



FACULTAD DE CIENCIAS DE LA SALUD
DEPARTAMENTO DE PSICOLOGÍA BÁSICA, CLÍNICA Y PSICOBIOLOGÍA

**EFFICACY OF POSITIVE PSYCHOLOGICAL
INTERVENTIONS ORIENTED TOWARD THE FUTURE:
EXPERIMENTAL STUDIES WITH GENERAL AND
CLINICAL POPULATIONS**

**EFICACIA DE LAS INTERVENCIONES PSICOLÓGICAS
POSITIVAS ORIENTADAS AL FUTURO: ESTUDIOS
EXPERIMENTALES CON POBLACIÓN GENERAL Y CLÍNICA**

TESIS DOCTORAL

Presentada por:
ÁNGEL ENRIQUE ROIG

Dirigida por:
DRA. CRISTINA BOTELLA ARBONA
DRA. JUANA MARÍA BRETÓN LÓPEZ

Castellón, Junio 2017

La presente tesis ha podido realizarse gracias a la beca concedida por la Universitat Jaume I para la formación del personal investigador (PREDOC/2012/51).

Esta tesis doctoral ha sido fruto de un trabajo de más de 4 años de duración. Un camino de largo recorrido en el que muchas han sido las personas que han ayudado y permitido que este proyecto salga adelante. El trabajo que se va a mostrar a continuación no hubiese sido posible de otra manera, así que este apartado va por todos ellos.

En primer lugar, gracias todos los participantes que accedieron a participar en cada uno de los estudios e imaginar un futuro con un poco más de luz.

De manera muy especial, me gustaría dar las gracias a mis directoras de tesis. A la doctora Cristina Botella por brindarme esta oportunidad, una oportunidad que me ha cambiado la vida y me ha permitido evolucionar tanto en lo personal como en lo profesional. Gracias Cristina por enseñarme el valor de la ciencia y transmitirme la pasión por este trabajo, tan arduo pero, a su vez, tan gratificante. También quiero agradecer de manera muy especial a la doctora Juani Bretón, por su gran disposición y apoyo en todas y cada una de las fases de esta tesis, agradezco sus noches en vela y también su capacidad para tranquilizarme en mis momentos de angustia. A Guada, mi copiloto en el desarrollo de casi todos los estudios. Mil gracias por haber invertido tantas horas de tu tiempo en atender participantes, revisar miles de artículos, compartir tus conocimientos conmigo, en definitiva, gracias por haberme ayudado a crecer en el camino de la ciencia y la investigación. También quiero agradecer el apoyo metodológico y estadístico que me han brindado Eirini y Pablo, gracias por haberme enseñado tanto.

A todos mis compañeros de LABPSITEC. Muchas gracias. Gracias por haber estado ahí, porque no habría podido tener mejores compañeros, porque a vuestro lado todo esto ha sido mucho más fácil. Mi experiencia en estos últimos 5 años ha sido increíble, me ha encantado haber podido compartir este camino junto a vosotros. No habéis sido compañeros de trabajo, habéis sido mi segunda familia y os estaré eternamente agradecido.

A mis padres, por facilitarme todo el camino, por enseñarme el valor del esfuerzo y el trabajo y por ayudarme a ser quien soy hoy en día. Si no fuese por vosotros seguro que no hubiese llegado hasta aquí. A mis hermanos y hermana, por animarme siempre, desde bien pequeñito, a continuar adelante y no abandonar los estudios. Gracias por compartir mis alegrías y mis penas.

A mis amigos, por estar ahí y hacerme desconectar de la tesis. Por todas las risas y el cachondeo que han hecho de todos los momentos compartidos, momentos inolvidables.

A Sheila, mi compañera de vida. Es imposible poder describir con palabras lo que ha significado para mí que me hayas acompañado todo este tiempo. Nadie mejor que tu sabe lo que esto ha supuesto en nuestras vidas. Gracias por tu energía positiva, tu paciencia, tu apoyo y tu comprensión, gracias por haberte desvivido. Gracias por haber creído tanto en mí y por saber sacar la mejor versión de mí mismo. Nunca podré compensarte por todo esto, pero no dudes que estaré ahí para apoyarte en todo aquello que venga por delante.

ÍNDICE

Modalidad de la tesis	1
Chapter 1. Introducción general	5
1.1 Psicología positiva. Una perspectiva general	7
1.1.1 Bienestar hedónico y eudaimónico: Conceptos básicos	8
1.2 Intervenciones Psicológicas Positivas	10
1.2.1 Mecanismos de acción de las intervenciones positivas ¿Por qué funcionan?.....	11
1.2.2 Intervenciones positivas orientadas hacia el futuro	14
1.2.3 Eficacia de las Intervenciones Psicológicas Positivas en población general.....	18
1.2.4 Eficacia de las Intervenciones psicológicas positivas en población clínica.....	20
1.3 Tecnologías Positivas	24
Referencias.....	28
Outline of the Dissertation	37
Chapter 2. Effectiveness of positive psychological interventions oriented toward the future: A meta-analysis of randomized controlled trials	41
Abstract.....	43
2.1 Introduction	45
2.2 Method.....	48
2.3 Results	51
2.4 Discussion.....	63
References	67
Chapter 3. Efficacy of <i>e</i> -BPS: An adaptation of the Best possible Self exercise implemented through positive technology. A Randomized Control Trial	73
Abstract.....	75
3.1 Introduction	77
3.2 Method.....	80
3.3 Results	87
3.4 Discussion.....	93
References	98
Chapter 4. Single-session effects of a positive psychological intervention in patients with eating disorders: results from a Randomized Control Trial.....	105

Abstract.....	107
4.1 Introduction	109
4.2 Method.....	111
4.3 Results	119
4.4 Discussion.....	121
References	126
Chapter 5. Efficacy of a positive psychological intervention in patients with eating disorders: a Randomized Control Trial.	131
Abstract.....	133
5.1 Introduction	135
5.2 Method.....	137
5.3 Results	142
5.4 Discussion.....	150
References..	153
Addendum..	159
Chapter 6. Implementation of a positive psychology group program in an inpatients eating disorder service. A pilot study	163
Abstract.....	165
6.1 Introduction	167
6.2 Method.....	169
6.3 Results	175
6.4 Discussion.....	178
References..	182
Chapter 7. General discussion.....	187
Conclusions	203
References	205
Anexos.....	209
Anexo 1 - Search string of the meta-analysis	209
Anexo 2 - Cartel para realizar el llamamiento de los participantes.....	210
Anexo 3 - Carta de aprobación del estudio en población general por parte del comité de ética de la Universitat Jaume I.....	211
Anexo 4 - Carta de aprobación del estudio en población clínica por parte del comité de ética del Consorcio Hospitalario Provincial de Castellón	212
Anexo 5 - Consentimiento informado para participar en el estudio.....	213

Anexo 6 - Consentimiento informado para participar en el taller de 4 sesiones. Versión para padres	214
Anexo 7 - Manual de instrucciones para la condición BPS.....	215
Anexo 8 - Manual de instrucciones. Condición control	221
Anexo 9 - Entrevista de admisión.....	225
Anexo 10 - Instrumentos de evaluación utilizados.....	226

ÍNDICE DE TABLAS

Table 1 - Compendium of publications included in this doctoral dissertation.....	3
Table 2.1 - Characteristics of the studies included in the meta-analysis.....	54
Table 2.2 - Main effects	59
Table 2.3 - Results of moderator analysis: subgroup analysis	61
Table 3.1 - Means, standard deviations and within-group effect sizes for the outcome measures in the different time-point assessments.....	92
Table 4.1 - Descriptive data about demographic variables, diagnosis, functional impairment and medication	112
Table 4.2 - Best Possible Self Essay Codification	115
Table 4.3 - Kappa values, intercoder correlations and means and standard deviations of the different units of analysis.....	117
Table 4.4 - Means, standard deviations and within-group effect sizes for the outcome measures of each condition.....	120
Table 4.5 - Means, Standard deviations and intercorrelations between measures at baseline and the BPS categories for participants of the BPS condition (n=29) ..	122
Table 5.1 - Descriptive data about demographic variables, diagnosis, functional impairment and medication (n= 54)	138
Table 5.2 - Means, standard deviations and within-group effect sizes for the outcome measures in the different time-point assessments.....	145
Table 5.3 - Goodness-of-Fit Indexes for the tested models	149
Table 5.4 - Factor loadings and significance levels of the variables included in the different structural models.....	149
Table 6.1 - Group protocol	174
Table 6.2 - Pre- and post-test descriptive analysis and Wilcoxon signed-rank test	175

INDICE DE FIGURAS

Figura 1.1 - Modelo de actividad Positiva	13
Figura 1.2 - Modelo procesual de regulación de la emoción	14

Figure 2.1 - Flow chart of studies selection process	52
Figure 2.2 - Risk of bias assessment	53
Figure 2.3 - Post-test effects of positive future-oriented interventions on subjective well-being.....	60
Figure 2.4 - Post-test effects of positive future-oriented interventions on psychological well-being.....	60
Figure 3.1 Assessment moments	82
Figure 3.2 - Participant flow (following consort flow diagram 2010).....	88
Figure 3.3 - Single-session effects on SPT	90
Figure 3.4 - Single-session effects on PANAS	90
Figure 3.5 - Performance frequency per week depending on the condition	93
Figure 5.1 - Participant flow (following consort flow diagram 2010).....	143
Figure 5.2 - Diagrams of the structural equation models evaluated.....	148
Figure 5.3 - Acceptability levels for the different Positive Technologies reported by participants	159
Figure 6.1 - Evolution of positive and negative expectations over time.....	176
Figure 6.2 - Evolution of positive and negative affect	176
Figure 6.3 - Acceptability levels for the group program and the technology reported by participants	178

MODALIDAD DE LA TESIS

La presente tesis doctoral opta por la incorporación de un compendio de trabajos de investigación que han sido sometidos para publicación en reconocidas revistas de impacto para la divulgación científica, incluyendo un total de cinco artículos. En la Tabla 1 se muestra el título y las autorías de cada uno de los artículos que conforman esta tesis, además del estado en el que se encuentran en la revista. Actualmente, todos los artículos se encuentran en proceso de revisión en diferentes revistas científicas internacionales. Aunque todos los capítulos que conforman esta tesis están orientados hacia un objetivo general señalado en el apartado correspondiente, todos ellos presentan entidad propia y pueden ser leídos de manera independiente. A este respecto, cada artículo sigue las normas de publicación de la revista a la que ha sido enviado, por lo que es posible encontrar diferencias en aspectos de estructura y en estilos de referencias bibliográficas. Asimismo, todos los coautores que han participado en la elaboración de los diferentes artículos de investigación han manifestado su conformidad para que el doctorando presente el trabajo como tesis y renuncian expresamente a presentar dichos trabajos como parte de otra tesis doctoral.

La presente tesis doctoral se rige por la normativa de los estudios de doctorado regulados por el Real Decreto 99/2011 (que modifica el Real Decreto 1393/2007 de 29 de Octubre al que se adscribe la presente tesis doctoral) en la Universitat Jaume I para las modalidades de doctorado con mención internacional y doctorado por compendio de publicaciones. Para ello, es requisito indispensable que parte de la tesis se haya redactado en lengua inglesa y, al menos una parte en alguna de las lenguas oficiales españolas. En este sentido, los artículos científicos que conforman esta tesis han sido redactados en lengua inglesa y también el capítulo final de discusión general y conclusiones. La introducción general ha sido desarrollada en castellano con el fin de cumplir con las exigencias establecidas por dicha normativa reguladora.

Table 1 - Compendium of publications included in this doctoral dissertation

Chapter	Article
2	Enrique, A., Bretón-López, J., Molinari, G., Karyotaki, E., Cuijpers, P., & Botella, C. Effectiveness of positive psychological interventions oriented toward the future: A meta-analysis of randomized controlled trials. Submitted to <i>The Journal of Positive Psychology</i> .
3	Enrique, A., Bretón-López, J., Molinari, G., Baños, R., & Botella, C. (in press). Efficacy of <i>e</i> -BPS: An adaptation of the Best Possible Self exercise implemented through positive technology. A randomized Control Trial. <i>Applied Research in Quality of Life</i> .
4	Enrique, A., Bretón-López, J., Molinari, G., Fernández-Aranda, F., Llorca, G., Guillén, V., & Botella, C. Single-session effects of a positive psychological intervention in patients with eating disorders: results from a Randomized Control Trial. Submitted to <i>BMC Psychiatry</i> .
5	Enrique, A., Bretón-López, J., Molinari, G., Roca, P., & Botella, C. Efficacy of a positive psychological intervention in patients with eating disorders: a Randomized Control Trial. Submitted to <i>International Journal of Eating Disorders</i> .
6	Enrique, A., Bretón-López, J., Molinari, G., Llorca, G., & Botella, C. Implementation of a positive psychology group program in an inpatients eating disorder service. A pilot study. Submitted to <i>Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity</i> .

Chapter 1. INTRODUCCIÓN GENERAL



1.1 Psicología positiva. Una perspectiva general

La psicología positiva se centra en el estudio de las condiciones y procesos que contribuyen al bienestar y funcionamiento positivo de las personas, grupos e instituciones (Gable y Haidt, 2005). Esta perspectiva surgió hace más de quince años con el propósito de apoyar, no reemplazar, el conocimiento acerca del sufrimiento humano, el malestar y los trastornos (Seligman y Csikszentmihalyi, 2000), aunque existen estudios dirigidos a promover el bienestar y las emociones positivas con anterioridad al surgimiento de esta corriente (p.ej. Fordyce, 1977; Rogers, 1963). Sin embargo, la investigación en psicología se ha centrado principalmente en las emociones negativas y el tratamiento de los problemas y trastornos de salud mental (Seligman y Csikszentmihalyi, 2000). En este sentido, el campo de la psicología positiva ha permitido concentrar una mayor atención empírica en el entendimiento y promoción de las fortalezas y el bienestar de los seres humanos. Este campo responde además a una necesidad fundamental en la promoción de la salud de la población y, más concretamente, la promoción de la salud mental. A este respecto, la Organización Mundial de la Salud (OMS) definió, ya desde sus inicios, la salud como "un estado de completo bienestar físico, mental y social" (OMS, 1948). Respecto a la definición de salud mental, la OMS la definió como "un estado de bienestar en el cual el individuo se da cuenta de sus propias aptitudes, puede afrontar las presiones normales de la vida, puede trabajar productiva y fructíferamente y es capaz de hacer una contribución a la comunidad". Más aún, esta organización recoge también el concepto de salud mental positiva, que es descrita como la presencia de emociones positivas y recursos psicológicos como la autoestima, la resiliencia y la capacidad de hacer frente a la adversidad (OMS, 2004).

Numerosos estudios han demostrado que la función de estas emociones y experiencias positivas va mucho más allá del mero hecho de hacernos sentir bien (Hirsh y Anderson, 2007; Tugade, Shiota & Kirby, 2014). Así, una de las teorías más aceptadas en cuanto a la funcionalidad de las emociones positivas es la teoría de la ampliación y construcción elaborada por Fredrickson (1998). Dicha teoría plantea que, a corto plazo, las emociones positivas comparten la capacidad de ampliar los repertorios de pensamiento y acción de las personas (Fredrickson y

Branigan, 2005; Srinivasan y Hanif, 2009). A largo plazo, la ampliación de estos repertorios ayudará a construir recursos personales duraderos a diferentes niveles, desde recursos físicos e intelectuales a recursos sociales y psicológicos (Fredrickson, Tugade, Waugh y Larkin, 2003; Hart, Vella y Mohr, 2008; Lyubomirsky, King y Diener, 2005). En conjunto, esta teoría plantea que si somos capaces de generar y mantener estas experiencias positivas, se puede favorecer la consolidación de repertorios adaptativos y de un mejor funcionamiento general (Vázquez, Hervás y Ho, 2006).

1.1.1 Bienestar hedónico y eudaimónico: Conceptos básicos

El constructo de bienestar es amplio e incluye diferentes enfoques teóricos, incluyendo el bienestar hedónico y eudaimónico (Gallagher, López y Preacher, 2009). Cada uno de estos enfoques enfatiza aspectos diferentes del bienestar y está compuesto por dimensiones distintas (Kashdan, Biswas-Diener & King, 2008; Ryan & Deci, 2000).

Por un lado, el bienestar hedónico, también conocido como bienestar subjetivo, se refiere a las evaluaciones cognitivas que las personas hacen sobre sus vidas y está compuesto por la satisfacción vital en combinación con niveles equilibrados de afecto positivo y negativo (Diener, 2013; Diener, Suh, Lucas y Smith, 1999). Los instrumentos más aceptados para medir estos aspectos son: 1) Escala de afecto positivo y negativo (PANAS; Watson, Clark y Tellegen, 1988). Esta escala consta de 20 ítems para medir el afecto positivo (10 ítems) y el afecto negativo (10 ítems), en el que el sujeto valora la intensidad con la que el sujeto siente las diferentes emociones. 2) Escala de satisfacción vital (SWLS; Diener, Emmons, Larsen y Griffin, 1985). Esta escala valora la evaluación cognitiva del individuo acerca de la satisfacción con su propia vida a través de 5 ítems. 3) Escala de Felicidad Subjetiva (SHS; Lyubomirsky y Lepper, 1999). Esta breve escala se compone de dos partes. La primera consta de dos preguntas en las que se les pide a los individuos que indiquen cuán felices se sienten en general y en comparación con las personas de su alrededor. La otra parte consta de dos afirmaciones sobre individuos felices e infelices y se les pide a los sujetos que valoren el grado en que se identifican con ambas afirmaciones.



En cuanto a los beneficios con los que se relaciona la experiencia del bienestar subjetivo, una reciente revisión los ha agrupado y descrito (Diener et al., 2016). Respecto a sus beneficios, se ha demostrado que las personas con mayores niveles de bienestar subjetivo sufren menos enfermedades (Diener y Chan, 2011), viven más años (Danner, Friesen y Snowdon, 2001; Pressman y Cohen, 2012) y también se han encontrado menores tasas de mortalidad en individuos diagnosticados de VIH/SIDA (Chida y Steptoe, 2008). Dichos beneficios se atribuyen al hecho de que las personas con mayores niveles de bienestar subjetivo tiene mayor tendencia a implicarse en conductas saludables tales como hacer ejercicio, no fumar y abrocharse el cinturón de seguridad (Diener, Kanazawa, Suh y Oishi, 2015).

Por otro lado, el bienestar eudaimónico, también conocido como bienestar psicológico, responde a diferentes perspectivas teóricas, tales como el modelo de bienestar psicológico de Ryff (1989), que se compone de 6 dimensiones: autonomía, manejo del ambiente, crecimiento personal, relaciones positivas con otros, propósito de vida y auto-aceptación. También se consideran modelos de bienestar eudaimónico la teoría de la auto-determinación (Ryan y Deci, 2000) y la teoría de la identidad eudaimónica (Waterman, 1993), como las teorías más consolidadas. Estas tres teorías comparten una perspectiva sobre el bienestar que subraya el desarrollo de las propias potencialidades y la consecución de un funcionamiento psicológico óptimo (Vittersø, 2016). Atendiendo a dichas teorías, cabe destacar que este constructo es mucho más abierto y, por tanto, la evaluación del mismo también se puede entender desde diferentes enfoques. Las medidas más aceptadas para evaluar este constructo se resumen a continuación: 1) Escala de bienestar psicológico (PWBS; Ryff, 1989). Se trata de la escala más aceptada para medir bienestar psicológico y evalúa las seis dimensiones del modelo de Ryff. 2) Cuestionario de bienestar eudaimónico (Waterman et al., 2010). Este instrumento evalúa aspectos de auto-descubrimiento, percepción de desarrollo de las propias potencialidades, sentido y propósito de vida, implicación intensa en actividades, inversión de esfuerzo significativo y disfrute de actividades personalmente expresivas. 3) Escala de orientación hacia la felicidad (Peterson, Park y Seligman, 2005). Dicha escala está compuesta por dos subescalas relacionadas. La primera evalúa el significado e implicación con la vida y la segunda mide bienestar

hedónico, entendido como la vida placentera. 4) Índice de felicidad de Pemberton (Hervás y Vázquez, 2013). Este instrumento combina las dimensiones de bienestar hedónico y eudaimónico con el objetivo de proporcionar una evaluación integrativa. Por un lado, evalúa bienestar recordado (general, hedónico, eudaimónico y social) y, por otro, evalúa bienestar experimentado recientemente. La combinación de estas dos partes da lugar a un índice de bienestar combinado.

Además de estas medidas que podrían ser consideradas como las más comprensivas en cuanto al constructo de bienestar eudaimónico, existen otros instrumentos que miden aspectos específicos de este funcionamiento psicológico óptimo. Así, en el meta-análisis llevado a cabo por Bolier et al. (2013) se consideraron como medidas relacionadas con el bienestar eudaimónico todas aquellas que medían aspectos concretos de las teorías anteriormente citadas, por nombrar algunos de ellos: esperanza, satisfacción de necesidades y propósito en la vida.

En cuanto a los beneficios con los que se relaciona este funcionamiento psicológico óptimo se encuentra el hecho de que actúa como factor protector frente a la emergencia de problemas y trastornos psicológicos (Lamers, Westerhof, Glas y Bohlmeijer, 2015; Wood y Joseph, 2010). Además, también se ha relacionado con menor riesgo de sufrir condiciones crónicas, como el Alzheimer (Ryff, 2013)

1.2 Intervenciones Psicológicas Positivas

Una de las aportaciones fundamentales de la psicología positiva ha sido el desarrollo de nuevas estrategias e intervenciones dirigidas a fomentar la aparición de experiencias emocionales positivas. Fundamentalmente, se trata de intervenciones sencillas dirigidas a reflejar las conductas y pensamientos que comparten aquellos individuos con mayores niveles de bienestar, y que pueden ser sometidas a prueba ante grupos control (Lyubomirsky y Layous, 2013). No obstante, cabe recordar que, previo al surgimiento de este enfoque, ya existían intervenciones centradas en potenciar aspectos positivos de la persona (Fordyce, 1977; Fava, Rafanelli, Cazzaro, Conti y Grandi, 1998). Por ello, en esta tesis nos centraremos en aquellas estrategias e intervenciones dirigidas a potenciar el



bienestar y el desarrollo de un funcionamiento psicológico positivo tanto si se han desarrollado dentro del marco de la psicología positiva como en otros marcos teóricos. En esta línea, las intervenciones psicológicas positivas (IPP) se definen en su conjunto como procedimientos dirigidos a promover emociones, pensamientos y conductas positivas con la finalidad de incrementar el bienestar individual o grupal (Parks y Biswas-Diener, 2013). Esta definición se compone de dos aspectos fundamentales e interrelacionados: el objetivo de la intervención y las vías por las que opera. Por una parte, el objetivo de la intervención ha de ser el bienestar en cualquiera de sus vertientes, es decir, aspectos relacionados con el bienestar subjetivo, psicológico y/o social (Schueller, Kashdan y Parks, 2014). En cuanto a las vías por las que opere dicha intervención, éstas han de ser la promoción de emociones, pensamientos y conductas positivas, más que estar centrado en la reparación de déficits y la corrección de patrones desadaptativos (Schueller et al., 2014).

1.2.1 Mecanismos de acción de las intervenciones positivas ¿Por qué funcionan?

A pesar de que numerosos estudios han puesto de manifiesto los beneficios que las IPP generan en la mejora del bienestar subjetivo y psicológico (Bolier et al., 2013; Sin y Lyubomirsky, 2009), poco se sabe aún sobre los mecanismos subyacentes a su efectividad. A este respecto, recientemente se han planteado dos modelos teóricos que analizan cómo y por qué funcionan estas intervenciones.

1.2.1.1 Modelo de actividad positiva

Este modelo fue planteado por Lyubomirsky y Layous (2013; "*Positive-Activity Model*") y tiene como finalidad analizar las condiciones óptimas bajo las que funcionan estas intervenciones y los mecanismos que subyacen a su eficacia. Este modelo tiene en cuenta las características de la persona y de la actividad así como de su interacción, a la hora de buscar un ajuste óptimo que permita obtener un mayor beneficio de estas intervenciones (Figura 1. 1)

Características de la actividad. Los autores plantean dos aspectos fundamentales. Por un lado, se centran en el modo de implementación de las actividades, teniendo en cuenta la frecuencia de realización del ejercicio (dosificación), si existe variedad en las estrategias a utilizar, el orden de

presentación de las mismas (disparador) y si incorporan apoyo social o no. Por otro lado, plantean que ciertas características específicas de las intervenciones también podrían influir en su eficacia. Así, la orientación temporal podría jugar un papel importante, distinguiendo entre actividades centradas en el pasado (p. ej: expresar gratitud o recordar acontecimientos positivos), el presente (ej: estrategias de saboreo) y el futuro (ej: entrenamiento en esperanza o el "mejor yo posible"). Otra variable a tener en cuenta es si la actividad está orientada hacia uno mismo (p. ej. practicar optimismo) o hacia otros (p. ej. expresar gratitud). Además también podría tener influencia en la eficacia de estas actividades si la actividad es más social (p. ej: realizar actos amables) o reflexiva (p. ej: disfrutar los buenos momentos).

Características de la persona. Según estos autores, los atributos de la persona que va a implicarse en la actividad también jugarían un papel fundamental en el éxito de la misma. Así, personas con una mayor motivación para ser felices y que creen que sus esfuerzos tendrán recompensa, obtienen mayores niveles de bienestar (Layous, Nelson y Lyubomirsky, 2012). Por otro lado, el estado afectivo basal y las variables de personalidad del individuo (p. ej: neuroticismo, extraversión) podrían afectar al beneficio que se obtiene de la actividad. También el apoyo que perciban los individuos por parte de su propia red social para llevar a cabo actividades que les generen bienestar podría influir en el beneficio que obtienen de ellas. Por último, las propias características sociodemográficas, como la edad o la cultura (oriental u occidental) podrían modular la eficacia de las intervenciones.

Ajuste persona-actividad. El planteamiento final del modelo ahonda en la importancia de buscar un equilibrio entre las características de la actividades y de la persona, de manera que se exploren qué características de las actividades son más compatibles con qué tipo de personas. Este equilibrio es apoyado por aquellos estudios que muestran el grado en que los participantes disfrutan llevando a cabo la actividad, ya que esto predice tanto la frecuencia con la que realizan la actividad, como el beneficio que obtienen de ella (Lyubomirsky, 2008; Schueller, 2010).

