta/Bruta	1	Maltractada	1
Bebedora	1	Màrtir/Mártir	1
Cansada	1	Masclista/Machista	1
Casolana/Casera	1	No anima	1
Conformista	1	No casolana/No casera	1

Pole	Repetitions	Pole	Repetitions
No detallista	1	Col·leccionista/Coleccionista	0
No dona consells/No da consejos	1	Còmoda/Cómoda	0
No valora les coses/No valora las cosas	1	Comparteix/Comparte	0
Obscuritat/Oscuridad	1	Complicada	0
Odiosa	1	Continguda/Contenida	0
Orgullosa	1	Covarda/Cobarde	0
Passota/Pasota	1	Decepciona	0
Pesada	1	Dedicada als altres/Dedicada a los demás	0
Problemàtica/Problemática	1	Dependent/Dependiente	0
Rencorosa	1	Desagradable	0
Responsable	1	Desapercebuda/Desapercibida	0
Rondinaire/Gruñona	1	Desconfiada	0
Sense ganes de viure/Sin ganas de vivir	1	Desengany/Desengaño	0
Sensible	1	Desequilibrada	0
Seria	1	Desesperançada/Desesperanzada	0
Sosa	1	Desgraciada	0
Submisa/Sumisa	1	Deshonesta	0
Tonta/Estúpida	1	Deslleial/Desleal	0
Tossuda/Tozuda	1	Desorientada	0
Vanitosa/Vanidosa	1	Despreocupada	0
Vençuda/Vencida	1	Desvergonyida/Desvergonzada	0
Víctima	1	Dificultat comunicació/Dificultad de comunicació	0
Xafada/Chafada	1	Dispersa	0
Xafardera/Chafardera	1	Distant/Distante	0
Abobada	0	Dona voltes/Da vueltas	0
Absent/Absente	0	Dramàtica/Dramática	0
Angoixada/Angustiada	0	Emprenedora/Emprendedora	0
Antiquada/Anticuada	0	Enfonsada/Derrumbada	0
Apagada	0	Enrevessada/Enrevesada	0
Apalancada	0	Estafadora	0
Avorrida/Aburrida	0	Estancada	0
Boja/Loca	0	Estirada	0
Borde	0	Evitativa	0
Busca baralla/Busca pelea	0	Explica tot a tothom/Explica todo a todo el mundo	0
Cabrona	0	Fa tard/Llega tarde	0
Calculadora	0	Falsa	0
Capriciosa/Caprichosa	0	Fashion	0
Caràcter/Carácter	0	Feridora/Hiriente	0
Classista/Clasista	0	Gelosa/Celosa	0
Col·labora/Colabora	0	Generosa	0

Pole	Repetitions	Pole	Repetitions
Immoral/Inmoral	0	No s'estima/No se quiere	0
Impulsiva	0	No social/Asocial/Insociable	0
Incompetent/Incompetente	0	No té cara/No tiene cara	0
Incomprensiva	0	Ordenada	0
Incongruent/Incongruente	0	Pacífica	0
Inconscient/Inconsciente	0	Pansida/Mústia	0
Incorrecta	0	Paranoica	0
Indecisa	0	Parladora/Habladora	0
Inestable	0	Perdona	0
Infidel/Infiel	0	Pessimista/Pesimista	0
Influenciable	0	Pilota/Pelota	0
Injusta	0	Ploranera/Llorona	0
Inocent/Inocente	0	Poruga/Miedica	0
Insegura	0	Preocupada	0
Insensata	0	Presumida	0
Interessada/Interesada	0	Quadrada/Cuadrada	0
Intolerant/Intolerante	0	Recta	0
Intransigent/Intransigente	0	Relaxada/Relajada	0
Irreflexiva	0	Religiosa	0
Irrespectuosa/Irrespetuosa	0	Reprimida	0
Irresponsable	0	Repulsiva	0
Maniàtica/Maniàtica	0	Reservada	0
Manipuladora	0	Rígida	0
Mesquina/Mezquina	0	S'amaga/Se esconde	0
Monotemàtica/Monotemática	0	Sedentària/Sedentaria	0
Monòtona/Monótona	0	Sense idees/Sin ideas	0
Morta/Muerta	0	Sense sang/Sin sangre	0
Nerviosa	0	Simple	0
No aconseguix el que vol/			
No consigue lo que quiere	0	Solitària/Solitaria	0
No aguanta	0	Somiadora/Soñadora	0
No comparteix/No comparte	0	Superficial	0
No coneix les persones/No conoce las personas	0	Tancada/Cerrada	0
No fa el que diu/No hace lo que dice	0	Tímida	0
No fa res/No hace nada	0	Traïdora/Traidora	0
No facilita la comunicació/No facilita la comunicación	0	Tramposa	0
No gaudeix/No disfruta	0	Trepa	0
No instinct maternal/No instinto maternal	0	Turmentada/Atormentada	0
No mimada	0	Vulgar	0
No pràctica/No práctica	0		