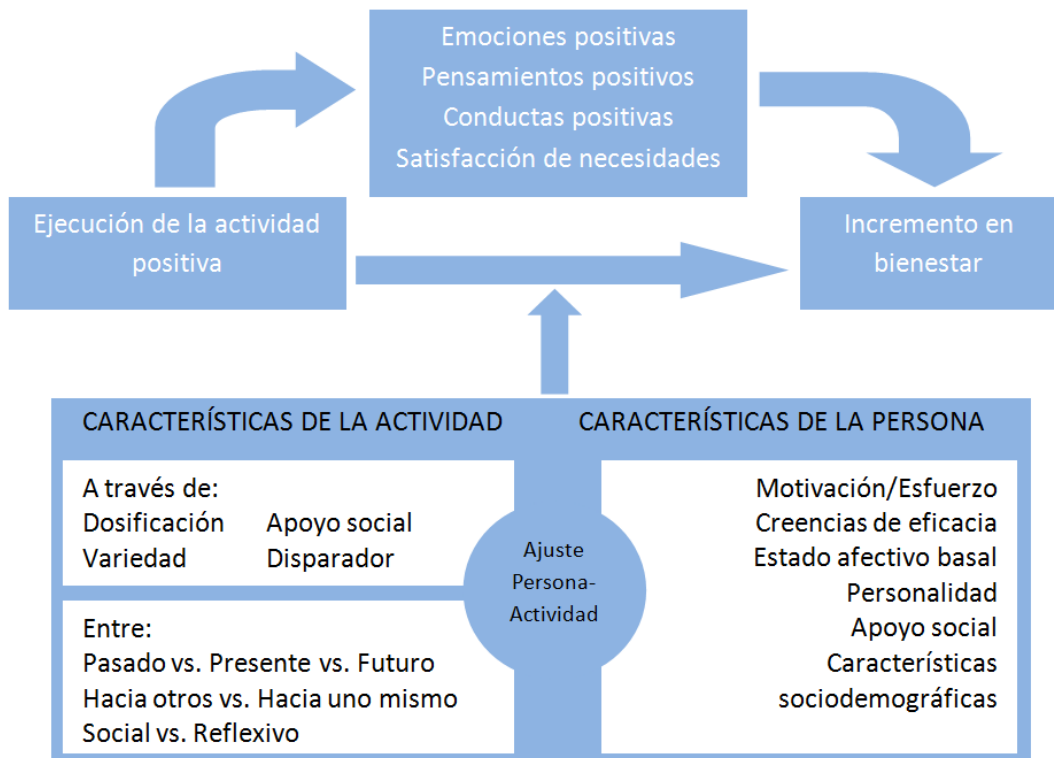


Figura 1. 1 - Modelo de actividad Positiva

1.2.1.2 Modelo de regulación de las emociones positivas

El modelo planteado por Quoidbach, Mikolajczak y Gross (2015) propone un modelo de regulación de las emociones positivas utilizando como punto de referencia el modelo procesual de regulación emocional (Gross, 1998; Gross y Thompson, 2007). Basándose en este modelo, los autores categorizan las actividades en función del proceso psicológico subyacente que está operando y el momento temporal en el que se pone en marcha la estrategia de regulación emocional.

En cuanto al proceso psicológico subyacente a las actividades, proponen que éstas se pueden distinguir según la fase del proceso de regulación emocional de Gross (1998) en el que se aplican (Figura 1.2):

- a) Selección de la situación: El individuo elige aquellas situaciones en las que implicarse (o no) según sus expectativas acerca de la respuesta emocional que tendrá.
- b) Modificación de la situación: Una vez el sujeto está en esa situación, puede elegir modificarla.

- c) Focalización de la atención. El sujeto atiende a características específicas de la situación.
- d) Cambio cognitivo: Posibilidad de reevaluar cognitivamente la situación.
- e) Modificación de la respuesta: El sujeto también puede alterar sus respuestas conductuales y fisiológicas

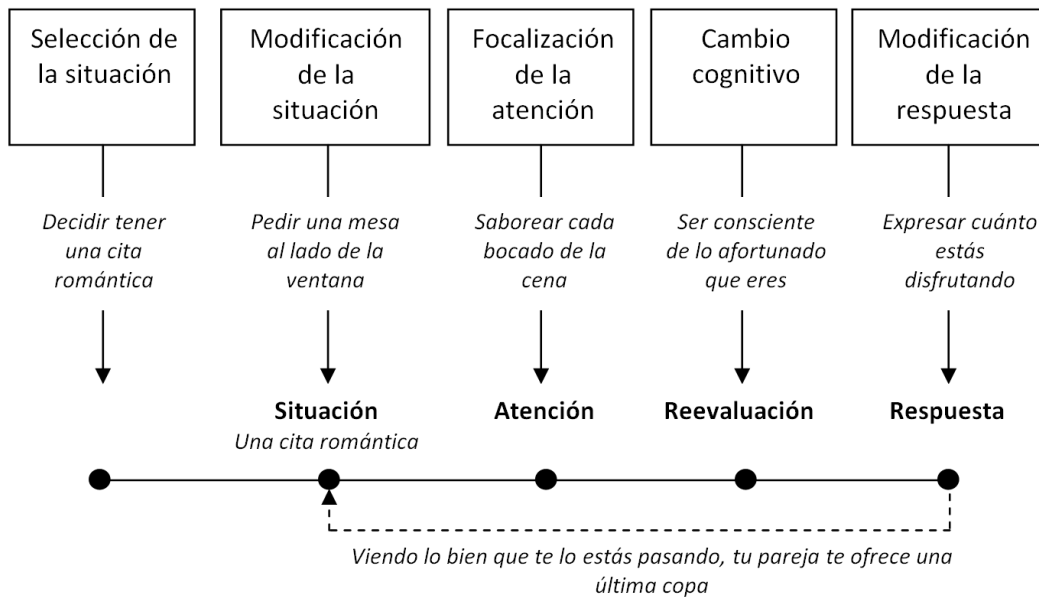


Figura 1.2 - Modelo procesual de regulación de la emoción

Por otro lado, este modelo también defiende que la orientación temporal de la intervención positiva podría generar emociones positivas en función del momento en que se implemente. A este respecto, los autores ponen el ejemplo de cómo maximizar el disfrute de unas vacaciones. Así, antes del evento podría empezar a pensar de manera positiva sobre las futuras vacaciones, buscando los mejores destinos y con quién iría (actividades positivas orientadas hacia el futuro); durante las vacaciones podría disfrutar de las diferentes actividades que realice (actividades positivas orientadas hacia el presente) y después de las vacaciones podría recordar los mejores momentos o compartir sus fotos con otros (actividades positivas orientadas hacia el pasado).

1.2.2 Intervenciones positivas orientadas hacia el futuro

Teniendo en cuenta los modelos teóricos comentados anteriormente, cabe pensar que la orientación temporal de las intervenciones psicológicas positivas



podría ser un importante mecanismo de acción subyacente a la efectividad de las mismas o un aspecto a tener en cuenta para el logro de determinados objetivos.

En este sentido, el presente trabajo se ha centrado en intervenciones positivas con una orientación temporal futura, dado que consideramos que dicho marco temporal puede tener importantes implicaciones para la salud y el bienestar. Tal como plantea Macleod (2013) los seres humanos estamos orientados al futuro: planeamos y anticipamos; presuponemos y esperamos. La capacidad de proyectarnos en el futuro es compartida por otros animales, aunque estos últimos tan solo pueden hacerlo en base al aprendizaje derivado de asociaciones estimulares. Por tanto, esta característica distintiva es la que nos permite pensar en el futuro en multitud de maneras diferentes.

Esta perspectiva orientada hacia el futuro engloba los conceptos de optimismo, esperanza, orientación y establecimiento de objetivos, que representan una postura motivacional, emocional y cognitiva hacia el futuro (Peterson y Seligman, 2004). En cuanto al optimismo y la esperanza, ambos son concebidos como rasgos de personalidad estables que reflejan el grado en que uno cree que su futuro será próspero y favorable, además de que tienen relaciones directas con los objetivos y propósitos vitales (Gallagher y López, 2009; Ruini y Fava, 2013). Al mismo tiempo, ambos conceptos proporcionan explicaciones de cómo las expectativas futuras positivas influyen en la conducta humana y promueven el bienestar (Gallagher y López, 2009). A continuación se van a describir brevemente las características de la esperanza, el optimismo y el planteamiento de objetivos, así como su entrenamiento.

En primer lugar, el optimismo se define como una expectativa generalizada de obtener resultados positivos en la vida sin poner énfasis en cómo o por qué se logran dichas metas (Scheier y Carver, 1985). En este sentido, las intervenciones basadas en el optimismo se centran principalmente en pensar y visualizar acontecimientos futuros y objetivos de manera positiva (King, 2001; Quoidbach, Wood y Hansenne, 2009). Dichas intervenciones se han demostrado eficaces en la mejora de los niveles de afecto positivo, satisfacción vital y optimismo (Meevissen, Peters y Alberts, 2011; Sheldon y Lyubomirsky, 2006). Un meta-análisis reciente (Malouff y Schutte, 2016) ha demostrado que la

intervención más eficaz para la mejora del optimismo es el ejercicio "Mejor Yo Posible" (King, 2001), el cual será descrito con mayor detalle más adelante.

En segundo lugar, el concepto de esperanza está compuesto por 3 aspectos interrelacionados (Snyder, 2000): (1) planteamiento claro de los objetivos; (2) Percepción de rutas, referido a la capacidad de buscar caminos que nos permitan alcanzar dichos objetivos; y (3) Percepción de capacidad, referido a la motivación para seguir esos caminos y alcanzar los objetivos. Derivado de este modelo, han surgido diferentes intervenciones basadas en los componentes de esperanza dirigidas a mejorar los niveles de bienestar y esperanza en población general y clínica (Berg, Snyder y Hamilton, 2008; Cheavens, Feldman, Gum, Michael, y Snyder, 2006). Un meta-análisis demostró que estas intervenciones producían tamaños del efecto pequeños en la mejora de la satisfacción vital, aunque no se observó una disminución significativa en los niveles de malestar (Weis y Speridakos, 2011).

Por último, los objetivos se definen como representaciones internas de estados deseados, entendiendo estados como resultados, situaciones o procesos futuros (Austin y Vancouver, 1996). Estas representaciones acerca del futuro influyen en el presente, actuando como una fuente de motivación y un incentivo para la acción (Cochran y Tesser, 1996). A este respecto, las intervenciones basadas en objetivos dirigidas a mejorar el bienestar se componen de dos partes fundamentales (Macleod, Coates y Hetherington, 2008): a) Identificar objetivos acordes a uno mismo y enfocarse hacia ellos; y b) Desarrollar habilidades de planificación que conduzcan a establecer los planes y afrontar los posibles obstáculos que puedan aparecer. Estas intervenciones producen aumentos significativos en los niveles de bienestar subjetivo y también mejora en las expectativas futuras positivas en comparación con grupos control (Farquharson y Macleod, 2014; Macleod et al., 2008).

En general, los tres conceptos comparten que la base de su funcionamiento es el foco en la orientación temporal futura y en los objetivos a lograr. No obstante, el optimismo se centra fundamentalmente en la creencia de que los objetivos serán alcanzados, mientras que la esperanza y el planteamiento de objetivos se centran en los pasos a seguir para alcanzar los objetivos y los posibles obstáculos que se pueden encontrar. A decir verdad, ningún estudio ha



investigado de manera conjunta los diferentes tipos de intervenciones orientadas hacia el futuro y su relación con el bienestar. Esto ha conducido al desarrollo de estrategias diferentes pero que comparten una base muy similar. Por ejemplo, en la literatura es posible encontrar diferentes intervenciones basadas en optimismo con instrucciones muy similares, pero con diferentes nombres (Littman-Ovadia y Nir, 2014; Quoidbach et al, 2009; Murru y Ginis, 2010). Esto es problemático, ya que a pesar de sus grandes similitudes, no se puede concluir en base a la eficacia global de una intervención específica.

1.2.2.1 El Mejor Yo Posible

Esta intervención consiste en una técnica de pensamiento futuro positivo, la cual requiere que la persona se visualice y escriba sobre un futuro en el que ha trabajado mucho y, gracias a ello, ha conseguido todos sus objetivos y ha desarrollado todas sus potencialidades (Peters, Flink, Boersma y Linton, 2010).

El ejercicio Mejor Yo Posible (MYP) fue planteado inicialmente por King (2001) como un ejercicio de escritura sobre los objetivos de vida, alternativo a escribir y pensar sobre acontecimientos negativos y traumáticos. Estos últimos habían demostrado producir beneficios físicos y psicológicos como consecuencia de procesos de catarsis y expresión emocional, los cuales acompañaban a la elaboración del suceso traumático y permitían que el individuo se desahogase emocionalmente (Pennebaker, 1993, 1997). Los resultados de los estudios de King mostraron que escribir sobre el mejor futuro posible era menos angustiante y generaba menos malestar que escribir sobre otros sucesos, incluso se asoció con menores síntomas de enfermedad (King, 2001; King & Rospin, 2004). Cabe destacar que aunque estos estudios también recogieron información sobre variables positivas, este ejercicio fue pensado inicialmente para reducir el malestar (King, 2001).

Actualmente, esta intervención es una de las más estudiadas en el campo de la psicología positiva, habiendo sido aplicada en más de 30 estudios desde su aparición (Loveday, Lovell y Jones, 2016) y demostrando eficacia en la mejora del estado de ánimo y el bienestar de quienes lo realizan. Así, el primer estudio que incluyó este ejercicio con la finalidad de promover el bienestar fue llevado por Sheldon y Lyubomirsky (2006). En él se comparó la eficacia de dos IPPs: el MYP y un ejercicio de expresar gratitud, con un grupo control, en la promoción

de emociones positivas en estudiantes universitarios. Además, para la realización del ejercicio MYP se pidió a los participantes de manera explícita que, además de escribir sobre ese tema, se visualizasen en ese mejor futuro. Los resultados mostraron que, tras cuatro semanas de práctica, los participantes que realizaron los ejercicios de psicología positiva, incrementaron significativamente sus niveles de afecto positivo en comparación con el grupo control. Además se encontró que los efectos producidos en el grupo que realizó el ejercicio BPS fueron incluso más pronunciados que en la condición de gratitud. Estudios similares han demostrado que el ejercicio BPS ha demostrado eficacia en mejorar niveles de bienestar subjetivo tras 8 semanas de práctica, aunque estos resultados no se mantuvieron en el seguimiento a 6 meses (Layous, Nelson & Lyubomirsky, 2012; Lyubomirsky, Dickerhoof, Boehm & Sheldon, 2011).

Debido a la orientación futura del ejercicio, otros autores estudiaron los efectos del MYP en variables orientadas al futuro, como las expectativas futuras positivas y el optimismo disposicional. Estos autores demostraron que este ejercicio también era efectivo en la mejora de estos aspectos a corto y medio plazo (Peters, Flink, Boersma y Linton, 2010; Meevissen, Peters y Alberts, 2011). No obstante, estudios posteriores del MYP con población general y depresiva que han incluido la medida de optimismo disposicional no han observado mejoras significativas en esta medida (Liau, Neihart, Teo & Lo, 2016; Pietrowsky & Mukutta, 2012).

1.2.3 Eficacia de las Intervenciones Psicológicas Positivas en población general

Principalmente, la eficacia de las IPP en la mejora del bienestar se ha sometida a prueba en población sana, comparando los efectos con grupos control. Algunas de las (IPP) que han recibido una mayor atención empírica son las siguientes: escribir cartas de gratitud (Boehm, Lyubomirsky y Sheldon, 2011; Seligman, Steen, Park y Peterson, 2005), realizar actos de amabilidad (Buchanan y Bardi, 2010; Dunn, Aknin y Norton, 2009), intervenciones basadas en esperanza (Cheavens, Feldman, Woodward y Snyder, 2006; Weis y Speridakos, 2011), pensar en el mejor yo posible (King, 2001; Meevissen, Peters y Alberts, 2011), pensar y escribir sobre experiencias positivas (Burton y King, 2004; Wing,



Schutte y Birne, 2006, entrenamiento de fortalezas (Mitchell, Stanimirovic, Klein y Vella-Brodrick, 2009; Seligman et al., 2005), ejercicios de saboreo (Hurley y Kwon, 2011; Schueller y Parks, 2012) y entrenamiento en compasión (Fredrickson, Cohn, Coffey, Pek y Finkel, 2008; Shapira & Mongrain, 2010).

Hasta la fecha, dos meta-análisis han analizado la eficacia de las IPP en la mejora del bienestar (Bolier et al., 2013; Sin y Lyubomirsky, 2009). Aunque ambos meta-análisis incluyeron estudios con población general y clínica, la mayoría de los estudios incluidos habían sido realizados con población general. El primero de ellos (Sin y Lyubomirsky, 2009) exploró la eficacia en la mejora del bienestar de todas aquellas intervenciones dirigidas fundamentalmente a cultivar sentimientos, cogniciones o conductas positivas. Cabe destacar que estos autores analizaron la eficacia en base a una medida de bienestar general, es decir, todas las medidas de resultado de los diferentes estudios fueron unidas en una medida única de bienestar general. Los resultados mostraron que estas intervenciones producían tamaños del efecto moderados ($d = 0,61$) en la medida de bienestar general. También analizaron los efectos sobre los niveles de depresión encontrando tamaños del efecto moderados ($d = 0,65$). En cuanto a los moderadores de la eficacia de las intervenciones, este meta-análisis encontró que los participantes con mayores niveles previos de depresión, los participantes de más edad, que se ofrecían voluntarios y las intervenciones aplicadas en formato individual y de mayor duración obtenían mayores beneficios de estas intervenciones.

En cuanto al meta-análisis realizado por Bolier et al. (2013), este reunió todas aquellas intervenciones desarrolladas dentro del marco de la psicología positiva, esto es, todos aquellos estudios que aparecieron a partir del nacimiento de esta corriente (1998), excluyendo todos los estudios anteriores a esta fecha. Además otra diferencia fundamental respecto a su homólogo anterior fue la categorización del bienestar en dos medidas de resultado principales, a saber, bienestar subjetivo y bienestar psicológico. Además, también recogieron los efectos de estas intervenciones sobre los niveles de depresión. Los resultados de este meta-análisis mostraron tamaños del efecto pequeños en la mejora del bienestar subjetivo ($d = 0,34$), bienestar psicológico ($d = 0,20$) y depresión ($d = 0,23$). En cuanto al análisis de moderadores, este meta-análisis no encontró

ninguna variable que moderara los efectos de estas intervenciones sobre los niveles de bienestar subjetivo o psicológico. No obstante, para la variable de depresión sí que encontraron que las intervenciones eran más efectivas si tenían una mayor duración, si la muestra se reclutaba a través de hospitales, si los participantes tenían problemas psicosociales y si se aplicaban de manera individual, y también si el diseño del estudio era de baja calidad.

En conjunto, ambos meta-análisis pusieron de manifiesto que las IPP son estrategias consolidadas para mejorar el bienestar en población adulta. La diferencia encontrada en cuanto a los tamaños del efecto y a los moderadores de las intervenciones podría deberse a alguna de las diferencias fundamentales entre ambos estudios, tales como los criterios para la inclusión de los estudios o la separación de las medidas bienestar. Como limitación, es importante señalar que ambos trabajos seleccionaron los trabajos en base a las medidas de resultado, in tener en cuenta las características de las intervenciones. Esto impide poder sacar conclusiones en cuanto a la eficacia diferencial de diferentes tipos de intervenciones.

1.2.4 Eficacia de las Intervenciones psicológicas positivas en población clínica

La inclusión de estrategias para la mejora de las emociones positivas como un modo de ampliación del foco de la psicología clínica, más allá del sufrimiento y el alivio del mismo, ha sido ampliamente abordado (Lee Duckworth, Steen y Seligman, 2005; Ryff y Singer, 1996). En este sentido, ambos enfoques pueden ser entendidos como complementarios y han de estar destinados a integrarse (Johnson y Wood, 2015). Esta unión supone un paso adelante para poder ayudar a las personas de un modo más eficaz, ya que no solo se abordan los déficits y problemas, sino también recursos y potencialidades (Ruini, 2017).

A este respecto, la inclusión de estas estrategias en el proceso terapéutico cumple diferentes funciones. En primer lugar, la promoción de los aspectos positivos está relacionado con una mejora en la calidad de vida y el bienestar (Diener y Chan, 2011; Howell, Kern y Lyubomirsky, 2007), por lo que su presencia en el proceso terapéutico es fundamental. En segundo lugar, la inclusión de estas estrategias pueden mitigar los efectos nocivos producidos por los



trastornos psicológicos (Layous, Chancellor y Lyubomirsky, 2014). Además, también pueden jugar un importante papel como prevención de recaídas, dado que las emociones positivas podrían fortalecer al individuo frente a la reaparición de sintomatología en el futuro (Ryff y Singer, 1996; Vázquez, Hervás y Ho, 2006).

Los meta-análisis previos han puesto de manifiesto que individuos depresivos o con problemas psicosociales obtenían un mayor beneficio tras practicar este tipo de actividades (Bolier et al., 2013; Sin y Lyubomirsky, 2009). Además, actualmente ya se han desarrollado algunos protocolos compuestos por diferentes estrategias de psicología positiva y que han demostrado ser eficaces en la mejora de diferentes problemas psicológicos. Uno de ellos es la terapia del bienestar de Fava (Fava y Ruini, 2003), basada en el modelo de bienestar eudaimónico de Ryff (Ryff, 2014), y que ha demostrado ser eficaz como componente coadyuvante de protocolos cognitivo-conductuales para el tratamiento de depresiones recurrentes y también de trastornos de ansiedad (Ruini & Fava, 2004, 2009).

Otra intervención que ha recibido gran atención empírica es la terapia positiva para la depresión propuesta por Seligman et al. (2006). Este protocolo puede administrarse de manera independiente o incluirse en otros procedimientos y su eficacia está siendo puesta a prueba en diferentes problemas psicológicos, tales como depresión, ansiedad o trastorno límite de la personalidad (para una revisión ver Rashid, 2014). En la mayoría de casos, esta terapia se ha aplicado en formato grupal a población comunitaria (pacientes ambulatorios en contextos hospitalarios, clínicas comunitarias de salud mental, estudiantes con síntomas depresivos). A pesar de que los resultados son prometedores, en su mayoría son estudios pilotos que requieren ser replicados y sometidos a prueba en estudios controlados, incluyendo seguimiento más largos y muestras más representativas (Ruini, 2017).

La terapia de calidad de vida (Frisch, 2006), recientemente reformulada en la llamada terapia de calidad de vida y coaching (Frisch, 2013) conforma otro protocolo de intervención que cuenta con evidencia empírica. A diferencia de las anteriores, esta terapia está centrada en promover aspectos del bienestar subjetivo y la satisfacción vital en diferentes ámbitos. La población diana en estos casos han sido poblaciones con problemáticas de salud física o cuidadores de personas con

trastornos mentales (Abedi y Vostanis, 2010; Rodrigue, Mandelbrot, y Pavlakis, 2011).

Por último, las intervenciones basadas en fortalezas, parten del Cuestionario VIA-IS (Peterson y Seligman, 2004) para identificar las fortalezas principales de los individuos. Una vez identificadas, los participantes son animados a usar estas fortalezas de una manera más consciente y aplicarlas también en nuevos ámbitos (Rashid, 2009). Este enfoque ha sido aplicado, tanto en contextos clínicos, como organizacionales y escolares demostrando efectos positivos (Gander, 2013).

1.2.4.1 Intervenciones Psicológicas Positivas y Trastornos de la Conducta Alimentaria

Los trastornos de la conducta alimentaria son graves desórdenes psiquiátricos con elevadas tasas de mortalidad y morbilidad física y psicosocial (Arcelus, Mitchell, Wales y Nielsen, 2011). Además, son trastornos muy difíciles de tratar y, en muchos casos, los pacientes suelen permanecer enfermos durante años, incluso llegando a convertirse en pacientes crónicos (Geller, Williams y Srikameswaran, 2001; Noordenbos, Oldenhave, Muschter y Terpstra, 2002). Con respecto a los tratamientos científicos basados en la evidencia, se ha demostrado que la terapia cognitivo-conductual es efectiva en la reducción de la sintomatología del trastorno por atracón y la bulimia nerviosa (Pike, Gianini, Loeb y Le Grange, 2015). No obstante, todavía no existe ningún tratamiento que haya demostrado eficacia clara para la mejora de la anorexia nerviosa y el trastorno de la conducta alimentaria no especificado (Fairburn, 2005; Pike et al., 2015).

Por otro lado, las investigaciones han demostrado que los pacientes con TCA tienen afectadas muchas áreas aparte de la sintomatología alimentaria, tal como las áreas psicológica y social, produciendo un gran impacto en su calidad de vida (Engel, Adair, Hayas y Abraham, 2009). A este respecto se ha observado que estas pacientes manifiestan niveles muy bajos de emociones positivas, bajos niveles de optimismo y menor satisfacción con la vida (Tomba, Offidani, Tecuta, Svhumann y Ballardini, 2014). Más aún, se ha demostrado que pacientes con TCA que han recibido tratamiento psicológico continúan mostrando bajos niveles de bienestar (Tomba, Tecuta, Schumann y Ballardini, 2017), lo cual podría



contribuir a un mayor riesgo de recaídas, tal como se ha observado en individuos con otros trastornos psiquiátricos en remisión (Wood y Joseph, 2010).

Teniendo en cuenta la limitada eficacia de los tratamientos convencionales, se ha planteado un cambio en el enfoque de los objetivos de tratamiento, desde la restauración del peso y la recuperación completa, al restablecimiento de la calidad de vida y el bienestar (Dawson, Rhodes y Touyz, 2014; Slade, 2010). Este enfoque está especialmente dirigido a pacientes con TCA grave y de larga duración, ya que suelen tener baja motivación por el cambio y un estilo de vida dominado por la enfermedad (Touyz et al., 2013; Treasure y Russell, 2011). Así, propone animar a los pacientes a que sean proactivas y optimistas con la terapia y que las decisiones sobre el tratamiento se tomen de manera conjunta entre paciente y terapeuta. Esta perspectiva podría ayudar a los pacientes que no quieren centrarse en la restauración de peso, a estar más motivados a mejorar áreas concretas que estén afectadas, pudiendo resultar en una mayor implicación y adherencia con el tratamiento (Bamford y Mountford, 2012).

Debido al potencial beneficio que puede tener el bienestar en el proceso de recuperación, numerosos expertos han planteado la inclusión de intervenciones psicológicas positivas como posibles estrategias de prevención y tratamiento de los TCA (Steck, Abrams y Phelps, 2004; Góngora, 2014). La promoción de estos aspectos positivos podría ayudar en el proceso de recuperación de los pacientes, al amortiguar el impacto negativo causado por estos trastornos (Tchanturia, Dapelo, Harrison y Hambrook, 2015). No obstante, hasta la fecha no se ha llevado a cabo ningún estudio controlado que analice la eficacia de las intervenciones psicológicas positivas en la mejora del bienestar en pacientes con TCA. Tan solo un estudio piloto analizó la viabilidad de un taller grupal de 5 sesiones compuesto por una combinación de diferentes estrategias positivas (p. ej: escribir sobre experiencias positivas, actos de amabilidad, cartas de gratitud) y aplicado en un grupo de adolescentes con TCA que eran atendidos en una unidad especializada (Harrison, Al-Khairulla y Kikoler, 2015). Los resultados mostraron potenciales beneficios en la mayoría de los pacientes en términos de satisfacción vital y bienestar subjetivo.

Dada la gran variedad de estrategias positivas, es fundamental seleccionar aquellas que cubran necesidades específicas de los pacientes con el objetivo de

diseñar tratamientos personalizados y maximizar así sus beneficios (Lyubomirsky y Layous, 2013). A este respecto, la literatura ha demostrado que los pacientes con TCA tienen un auto-concepto alterado que funciona como un factor de vulnerabilidad clave en la formación y la persistencia de estos trastornos (Stein y Corte, 2007). En consecuencia, estos pacientes a menudo perciben la recuperación como inimaginable, siendo incapaces de imaginar un futuro personal mejor, dado que han internalizado un self patológico, esencialmente anoréxico o bulímico (Malson et al., 2011). Por ello, varios autores sugieren que intervenciones dirigidas a desarrollar un self más allá de los parámetros del trastorno alimentario, es decir, en el que se plantee una perspectiva optimista y significativa acerca del futuro podrían ser muy beneficiosas para la recuperación (Stein y Corte, 2007; Malson et al., 2011). Por este motivo, parte de los estudios de esta tesis doctoral pretenden someter a prueba la eficacia del ejercicio MYP en pacientes con TCA para la mejora del optimismo y de diferentes variables de funcionamiento positivo.

1.3 Tecnologías Positivas

Las Tecnologías de la Información y la Comunicación (TICs) han supuesto un complemento al campo de la psicología positiva, permitiendo el desarrollo de intervenciones con mayor potencial para generar emociones positivas y bienestar. Las Tecnologías Positivas (TPs) se definen como el enfoque científico y aplicado de la tecnología para mejorar la calidad de nuestra experiencia personal, con el objetivo de incrementar nuestro bienestar y generar fortalezas y resiliencia en individuos, organizaciones y en la sociedad en general (Riva, Baños, Botella, Wiederhold y Gaggioli, 2012). Los autores pioneros en el campo de las tecnologías positivas (Botella et al., 2012; Riva et al., 2012) sugieren que el uso de la tecnología puede actuar sobre tres aspectos diferentes del bienestar, en concreto, el nivel hedónico, eudaimónico y social. A este respecto, se plantea que pare ser considerada una tecnología positiva, ésta debe haber sido específicamente diseñada para mejorar la calidad de la experiencia personal, la cual de hecho sirve para promover bienestar y generar recursos y fortalezas en los individuos.

En cuanto al bienestar hedónico, las TPs irían dirigidas a estimular estados emocionales positivos, tales como alegría, relajación o disfrute. A este respecto,



existen procedimientos de inducción del estado de ánimo cuya finalidad es provocar en el individuo estados emocionales transitorios en una situación no natural, de forma controlada. El estado de ánimo que se induce intenta ser específico y pretende ser un análogo experimental del estado de ánimo que se daría en una situación natural determinada (García-Palacios y Baños, 1999). Baños et al (2006) han desarrollado algunos dispositivos, denominados “parques emocionales”, en los que se ha tratado de combinar los procedimientos de inducción del estado de ánimo con realidad virtual para inducir emociones positivas (bienestar y relajación). Por otro lado, Botella et al (Botella et al., 2009; Etchemendy et al., 2011), han diseñado otro dispositivo que utiliza realidad virtual y otras TICs, llamado Sistema Mayordomo. Este sistema es una plataforma virtual de salud diseñada para mejorar la calidad de vida de la población mayor. Una de sus aplicaciones son dos ambientes de RV para generar emociones positivas, que presentan estímulos visuales y auditivos para inducir estados de bienestar y relajación en el usuario.

En cuanto al bienestar eudaimónico, las tecnologías positivas tienen como objetivo investigar cómo éstas pueden ser usadas para apoyar a los individuos en alcanzar experiencias atractivas y auto-realizadoras, es decir, tareas en las que se impliquen y les resulten motivadoras (Riva et al., 2012). En esta línea, nuestro grupo de investigación desarrolló una aplicación llamada EARTH (Emotional Activities Related to Health; Baños, Botella, Etchemendy y Farfallini, 2012; Botella, Baños, Etchemendi, García-Palacios y Alcañiz, 2016), la cual fue desarrollada dentro del proyecto MARS500. Este proyecto fue diseñado para ayudar a los astronautas en una futura misión a Marte, simulando los efectos psicológicos de un grupo de seis personas tras 520 días de confinamiento en un espacio reducido. EARTH incluye procedimientos de inducción del estado de ánimo a través de realidad virtual junto con una aplicación llamada “Libro de la Vida”, la cual incluye varios capítulos que se centran en experiencias significativas de la vida de uno mismo, además de un capítulo sobre los planes futuros. Cada uno de los capítulos está diseñado para promover una fortaleza psicológica específica y todos ellos incluyen la posibilidad de adjuntar imágenes, audios y videos, además del texto. Una vez las memorias y planes de los usuarios

han sido organizados y analizados, los usuarios pueden revisarlas y disfrutarlas en cualquier momento.

Riva et al. (2012) sugieren que otro tipo de tecnologías positivas que pueden actuar a nivel eudaimónico son aquellas que potencien el estado de flow. Éste se define como un estado de conciencia positiva y compleja que está presente cuando los individuos realizan una tarea con una total implicación en la misma (Csikszentmihalyi, 1990). La característica fundamental de esta experiencia es la existencia de un equilibrio entre tareas motivadoras y unos adecuados recursos personales para afrontarlas (Csikszentmihalyi, 1990). En esta línea, algunos trabajos han demostrado que las experiencias de flow pueden aparecer tanto al utilizar videojuegos online como en juegos de aprendizaje (Admiraal, Huizenga, Akkerman y Dam, 2011; Chiang, Lin, Cheng y Liu, 2011).

En cuanto al bienestar social, las tecnologías positivas tienen como objetivo promover las relaciones sociales y el crecimiento a través de la integración y la conectividad social (Botella et al., 2012; Riva et al., 2012). En Internet se pueden encontrar diferentes páginas web en las que se busca desarrollar TICs para mejorar la participación y la colaboración social. Uno de los ejemplos más claros es Wikipedia, la enciclopedia online más consultada del mundo. Dicha página se caracteriza porque sus artículos han sido redactados conjuntamente por usuarios de todo el mundo, con el fin de constituir una enciclopedia libre, políglota y editada colaborativamente. El objetivo es implicar y permitir a la gente del mundo reunir y desarrollar contenidos educativos de una forma gratuita, para mejorar la educación y la calidad de vida de los usuarios (Calefato, Vernerio y Montanari, 2009). Cabe destacar también un proyecto desarrollado en España denominado “Proyecto Ment@” (www.proyectomenta.es). Se trata de un emprendimiento social que tiene como objetivo elaborar aplicaciones para favorecer la accesibilidad a mayores en el uso de las TICs, de manera que las incorporen en sus actividades cotidianas, y se sirvan de ellas para mejorar su calidad de vida.

En general, hasta la fecha son escasos los ejemplos de TICs que se puedan considerar tecnologías positivas por lo que aún queda mucha investigación por desarrollar. En este sentido, Botella et al. (2012) sugieren que la integración de las



TICs y las IPP puede constituir un binomio atractivo y facilitador que potencie la eficacia de estas intervenciones en la mejora del bienestar.

Referencias

- Abedi, M. R., y Vostanis, P. (2010). Evaluation of quality of life therapy for parents of children with obsessive-compulsive disorders in Iran. *European child y adolescent psychiatry*, 19(7), 605-613.
- Admiraal, W., Huizenga, J., Akkerman, S. y Dam, G. T. (2011). The concept of flow in collaborative game-based learning. *Computers in Human Behavior*, 27(3), 1185-1194.
- Arcelus, J., Mitchell, A. J., Wales, J., y Nielsen, S. (2011). Mortality Rates in Patients With Anorexia Nervosa and Other Eating Disorders : a meta-analysis of 36 studies. *Archives of general psychiatry*, 68(7), 724-731.
- Austin, J. T., y Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process and content. *Psychological Bulletin*, 120, 338-375.
- Bamford, B. H., y Mountford, V. A. (2012). Cognitive behavioural therapy for individuals with longstanding anorexia nervosa: Adaptations, clinician survival and system issues. *European Eating Disorders Review*, 20(1), 49-59.
- Baños, R. M., Liaño, V., Botella, C., Alcañiz, M., Guerrero, B. y Rey, B. (2006). Changing induced moods via virtual reality. En *Persuasive Technology* (pp. 7-15). Springer Berlin Heidelberg.
- Baños, R.M., Botella, C., Etchemendy, E. y Farfallini, L. (2012). EARTH of Wellbeing: A place to live Positive Emotions. En B.K Wiederhold y G. Riva (Eds.), *Annual Review of Cybertherapy and Telemedicine*.
- Berg, C. J., Snyder, C. R., y Hamilton, N. (2008). The effectiveness of a hope intervention in coping with cold pressor pain. *Journal of health psychology*, 13(6), 804-9.
- Boehm, J. K., Lyubomirsky, S., y Sheldon, K. M. (2011). A longitudinal experimental study comparing the effectiveness of happiness-enhancing strategies in Anglo Americans and Asian Americans. *Cognition & Emotion*, 25(7), 1263-1272.
- Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., y Bohlmeijer, E. (2013). Positive psychology interventions: a meta-analysis of randomized controlled studies. *BMC public health*, 13, 119.
- Botella, C., Baños, R. M., Etchemendy, E., García-Palacios, A., y Alcañiz, M. (2016). Psychological countermeasures in manned space missions: «EARTH» system for the Mars-500 project. *Computers in Human Behavior*, 55, 898-908.
- Botella, C., Etchemendy, E., Castilla, D., Baños, R. M., García-Palacios, A., Quero, S., ... y Lozano, J. A. (2009). An e-health system for the elderly (Butler Project): A pilot study on acceptance and satisfaction. *CyberPsychology y Behavior*, 12(3), 255-262.
- Botella, C., Riva, G., Gaggioli, A., Wiederhold, B. K., Alcañiz, M. y Baños, R. M. (2012). The present and future of positive technologies. *CyberPsychology, Behavior, and Social Networking*, 15(2), 78-84.
- Buchanan, K.E. y Bardi, A. (2010). Acts of Kindness and Acts of Novelty Affect Life Satisfaction. *The Journal of Social Psychology*, 150(3), pp. 235-237.
- Burton, C. M., y King, L. a. (2004). The health benefits of writing about intensely positive experiences. *Journal of Research in Personality*, 38(2), 150-163.



- Calefato, C., Venero, F. y Montanari, R. (2009). Wikipedia as an example of positive technology: How to promote knowledge sharing and collaboration with a persuasive tutorial. En *Proceedings of the 2nd conference on Human System Interactions* (pp. 507-513). IEEE Press.
- Cheavens, J. S., Feldman, D. B., Gum, A., Michael, S. T., y Snyder, C. R. (2006). Hope therapy in a community sample: A pilot investigation. *Social Indicators Research*, 77(1), 61-78.
- Cheavens, J. S., Feldman, D. B., Woodward, J. T., y Snyder, C. R. (2006). Hope in Cognitive Psychotherapies: On Working With Client Strengths. *Journal of Cognitive Psychotherapy*.
- Chiang, Y. T., Lin, S. S., Cheng, C. Y. y Liu, E. Z. F. (2011). Exploring online game players' flow experiences and positive affect. *Turkish Online Journal of Educational Technology*, 10(1) 106-114.
- Chida, Y., y Steptoe, A. (2008). Positive psychological well-being and mortality: a quantitative review of prospective observational studies. *Psychosomatic medicine*, 70(7), 741-756.
- Cochran, W., y Tesser, A. (1996). The “what the hell” effect: Some effects of goal proximity and goal framing on performance. In L. Martin y A. Tesser (Eds.), *Striving and feeling* (pp. 99–120). Mahwah: Erlbaum.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. Nueva York: HarperryRow.
- Danner, D. D., Snowdon, D. a, y Friesen, W. V. (2001). Positive emotions in early life and longevity: findings from the nun study. *Journal of personality and social psychology*, 80(5), 804-13.
- Dawson, L., Rhodes, P., y Touyz, S. (2014). The recovery model and anorexia nervosa. *The Australian and New Zealand journal of psychiatry*, 48(11), 1009-1016.
- Diener, E. (2013). The remarkable changes in the science of subjective well-being. *Perspectives on Psychological Science*, 8(6), 663-666.
- Diener, E., y Chan, M. Y. (2011). Happy people live longer: Subjective well-being contributes to health and longevity. *Applied Psychology: Health and Well-Being*, 3(1), 1-43.
- Diener, E., Emmons, R. A., Larsen, R. J., y Griffin, S. (1985). The satisfaction with life scale. *Journal of personality assessment*, 49(1), 71-75.
- Diener, E., Heintzelman, S. J., Kushlev, K., Tay, L., Wirtz, D., Lutes, L. D., y Oishi, S. (2016). Findings All Psychologists Should Know From the New Science on Subjective Well-Being. *Canadian Psychology/Psychologie canadienne*, 1-18.
- Diener, E., Kanazawa, S., Suh, E. M., y Oishi, S. (2015). Why people are in a generally good mood. *Personality and Social Psychology Review*, 19(3), 235-256.
- Diener, E., Suh, E. M., Lucas, R. E., y Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125(2), 276-302.
- Duckworth, A. L., Steen, T. A., y Seligman, M. E. P. (2005). Positive psychology in clinical practice. *Annual review of clinical psychology*, 1, 629-51.
- Dunn, E. W., Aknin, L., y Norton, M. I. (2008). Spending money on others promotes happiness. *Science*, 319, 1687–1688.

-
- Engel, S. G., Adair, C. E., Hayas, C. Las, y Abraham, S. (2009). Health-related quality of life and eating disorders: A review and update. *International Journal of Eating Disorders*, 42(2), 179-187.
- Etchemendy, E., Baños, R. M., Botella, C., Castilla, D., Alcañiz, M., Rasal, P. y Farfallini, L. (2011). An e-health platform for the elderly population: The butler system. *Computers & Education*, 56(1), 275-279.
- Fairburn, C. G. (2005). Evidence-based treatment of anorexia nervosa. *International Journal of Eating Disorders*, 37(S1), S26-S30.
- Farquharson, L., y MacLeod, A. K. (2014). A brief goal-setting and planning intervention to improve well-being for people with psychiatric disorders. *Psychotherapy and psychosomatics*, 83(2), 122-4.
- Fava, G. A., y Ruini, C. (2003). Development and characteristics of a well-being enhancing psychotherapeutic strategy: Well-being therapy. *Journal of behavior therapy and experimental psychiatry*, 34(1), 45-63.
- Fava, G. A., Rafanelli, C., Cazzaro, M., Conti, S., y Grandi, S. (1998). Well-being therapy. A novel psychotherapeutic approach for residual symptoms of affective disorders. *Psychological medicine*, 28(02), 475-480.
- Fordyce, M. W. (1977). Development of a program to increase personal happiness. *Journal of Counseling Psychology*, 24(6), 511.
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of general psychology*, 2(3), 300.
- Fredrickson, B. L., y Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition & emotion*, 19(3), 313-332.
- Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., y Finkel, S. M. (2008). Open hearts build lives: positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of personality and social psychology*, 95(5), 1045-62.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., y Larkin, G. R. (2003). What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of personality and social psychology*, 84(2), 365-76.
- Frisch, M. B. (2006). *Quality of life therapy*. Hoboken, NJ: John Wiley y Sons.
- Frisch, M. B. (2013). Evidence-based well-being/positive psychology assessment and intervention with Quality of Life Therapy and Coaching and the Quality of Life Inventory (QOLI). *Social Indicators Research*, 114(2), 193-227.
- Gable, S. L., y Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology*, 9(2), 103-110.
- Gallagher, M. W., y Lopez, S. J. (2009). Positive expectancies and mental health: Identifying the unique contributions of hope and optimism. *The Journal of Positive Psychology*, 4(6), 548-556.
- Gallagher, M. W., Lopez, S. J., y Preacher, K. J. (2009). The hierarchical structure of well-being. *Journal of personality*, 77(4), 1025-1050.
- Gander, F., Proyer, R. T., Ruch, W., y Wyss, T. (2013). Strength-based positive interventions: Further evidence for their potential in enhancing well-being and alleviating depression. *Journal of Happiness Studies*, 14(4), 1241-1259.
-



- García-Palacios, A. y Baños, R. (1999). Eficacia de dos procedimientos de inducción del estado de ánimo e influencia de variables moduladoras. *Revista de psicopatología y psicología clínica*, 4(1), 15-26.
- Geller, J., Williams, K., y Srikameswaran, S. (2001). Clinician stance in the treatment of chronic eating disorders. *European Eating Disorders Review*, 9(6), 365-373.
- Góngora, V. C. (2014). Satisfaction with life, well-being, and meaning in life as protective factors of eating disorder symptoms and body dissatisfaction in adolescents. *Eating disorders*, 22(5), 435-49.
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of general psychology*, 2(3), 271.
- Gross, J.J., y Thompson, R.A. (2007). Emotion regulation: Conceptual foundations. In J.J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3–26). New York: Guilford.
- Harrison, A., Al-Khairulla, H., y Kikoler, M. (2015). The feasibility, acceptability and possible benefit of a positive psychology intervention group in an adolescent inpatient eating disorder service. *The Journal of Positive Psychology*, Feb, 1-11.
- Hart, S. L., Vella, L., y Mohr, D. C. (2008). Relationships among depressive symptoms, benefit-finding, optimism, and positive affect in multiple sclerosis patients after psychotherapy for depression. *Health psychology*, 27(2), 230-8.
- Hervás, G., y Vázquez, C. (2013). Construction and validation of a measure of integrative well-being in seven languages: the Pemberton Happiness Index. *Health and quality of life outcomes*, 11, 66.
- Howell, R. T., Kern, M. L., y Lyubomirsky, S. (2007). Health benefits: Meta-analytically determining the impact of well-being on objective health outcomes. *Health Psychology Review*, 1(1), 83-136.
- Hurley, D. B., y Kwon, P. (2011). Results of a Study to Increase Savoring the Moment: Differential Impact on Positive and Negative Outcomes. *Journal of Happiness Studies*, 13(4), 579-588.
- Johnson, J., y Wood, A. M. (2015). Integrating Positive and Clinical Psychology: Viewing Human Functioning as Continua from Positive to Negative Can Benefit Clinical Assessment, Interventions and Understandings of Resilience. *Cognitive Therapy and Research* 1-15..
- Kashdan, T. B., Biswas-Diener, R., y King, L. A. (2008). Reconsidering happiness: The costs of distinguishing between hedonics and eudaimonia. *The Journal of Positive Psychology*, 3(4), 219-233.
- King, L. A. (2001). The Health Benefits of Writing about Life Goals. *Personality and Social Psychology Bulletin*, 27(7), 798-807.
- King, L. A., y Raspin, C. (2004). Lost and Found Possible Selves , Subjective Well-Being , and Ego Development in Divorced Women. *Journal of personality*, 72(3), 603-632.
- Lamers, S. M. A., Westerhof, G. J., Glas, C. A. W., y Bohlmeijer, E. T. (2015). The bidirectional relation between positive mental health and psychopathology in a longitudinal representative panel study. *The Journal of Positive Psychology*, 10(6), 553-560.

- Layous, K., Chancellor, J., y Lyubomirsky, S. (2014). Positive activities as protective factors against mental health conditions. *Journal of Abnormal Psychology*, 123(1), 3.
- Layous, K., Nelson, K. S., y Lyubomirsky, S. (2012). What Is the Optimal Way to Deliver a Positive Activity Intervention? The Case of Writing About One's Best Possible Selves. *Journal of Happiness Studies*, 14(2), 635-654.
- Liau, A. K., Neihart, M. F., Teo, C. T., y Lo, C. H. M. (2016). Effects of the Best Possible Self Activity on Subjective Well-Being and Depressive Symptoms. *Asia-Pacific Education Researcher*, 25(3), 473-481.
- Littman-Ovadia, H., y Nir, D. (2014). Looking forward to tomorrow: The buffering effect of a daily optimism intervention. *The Journal of Positive Psychology* 9(2), 122-136.
- Loveday, P. M., Lovell, G. P., y Jones, C. M. (2016). The Best Possible Selves Intervention: A Review of the Literature to Evaluate Efficacy and Guide Future Research. *Journal of Happiness Studies*, 1-22.
- Lyubomirsky, S. (2008). *The how of happiness: A scientific approach to getting the life you want*. Penguin.
- Lyubomirsky, S., y Layous, K. (2013). How Do Simple Positive Activities Increase Well-Being? *Current Directions in Psychological Science*, 22(1), 57-62.
- Lyubomirsky, S., y Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social indicators research*, 46(2), 137-155.
- Lyubomirsky, S., Dickerhoof, R., Boehm, J. K., y Sheldon, K. M. (2011). Becoming happier takes both a will and a proper way: an experimental longitudinal intervention to boost well-being. *Emotion*, 11(2), 391-402.
- Lyubomirsky, S., King, L., y Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, 131(6), 803-855.
- MacLeod, A. K. (2013). Goals and Plans: Their Relationship to Well-Being. In A. Efklides y D. Moraitou, *A Positive Psychology Perspective on Quality of life* (pp. 33- 50) Springer
- MacLeod, A. K., Coates, E., y Hetherington, J. (2008). Increasing well-being through teaching goal setting and planning skills: Results of a brief intervention. *Journal of Happiness Studies*, 9, 185-196.
- Malouff, J. M., y Schutte, N. S. (2016). Can psychological interventions increase optimism? A meta-analysis. *The Journal of Positive Psychology*, Aug, 1-11.
- Malson, H., Lin, B., Clarke, S., Treasure, J., Anderson, G., y Kohn, M. (2011). Un/imaginable future selves: A discourse analysis of in-patients' talk about recovery from an «eating disorder». *European Eating Disorders Review*, 19(1), 25-36.
- Meevissen, Y. M. C., Peters, M. L., y Alberts, H. J. E. M. (2011). Become more optimistic by imagining a best possible self: effects of a two week intervention. *Journal of behavior therapy and experimental psychiatry*, 42(3), 371-8.
- Mitchell, J., Stanimirovic, R., Klein, B., y Vella-Brodrick, D. (2009). A randomised controlled trial of a self-guided internet intervention promoting well-being. *Computers in Human Behavior*, 25(3), 749-760.



- Murru, E. C., y Martin Ginis, K. A. (2010). Imagining the possibilities: the effects of a possible selves intervention on self-regulatory efficacy and exercise behavior. *Journal of sport & exercise psychology*, 32(4), 537-54.
- Noordenbos, G., Oldenhave, A., Muschter, J., y Terpstra, N. (2002). Characteristics and treatment of patients with chronic eating disorders. *Eating Disorders: The Journal of Treatment y Prevention*, 10(1), 15-29.
- Parks, A. C., y Biswas-Diener, R. (2013). Positive interventions: Past, present, and future. En *Bridging acceptance and commitment therapy and positive psychology: A practitioner's guide to a unifying framework*. Oakland, CA: New Harbinger.
- Pennebaker, J. W. (1993). Putting stress into words: Health, linguistic, and therapeutic implications. *Behaviour Research and Therapy*, 31(6), 539-548.
- Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological science*, 8(3), 162-166.
- Peters, M. L., Flink, I. K., Boersma, K., y Linton, S. J. (2010). Manipulating optimism: Can imagining a best possible self be used to increase positive future expectancies? *The Journal of Positive Psychology*, 5(3), 204-211.
- Peterson, C., y Seligman, M. E. (2004). *Character strengths and virtues: A handbook and classification* (Vol. 1). Oxford University Press.
- Peterson, C., Park, N., y Seligman, M. E. P. (2005). Orientations to happiness and life satisfaction: The full life versus the empty life. *Journal of Happiness Studies*, 6(1), 25-41.
- Pietrowsky, R., y Mikutta, J. (2012). Effects of Positive Psychology Interventions in Depressive Patients — A Randomized Control Study. *Psychology*, 3(12), 1067-1073.
- Pike, K., Gianini, L., Loeb, K., y Le Grange, D. (2015). Treatments for Eating Disorders. En P. Nathan y J. Gorman (Eds.), *A guide to treatments that work*, 4th ed (pp. 641-658). New York, NY, USA: Oxford University Press.
- Pressman, S. D., y Cohen, S. (2012). Positive emotion word use and longevity in famous deceased psychologists. *Health Psychology*, 31(3), 297.
- Quoidbach, J., Mikolajczak, M., y Gross, J. J. (2015). Positive interventions: An emotion regulation perspective. *Psychological Bulletin*, 141(3), 655.
- Quoidbach, J., Wood, A. M., y Hansenne, M. (2009). Back to the future: The effect of daily practice of mental time travel into the future on happiness and anxiety. *The Journal of Positive Psychology*, 4(5), 349-355.
- Rashid, T. (2009). Positive interventions in clinical practice. *Journal of clinical psychology*, 65(5), 461-6.
- Rashid, T. (2014). Positive psychotherapy: A strength-based approach. *The Journal of Positive Psychology*, 10(1), 25-40.
- Riva, G., Baños, R. M., Botella, C., Wiederhold, B. K. y Gaggioli, A. (2012). Positive technology: using interactive technologies to promote positive functioning. *Cyberpsychology, Behavior, and Social Networking*, 15(2), 69-77.
- Rodrigue, J. R., Mandelbrot, D. A., y Pavlakis, M. (2011). A psychological intervention to improve quality of life and reduce psychological distress in adults awaiting kidney transplantation. *Nephrology, Dialysis, Transplantation*, 26(2), 709-715.

-
- Rogers, C. R. (1963). Actualizing tendency in relation to« Motives» and to consciousness. Nebraska symposium on motivation. In *Nebraska Symposium on Motivation*, ed. MR Jones, 11:1–24. Lincoln: Univ. Nebr. Press
- Ruini, C. (2017). *Positive Psychology in the Clinical Domains: Research and Practice*. Springer.
- Ruini, C., y Fava, G. a. (2004). Clinical Applications of Well-Being Therapy. *Positive psychology in practice* 371-387.
- Ruini, C., y Fava, G. A. (2009). Well-being therapy for generalized anxiety disorder. *Journal of clinical psychology*, 65(5), 510-9.
- Ruini, C., y Fava, G. A. (2013). The polarities of psychological well being and their response to treatment. *Terapia Psicologica*, 31(1), 49-57.
- Ryan, R. M., y Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American psychologist*, 55(1), 68-78.
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081.
- Ryff, C. D. (2013). Psychological well-being revisited: Advances in the science and practice of eudaimonia. *Psychotherapy and psychosomatics*, 83(1), 10-28.
- Ryff, C. D., y Singer, B. (1996). Psychological well-being: Meaning, measurement, and implications for psychotherapy research. *Psychotherapy and psychosomatics*, 65(1), 14-23.
- Scheier, M. F., y Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health psychology*, 4(3), 219.
- Schueller, S. M. (2010). Preferences for positive psychology exercises. *The Journal of Positive Psychology*, 5(3), 192-203.
- Schueller, S. M., y Parks, A. C. (2012). Disseminating self-help: positive psychology exercises in an online trial. *Journal of medical Internet research*, 14(3), e63.
- Schueller, S., Kashdan, T., y Parks, A. (2014). Synthesizing positive psychological interventions: Suggestions for conducting and interpreting meta-analyses. *International Journal of Wellbeing*, 4(1).
- Seligman, M. E. P., y Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14.
- Seligman, M. E. P., Rashid, T., y Parks, A. C. (2006). Positive psychotherapy. *The American Psychologist*, 61(8), 774–788.
- Seligman, M. E. P., Steen, T. A., Park, N., y Peterson, C. (2005). Positive psychology progress: empirical validation of interventions. *The American psychologist*, 60(5), 410-21.
- Shapira, L. B., y Mongrain, M. (2010). The benefits of self-compassion and optimism exercises for individuals vulnerable to depression. *The Journal of Positive Psychology*, 5(5), 377-389.
- Sheldon, K. M., y Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *The Journal of Positive Psychology*, 1(2), 73-82.
-



- Sin, N. L., y Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: a practice-friendly meta-analysis. *Journal of clinical psychology*, 65(5), 467-87.
- Snyder, C. R. (Ed.). (2000). *Handbook of hope: Theory, measures, and applications*. Academic press.
- Srinivasan, N., y Hanif, A. (2009). Global-happy and local-sad: Perceptual processing affects emotion identification. *Cognition y Emotion*, 24(6), 1062-1069.
- Steck, E. L., Abrams, L. M., y Phelps, L. (2004). Positive psychology in the prevention of eating disorders. *Psychology in the Schools*, 41(1), 111-117.
- Stein, K. F., y Corte, C. (2007). Identity impairment and the eating disorders: Content and organization of the self-concept in women with anorexia nervosa and bulimia nervosa. *European Eating Disorders Review*, 15(1), 58-69.
- Tchanturia, K., Dapelo, M. A. M., Harrison, A., y Hambrook, D. (2015). Why Study Positive Emotions in the Context of Eating Disorders? *Current Psychiatry Reports*, 17(1).
- Tomba, E., Offidani, E., Tecuta, L., Schumann, R., y Ballardini, D. (2014). Psychological well-being in out-patients with eating disorders: A controlled study. *International Journal of Eating Disorders*, 47(3), 252-258.
- Tomba, E., Tecuta, L., Schumann, R., y Ballardini, D. (2017). Does psychological well-being change following treatment? An exploratory study on outpatients with eating disorders. *Comprehensive Psychiatry*, 74, 61-69.
- Touyz, S., Le Grange, D., Lacey, H., Hay, P. J., Smith, R., Maguire, S., ... Crosby, R. D. (2013). Treating severe and enduring anorexia nervosa: a randomized controlled trial. *Psychological medicine*, 43(12), 2501-11.
- Treasure, J., y Russell, G. (2011). The case for early intervention in anorexia nervosa: Theoretical exploration of maintaining factors. *British Journal of Psychiatry*, 199(1), 5-7.
- Tugade, M.M., Shiota, M.N., y Kirby, L.D. (2014). *Handbook of positive emotions*. New York: The Guilford Press
- Vazquez, C., Hervás, G., y Ho, S. (2006). Intervenciones clínicas basadas en la psicología positiva: fundamentos y aplicaciones. *Psicología conductual*, 14(3), 401-432.
- Vittersø, J. (Ed.). (2016). *Handbook of Eudaimonic Well-Being*. International Handbooks of Quality-of-Life. doi:10.1007/978-3-319-42445-3
- Waterman, A. S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of personality and social psychology*, 64(4), 678.
- Waterman, A. S., Schwartz, S. J., Zamboanga, B. L., Ravert, R. D., Williams, M. K., Bede Agocha, V., ... Brent Donnellan, M. (2010). The Questionnaire for Eudaimonic Well-Being: Psychometric properties, demographic comparisons, and evidence of validity. *The Journal of Positive Psychology*, 5(1), 41-61.
- Watson, D., Clark, L. A., y Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, 54(6), 1063.
- Weis, R., y Speridakos, E. C. (2011). A meta-analysis of hope enhancement strategies in clinical and community settings. *Psychology of well-being: Theory, research and Practice*, 1(1), 5.

- Wing, J. F., Schutte, N. S. y Byrne, B. (2006). The effect of positive writing on emotional intelligence and life satisfaction. *Journal of Clinical Psychology*, 62(10), 1291-1302.
- Wood, A. M., y Joseph, S. (2010). The absence of positive psychological (eudemonic) well-being as a risk factor for depression: a ten year cohort study. *Journal of affective disorders*, 122(3), 213-7.
- World Health Organization (1948). *Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference*, New York, 19 June–22 July 1946; signed on 22 July 1946 by the representatives of 61 States. Official Records of the World Health Organization, vol. 2. (pp. 100). Geneva: World Health Organization, 100.
- World Health Organization (2004). *Promoting mental health - Concepts, emerging evidence, practice*. Geneva: World Health Organization.

Outline of the Dissertation

General aim

To explore the effectiveness of future-oriented PPIs in the promotion of subjective and psychological well-being levels for general and clinical young populations.

Specific aims

- 1) To investigate the general effectiveness of future-oriented PPI in the promotion of subjective and psychological well-being levels.
- 2) To study the efficacy of a future-oriented PPI, that is, the Best Possible Self exercise, for promoting optimism and additional well-being variables in general young population at short-, mid-, and long-term.
- 3) To study the efficacy of the Best Possible Self exercise for promoting optimism and additional well-being variables in a sample of patients diagnosed of Eating Disorder conditions at short-, mid-, and long-term.
- 4) To develop and to explore the feasibility of a future-oriented PPI delivered in group for inpatients of an eating disorder service.

The thesis is composed by a compendium of five publications addressed to cover the specific aims described above. Two additional chapters complete the entire document, namely a first chapter for the general introduction and a latter one for general discussion and conclusions. Thus, this doctoral thesis is composed by a total of seven chapters.

Regarding the general structure of the thesis, **Chapter 1** has served as an introduction which has included a general overview about positive psychology and the concepts of well-being. This chapter has also been addressed to discuss

the relation between PPIs and clinical settings, and, more specifically, their relation with eating disorders populations. Furthermore, it has described the role of the temporal orientation of the PPIs, along with a detailed description of future-oriented PPIs. Lastly, Information and Communication Technologies (ICTs) aimed to promote well-being, namely Positive Technologies, has been presented.

Chapter 2 is aimed to encompass different future-oriented PPIs and to analyze their effectiveness. To that end, a meta-analysis is conducted in order to explore the efficacy of future-oriented PPIs. Furthermore, potential moderating variables, such as the type of intervention, the duration, the age of the participants and study quality, were examined.

Chapter 3 consists of a randomized controlled trial addressed to analyze the efficacy of a future-oriented PPI, the best possible self (BPS), for the promotion of optimistic thinking and additional well-being variables at short-, mid-, and long-term in general young population.

Chapters 4 and 5 are part of the same study, which has tested the efficacy of the BPS in a sample of patients with Eating Disorder (ED) conditions, who were receiving psychological treatment. A similar design to the established for the prior study with general population was followed, with a slightly variation in some of the included measures. More specifically, **Chapter 4** presents data about the efficacy of the BPS exercise for the improvement of optimistic thinking and affect after one session. This chapter also includes a qualitative analysis of the narratives developed by the ED patients who performed the BPS exercise and these qualitative data were related to the baseline measures of the patients. Concerning **Chapter 5**, it collects data about the efficacy of the BPS exercise after one-month training and until a three-month follow-up for the improvement of optimistic thinking, affect and other well-being measures in the same patients. This chapter also presents a structural equation model aimed to analyze whether the quality of the narratives developed by patients with ED is mediating the relation between the severity of the ED pathology and the improvement produced after one-month training.

Chapter 6 describes a 4-session future-oriented PPI delivered in group format for patients with ED conditions. It also explores the feasibility of this program to be applied with inpatients of an eating disorder service.

Finally, **Chapter 7** includes a general discussion of the specific aimed established in this doctoral thesis, together with the main implications of each one of them. Next, general strengths and limitations of this thesis are presented. Future considerations and recommendations for research are also described. Finally, the main conclusions extracted from this thesis are summarized.

Chapter 2. Effectiveness of positive psychological interventions oriented toward the future: A meta-analysis of randomized controlled trials

This chapter has been submitted to *The Journal of Positive Psychology* as:

Enrique, A., Bretón-López, J., Molinari, G., Karyotaki, E., Cuijpers, P., & Botella, C. Effectiveness of positive psychological interventions oriented toward the future: A meta-analysis of randomized controlled trials.



Effectiveness of positive psychological interventions oriented toward the future: A meta-analysis of randomized controlled trials.

Angel ENRIQUE¹, Juana BRETÓN-LÓPEZ^{1,2}, Guadalupe MOLINARI¹, Eirini KARYOTAKI⁴, Pim CUIJPERS⁴, & Cristina BOTELLA^{1,2}

¹Universitat Jaume I, Castellón, Spain

²CIBER de Fisiopatología de la Obesidad y Nutrición (CIBEROBN)

³Universitat de Valencia, Valencia, Spain

⁴VU University Amsterdam, Amsterdam, The Netherlands

Abstract

Positive Psychological Interventions (PPIs) are effective in improving well-being. However, little is known about the differential effects of specific type of PPIs. It has been suggested that the temporal orientation of these interventions could affect their success. This meta-analysis is aimed to summarize the evidence regarding the effectiveness of PPIs oriented toward the future compared to control groups in adults. A systematic literature search resulted in 30 randomized controlled trials with 2,227 participants. The outcome measures used were subjective and psychological well-being. Future-oriented PPIs regarding cognitions, feelings or behaviors were considered. Results showed that these interventions produced an effect size of $d= 0.37$ for subjective and psychological well-being. Future-oriented PPIs applied beyond one month showed greater effects compared with shorter interventions. The findings indicate that future-oriented PPIs are effective improving subjective and psychological well-being. Temporal orientation of PPIs has to be considered for tailoring interventions according to individuals' needs.



2.1 INTRODUCTION

From its beginning, the world health organization (WHO) has included mental well-being in the definition of health. Specifically, health is understood as a state of complete physical, mental, and social well-being (WHO, 1948). In this regard, the construct of well-being has been studied from different perspectives, and two main approaches have mainly attracted empirical attention, namely, hedonic and eudaimonic well-being (Kashdan, Biswas-Diener & King, 2008; Ryan & Deci, 2001).

Hedonic well-being, also considered as subjective well-being, refers to the people's cognitive and affective evaluations of their lives. It is composed of life satisfaction and balanced levels of positive and negative affect (Diener, 2000). Eudaimonic well-being, also called psychological well-being, responds to different theories (Ryan & Deci, 2001; Ryff, 1989; Waterman, 1993), but all of them share an understanding of well-being as 'the fulfillment of the ultimate purpose of being human, with the concept of ultimate purpose typically taken to mean an optimally functioning life' (Vittersø, 2016, p. 9).

In recent years, an increasing number of interventions have specifically addressed the promotion of hedonic and eudaimonic well-being, which has led to the need to summarize all this work into more comprehensive studies. Two recent meta-analyses demonstrated mild to moderate effects of positive psychological interventions (PPIs), compared to controls, in the enhancement of subjective well-being (Bolier et al., 2013; Sin & Lyubomirsky, 2009). Furthermore, the meta-analysis carried out by Bolier and colleagues (2013) also explored the effects of PPIs on psychological well-being, and found similar results to the subjective well-being outcomes. These recent meta-analyses also explored the moderating effects of several intervention and participant characteristics in treatment effects on well-being; however, the results were inconsistent. Sin and Lyubomirsky (2009) found that interventions administered individually and in older age groups have significantly higher effect sizes compared to group and self-help formats and younger adults, respectively. Nevertheless, Bolier et al. (2013) did not find any significant moderator of subjective and psychological well-being.

Although these reviews have shown that these interventions work, less is known about the differential efficacy of specific interventions and the mechanisms underlying their effectiveness. In this regard, an important limitation of prior meta-analyses is that they lumped together different types of interventions, making it difficult to explore the moderator role of specific features of interventions. Recent theoretical models claim that the effectiveness of these interventions could be partially explained by the time orientation of the activity (Lyubomirsky & Layous, 2013; Quoidbach, Mikolajczak & Gross, 2015). Therefore, the present study focuses on positive psychological interventions with a future temporal orientation.

The relationship between the future time orientation and well-being has been established by different approaches. For example, one of the dimensions of Ryff's model of well-being (2013) is purpose in life, which refers to having goals in life and a sense of directedness. In addition, one of the strengths of character proposed by Peterson and Seligman (2004) is transcendence, which, in turn, places the focus on future-mindedness. This positive view towards the future represents a cognitive, emotional, and motivational attitude that is shared by the concepts of optimism, hope, and goal setting (Peterson & Seligman, 2013; Ruini, 2017). Thus, interventions designed to promote such dimensions can be understood from two main approaches. On the one hand, there are interventions focused on developing a more optimistic view about the future, which consists of thinking about and envisioning prospective events and goals in a positive way (King, 2001; Quoidbach, Wood & Hansenne, 2009). On the other hand, some interventions are based on setting goals and planning the steps to reach them, along with the development of a sense of agency (Berg, Snyder & Hamilton, 2008; Coote & Macleod, 2012). In sum, all of these interventions share the fact that the basis of their functioning is the focus on a future orientation. However, the lack of more comprehensive studies on this temporal perspective has led to the development of different strategies that share the same theoretical approach. For example, in the literature it is possible to find different optimism-based exercises with similar instructions but different names (Littman-Ovadia & Nir, 2014; Quoidbach et al, 2009; Murru & Ginis, 2010). This situation is controversial



because it makes it difficult to draw conclusions about the efficacy and action mechanisms of specific strategies.

Present study

The importance of this study lies in the need to explore the role of specific features of PPIs, such as the temporal orientation of the interventions (Lyubomirsky & Layous, 2013; Quoidbach et al., 2015). Therefore, a main goal of the present study is to summarize the evidence about the effectiveness of future-oriented PPIs compared to control conditions in improving subjective and psychological well-being. These interventions can be categorized as: a) optimism-based interventions, which include all the procedures based mainly on thinking about and envisioning the future in a positive way (i.e. *best possible self*, *optimism interventions*); and b) goal-based interventions, which include all the strategies for establishing goals and the pathways to reach them (i.e. *goal-setting*, *hope therapy*).

Thus, our meta-analysis will provide crucial answers to better understand PPIs specifically focused on a future-time orientation, their relationship with subjective and psychological well-being levels, and the potential variables moderating their efficacy.

- To what extent are PPIs focused on the future effective in increasing subjective and psychological well-being in adults, compared to control conditions?
- What is the relative efficacy of different sub-types of PPIs focused on the future in improving subjective well-being in adults?
- What is the relative efficacy of different sub-types of PPIs focused on the future in improving psychological well-being in adults?
- Which participant and intervention characteristics moderate the efficacy of PPIs focused on the future, compared to controls?

2.2 METHOD

Definitions

We defined future-oriented PPIs as any psychological intervention or strategy designed to enhance well-being by focusing on a future-time orientation about cognitions, feelings, or behaviors. These interventions are usually based on best possible self, future thinking, hope theory, optimism exercises, and goal setting strategies.

Inclusion criteria

We included randomized controlled trials conducted with adult populations and published in Spanish or English peer-reviewed journals. The selected interventions had to be focused on the future (as described above), whereas the selected comparison groups were waiting list, placebo, treatment as usual, or no treatment. The studies had to include subjective or psychological well-being measures. Any studies that included other exercises besides the future-oriented PPI (i.e. positive psychology programs) were excluded because it was impossible to isolate the specific effects of the exercise from the overall effect of a package of strategies. Our search goes beyond the positive psychology framework because we include studies with well-being measures as primary outcomes, regardless of whether or not they are conceptualized in this field. This procedure agrees with the suggestions of Schueller and colleagues (2014) about conducting meta-analyses with positive psychological interventions.

Search strategy

We carried out a systematic review of the literature in Web of Science, PsycNet, and Pubmed from 1970 to February 23, 2017. In addition, other references were extracted from earlier meta-analyses (Bolier et al, 2013; Malouff & Schutte, 2016; Sin & Lyubomirsky, 2009) and from the reference sections of the papers obtained. Taking into account the specificity of our search, we selected keywords from different sources: earlier meta-analyses on positive psychology discussed above, papers included in these meta-analyses based on positive interventions focused on the future (e.g. Meevissen et al, 2011; Shapira & Mongrain, 2010), and synonyms of these keywords. The following index and free terms were used: “future expectancies”, “expectation”, “goal”, “positive affect”,



“hope”, “purpose in life”, “optimism”, “happiness”, “well-being”, “quality of life”, “life satisfaction”, “life purpose”, “motivation”, “achievement”, “aspiration”, “positive mood” and “positivism” in combination with “positive psychology”, “possible self”, “hope theory”, “goal setting”, “goal orientation” and “future thinking”. The search was filtered by randomized clinical trials in the different databases in order to facilitate the selection of the studies. The full search strings for the different databases are presented in Appendix 1. Reference manager Mendeley 1.16.1 was used to store all the references. After duplicates were removed, two reviewers (AE and GM) made an initial independent screening of the potentially eligible studies, focusing on the title and abstract. All the studies selected as potentially eligible by at least one of the two reviewers were re-evaluated, and in the second phase, the full-text article was reviewed. Disagreement was resolved by consensus, and, if necessary, the opinion of a third reviewer (CB and JB) was sought.

Data collection

We extracted the following data from the selected papers: a) type of intervention, b) target group, c) type of control group, d) sample size for each of the examined conditions, e) age group, f) outcome measures from each study, g) delivery method, h) duration of the intervention, i) follow-up in months, and j) country.

If some of the aforementioned data were not reported in the paper, we contacted the corresponding authors to ask for the required information. Thus, ten authors were contacted via email for additional data. Five of them answered the email and provided the required data. One author answered that he was unable to access the dataset anymore. Regarding the other four authors, we did not receive any answer from them.

Quality assessment

We assessed the methodological validity of the studies included following the Risk of bias criteria proposed by the Cochrane Collaboration (2011). This tool assesses the following possible sources of bias in randomized trials: 1) randomized sequence generation, 2) allocation concealment, 3) blinding of the participants and the personnel during the study, 4) blinding of outcome

assessment, 5) incomplete outcome data, 6) selective reporting, and 7) other bias. Quality assessment was conducted by two independent reviewers (AE and GM), and disagreements were resolved by consensus. Each item was scored as 0 (study does not meet criterion) or 1 (study meets the criterion). We classified study quality as low quality when zero to two criteria were met, medium when three and four criteria were met, and high when five to seven criteria were met.

Meta-analysis

In order to calculate effect sizes for subjective and psychological well-being, the outcome measures were categorized in terms of subjective and psychological well-being related measures. For subjective well-being, we considered measures that assessed the presence of positive emotions and an overall positive evaluation of one's life condition, namely life satisfaction (Diener, 1999; Ruini, 2017). In the case of psychological (eudaimonic) well-being, we included measures related to the fulfillment of one's potential in a process of self-realization, including concepts such as meaning in life, hope, optimism, enjoyment of activities as personally expressive, and autonomy (Ryan & Deci, 2001; Ruini, 2017; Ryff, 1989; Waterman et al., 1993). If more than one measure was used for subjective or psychological well-being, the mean of the effect sizes was calculated so that each study had only one effect size.

We calculated pooled mean effect sizes using the Comprehensive meta-analysis (CMA, version 2.2.064) program. Effect sizes (Cohen's d) were calculated by subtracting the means of the intervention group and the control group, divided by the pooled standard deviations of both groups. Given the diversity of the interventions and measures, considerable heterogeneity was expected among the studies. Therefore, the random effects model was used to pool the results of the selected studies. In order to interpret the meaning of the effect size, Lipsey's rules (1990) were followed: effects of 0-0.32 are considered small, medium effect sizes range from 0.33 to 0.55, and large effect sizes are from 0.56 and above.

Statistical heterogeneity was explored for subjective and psychological well-being. Heterogeneity refers to the variability in the effect sizes found among the included studies, indicating to what extent the variability across the studies



can be explained by chance. Heterogeneity may be due to different factors such as interventions, measures, participants, or the study design (Deeks, Higgins & Altman, 2008). First, we examined heterogeneity with the Q-statistic and I², which provide the amount of variation in results across the studies. A significant Q-test reveals evidence for heterogeneity. Second, the I²-statistic reveals the percentage of the total variance that can be explained by chance. Thus, it is assumed that 25% indicates low heterogeneity, 50% moderate, and 75% high heterogeneity (Higgins, Thompson, Deeks & Altman, 2003).

Several subgroup-moderator analyses were conducted: (1) target group (clinical population vs. non-clinical); (2) Type of intervention (optimism-based vs. goal-based intervention); (3) Duration: 1 day, interventions up to 1 month or more than 1 month; (4) Age of the target group: young adults (18 to 35 years old), middle adults (36 to 59), and older adults (60 years old and up); (5) Delivery method: group, individual, self-help (including online); (6) control group: active comparison (placebo task, alternative treatment) or non-active (waiting-list, no-treatment); (7); quality rating: low (0-2 criteria), medium (3-4 criteria), or high (5-7 criteria).

Publication bias was estimated by analyzing the funnel plot on the primary outcome measures, and by using Egger's test for assessing the asymmetry of the funnel plot and examining whether the possibility of publication bias was significant. Furthermore, Duval and Tweedie's trim and fill procedure was calculated in order to obtain an estimation of the number of unpublished studies and provide an estimate of the effect size after adjusting for publication bias.

2.3 RESULTS

Study selection

The systematic literature review was performed on February 23, 2017. The systematic searches resulted in a total of 1039 records from the different databases, and 33 additional publications were found through reference list searches and from other meta-analyses related to the topic (Bolier et al., 2013; Malouff & Schute, 2016; Sin & Lyubomirsky, 2009; Weis & Speridakos, 2011). After removing duplicates, 600 studies remained, and their titles and abstracts were examined. Of them, 490 were excluded because they did not meet the

inclusion criteria. The full texts of the remaining 110 studies were reviewed for eligibility. Thirty studies met the inclusion criteria and were included in the meta-analysis. Disagreement between the reviewers was resolved through discussion, and, if necessary, the opinion of a third reviewer (CB and JB) was requested. Inter-rater reliability (kappa) was 0.89. Figure 2.1 summarizes the study selection process.

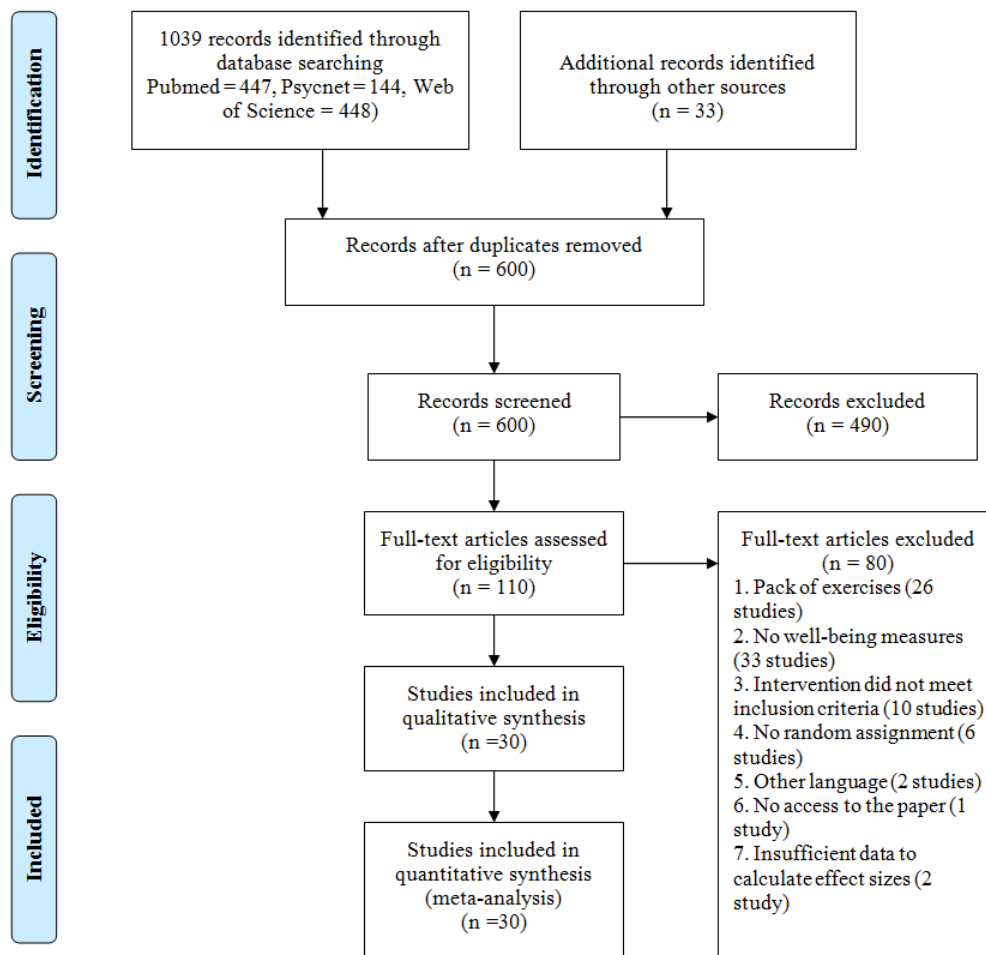


Figure 2.1 - Flow chart of studies selection process

Study characteristics

The main characteristics of the included studies are presented in Table 2.1. All 30 studies were RCTs published in peer-reviewed journals. The studies evaluated a total of 2227 participants. Twenty-one of the studies included young adults, eight included middle adults, and one included older adults. The majority of the studies (24 studies) recruited non-clinical populations (e.g. students, athletes, adult volunteers), and six studies had clinical samples (mainly adults with depressive symptoms). All of them included interventions with a future-



orientation perspective, such as best possible self, goal-setting and planning, goal-pursuit intervention, goal-focused group, hope therapy, optimism intervention, solution-focused life coaching, and future-thinking manipulation. Twenty-two studies compared the future-oriented PPIs to placebo conditions, five of them used a waiting-list comparison group, three had a no-intervention group, and one used a treatment as usual condition. In fifteen studies, the intervention was delivered as self-help (including online), nine studies were implemented in group format, and five were individual interventions. In addition, one of the studies (Layous et al., 2012) included different delivery methods. The distribution of the outcome measures resulted in twenty-two studies with psychological well-being-related measures and twenty with subjective well-being-related measures. Only six studies included a follow-up of more than one month. In terms of intervention duration, 10 studies included the results of a single-session, 10 studies included interventions lasting up to one month, and the duration of the other 10 studies ranged from 1 to 4 months.

Risk of bias of the included studies

Following the risk of bias criteria, the average quality of the studies was 3.27 (SD= 1.11). Specifically, nine studies were classified as low quality, seventeen as medium and four as high quality. None of the studies met all the quality criteria. Most of the studies did not report information about the random sequence generation or the allocation concealment. Blinding of outcome assessment was not possible in many studies because of the nature of the assessment, that is, self-reports. Figure 2.2 illustrates the criteria met by the different studies.

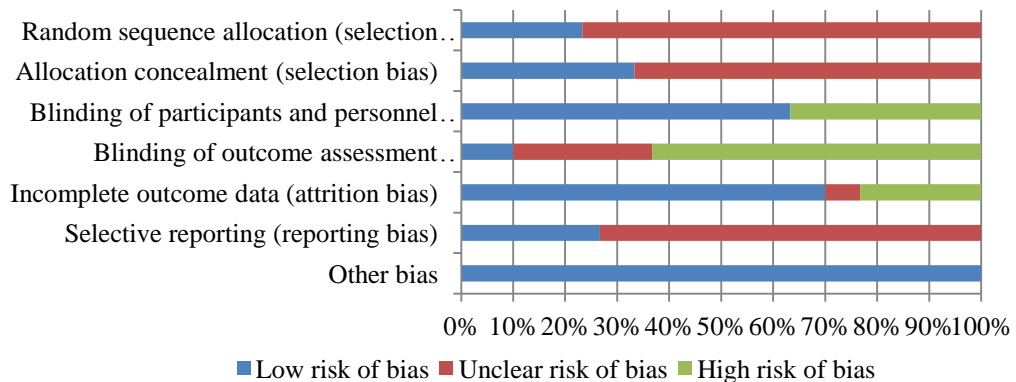


Figure 2.2 - Risk of bias assessment

Table 2.1 - Characteristics of the studies included in the meta-analysis

Authors	Intervention	Type of intervention	Duration	Sample	N	Age group	Control group	F-up (weeks, months)	Delivery Method	Outcome	Country
Berg, Snyder & Hamilton, 2008	Hope intervention	Goal-based intervention	1 day	College students	172	Young adults	Placebo	--	Individual	PWB: THS	U.S.
Boehm, Lyubomirsky & Sheldon, 2011	Best Possible Self	Optimism-based intervention	6 weeks	Community	139	Middle Adults	Placebo	1m	Self-help (Online)	SWB:SWLS	U.S.
Boselie et al, 2016a	Best Possible Self	Optimism-based intervention	1 day	Students	82	Young adults	Placebo	--	Self-help	PWB: FEX SWB: PANAS	Netherlands
Boselie et al, 2016b	Best Possible Self	Optimism-based intervention	1 day	Students	64	Young adults	Placebo	--	Self-help	PWB: FEX SWB: PANAS	Netherlands
Boselie et al., 2014	Best Possible Self	Optimism-based intervention	1 day	College students	74	Young adults	Placebo	--	Individual	SWB: PA; PWB: FEX	Netherlands
Cheavens et al., 2006	Hope Therapy	Goal-based intervention	8weeks	Community	32	Middle Adults	Waiting-list Group	--	Group	PWB: SHS	U.S.

Coote & Macleod, 2012	Goal-Setting and Planning Intervention	Goal-based intervention	5 weeks	Depressive patients	55	Middle Adults	Waiting-list Group	--	Self-Help	SWB: PA, SWLS	U.K.
Farquharson & MacLeod, 2014	Goal-Setting and Planning Intervention	Goal-based intervention	4 weeks	People with psychiatric disorders	56	Middle Adults	Waiting-list Group	--	Group	SWB: PA, SWLS	U.K.
Feldman & Dreher, 2012	Goal-pursuit intervention	Goal-based intervention	1 day	College students	64	Young adults	Placebo	--	Group	PWB: GSHS, PILT	U.S.
Fosnaugh et al., 2009	Future thinking manipulation	Optimism-based intervention	1 day	College students	108	Young adults	Placebo	--	Self-Help	SWB: PA; PWB: LOT-R, CO	U.S.
Green, Oades & Grant, 2006	Coaching based on hope theory	Goal-based intervention	10 weeks	Community	50	Middle Adults	Waiting-list Group	--	Group	SWB: PA, SWLS; PWB: THS; PWBS	Australia
Hansen, Peters, Vlaeyen, Meevissen & Vancleef, 2012	Best Possible Self	Optimism-based intervention	1 day	College students	79	Young adults	Placebo	--	Individual	SWB: VAS; PWB: FEX	Netherlands
King, 2001	Best Possible Self	Optimism-based intervention	4 days	College students	35	Young adults	Placebo	--	Self-Help	SWB: PA	U.S.
Klausner et	Goal-Focused	Goal-based	11 weeks	Depressive	13	Older	TAU	--	Group	PWB: SHS	U.S.

al., 1998	Therapy	intervention		patients		adults					
Law & Jen Guo, 2012	Hope-based substance treatment	Goal-based intervention	16 weeks	Female drug offenders	40	Middle Adults	Waiting-list Group	--	Group	PWB: HI	Taiwan
Layous, Nelson & Lyubomirsky, 2012	Best Possible Self	Optimism-based intervention	4 weeks	College students	119	Young adults	Placebo	--	Individual & Online	SWB: PA; PWB: NS	U.S.
Littman-Ovadia & Nir, 2014	Optimism intervention	Optimism-based intervention	1 week	Community	77	Young adults	Placebo	1m	Self-Help	SWB: PA, SWLS; PWB: LOT-R	Israel
Manthey, Vehreschild & Renner, 2014	Best Possible Self	Optimism-based intervention	8 weeks	Community	285	Middle Adults	Placebo	1m	Self-help (Online)	SWB: PA, SWLS	Germany
Meevissen, Peters & Alberts, 2011	Best Possible Self	Optimism-based intervention	2 weeks	College students	51	Young adults	Placebo	--	Self-Help	SWB: PA; PWB: SPT, LOT-R	Netherlands
Miranda et al, 2016	Optimistic induction	Optimism-based intervention	1 day	Depressive individuals	170	Young adults	Placebo	--	Self-help	PWB: FEQ	U.S.
Murru & Ginis, 2010	hoped-for possible	Optimism-based intervention	8 weeks	College students	53	Young adults	Placebo	--	Self-Help	PWB: S-RE	Canada

selves											
Peters et al., 2016	Best Possible Self	Optimism-based intervention	1 day	Students	56	Young Adults	Placebo	--	Individual	SWB: PA PWB: FEX-POS	Germany
Peters, Flink, Boersma & Linton, 2010	Best Possible Self	Optimism-based intervention	1 day	College students	82	Young adults	Placebo	--	Group	SWB: PA; PWB: SPT	Sweden
Peters, Meevissen & Hansen, 2013	Best Possible Self	Optimism-based intervention	1 week	College students	58	Young adults	Placebo	--	Self-Help	SWB: SWLS; PWB: LOT-R	Netherlands
Quoidbach, Wood, & Hansenne 2009	Projecting a positive self in the future	Optimism-based intervention	15 days	Community	72	Young adults	No intervention	--	Self-help (Online)	SWB: SHS	Belgium
Renner, Schwarz, Peters & Huibers, 2013	Best Possible Self	Optimism-based intervention	1 day	College students	40	Young adults	Placebo	--	Individual	SWB: PA	Netherlands
Rolo & Gould, 2007	Hope intervention	Goal-based intervention	10 weeks	Athletes	44	Young adults	No intervention	--	Group	PWB: THS, SHS	U.S.
Seear & Vella-	Best Possible	Optimism-based	1 week	Community	48	Middle	No intervention	2w	Self-help	SWB: PA; PWB:	Australia

Brodrick, 2013	Self	intervention				Adults	ion		(Online)	WEMWBS	
Sergeant & Mongrain, 2014	Cultivating optimism	Optimism-based intervention	3 weeks	Depressive patients	166	Young adults	Placebo	2m	Self-help (Online)	PWB:OTH	Canada
Shapira & Mongrain, 2010	Optimism intervention	Optimism-based intervention	1 week	Community	125	Young adults	Placebo	6m	Self-help	PWB: SHI	Canada
Sheldon & Lyubomirsky, 2006	Best Possible Self	Optimism-based intervention	2 weeks	College students	46	Young adults	Placebo	1m	Group	SWB: PA	U.S.

SWB = Subjective Well-being; PWB = Psychological Well-being; PA = Positive Affect; SWLS = Satisfaction With Life Scale; PWB = Orientations To Happiness; SPT = Subjective Probability Scale; LOT-R = Life Orientation Scale; HI = Hope Index; VAS= Visual Analogue Scale; FEX = Future Expectancies Scale; THS = Trait Hope Scale; SHS = State Hope Scale; GSHS = Goal-Specific Hope Scale; PILT = Purpose In Life Test; WEMWBS = Warwick-Edinburgh Mental Well-being Scale; NS = Need Satisfaction; SHS = Subjective Happiness Scale; PWBS = Psychological Well-Being Scale; S-RE = Self-Regulatory Efficacy; UK = United Kingdom; US = United States; Young adults = 18 to 35 years old; Middle adults = 36 to 59 years old; Older Adults = 60 years old and up



Post-test effects

The random effect model showed that the positive future-oriented interventions were effective for psychological and subjective well-being-related measures. Results are presented in Table 2.2. The effect sizes for the individual studies at post-test are represented in Figure 2.3 and Figure 2.4.

In the case of subjective well-being, a statistically significant effect size (Cohen's d) was observed $d = 0.37$ (95% CI [0.21, 0.52], $p < .01$). For psychological well-being, Cohen's d was 0.37 (95% CI [0.26, 0.47], $p < .01$). Heterogeneity was moderate for subjective well-being ($I^2 = 56.53\%$) and low for psychological well-being ($I^2 = 17.86\%$). Next, a visual inspection of Figure 2.3 and Figure 2.4 was carried out in order to find outliers for SWB and PWB outcomes. Thus, one study was removed for SWB (Peters et al., 2010) because the 95% CIs around the effect size did not overlap with the 95% CIs around the overall pooled effect size and the effect size remained significant $d = .32$ (95% CI [0.18-0.46]). Heterogeneity was reduced considerably but remained significant at a moderate level ($I^2 = 44$; $p = .02$). In the case of PWB, one study was removed (Hansen et al., 2012), following the same criterion described above, and the effect size also remained significant $d = 0.33$ (95% CI [0.23-0.42]). Once the study had been removed, heterogeneity for PWB was reduced to 0% and became non-significant ($p > .05$).

Table 2.2 - Main effects

Outcome Measures	N	Std diff. in means (95% CI)	Heterogeneity	Test for overall effect
Subjective Well-being	21	0.37 (0.21-0.52)	$Q = 46.01, df=20,$ $T^2 = 0.07 (p=.001);$ $I^2 = 56.53$	$Z = 4.61$ ($p=.000$)
Psychological Well-being	23	0.37 (0.26-0.47)	$Q = 26.78, df=22,$ $T^2 = 0.01 (p=.22);$ $I^2 = 17.86$	$Z = 6.84$ ($p=.000$)

Publication Bias

There were indications of publication bias in both outcomes. Regarding subjective well-being, Egger's regression was statistically significant, suggesting the existence of publication bias ($p < .05$). Thus, Duval and Tweedie's Trim and fill procedure pointed out that six studies needed to be trimmed, and the effect

size was adjusted to a statistically significant $d=0.19$ (95% CI 0.01-0.36). In the case of psychological well-being, Egger's regression test also suggested the existence of publication bias ($p < .05$). Duval and Tweedie's Trim and fill procedure imputed eight studies, and the effect size was adjusted but remained statistically significant $d=0.25$ (95% CI 0.13-0.37).

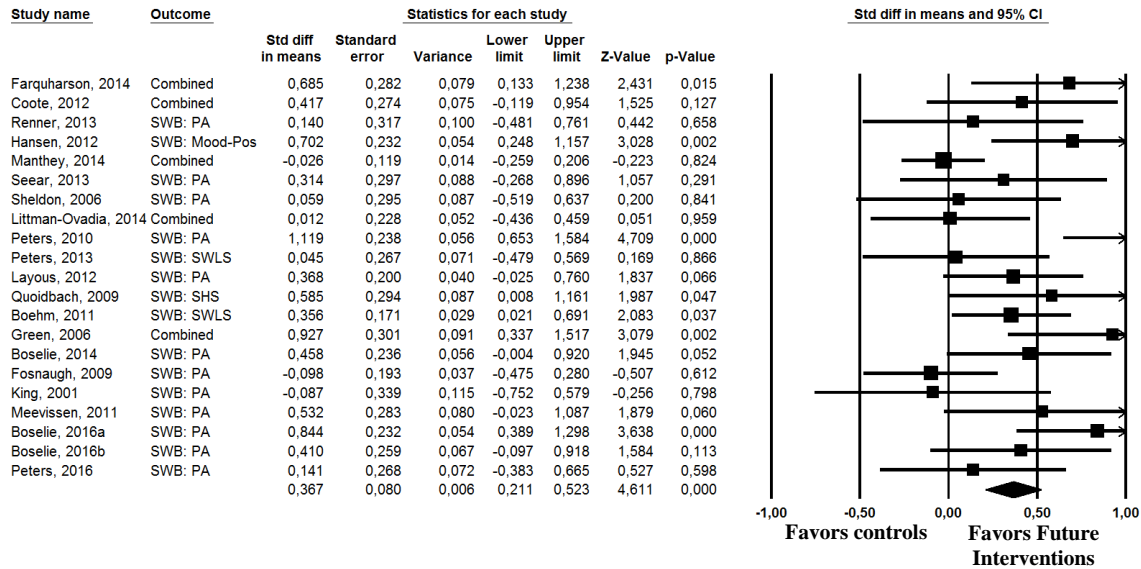


Figure 2.3 - Post-test effects of positive future-oriented interventions on subjective well-being. The square box depicts the effect size and the sample size (the larger the box, the larger the sample size) for each study. The line represents the 95% confidence interval. The rhombus shows the pooled effect size.

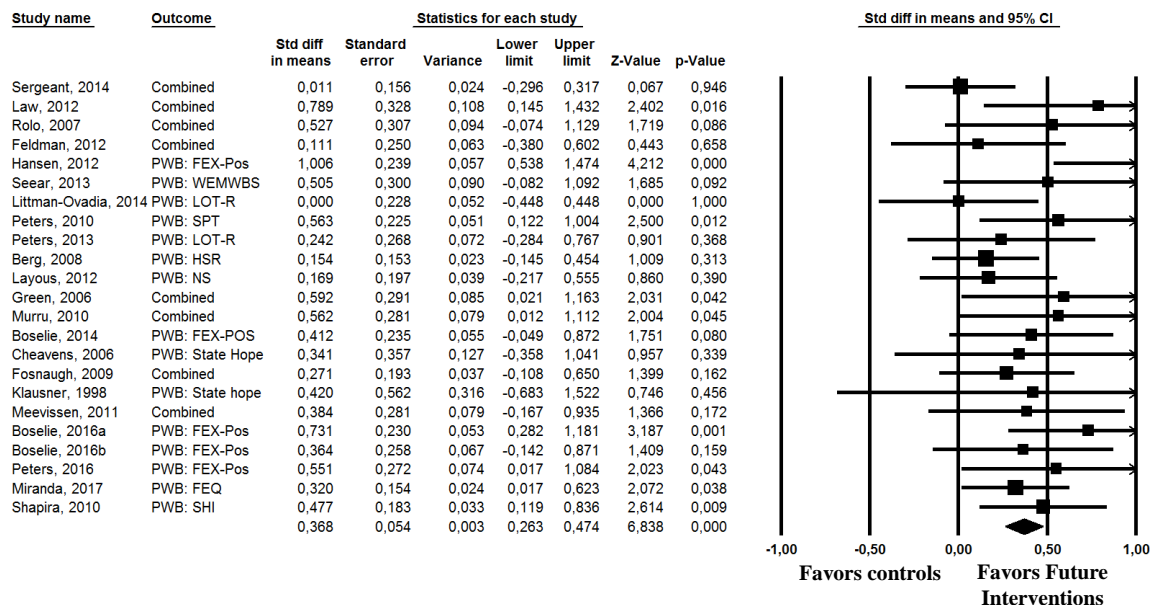


Figure 2.4 - Post-test effects of positive future-oriented interventions on psychological well-being. The square box depicts the effect size and the sample size (the larger the box, the larger the sample size) for each study. The line represents the 95% confidence interval. The rhombus shows the pooled effect size.



Moderator-subgroup analyses

Table 2.3 presents the subgroup analyses conducted with the different moderators. Results for both, subjective and psychological well-being, showed that there were no differences for age of target group, clinical and non-clinical samples, type of control group and quality ratings. Otherwise, it was found that longer interventions were more effective than interventions up to one month ($p = .05$) in increasing PWB. Additionally, there was a trend of the delivery method in SWB, insinuating that group interventions produced higher effect sizes than self-help interventions ($p = .08$). The type of intervention also showed a trend suggesting ($p = .06$) that goal-based interventions generated higher effect sizes than optimism-based interventions in terms of SWB.

Table 2.3 - Results of moderator analysis: subgroup analysis

Outcome Measure	Moderator	Subgroup	Number of studies	Cohen's <i>d</i> (95% CI)	Q-value (df), <i>p</i> -value
Subjective well-being	Age of target group	Young adults	15	0.36 (0.17, 0.55)	0.03 (1), 0.87
		Middle adults	6	0.39 (0.10, 0.68)	
	Target group	Clinical	2	0.55 (0.16, 0.93)	0.84 (1), 0.36
		Non-Clinical	19	0.35 (0.18, 0.52)	
	Control group	Active	17	0.32 (0.15, 0.50)	2.26 (1), 0.13
		Not Active	4	0.58 (0.30, 0.86)	
	Delivery Method	Group	4	0.71 (0.26, 1.16)	4.87 (2), 0.08
		Individual	3	0.49 (0.19, 0.78)	
		Self-help	13	0.24 (0.08, 0.41)	
	Duration	Single-session	8	0.47 (0.17, 0.77)	1.13 (2), 0.57
Up to 1		9	0.28		

	month		(0.11, 0.46)	
	From 1 to 4 months	4	0.36 (-0.02, 0.73)	
Intervention category	Optimism-based interventions	18	0.32 (0.16, 0.49)	3.31 (1), 0.06
	Goal-based interventions	3	0.66 (0.34, 0.98)	
Quality	Low	4	.51 (.11, .90)	0.51 (2), 0.77
	Intermediate	15	.35 (0.18, 0.53)	
	High	2	.31 (-0.40, 1.02)	
Psychological well-being	Young adults	18	0.35 (0.23, 0.47)	1.60 (2), 0.45
	Middle adults	4	0.56 (0.25, 0.87)	
	Older Adults	1	0.42 (-0.68, 1.52)	
Target group	Clinical	3	0.29 (-0.02, 0.59)	0.40 (1), 0.52
	Non-Clinical	19	0.36 (0.28, 0.50)	
Control group	Active	17	0.34 (0.21, 0.46)	2.48 (1), 0.12
	Not Active	6	0.56 (0.31, 0.80)	
Delivery Method	Group	7	0.47 (0.25, 0.69)	1.44 (2), 0.49
	Individual	3	0.50 (0.01, 0.99)	
	Self-help	12	0.33 (0.20, 0.46)	
Duration	Single-session	10	0.42 (0.26, 0.59)	5.95 (2), 0.05
	Up to 1 month	7	0.21 (0.06, 0.37)	



	From 1 to 4 months	6	0.56 (0.30, 0.82)	
Intervention category	Optimism-based interventions	16	0.32 (0.12, 0.51)	0.29 (1), 0.59
	Goal-based interventions	7	0.38 (0.25, 0.51)	
Quality	Low	6	0.46 (0.22, 0.70)	
	Intermediate	14	0.33 (0.21, 0.44)	1.20 (2), 0.55
	High	3	.47 (-0.06, 1.02)	

2.4 DISCUSSION

This meta-analysis outlines a first approach to the study of specific features of interventions by synthesizing PPIs focused on a future-time orientation aimed at improving subjective and psychological well-being. Following a systematic review of the literature, 30 articles with a total of 2227 participants were included. Results showed that PPIs focused on a future time perspective reached a moderate effect size (according to Lipsey & Wilson, 1988) across studies on both outcomes, subjective and psychological well-being ($d = 0.37$). Although effect sizes were equal for these two outcomes, heterogeneity was remarkably different. Thus, even with a larger number of compiled measures of psychological well-being, heterogeneity levels were low, even disappearing when excluding one outlier study. Regarding subjective well-being, heterogeneity across studies was moderate, and effect sizes ranged from below 0, implying a negative effect, to 1.12, indicating a large effect. Furthermore, publication bias analyses were significant, suggesting the existence of non-published studies with null or negative effects (six for subjective well-being and eight for psychological well-being). Even with these findings, adjusted effect sizes were lower, but remained significant, for both outcomes. These results contradict other meta-analyses that did not find publication bias (Weiss, Westerhof & Bohlmeijer, 2016; Malouff & Schutte, 2016), with the exception of Bolier and colleagues

(2013), who found publication bias in studies with psychological well-being measures.

Regarding subjective well-being, the effect sizes found in the present meta-analysis are lower than the effect sizes found in the meta-analysis by Sin and Lyubomirsky (2009; $d = 0.61$), but slightly greater than the ones found in a meta-analysis by Bolger et al (2013), where they found an effect size of 0.34. Regarding psychological well-being, our results are somewhat lower than those found in a meta-analysis by Weiss et al (2016; $d = 0.44$), but higher than those found in Bolger's review (2013; $d = 0.20$). Additionally, our results for psychological well-being are also similar to the findings from a meta-analysis with optimism as the primary outcome (Malouff & Schutte, 2016), which showed a moderate effect size. As a whole, PPIs focused on a future orientation show similar effectiveness to general interventions designed to improve well-being levels.

Focusing on the moderators of the interventions, our results showed that future-oriented PPIs implemented for more than one month showed greater effects than shorter interventions in improving psychological well-being, which is in line with prior meta-analyses (Bolger et al., 2013; Sin & Lyubomirsky, 2009). Other variables such as the age of the participants, the target group (clinical and non-clinical), the type of control group, and the quality ratings did not moderate the effectiveness of the future-oriented PPIs in improving subjective and psychological well-being. Our findings do not coincide with theoretical assumptions of Lyubomirsky and Layous (2013), who hypothesized that PPIs with a future-time orientation would be more beneficial for young people, because we did not find any moderator effect of the age of the participants. Additionally, the delivery method and the type of intervention showed a trend toward improving subjective well-being and should be viewed cautiously, given their clinical relevance. In this regard, the results suggested that future-oriented PPIs implemented in group format produced higher benefits than individual and self-help interventions. These results are contrary to prior meta-analyses (Weiss et al, 2016; Bolger et al, 2013; Sin & Lyubomirsky, 2009), which found that individual interventions produced larger benefits than other delivery methods. These differential effects might be explained by the potential benefits of sharing goals with others. Thus, literature has shown that when goals are shared and



experienced by peers, they serve as an intensifier of goal-directed behavior (Shteynberg & Galinsky, 2011), which is pertinent to well-being (Macleod, 2013). Regarding the type of intervention, results indicated that goal-based interventions were more effective than optimism-based interventions. Given that both approaches share a focus on the individuals' sense of agency over the goals, the differential effects in favor of goal-based interventions might be attributable to the additional components designed to reflect on the required steps and pathways to reach these goals (Alarcon, Bowling & Khazon, 2013; Snyder, Sympson, Michael & Cheavens, 2001). However, given that both moderators only showed a trend, these comments are speculations that need to be confirmed through more controlled trials in order to draw firmer conclusions.

This meta-analysis addresses one fundamental question in the positive psychology field, that is, the need to explore the specific features of the interventions (Lyubomirsky & Layous, 2013; Bolier et al., 2013). In this regard, this study indicates that future-oriented PPIs are effective in improving subjective and psychological well-being.

Our moderator analysis showed different results from those found in meta-analyses with more general PPIs (Bolier et al., 2013; Sin & Lyubomirsky, 2009), suggesting different working mechanisms. Another important contribution of this study is that we have synthesized distinct types of future-oriented interventions from different approaches, but sharing a similar basis. This will help researchers who want to explore the effects of future-oriented interventions and select specific strategies that best fit the aims of their studies, thus avoiding the development of new similar strategies that can be misleading.

This study has limitations. First, the quality of the studies was not high, and none of the studies included in the review met all the quality criteria. For instance, only one of the studies with drop-out rates conducted intent-to-treat analyses, which could have biased the results. However, it should also be pointed out that this quality might be underestimated because a lot of studies did not report important information, such as the randomization procedure or the allocation concealment. In this regard, future studies following CONSORT statements for reporting RCTs are strongly preferred. Second, even though this review includes enough studies to draw conclusions, the number of studies in

some subgroup analyses was small or disproportionate, which could explain the lack of more significant results in terms of moderator effects. Third, our study only includes studies published in peer-reviewed journals, excluding grey literature and unpublished studies, which might explain the existence of publication bias. Fourth, few studies included follow-up effects beyond one month, or they did not report the data, which impeded the exploration of longer-term effects. Fifth, there are some limitations of our search strategy because 33 studies were not found by our database search. This might be explained by the use of filters from the databases that, in some cases, were not completely precise when limiting the search for RCTs. That is, even when our search string matched the keywords of a specific RCT, the database filter excluded the study by not considering it a RCT. However, this potential limitation has been compensated for with prior meta-analyses and reference tracking. Finally, this review has measured psychological well-being in a very broad way with many different instruments, as in prior meta-analyses (Bolier et al., 2013); however, this can cause confusion about the definition of psychological well-being (Weiss et al., 2016). As Huta and Waterman claim (2014), the difficulty of providing a conclusive definition of eudaimonia lies in the fact that it is a multifaceted concept.

The results of this meta-analysis have several implications for research and clinical practice. First, they indicate that researchers should focus on the temporal orientation of PPIs when designing studies to test their efficacy. As has been suggested, the positive psychology field must not only investigate whether a PPI works, but also how it works (Lyubomirsky & Layous, 2013). Thus, the selection of PPIs should be based on the individuals' preferences or patients' needs in order to design tailored interventions and maximize the benefits (Schueller, 2010). Furthermore, comprehensive studies of past-oriented and present-oriented PPIs would provide a more general outlook about the moderator role that temporal orientation plays in the efficacy of these strategies. Based on our moderator analysis, we would recommend that future-oriented PPIs be implemented for more than one month in order to maximize their benefits. Although this is not directly derived from our meta-analyses, when combining different PPIs into a "package", the selected strategies should cover the three temporal axes, given that



each of them might be triggering specific working mechanisms (Wellenzohn, Proyer & Ruch, 2016).

Future studies should include follow-ups in order to explore the maintenance of the results in the long-term and the ways to overcome potential obstacles, such as hedonic adaptation to the benefits produced by these interventions (Diener et al., 2006). Furthermore, in order to explore the potential benefits of PPIs in different psychiatric conditions, researchers should select PPIs according to patients' needs and their therapeutic goals, in order to maximize the impact of the interventions. Finally, based on the publication bias found in the present meta-analysis, we encourage authors, editors, and journals to publish studies with null or negative effects in peer-reviewed journals because publication bias leads to the overestimation of the true effects of the interventions (Cuijpers, 2016).

References

- Alarcon, G. M., Bowling, N. A., & Khazon, S. (2013). Great expectations: A meta-analytic examination of optimism and hope. *Personality and Individual Differences, 54*(7), 821-827.
- *Berg, C. J., Snyder, C. R., & Hamilton, N. (2008). The effectiveness of a hope intervention in coping with cold pressor pain. *Journal of health psychology, 13*(6), 804-9.
- *Boehm, J. K., Lyubomirsky, S., & Sheldon, K. M. (2011). A longitudinal experimental study comparing the effectiveness of happiness-enhancing strategies in Anglo Americans and Asian Americans. *Cognition & Emotion, 25*(7), 1263-1272.
- Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive psychology interventions: a meta-analysis of randomized controlled studies. *BMC public health, 13*, 119.
- *Boselie, J. J., Vancleef, L. M., & Peters, M. L. (2016). The effects of experimental pain and induced optimism on working memory task performance. *Scandinavian Journal of Pain, 12*, 25-32.
- *Boselie, J. J., Vancleef, L. M., Smeets, T., & Peters, M. L. (2014). Increasing optimism abolishes pain-induced impairments in executive task performance. *PAIN[®], 155*(2), 334-340.

-
- *Cheavens, J. S., Feldman, D. B., Gum, A., Michael, S. T., & Snyder, C. R. (2006). Hope therapy in a community sample: A pilot investigation. *Social Indicators Research, 77*(1), 61-78.
- *Coote, H. M., & MacLeod, A. K. (2012). A self-help, positive goal-focused intervention to increase well-being in people with depression. *Clinical psychology & psychotherapy, 19*(4), 305-315.
- Cuijpers, P. (2016). *Meta-analyses in mental health research: A practical guide*. Amsterdam, the Netherlands: Pim Cuijpers Uitgeverij.
- Deeks, J. J., Higgins, J., & Altman, D. G. (2008). Analysing data and undertaking meta-analyses. *Cochrane handbook for systematic reviews of interventions: Cochrane book series, 243-296*.
- Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: revising the adaptation theory of well-being. *American psychologist, 61*(4), 305.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276-302.
- *Farquharson, L., & MacLeod, A. K. (2014). A brief goal-setting and planning intervention to improve well-being for people with psychiatric disorders. *Psychotherapy and psychosomatics, 83*(2), 122-4.
- *Feldman, D. B., & Dreher, D. E. (2012). Can hope be changed in 90 minutes? Testing the efficacy of a single-session goal-pursuit intervention for college students. *Journal of Happiness Studies, 13*(4), 745-759.
- *Fosnaugh, J., Geers, A. L., & Wellman, J. A. (2009). Giving off a rosy glow: The manipulation of an optimistic orientation. *The Journal of Social Psychology, 149*(3), 349-364.
- *Green, L. S., Oades, L. G., & Grant, A. M. (2006). Cognitive-behavioral, solution-focused life coaching: Enhancing goal striving, well-being, and hope. *The Journal of Positive Psychology, 1*(3), 142-149.
- *Hanssen, M. M., Peters, M. L., Vlaeyen, J. W., Meevissen, Y. M., & Vancleef, L. M. (2013). Optimism lowers pain: evidence of the causal status and underlying mechanisms. *Pain®, 154*(1), 53-58.
- Higgins, J., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *British medical journal, 327*, 557-560.
- Huta, V., & Waterman, A. S. (2014). Eudaimonia and its distinction from hedonia: Developing a classification and terminology for understanding conceptual and operational definitions. *Journal of Happiness Studies, 15*(6), 1425-1456.
-



- Kashdan, T. B., Biswas-Diener, R., & King, L. A. (2008). Reconsidering happiness: The costs of distinguishing between hedonics and eudaimonia. *The Journal of Positive Psychology, 3*(4), 219-233.
- *King, L. A. (2001). The Health Benefits of Writing about Life Goals. *Personality and Social Psychology Bulletin, 27*(7), 798-807.
- *Klausner, E. J., Clarkin, J. F., Spielman, L., Pupo, C., Abrams, R., & Alexopoulos, G. S. (1998). Late-life depression and functional disability: the role of goal-focused group psychotherapy. *International journal of geriatric psychiatry, 13*(10), 707-716.
- *Law, F. M., & Guo, G. J. (2012). Hope and recovery from substance abuse for female drug offenders in Taiwan. *International journal of offender therapy and comparative criminology, 56*(8), 1258-1282.
- Layous, K., Nelson, K. S., & Lyubomirsky, S. (2012). What Is the Optimal Way to Deliver a Positive Activity Intervention? The Case of Writing About One's Best Possible Selves. *Journal of Happiness Studies, 14*(2), 635-654.
- Lipsey, M. W., & Wilson, D. B. (1993). The efficacy of psychological, educational, and behavioral treatment: Confirmation from meta-analysis. *American psychologist, 48*(12), 1181.
- *Littman-Ovadia, H., & Nir, D. (2014). Looking forward to tomorrow: The buffering effect of a daily optimism intervention. *The Journal of Positive Psychology 9*(2), 122-136.
- *Lyubomirsky, S., Dickerhoof, R., Boehm, J. K., & Sheldon, K. M. (2011). Becoming happier takes both a will and a proper way: an experimental longitudinal intervention to boost well-being. *Emotion, 11*(2), 391-402.
- Lyubomirsky, S., & Layous, K. (2013). How Do Simple Positive Activities Increase Well-Being? *Current Directions in Psychological Science, 22*(1), 57-62.
- MacLeod, A. K. (2013). Goals and Plans: Their Relationship to Well-Being. In A. Efklides y D. Moraitou, *A Positive Psychology Perspective on Quality of life* (pp. 33- 50) Springer
- *Manthey, L., Vehreschild, V., & Renner, K. H. (2016). Effectiveness of two cognitive interventions promoting happiness with video-based online instructions. *Journal of Happiness Studies, 17*(1), 319-339.
- *Meevissen, Y. M. C., Peters, M. L., & Alberts, H. J. E. M. (2011). Become more optimistic by imagining a best possible self: effects of a two week intervention. *Journal of behavior therapy and experimental psychiatry, 42*(3), 371-8.

-
- *Miranda, R., Weierich, M., Khait, V., Jurska, J., & Andersen, S. M. (2017). Induced optimism as mental rehearsal to decrease depressive predictive certainty. *Behaviour Research and Therapy*, 90, 1-8.
- *Murru, E. C., & Ginis, K. A. (2010). Imagining the possibilities: the effects of a possible selves intervention on self-regulatory efficacy and exercise behavior. *Journal of sport & exercise psychology*, 32(4), 537-54.
- *Peters, M. L., Flink, I. K., Boersma, K., & Linton, S. J. (2010). Manipulating optimism: Can imagining a best possible self be used to increase positive future expectancies? *The Journal of Positive Psychology*, 5(3), 204-211.
- *Peters, M. L., Meevissen, Y. M., & Hanssen, M. M. (2013). Specificity of the Best Possible Self intervention for increasing optimism: Comparison with a gratitude intervention. *Terapia psicológica*, 31(1), 93-100.
- *Peters, M. L., Vieler, J. S., & Lautenbacher, S. (2016). Dispositional and induced optimism lead to attentional preference for faces displaying positive emotions: An eye-tracker study. *The Journal of Positive Psychology*, 11(3), 258-269.
- Peterson, C., & Seligman, M. E. (2004). *Character strengths and virtues: A handbook and classification* (Vol. 1). Oxford University Press.
- Quoidbach, J., Mikolajczak, M., & Gross, J. J. (2015). Positive interventions: An emotion regulation perspective. *Psychological Bulletin*, 141(3), 655.
- *Quoidbach, J., Wood, A. M., & Hansenne, M. (2009). Back to the future: The effect of daily practice of mental time travel into the future on happiness and anxiety. *The Journal of Positive Psychology*, 4(5), 349-355.
- *Renner, F., Schwarz, P., Peters, M. L., & Huibers, M. J. (2014). Effects of a best-possible-self mental imagery exercise on mood and dysfunctional attitudes. *Psychiatry research*, 215(1), 105-110.
- *Rolo, C., & Gould, D. (2007). An intervention for fostering hope, athletic and academic performance in university student-athletes. *International Coaching Psychology Review*, 2(1), 44-61.
- Ruini, C. (2017). *Positive Psychology in the Clinical Domains: Research and Practice*. Springer.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American psychologist*, 55(1), 68-78.
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081.
-



- Ryff, C. D. (2013). Psychological well-being revisited: Advances in the science and practice of eudaimonia. *Psychotherapy and psychosomatics*, 83(1), 10-28.
- Schueller, S. M. (2010). Preferences for positive psychology exercises. *The Journal of Positive Psychology*, 5(3), 192-203.
- Schueller, S., Kashdan, T., & Parks, A. (2014). Synthesizing positive psychological interventions: Suggestions for conducting and interpreting meta-analyses. *International Journal of Wellbeing*, 4(1).
- *Seear, K. H., & Vella-Brodrick, D. A. (2013). Efficacy of positive psychology interventions to increase well-being: Examining the role of dispositional mindfulness. *Social indicators research*, 114(3), 1125-1141.
- *Sergeant, S., & Mongrain, M. (2014). An online optimism intervention reduces depression in pessimistic individuals. *Journal of consulting and clinical psychology*, 82(2), 263.
- *Shapira, L. B., & Mongrain, M. (2010). The benefits of self-compassion and optimism exercises for individuals vulnerable to depression. *The Journal of Positive Psychology*, 5(5), 377-389.
- *Sheldon, K. M., & Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *The Journal of Positive Psychology*, 1(2), 73-82.
- Shteynberg, G., & Galinsky, A. D. (2011). Implicit coordination: Sharing goals with similar others intensifies goal pursuit. *Journal of Experimental Social Psychology*, 47(6), 1291-1294.
- Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: a practice-friendly meta-analysis. *Journal of clinical psychology*, 65(5), 467-87.
- Snyder, C. R., Sympson, S. C., Michael, S. T., & Cheavens, J. (2001). Optimism and hope constructs: Variants on a positive expectancy theme. *Optimism and pessimism: Implications for theory, research, and practice*, 101-125.
- Vittersø, J. (Ed.). (2016). *Handbook of Eudaimonic Well-Being*. International Handbooks of Quality-of-Life. doi:10.1007/978-3-319-42445-3
- Waterman, A. S. (1993). Two conceptions of happiness: Contrasts of personal expressiveness (eudaimonia) and hedonic enjoyment. *Journal of personality and social psychology*, 64(4), 678.
- Weis, R., & Speridakos, E. C. (2011). A meta-analysis of hope enhancement strategies in clinical and community settings. *Psychology of well-being: Theory, research and Practice*, 1(1),

Wellenzohn, S., Proyer, R. T., & Ruch, W. (2016). Humor-based online positive psychology interventions: A randomized placebo-controlled long-term trial. *The Journal of Positive Psychology, 11*(6), 584-594.

World Health Organization (1948). *Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference*, New York, 19 June–22 July 1946; signed on 22 July 1946 by the representatives of 61 States. Official Records of the World Health Organization, vol. 2. (pp. 100). Geneva: World Health Organization, 100.

Chapter 3. Efficacy of *e*-BPS: An adaptation of the Best possible Self exercise implemented through positive technology. A Randomized Control Trial

This chapter is published as:

Enrique, A., Bretón-López, J., Molinari, G., Baños, R., & Botella, C. (in press).
Efficacy of *e*-BPS: An adaptation of the Best Possible Self exercise implemented through positive technology. A randomized Control Trial.
Applied Research in Quality of Life



Efficacy of *e*-BPS: An adaptation of the Best Possible Self exercise implemented through positive technology. A Randomized Control Trial.

Angel ENRIQUE¹, Juana BRETÓN-LÓPEZ^{1,2}, Guadalupe MOLINARI¹, Rosa BAÑOS^{2,3}, & Cristina BOTELLA^{1,2}

¹Universitat Jaume I, Castellón, Spain

²CIBER de Fisiopatología de la Obesidad y Nutrición (CIBEROBN)

³Universitat de Valencia, Valencia, Spain

Abstract

Background. Best possible Self (BPS) is a positive psychological intervention based on positive future thinking. It has been shown to be effective in improving well-being and depressive symptoms over short periods of time. Positive technology is a scientific approach designed to increase well-being through Information and Communication Technologies.

Objective. To assess the efficacy of the BPS implemented through a positive technology application in improving optimistic thinking, affect and depressive symptoms, during a one-month period, with two follow-ups one and three months later.

Design, setting and participants. Randomized, single-blind control trial. Central randomization was performed by an independent researcher using computer software to generate lists allocating participants to treatments. Recruitment was carried out through advertisements at two universities. Randomized participants were 78 young adults who were assigned to the *e*-BPS condition (n=38) or to a control group (n=40).

Interventions. Participants were asked to visualize their BPS each day using a Positive Technology Application. The Control condition consisted of thinking and writing about daily activities, also through technologies.

Main outcome measures. Affect, future expectations, and depressive symptoms were measured in different time frames.

Results. 78 participants were analyzed using intention-to-treat analyses. Results suggest that BPS was able to improve future expectations and reducing depressive symptoms until the post-training, but these differences were not statistically significant compared to controls. Furthermore, these effects were not maintained in the three-month follow-up period.

Conclusion. This study indicates that BPS can also be effectively adapted for implementation through positive technologies. Factors such as the variety of exercises and the instructions can play a role in maintaining the changes in the long term.

Trial registration. clinicaltrials.gov Identifier: NCT02321605

Funding. Jaume I University grant PREDOC/2012/51

Key Words. Best Possible Self, future thinking, Positive Psychological Intervention, Positive Technology, Optimism, well-being



3.1 INTRODUCTION

In the past fifteen years, the goal of positive psychology interventions has been to find out how to enhance and sustain the emergence of positive emotions and well-being. Meta-analyses have shown that these interventions are effective in improving well-being and depressive symptoms in the general population and in individuals suffering from specific psychosocial problems (Bolier et al. 2013; Sin & Lyubomirsky, 2009).

One of these interventions is the Best Possible Self (BPS), proposed by King (2001) as a disclosure writing exercise where participants have to write about their life goals. In this activity, participants are asked to imagine and write an essay about themselves in the future, after everything has turned out as well as it possibly could, and read it every day during the established period (King, 2001; Sheldon & Lyubomirsky, 2006). Results of King's studies showed that it was less upsetting and distressing than writing about other topics (i.e. writing about trauma), and it was even associated with decreased illness symptoms compared to controls (King, 2001; King & Raspin, 2004). In this regard, given that depressive patients usually have a pessimistic view of their personal future (Rief et al., 2015), BPS has been shown effective in improving depressive symptoms in depressive and pessimistic individuals (Pietrowsky & Mikutta, 2012; Sergeant & Mongrain, 2014). It is important to note that, although these studies also collected information about positive variables, BPS was first designed to reduce negative symptoms and decrease illness (King, 2001).

The first study that included BPS as a Positive Psychological Intervention (PPI) to promote well-being was conducted by Sheldon and Lyubomirsky (2006). In this study, it was compared the efficacy of two PPIs: BPS and Expressing Gratitude, as a way to increase and sustain positive emotions, compared to a control condition. Furthermore, it was explicitly asked to the participants not only to write the essay, but also to visualize their best possible future. Results showed that, after 4 weeks, participants who performed one of the two PPIs increased their levels of positive affect significantly more than the control condition, but the effect was more pronounced in individuals who performed the BPS exercise. In addition, the BPS intervention has shown efficacy in improving positive affect

and subjective well-being measures 6 and 8 weeks later (Boehm, Lyubomirsky & Sheldon, 2011; Layous, Nelson & Lyubomirsky, 2012; Lyubomirsky, Dickerhoof, Boehm & Sheldon, 2011), but these effects were not maintained after 6 months (Lyubomirsky et al. 2011).

Although prior studies indicate that BPS is effective in improving some aspects of subjective well-being, these studies do not explore its effect on other variables. In this regard, it has been suggested that BPS, which is a future-oriented exercise, might have the potential to improve variables such as optimism and future expectations (Peters, Flink, Boersma & Linton, 2010). In this sense, Peters and colleagues (2010) showed that the performance of the exercise was able to produce significant changes in future expectations in a single session, compared to a control condition (Peters et al. 2010). In another study, the BPS exercise was tested during a two-week period, producing improvements in dispositional optimism and future expectations compared to a control group (Meevissen, Peters and Alberts, 2011). In addition, Meevissen and colleagues (2011) provided specific domains for the imagery content (personal, professional, and social domains) in order to standardize the content of the exercise as much as possible. Furthermore, in a quite similar study, it was shown not only that the BPS exercise was able to produce changes in optimistic attributions and dispositional optimism after a week, but also its differential efficacy with a gratitude intervention, which is more focused on the past (Peters, Meevissen & Hansen, 2013). However, there are no data about the maintenance of the effects on these specific variables related to the future beyond two weeks of intervention. The present study is aimed to cover this gap by analyzing the impact of an adaptation of BPS exercise on future expectations and optimism after one month of practice.

On the other hand, an important aspect of the BPS intervention is the way it is implemented. Up until now, the BPS exercise has been performed by writing on a blank sheet of paper. Thus, previous studies asked participants to write an essay about their best possible self and read it every day during the established period (King, 2001; Peters, et al. 2013). However, the use of Information and Communication Technologies (ICTs) is helping to develop other ways to implement these kinds of exercises, as occurs in the clinical psychology field with the emergence of new treatment methods (virtual reality, augmented reality,



Internet interventions; Andersson & Cuijpers, 2009; Opris et al., 2012). Likewise, the use of ICTs has also been suggested to enhance the benefits produced by positive psychology (Botella et al., 2012; Riva, Baños, Botella, Wiederhold & Gaggioli, 2012). In this regard, the integration of ICTs and Positive Psychology has resulted in the emergence of a new field called “Positive Technology” (PT). This approach has been defined as “the scientific and applied approach that uses technology to improve the quality of our personal experience, with the goal of increasing wellness and generating strengths and resilience in individuals, organizations, and society” (Botella et al., 2012; Riva et al., 2012). Thus, PT can be used to influence three specific features of our experience: emotional quality, linked to the generation of positive and pleasant experiences; engagement/actualization, using technology to achieve engaging and self-actualizing experiences; and connectedness, using technology to improve social integration and connectedness (Baños et al., 2014). Moreover, the use of PTs can help to standardize procedures because it allows much more control over the process (Baños et al., 2013). In the present study, we have adapted the BPS exercise for implementation through Positive Technology. In this case, we use this technology to enhance the quality of the experience by providing a more engaging way to perform the exercise.

In sum, this study is designed to investigate whether the BPS exercise applied through positive technologies increases optimistic future thinking beyond two weeks of intervention (Meevissen et al., 2011), and explore the effects on other potentially impacted measures, such as affect and depressive symptoms, after one month of training (Layous, Nelson & Lyubomirsky, 2013; Sergeant & Mongrain, 2014). Thus, the main goal is to test if the adaptation of the BPS exercise is able to replicate the effects found in other studies in the short- (pre-post session; Peters et al., 2013) and mid-term (15 days; Meevissen et al., 2011), and explore whether these effects are maintained after a training period of one month. In addition, a second goal is to explore whether these effects are maintained at follow-ups measured one and three months later. Finally, the present study explores the acceptance and perceived usefulness of the exercise and the technology used to implement it. Based on these goals, the main hypothesis is that participants of the BPS condition will increase their levels of

positive affect, optimism, and future expectations, and reduce depressive symptoms until post-training, compared to a control condition. Given that the second goal is exploratory, no hypothesis has been established with regard to this matter. The third hypothesis is that participants will report high levels of satisfaction with and perceived usefulness about the exercises and about the use of Positive Technologies.

3.2 METHOD

Participants

The total sample was composed of 78 participants, 27 men (34.6%) and 51 women (65.4%), mostly students and administrative personnel from the Universitat Jaume I and the Universitat de Valencia. Mean age was 23.8 years (SD=3.85). Information about the flow of participants through the study is presented in the results section.

Inclusion and exclusion criteria

The inclusion criteria used to select the participants were: 1) Aged between 18 and 70 years old, 2) Not suffering from a severe physical illness, 3) Not suffering from a psychological disorder or receiving psychological treatment.

Measures

Primary Outcome

Positive and Negative Expectations. We used the Spanish adaptation of the Subjective Probability Task (SPT; MacLeod, 1996, Molinari et al., in press). This instrument measures positive and negative expectations about events that will occur in the future. It consists of 30 items, 20 of them related to negative expectations about events that can take place in the future (i.e. "You will have health problems") and 10 referring to positive expectations (i.e. "People will admire you"). The instrument asks individuals to judge the likelihood of an event happening in the future on a 7-point scale (from 1 "Not at all likely to occur to 7 "extremely likely to occur"). Some studies have found appropriate internal consistency levels for positive and negative expectations ($\alpha=0.80-0.82$ and 0.91 , respectively; Meevissen et al., 2011; Peters et al., 2010).



Secondary Outcomes

Dispositional Optimism. We used the Spanish adaptation of the Life Orientation Test (LOT-R; Otero-López, et al., 1998; Scheier, Carver & Bridges, 1994). This scale measures the extent to which a person generally expects favorable outcomes. It includes 10 items: 3 items refer to positive expectations (i.e. "I'm always optimistic about my future"), 3 items refer to negative expectations (i.e. "I rarely count on good things happening to me"), and 4 items are fillers. Answers are rated on a 5-point scale (from 1 "strongly disagree" to 5 "strongly agree"). Higher scores reflect a higher level of dispositional optimism. Other studies have found an internal consistency for the eight items of $\alpha=0.76$ (Meevissen et al. 2011).

Positive and Negative Affect. To measure affect, we used the Spanish adaptation of the Positive and Negative Affect Scale (PANAS, Sandín et al., 1999; Watson, Clark & Tellegen, 1988). This instrument is composed of 20 items: 10 items measuring positive affective states (i.e. "Interested") and 10 items measuring negative affect states (i.e. "Irritable"). Participants rate on a five-point scale (from "Not at all" to "Extremely") the degree to which they usually feel a specific affective state. PANAS is one of the most widely-used instruments to measure affect because it shows excellent psychometric properties (Cronbach Alpha's from 0.87-0.91).

Depressive symptoms. The Beck Depression Inventory was used to measure mood levels (BDI-II; Beck, Steer & Brown, 1996). This is one of the most widely used instruments to assess the severity of depressive symptoms in general and clinical populations. In the present study, the Spanish validation of this instrument was used (Sanz, García-Vera, Espinosa, Fortún & Vázquez, 2005). It is composed of 21 items designed to assess depression in its different expressions: cognitive, affective, somatic, and behavioral (i.e. sadness, sleep problems, apathy, sex behavior). The time frame referred to in the questions is the past two weeks, and the answers range from 0 (absence of the symptom) to 3 (maximum level of the symptom). This scale has good reliability and internal consistency, with Cronbach's alphas of 0.84-0.89.

Participants' opinions. This scale includes five questions about qualitative data, rated on a Likert scale (from 0 to 10). First, "To what extent has your participation in this imagination exercise been satisfactory?" Second, "To what extent has your participation in this imagination exercise been useful?" Third, "To what extent has the use of this technology been satisfactory?" Fourth, "To what extent has the use of this technology been useful?" Finally, "How many days per week did you perform the exercise?"

Design

This is an experimental, repeated-measures study with two independent groups. All participants (N=78) were randomly assigned to two conditions: 38 to the experimental condition (adaptation of the BPS exercise) and the other 40 to the control condition (Daily Activities). The random assignment of the participants to the different experimental conditions was carried out by an independent researcher who had no knowledge about the study or the intervention received in the different groups. The randomization was performed through a randomization list created by the Random Allocation Software, version 1.0. The participants did not know the characteristics of the different experimental groups.

The study was registered in the United States National Institute of Health Registration System (<http://www.clinicaltrials.gov>) with Clinical Trials Registration Number: NCT02321605, <https://clinicaltrials.gov/show/NCT02321605>. Moreover, the study was approved by the Ethics Committee of Jaume I University.

Six assessment moments were used (see Figure 3.1): Before the exercise (pre), after the first session (post-session), mid-term training (15 days-training) and post-training. Moreover, we included two follow-ups: one month after finishing the training period (1st follow-up) and three months after finishing the training (2nd follow-up)



Figure 3.1 Assessment moments



Positive Technology Applications

Book of Life. This virtual application looks like a personal diary and is composed of different chapters in which users are asked to write about many different topics and support the essay with multimedia content. For this study, a new chapter was created with the BPS instructions, allowing the participants to add pictures, songs, and videos to the BPS essay. Book of Life is a module of the EARTH system, a self-guided platform with different activity modules, each of them designed to induce specific emotions. As a whole, it has shown efficacy in increasing positive mood (Baños et al., 2014; Botella et al., 2016).

TEO (Emotional-Online Therapy). This web platform is designed for use as a tool or a complement in the framework of a therapeutic program (for example: homework assignment; Quero, Molés, Pérez, Botella & Baños, 2012). It can be used to develop and organize therapeutic contents based on multimedia materials, as well as to create and personalize treatment sessions and protocols. Furthermore, after reading the exercise, participants can access two virtual environments (a forest and a beach), where they can stay as long as they like.

SMS messages: A protocol for sending messages was developed to encourage and remind participants to practice the exercise. The messages were sent through the website www.trendoo.es. in a randomized way, for example: “Happiness is not an ideal based on reason, but rather on imagination. Don’t forget to continue to practice the imagination exercise! Thank you very much.” or “Hello! You’re doing great! We encourage you to continue to practice the imagination exercise. Thank you very much.”

PowerPoint: A PowerPoint file was created to write about the activities, feelings and thoughts experienced in the past 24 hours. It included a first slide with the instructions for the exercise, and from that point on, the participant could add slides as he/she tracked the following days.

Interventions

e-BPS: In this condition, participants were asked to write about and imagine a future in which they have reached all their goals and developed all their potential in four different domains: personal, professional, social, and health

domains. Unlike other studies do not include a health domain (Meevissen et al. 2011), we considered it important for participants to think about what they would have to do to improve or sustain their current level of health, a significant life area.

Participants performed the exercise in the “Book of Life” located in the laboratory. This application was designed so that participants could write and imagine their BPS and incorporate multimedia content (images, music and videos) into the essay, in order to enrich the experience and enhance the content of what they had written. After the first session, all the content included by the participants in the “Book of Life” was exported to the web platform (TEO), so that they could continue to practice the exercise at home in the same format.

Daily activities (DA): In this condition, participants were asked to think and write about everything they had done in the past 24 hours. These instructions were adapted from the Sheldon and Lyubomirsky (2006). As they performed the exercise, participants were told that it would help them to identify problematic areas in their lives and work on improving them. Participants in this condition were provided with a PowerPoint document on which to write the content of the exercise. They kept this document so that they could continue to write at home.

In both conditions, they were told to write the exercise in the format of a personal story to facilitate visualization. Furthermore, they were given a printed copy of the text they had written and, in the case of the participants in the BPS condition, this copy included the pictures they had added. In both conditions, we asked the participants to continue to practice the same exercise once a day at home for at least five minutes during the rest of the month. As a reminder, SMS messages were delivered weekly for all the participants.

Procedure

Sample recruitment was carried out by placing advertisements at different locations at Jaume I University of Castellon (Spain). The information provided to announce the study was extracted from the experiment performed by Meevissen and colleagues (2011), who designed a slogan to attract people’s attention. The advertisement stated that the study consisted of testing “The Power of Visualization”, and that it could have a positive influence on mood. Individuals



who showed interest in participating in the study contacted us by email or telephone. They were informed about the characteristics of the study, and if they agreed to participate, an appointment was made for the first session. Before the first meeting they were randomly assigned to one of the conditions. When the participants arrived at the laboratory, they signed the informed consent stating that they were participating in the study voluntarily. Later, we briefly explored whether they met the inclusion criteria for the study, and they completed the pre-test questionnaires. After that, the participants received the instructions for the corresponding exercise in audio format and on paper. Next, all the participants were left alone in the room to avoid distractors and stimulate concentration on the exercise. All participants in both conditions prepared the exercise during 20 minutes. In the case of BPS condition, if multimedia content was not still selected, participants were encouraged to do it, allowing them to spend a maximum of 5 minutes. When the time was up, all the participants were asked to perform the 5-minute imagery exercise. Specifically in the e-BPS condition, individuals performed the imagery exercise through another display of the Book of Life, where they visualized the BPS essay along with the multimedia content selected previously. Regarding the DA condition, participants were asked to read and visualize the content of their essays through the full screen mode of the PowerPoint presentation, in order to reproduce a similar methodology and use the same technology in both conditions.

To finalize the session, all the participants had to fill out the PANAS and SPT again to assess the immediate effects of writing and visualizing the exercise. At the end of this first session, they were asked to continue to practice the exercise 5 minutes a day during a period of one month. During this training period, two brief text messages per week were sent to the participants' mobile phones to encourage them and remind them to perform the exercise once a day. Fifteen days later (mid-term training), participants received and completed online surveys containing a brief follow-up of the LOT-R, SPT and PANAS, in order to compare the results at this time with similar studies (Meevissen et al. 2011).

At the end of the one-month study period (post-training), participants were given an appointment to complete the post-training assessment, including the participant opinion scale. Finally, participants were contacted online one and three

months later to complete the follow-up assessments (1st and 2nd follow-up). It is important to note that, during the follow-up period, participants were encouraged to continue to practice the exercise, but they were not instructed to perform it daily. Instead, they were told that they could decide how many days they would practice it, although we encouraged them to do so at least two or three days a week to maintain the habit. These instructions were given, regardless of the assigned condition. Furthermore, one text message per week was sent during the follow-up with the same content as the SMS sent during the one-month training.

Data analyses

Analyses were separated by measurement moments in order to check the efficacy of the intervention at different time points. Therefore, we divided the analyses into pre- and post-session assessments to analyze the single-session effects, and other analyses were performed with the other time assessments to explore the efficacy over time.

One-way analysis of variance (ANOVAs) was performed to find out whether there were significant differences between the groups in demographic data and pre-treatment measures. Mixed ANOVA with repeated measures were used to compare the effects of the intervention on the measures between the two conditions at the different time points.

In order to improve the quality of the study and following the CONSORT guidelines, intent-to-treat (ITT) analyses were carried out. These analyses make it possible to use all the available data from all the randomized subjects who received the allocated intervention (n=78; Gupta, 2011). For the treatment of missing data, the procedure suggested by Hair and colleagues (2014) was followed. First, the type of missing data was explored, concluding that they were missing data at item-level and, thus, eligible for imputation. Second, the quantity of missing values was analyzed, determining that any of the measures had more than 21% missing values. Third, a diagnosis of the random pattern of missing data was carried out through the Little MCAR test ($\chi^2(1110) = 634.96, p > 0.05$); Little & Rubin, 1990). This test concluded that the missing data were due to chance, and not to any other factor registered in the database. Finally, maximum likelihood estimation (ML) was performed for the missing values, and sensitivity



analysis comparing results of the completers with the estimated values. These analyses showed that there was no chance of falling into biased estimations by using the maximum likelihood estimation.

We analyzed single-session effects (pre—post-session), through a 2x2 ANOVA, to compare the effects of the intervention on affect and future expectations in the BPS and DA conditions. Next, effects over time were explored by carrying out a 5x2 ANOVA for each measure (Pre— 15-days training— Post-Training— 1st Follow-up— 2nd Follow-up). Finally, effect sizes (Cohen's *d*) and confidence intervals were calculated for within-group changes, based on the formula provided by Botella and Sanchez-Meca (2015). Reporting the effect size strengthens the reliability of the observed changes because it is the best indicator to assess the magnitude of the findings in research studies (Durlak, 2009).

Moreover, we analyzed the participants' opinions collected through the scale. Specifically, the levels of satisfaction and usefulness of the exercises and the technology were explored, as well as the frequency of the exercise. We calculated the average scores provided by the participants, and we compared the differences between conditions through independent-samples *t*-tests.

3.3 RESULTS

Participant Flow

Regarding the flow of participants throughout the investigation process, Figure 3.2 shows that 89 people were interested in the study. Eight of them did not participate in the first session because they were ultimately not interested ($n=6$), or they did not answer the phone call ($n=2$). A total of 81 participants were assigned to the two experimental conditions: *e*-BPS, $n=40$; DA, $n=41$. Of them, 3 people did not attend the first session (2 from the *e*-BPS condition and 1 from the control condition), and so the total sample that received the intervention consisted of 78 participants.

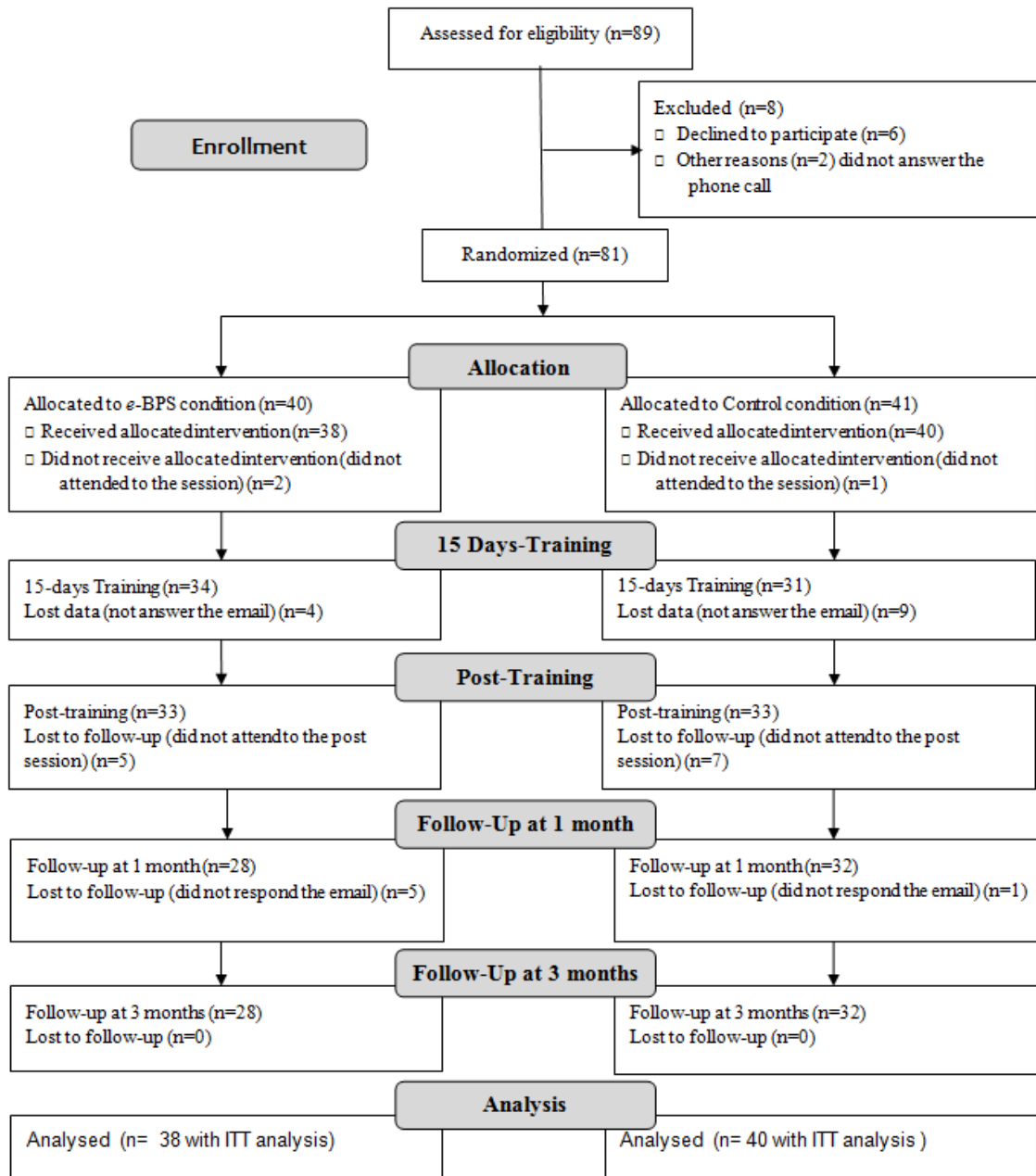


Figure 3.2 - Participant flow (following consort flow diagram 2010)

Pre-Treatment Data

Differences in pre-test scores between conditions were explored through one-way ANOVA. These analyses revealed no significant differences between conditions before treatment on any of these variables: SPT-POS ($F [1,76]=1.25$; $p =0.267$), SPT-NEG ($F [1,76] = 0.681$; $p = 0.412$), PA ($F [1,76] = 0.431$; $p = 0.514$), NA ($F [1,76] = 0.876$; $p = 0.352$), LOT-R ($F [1,76] = 1.225$; $p = 0.272$) and BDI ($F [1,76] = 0.031$; $p = 0.860$). These findings indicate that the random assignment was successful. In addition, applying the same analysis, no significant



differences were found based on participants' sex ($\chi^2(1) = 0.162$; $p = 0.687$) or age ($F(1,76) = 0.438$; $p = 0.510$).

Intervention effects

Pre—post-session effects (Single-session effects)

To analyze single-session effects, we conducted a repeated-measures mixed ANOVA on the SPT and PANAS questionnaires. Results showed significant time effects for all the measures included: SPT-POS ($F(1,76) = 26.91$, $p = 0.001$), SPT-NEG ($F(1,76) = 41.98$, $p = 0.001$), PA ($F(1,76) = 31.58$, $p = 0.001$) and NA ($F(1,76) = 4.92$, $p = 0.03$). Interaction effects were found for the two variables of the SPT, namely SPT-POS ($F(1,76) = 9.85$, $p = 0.002$) and SPT-NEG ($F(1,76) = 10.75$, $p = 0.002$), showing that the BPS exercise was more effective in increasing positive expectations and decreasing negative ones, compared to the control exercise. However, no significant interaction effects were found for PA ($F(1,76) = 3.12$, $p = 0.081$) or NA ($F(1,76) = 0.62$, $p = 0.432$), as there was a change in the scores after the first session, but with no significant differences between conditions.

Figure 3.3 and Figure 3.4 shows the graph of the change in scores for BPS and control conditions, as well as the effect size (measured by Cohen's d ; Cohen, 1988) for both measures. As the figures show, in the case of the e -BPS condition, a significant moderate effect size (at 95% confidence intervals) was found for SPT-POS, SPT-NEG and PA, and a non-significant small effect size for NA. For the control condition, effect sizes did not reach significance for any of the measures, although a small effect size was found for PA.

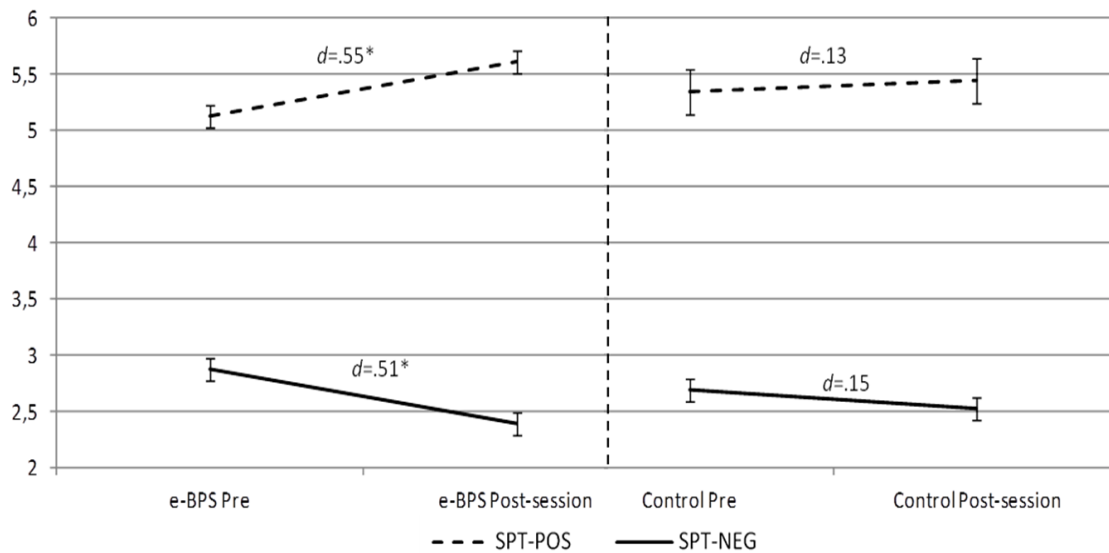


Figure 3.3 - Single-session effects on SPT

* 95% Confidence Interval reached significance; d= Cohen's d effect size

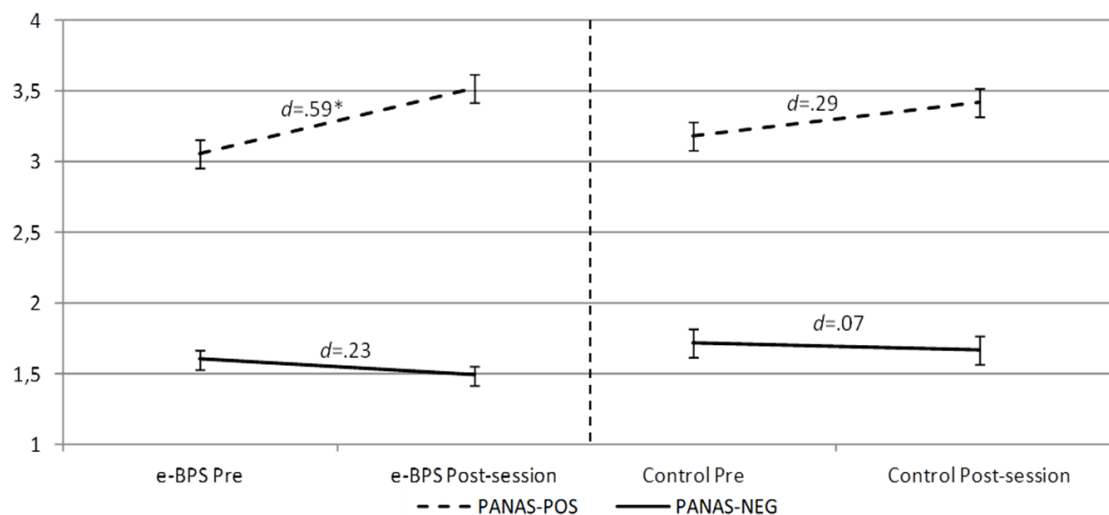


Figure 3.4 - Single-session effects on PANAS

* 95% Confidence Interval reached significance; d= Cohen's d effect size

Effects on the different time point assessments

Table 1 shows the means, standard deviations, and within-group effect sizes for mid-term, post-training, and follow-up effects in both experimental conditions.

We carried out a 5x2 ANOVA (Pre—15-days training —Post-Training—1st Follow-up—2nd Follow-up) of the different measures. We found a significant time effect on the SPT-POS ($F(1,76) = 3.45, p = 0.012$), SPT-NEG ($F(1,76) = 7.02, p = 0.001$), PA ($F(1,76) = 3.46, p = 0.012$) NA ($F(1,76) = 5.63, p = 0.001$) and BDI ($F(1,76) = 11.29, p = 0.001$), indicating that a significant change in



scores over time had been produced in both conditions. The time effect was non-significant in the case of LOT-R ($F(1,76) = 1.38, p = 0.249$), indicating that the change in both conditions was non-significant over time. ANOVA analyses did not show any significant interaction effects for any of the measures, indicating that differences between conditions were not statistically significant. Regarding the effect size (Table 3.1), in the case of the *e*-BPS condition, it is possible to observe a continued increase in the effect size during the training (15 days to post-training) on the SPT, PANAS and BDI measures, and this was more pronounced in the case of SPT-NEG and BDI, where a moderate effect size was found. The effects on these measures were maintained until the first follow-up and disappeared in the second follow-up, with the exception of BDI, whose effects were maintained in the second follow-up. In the case of the control condition, we also found a small effect size on the SPT-POS, PANAS and BDI at post-training, and these effects were also maintained in the first follow-up, with the exception of the SPT-POS, whose results disappeared in both follow-ups. In the case of BDI, the scores reached a moderate effect size at the first follow-up, but the effect size became small in the second follow-up.

Participants' opinion

Regarding the participants' opinions, we carried out independent-samples t-tests between conditions on the questions about satisfaction and usefulness. For the exercise, we did not find any significant differences between conditions. All the participants showed high levels of satisfaction ($M = 7.59, SD = 1.5$ for the *e*-BPS condition, and $M = 7.21, SD = 1.91$ for the control condition), and they referred to finding the exercise useful ($M = 7.21, SD = 1.71$ for the *e*-BPS condition, and $M = 6.94, SD = 1.86$ for the control condition).

In the case of the use of Positive Technologies, the Book of Life was rated significantly higher than the PowerPoint on usefulness ($t = 2.62, p = 0.01$) and satisfaction ($t = 2.66, p = 0.01$). Regarding the descriptive data, the Book of Life was considered very useful ($M = 8.03, SD: 1.61$), and participants felt highly satisfied with its use ($M = 8.00, SD = 1.44$). The TEO system also received appropriate scores on usefulness ($M = 6.92, SD = 2.21$) and satisfaction ($M = 7.12, SD = 2.03$). The PowerPoint was also considered useful ($M = 6.45, SD = 3.00$), and participants felt satisfied with it ($M = 6.79, SD = 2.15$).

Table 3.1 - Means, standard deviations and within-group effect sizes for the outcome measures in the different time-point assessments

		Mean (SD)			Within-group effect size, <i>d</i> [95% CI]	Within-group effect size, <i>d</i> [95% CI]	Mean (SD)			
		Pre	15-Days Training	Post- Training	Pre—15-Days Training	Pre—Post- Training	1 st Follow-Up	2 nd Follow- Up	Pre—1 st F-Up	Pre—2 nd F-Up
SPT- POS	BPS	5.12 (0.88)	5.22 (0.92)	5.42 (0.77)	0.11[-0.43-0.21]	0.33[0.02-0.64]*	5.39 (0.85)	5.28 (0.93)	0.30[-0.03-0.64]	0.18[-0.13-0.49]
	DA	5.34 (0.85)	5.29 (0.66)	5.51 (0.57)	0.06[-0.25-0.37]	0.20[-0.10-0.49]	5.39 (0.78)	5.51 (0.69)	0.06[-0.26-0.38]	0.20[-0.11-0.50]
	Total	5.23 (0.87)	5.26 (0.79)	5.47 (0.68)			5.39 (0.81)	5.40 (0.82)		
SPT- NEG	BPS	2.88 (0.93)	2.54 (0.88)	2.41 (0.83)	0.36[0.11-0.61]*	0.50[0.22-0.76]*	2.48 (0.86)	2.75 (0.91)	0.42[0.10-0.74]*	0.14[-0.17-0.45]
	DA	2.69 (1.08)	2.43 (1.02)	2.42 (0.97)	0.24[0.01-0.47]*	0.25[0.01-0.48]*	2.54 (1.09)	2.67 (1.22)	0.14 [-0.16-0.43]	0.02[-0.29-0.32]
	Total	2.78 (1.01)	2.48 (0.95)	2.41 (0.90)			2.52 (0.98)	2.71 (1.08)		
PA	BPS	3.06 (0.77)	3.32 (0.75)	3.37 (0.72)	0.33[0.02-0.64]*	0.39[0.08-0.70]*	3.37 (0.72)	3.26 (0.72)	0.39[0.07-0.72]*	0.25[-0.11-0.62]
	DA	3.18 (0.79)	3.21 (0.62)	3.36 (0.66)	0.04[-0.33-0.25]	0.22[-0.07-0.51]	3.39 (0.61)	3.37 (0.83)	0.26[-0.05-0.57]	0.24[-0.12-0.59]
	Total	3.12 (0.78)	3.26 (0.69)	3.37 (0.68)			3.38 (0.66)	3.27 (0.88)		
NA	BPS	1.59 (0.46)	1.56 (0.37)	1.49 (0.36)	0.09[-0.16-0.33]	0.23[-0.02-0.49]	1.52 (0.46)	1.66 (0.42)	0.17[-0.15-0.48]	-0.13[-0.50-0.25]
	DA	1.72 (0.67)	1.66 (0.66)	1.53 (0.56)	0.09[-0.15-0.33]	0.28[0.02-0.53]*	1.47 (0.48)	1.60 (0.57)	0.37[0.04-0.69]*	0.18[-0.19-0.54]
	Total	1.66 (0.58)	1.62 (0.56)	1.51 (0.47)			1.50 (0.47)	1.68 (0.57)		
LOT- R	BPS	21.63 (5.42)	21.81 (4.87)	21.77 (5.45)	0.03[-0.28-0.21]	0.03[-0.25-0.20]	22.34 (3.81)	23.23 (3.63)	0.13[-0.21-0.47]	0.29[-0.01-0.59]
	DA	22.82 (4.04)	22.74 (4.50)	23.39 (3.65)	0.02[-0.22-0.26]	0.14[-0.36-0.08]	23.42 (3.84)	21.04 (4.98)	0.15[-0.48-0.19]	-0.43[0.13-0.73]*
	Total	22.24 (4.77)	22.29 (4.67)	22.60 (4.65)			22.89 (3.84)	22.16 (4.45)		
BDI- II	BPS	8.08 (6.42)		4.87 (3.93)		0.49[0.20-0.77]*	4.37 (5.89)	4.19 (5.33)	0.57[0.24-0.89]*	0.59[0.24-0.94]*
	DA	7.80(7.42)	--	5.97 (6.11)	--	0.24[-0.01-0.49]	3.71 (4.70)	4.60 (5.44)	0.54[0.22-0.86]*	0.42[0.10-0.75]*
	Total	7.94 (6.90)		5.43 (5.16)			4.03 (5.29)	4.40 (5.35)		

SPT-POS: Positive expectations (potential range 1-7); SPT-NEG: Negative Expectations (potential range 1-7); PA: Positive Affect (potential range 1-5); NA: Negative Affect (potential range 1-5); LOT-R: Life Orientation Test (potential range 6-30); BDI: Beck Depression Inventory (potential range 0-64); BPS: Best Possible Self; DA: Daily Activities
BDI-II was not included in the 15-days training

*Significant effect size, indicated by 95% Confidence Intervals.



Regarding the frequency of the exercise (Figure 3.5), an ANOVA showed a significant time effect ($F [1,56] = 47.5, p < .01$), indicating a decrease in the scores over time for both conditions. No differences between conditions were found ($F [1,56] = 1.10, p = 0.34$).

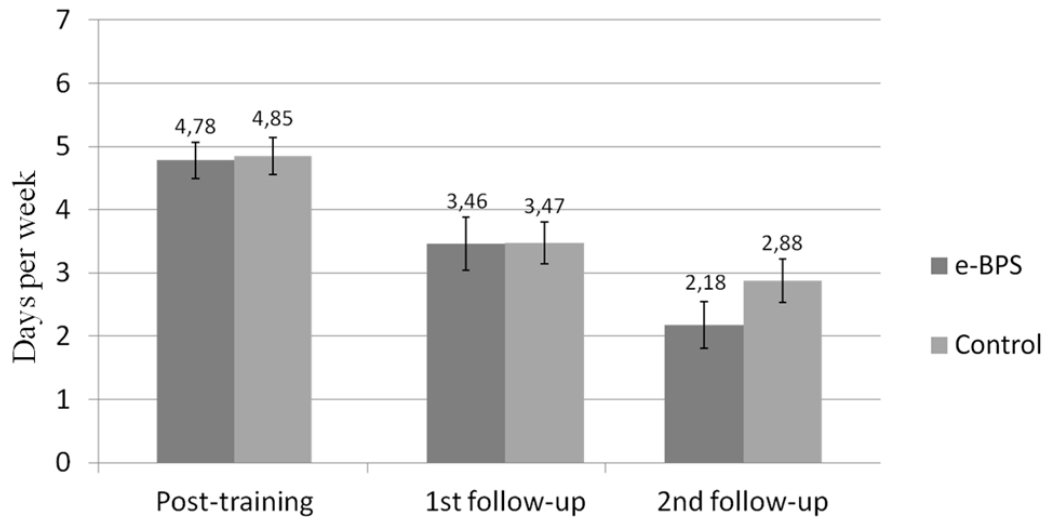


Figure 3.5 - Performance frequency per week depending on the condition

3.4 DISCUSSION

In this study, we analyzed the efficacy of an adaptation of the BPS intervention implemented through positive technology (e-BPS) in improving future expectations, optimism, positive affect, and depressive symptoms, compared to a control condition. These effects were explored at short, mid- and long-term and acceptance and utility levels of the exercises and the technologies were also collected.

Regarding our first hypothesis, the results indicate that the e-BPS intervention was able to replicate the significant improvement in future expectations after a single session, compared to the control condition as it was found in prior studies (Peters et al. 2010; Meevissen et al. 2011). However, in the case of affect, no significant differences between conditions were found, although the effect size for positive affect showed a significant moderate effect size in the e-BPS condition, whereas a non-significant small effect size was found for the control condition.

Considering the effects at fifteen days and at post-training, there was an overall improvement trend in the different measures, but there were no statistical differences between conditions in any of the measures. These results do not meet with our main hypothesis. Regarding the within-group effect sizes comparing pre to post-training, they were higher for the e-BPS condition, ranging from significant small to moderate effect sizes for future expectations and for positive affect. The effect sizes found in this study are similar to the results reported in prior studies (from small to moderate), except that they found statistically significant differences between conditions (Meevissen et al., 2011; Sheldon & Lyubomirsky, 2006). However, no change was found in dispositional optimism during the first month in either condition, indicating that the exercise was not powerful enough to produce any effects, unlike in the findings by Meevissen and colleagues (2011). Otherwise, the moderate effect size for the depressive symptoms confirms that this exercise could have a positive impact on the negative and pessimistic view of the personal future in depressive patients, as prior literature suggests (Pietrowsky & Mikutta, 2012; Sergeant & Mongrain, 2014).

In the case of the control condition (daily activities), some benefits were observed in the participants in these time frames. Specifically, negative future expectations and negative affect reached a significant small effect size at post-training that was maintained in the case of negative affect until the first follow-up. These results could explain the lack of significant differences between conditions in the ANOVA, as they both obtained changes. Thus, positive effects of thinking and writing about daily activities could be explained by the fact that reflecting about the events that happened during the day could create a higher level of awareness of the good and bad moments. The inclusion of the PowerPoint to perform the exercise might also have contributed to these effects, as it could provide a good framework for writing. This result is consistent with the study by Pennebaker (1993), who showed that, independently of the emotional content of the writing, enhancing the use of words that express awareness or are related to cognitive activity was linked to improvements in health. Furthermore, other studies also showed that the daily activities exercise was able to improve dysfunctional attitude levels (Renner, Schwarz, Peters & Huibers, 2014) and diminish negative affect (Sheldon & Lyubomirsky, 2006). For this reason, it



would be interesting to choose another more innocuous control activity in order to test the effects in a fairer way.

With regard to the second hypothesis, we explored whether these effects could be maintained at the one- and three-month follow-ups. As it was outlined above, there were not statistically significant differences between conditions in the follow-ups. Attending to the within-group effect sizes comparing pre to first and second follow-up, the results for the e-BPS condition showed maintenance of the changes in future expectations, affect, and depressive symptoms until the first follow-up, although only negative expectations and positive affect remained significant. However, nearly all of these effects disappeared at the second follow-up; only the scores on depressive symptoms continued to decrease over time in both conditions, especially in the e-BPS condition. Thus, although the study sample was composed of university students, and depression levels were low, a tendency toward reductions in these scores over time was observed. Regarding the disappearance of the effects at the second follow-up, these results were similar to the effects on subjective well-being shown by Lyubomirsky et al. (2011), where the performance of the exercise 8 months later did not show significant effects on well-being, compared to a control condition.

Regarding the third hypothesis, the performance of the BPS and the Daily Activities was rated as satisfactory and useful for all the participants. These results suggest that the motivation to do the exercises was high, and that they enjoyed and took advantage of them. Participants also rated the Positive Technology Applications as useful and satisfactory. However, satisfaction and usefulness levels were significantly higher for the Book of Life than for the PowerPoint. These results support arguments about the complementary role that ICTs can play in the positive psychology approach (Botella et al., 2012; Riva et al., 2012). In this regard, technologies can add some advantages, as they help to standardize the procedure or, in contrast, carry out controlled modifications to make it a more attractive and engaging activity for users. Along these lines, the importance of these findings lies in the need for interventions that can fit the profiles and features of different people (Lyubomirsky & Layous, 2013). Therefore, this intervention could be more effective in people who prefer to use ICTs.

Collected data in regard to the reported frequency of performing the exercises showed that, in both conditions, participants continued to practice the exercise weekly, even in the follow-up periods, when they were only invited to continue to do the exercise two or three days a week. Even with the reduction during the follow-up, the observed frequency is indicative of participants' willingness to do the exercise. This, it is possible that participants did not find it necessary to perform the exercise more than two or three times a week to obtain benefits. Based on a habit formation model, lapses of one week would be indicative of greater difficulties in maintaining a specific behavior (Armitage, 2005). In this case, the fact that the exercise was performed more than two days a week during the follow-up period could be a good prognosis for future performance and the maintenance of the habit. It would be interesting to find an optimal balance between the performance rate and the benefits, in order to discover the minimum frequency necessary to maintain the effects.

The present study contributes to the positive psychology literature because it not only explores long-term effects of a PPI, but it also conducts intent-to-treat analyses for handling missing values. Both aspects are crucial indicators of the methodological quality of the studies, and they have a direct impact on the validity and generalization of the results (Rothwell, 2006; Schulz, Altman & Moher, 2010). However, only about one fourth of the studies with PPIs explore long-term effects, and they rarely conduct intent-to-treat analyses (Bolier et al. 2013). Attending to the observed weakening of the outcomes over time, it could be explained by one of the mediator variables of PPIs proposed by Lyubomirsky and Layous (2013), the variety. These authors propose a set of factors that could affect the efficacy of the exercise. In the present study, the BPS manipulation consisted of repeating the exercise of visualizing the best possible future for four months, based on the essay edited in the first session. This situation could produce the phenomenon called hedonic adaptation (Diener, Lucas & Scollon, 2006), where the exercise no longer produces the same benefits as it did in the beginning. Taking the prior literature into account, factors like variety (Lyubomirsky & Layous, 2013) could help to avoid the hedonic adaptation that these exercises usually produce (Diener et al. 2006). Therefore, we should think about the possibility of improving positive psychological interventions by making them



more varied and tailored to each participant. In this sense, our team has designed a program for the improvement of positive processes and traits related to the future by mixing optimistic thinking (BPS exercise) and the components of hope therapy, in order to improve the variety of the intervention and sustain the effects in the long term (Enrique, Molinari, Llorca & Botella, 2016).

This study has some limitations. Participants may have been biased by the information received before the study. The advertising used to catch their attention stated that performing the exercise could have a positive influence on their mood. However, the information was extracted from other studies where it had no effect on the results (Meevissen et al. 2011; Sheldon & Lubomirsky, 2006). Future studies should try to control this variable, as in the study by Layous and colleagues (2012). They compared the efficacy of the BPS exercise in participants who read false testimonials about the benefits of the exercise and participants who read neutral information. Results showed that greater gains in well-being were obtained by participants who read the false testimonials, which suggests the importance of expectations in the actual efficacy of the intervention. Furthermore, the control condition focuses on the past 24 hours, unlike the BPS exercise, which is oriented towards the future. Therefore, further studies should include a control condition with the same temporal orientation in order to compare the results. Another limitation is that the power of the sample size was not previously calculated resulting in a lower sample size, so that the absence of more significant results could be due to a power problem. Despite the innovative design of the intervention, it is important to note that the efficacy of the technologies was not compared to a condition without technologies, which means we cannot know the differential role of the technology in the implementation of the BPS exercise. Moreover, the decrease in depressive symptoms observed during the training and follow-up supports the link between depressive symptoms and future expectations (Beck & Haigh, 2014; Rief et al. 2015). In this regard, the study sample was composed of young students with low scores on depressive symptoms and negative affect, which might make it more difficult to observe changes in these measures because of floor effects. As Sergeant and Mongrain (2015) showed, individuals suffering from emotional distress benefit more from PPIs than healthy adults. For this reason, it would be interesting to carry out studies with clinical

populations with higher depressive symptoms in order to find out whether the BPS exercise is also able to reduce depressive symptoms. Overall, we can say that the BPS exercise might be included as a way to prevent emotional problems, beyond improving positive affect and well-being.

Future studies could also explore the effects of the BPS exercise on other constructs related to eudaimonic well-being and goal pursuit, such as self-efficacy or purpose in life (Ryan & Deci, 2001). Furthermore, it would be important to develop new more sensitive instruments to change, such as a measure of state optimism, similar to the state hope scale (Snyder et al., 1996). These instruments would make it possible to analyze the real impact of these interventions on optimism because dispositional optimism is too stable to detect short-term changes (Liau, Neihart, Teo & Lo, 2016; Pietrowsky & Mukutta, 2012). Moreover, the inclusion of other types of measures, such as Ecological Momentary Assessment strategies, could help to perform a much more accurate assessment (Trull & Ebner-Priemer, 2009).

In conclusion, in the field of positive psychology, further research is needed about basic aspects such as the development of procedures, and interventions designed to enhance specific positive features and the implementation of high-quality methodological designs. In this sense, this study provides important information about the relative efficacy of BPS exercise in a controlled study. Nevertheless, the progress in the field in the past decade shows new developments that allow us to understand the BPS experience and, thus, the conditions and processes that contribute to the emergence of positive feelings.

References

- Andersson, G., & Cuijpers, P. (2009). Internet-based and other computerized psychological treatments for adult depression: a meta-analysis. *Cognitive behaviour therapy*, 38(4), 196-205. doi: 10.1080/16506070903318960.
- Armitage, C. J. (2005). Can the theory of planned behavior predict the maintenance of physical activity? *Health Psychology*, 24(3), 235. doi: 10.1037/0278-6133.24.3.235.
- Baños, R. M., Espinoza, M., García-Palacios, A., Cervera, J. M., Esquerdo, G., Barrajón, E., & Botella, C. (2013). A positive psychological intervention using virtual



reality for patients with advanced cancer in a hospital setting: a pilot study to assess feasibility. *Supportive Care in Cancer*, 21(1), 263-270. doi: 10.1007/s00520-012-1520-x.

Baños, R. M., Etchemendy, E., Farfallini, L., García-Palacios, A., Quero, S., & Botella, C. (2014). EARTH of Well-Being System: A pilot study of an Information and Communication Technology-based positive psychology intervention. *The Journal of Positive Psychology*, 9(6), 482-488. doi: 10.1080/17439760.2014.927906.

Beck, A. T., & Haigh, E. A. (2014). Advances in cognitive theory and therapy: The generic cognitive model*. *Annual Review of Clinical Psychology*, 10, 1-24. doi: 10.1146/annurev-clinpsy-032813-153734.

Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *BDI-II manual* (2nd edition). San Antonio, TX: Psychological Corporation.

Boehm, J. K., Lyubomirsky, S., & Sheldon, K. M. (2011). A longitudinal experimental study comparing the effectiveness of happiness-enhancing strategies in Anglo Americans and Asian Americans. *Cognition & Emotion*, 25(7), 1263-1272. doi: 10.1080/02699931.2010.541227.

Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive psychology interventions: a meta-analysis of randomized controlled studies. *BMC public health*, 13(1), 119. doi: 10.1186/1471-2458-13-119.

Botella, C., Baños, R. M., Etchemendy, E., García-Palacios, A., & Alcañiz, M. (2016). Psychological countermeasures in manned space missions: "EARTH" system for the Mars-500 project. *Computers in Human Behavior*, 55, 898-908.

Botella, C., Riva, G., Gaggioli, A., Wiederhold, B. K., Alcaniz, M., & Baños, R. M. (2012). The present and future of positive technologies. *Cyberpsychology, Behavior, and Social Networking*, 15(2), 78-84. doi: 10.1089/cyber.2011.0140.

Botella, J. & Sánchez-Meca (2015). *Meta-análisis en ciencias sociales y de la salud*. Madrid: Síntesis

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed. Hillsdale, New Jersey: Erlbaum.

Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: revising the adaptation theory of well-being. *American Psychologist*, 61(4), 305. doi: 10.1037/0003-066x.61.4.305.

-
- Durlak, J. A. (2009). How to select, calculate, and interpret effect sizes. *Journal of Pediatric Psychology, 34*, 917-928. doi: 10.1093/jpepsy/jsp004.
- Enrique, A., Molinari, G., Llorca, G. & Botella, C. (2016). “Mi Mejor Yo”: Diseño de una intervención positiva aplicada en formato grupal y apoyada en las TICs. *Agora de Salud, 3*, 121-129. doi: 10.6035/agorasalut.2016.3.13.
- Gupta, S. K. (2011). Intention-to-treat concept: a review. *Perspectives in clinical research, 2*(3), 109. doi: 10.4103/2229-3485.83221.
- Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2014). *Multivariate data analysis* (7th Ed.). River, NJ: Pearson-Prentice Hall. International Edition.
- King, L. A. (2001). The health benefits of writing about life goals. *Personality and Social Psychology Bulletin, 27*(7), 798-807. doi: 10.1177/0146167201277003.
- King, L. A., & Raspin, C. (2004). Lost and Found Possible Selves, Subjective Well-Being, and Ego Development in Divorced Women. *Journal of personality, 72*(3), 603-632. doi: 10.1111/j.0022-3506.2004.00274.x.
- Layous, K., Nelson, S. K., & Lyubomirsky, S. (2012). What is the optimal way to deliver a positive activity intervention? The case of writing about one’s best possible selves. *Journal of Happiness Studies, 14*(2), 635-654. doi: 10.1007/s10902-012-9346-2.
- Liau, A. K., Neihart, M. F., Teo, C. T., & Lo, C. H. (2016). Effects of the best possible self activity on subjective well-being and depressive symptoms. *The Asia-Pacific Education Researcher, 1*-9. doi: 10.1007/s40299-015-0272-z.
- Little, R. L. y Rubin, D. B. (1990). *Statistical analysis with missing data*. New York: Wiley.
- Lyubomirsky, S., & Layous, K. (2013). How do simple positive activities increase well-being? *Current Directions in Psychological Science, 22*(1), 57-62. doi: 10.1177/0963721412469809.
- Lyubomirsky, S., Dickerhoof, R., Boehm, J. K., & Sheldon, K. M. (2011). Becoming happier takes both a will and a proper way: an experimental longitudinal intervention to boost well-being. *Emotion, 11*(2), 391. doi: 10.1037/a0022575.
- MacLeod, A.K. (1996). Affect, emotional disorder, and future-directed thinking. *Cognition & Emotion, 10*, 69–86. doi: 10.1080/026999396380394.
- Meevissen, Y. M., Peters, M. L., & Alberts, H. J. (2011). Become more optimistic by imagining a best possible self: Effects of a two week intervention. *Journal of*
-



behavior therapy and experimental psychiatry, 42(3), 371-378. doi: 10.1016/j.jbtep.2011.02.012.

- Molinari, G., Dragomir-Davis, A.M., Enrique, A., García-Palacios, A., Baños, R.M. & Botella, C. (in press). The contribution of future-directed thinking to affect dimensions: differences in general and clinical populations.
- Opris, D., Pinteá, S., García-Palacios, A., Botella, C., Szamosközi, S., y David, D. (2012). Virtual reality exposure therapy in anxiety disorders: A quantitative meta-analysis. *Depression and Anxiety*, 29(2), 85-93. doi: 10.1002/da.20910.
- Otero, J.M., Luengo, A., Romero, E., Gómez, J.A. & Castro, C. (1998). *Psicología de personalidad. Manual de prácticas*. Barcelona: Ariel Practicum
- Pennebaker, J. W. (1993). Putting stress into words: Health, linguistic, and therapeutic implications. *Behaviour research and therapy*, 31(6), 539-548. doi: 10.1016/0005-7967(93)90105-4.
- Peters, M. L., Flink, I. K., Boersma, K., & Linton, S. J. (2010). Manipulating optimism: Can imagining a best possible self be used to increase positive future expectancies? *The Journal of Positive Psychology*, 5(3), 204-211. doi: 10.1080/17439761003790963.
- Peters, M. L., Meevissen, Y. M., & Hanssen, M. M. (2013). Specificity of the Best Possible Self intervention for increasing optimism: Comparison with a gratitude intervention. *Terapia Psicológica*, 31(1), 93-100. doi: 10.4067/s0718-48082013000100009.
- Pietrowsky, R., & Mikutta, J. (2012). Effects of positive psychology interventions in depressive patients—A randomized control study. *Psychology*, 3(12), 1067. doi: 10.4236/psych.2012.312158.
- Quero, S., Molés, M., & Pérez-Ara, M. A. Botella & Baños. RM (2012). An Online Emotional Regulation System to deliver homework assignments for treating Adjustment Disorders. *Annual Review of Cybertherapy and Telemedicine: Advanced Technologies in the Behavioral, Social and Neurosciences*. 2012, 181:273-7.
- Renner, F., Schwarz, P., Peters, M. L., & Huibers, M. J. (2014). Effects of a best-possible-self mental imagery exercise on mood and dysfunctional attitudes. *Psychiatry research*, 215(1), 105-110. doi: 10.1016/j.psychres.2013.10.033.

-
- Rief, W., Glombiewski, J. A., Gollwitzer, M., Schubö, A., Schwarting, R., & Thorwart, A. (2015). Expectancies as core features of mental disorders. *Current opinion in psychiatry*, 28(5), 378-385. doi: 10.1097/ycp.000000000000184.
- Riva, G., Baños, R. M., Botella, C., Wiederhold, B. K., & Gaggioli, A. (2012). Positive technology: using interactive technologies to promote positive functioning. *Cyberpsychology, Behavior, and Social Networking*, 15(2), 69-77. doi: 10.1089/cyber.2011.0139.
- Rothwell, P. M. (2006). Factors that can affect the external validity of randomised controlled trials. *PLOS Clin Trial*, 1(1), e9. doi: 10.1371/journal.pctr.0010009.
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual review of psychology*, 52(1), 141-166. doi: 10.1146/annurev.psych.52.1.141.
- Sandín, B., Chorot, P., Lostao, L., Joiner, T., Santed, M. & Valiente, R.M. (1999). Escala PANAS de afecto positivo y negativo: Validación factorial y convergencia transcultural. *Psicothema*, 11, 37-51.
- Sanz, J., García-Vera, M. P., Espinosa, R., Fortún, M., & Vázquez, C. (2005). Adaptación española del Inventario para la Depresión de Beck-II (BDI-II): 3. Propiedades psicométricas en pacientes con trastornos psicológicos. *Clínica y salud*, 16, 121-142.
- Scheier, M., Carver, C. & Bridges, M. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063-1078. doi: 10.1037//0022-3514.67.6.1063.
- Schulz, K. F., Altman, D. G., & Moher, D. (2010). CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. *BMC medicine*, 8(1), 1. doi: 10.1186/1745-6215-11-32.
- Sergeant, S., & Mongrain, M. (2014). An online optimism intervention reduces depression in pessimistic individuals. *Journal of consulting and clinical psychology*, 82(2), 263. doi: 10.1037/a0035536.
- Sheldon, K. M., & Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *The Journal of Positive Psychology*, 1(2), 73-82. doi: 10.1080/17439760500510676.
-



- Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of clinical psychology*, 65(5), 467-487. doi: 10.1002/jclp.20593.
- Snyder, C. R., Sympson, S. C., Ybasco, F. C., Borders, T. F., Babyak, M. A., & Higgins, R. L. (1996). Development and validation of the State Hope Scale. *Journal of personality and social psychology*, 70(2), 321.
- Trull, T. J., & Ebner-Priemer, U. W. (2009). Using experience sampling methods/ecological momentary assessment (ESM/EMA) in clinical assessment and clinical research: introduction to the special section. *Psychological Assessment*, 21(4), 457-462. doi: 10.1037/a0017653.
- Watson, D., Clark, L. & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1.063-1.070. doi: 10.1037//0022-3514.54.6.1063.

Chapter 4. Single-session effects of a positive psychological intervention in patients with eating disorders: results from a Randomized Control Trial

This chapter has been submitted to *BMC Psychiatry* as:

Enrique, A., Bretón-López, J., Molinari, G., Fernández-Aranda, F., Llorca, G., Guillén, V., & Botella, C. Single-session effects of a positive psychological intervention in patients with eating disorders: results from a Randomized Control Trial.



Single-session effects of a positive psychological intervention in patients with eating disorders: results from a Randomized Control Trial

Angel ENRIQUE¹, Juana BRETÓN-LÓPEZ^{1,2}, Guadalupe MOLINARI¹,
Fernando FERNÁNDEZ-ARANDA^{2,5}, Ginés LLORCA⁴, Verónica GUILLÉN³,
& Cristina BOTELLA^{1,2}

¹Universitat Jaume I, Castellón, Spain

²CIBER de Fisiopatología de la Obesidad y Nutrición (CIBEROBN)

³Universitat de Valencia, Valencia, Spain

⁴Consorcio Hospitalario Provincial de Castellón

⁵Department of Psychiatry, University Hospital of Bellvitge-IDIBELL, Barcelona, Spain

Abstract

Background: Positive psychological interventions have been suggested to produce benefits in patients with eating disorders (ED) by improving well-being, which might act as a buffer of the harmful effects caused by the disorder. Best Possible Self (BPS) is a positive psychological intervention which consists of writing and envisioning a future where everything has turned out in the best possible way. It has been shown effective in improving positive functioning measures. This study tested the single-session effects of the BPS in improving optimistic thinking and affect in patients with ED. A secondary aim was to analyze the BPS narratives developed by patients with ED.

Methods: Fifty-four participants were randomly assigned to two conditions. In the intervention group, participants had to write about their BPS. In the control group participants had to write about their daily activities. Prior levels of ED pathology, neuroticism and dispositional optimism were collected. Future expectations and affect were measured before and after performing the exercise. Narratives developed by participants in the BPS condition were systematically assessed by two independent reviewers.

Results: Results showed that patients in the BPS condition significantly improved their levels of future expectations, compared to the control condition.

These effects were not influenced by prior levels of ED severity, dispositional optimism, or neuroticism. Exploratory analyses of the narratives developed by the participants showed that patients with higher levels of ED pathology established fewer goals, and these goals tended to be directed toward the absence of specific problems, or patients highlighted the difficulty of attaining them.

Conclusions: These results suggest that patients can benefit from practicing the BPS exercise, even when there are difficulties in envisioning a better future. More empirical attention is needed to explore the potential benefits of PPIs as supporting tools in the prevention and treatment of eating disorders.

Trial registration: clinicaltrials.gov Identifier: NCT03003910, retrospectively registered December 27, 2016.

Keywords: Eating Disorders, Positive Psychological intervention, Best Possible Self, optimistic thinking, affect



4.1 INTRODUCTION

Eating disorders (ED) are considered serious psychiatric disorders which can originate functional impairment, emotional distress and different health problems [1,2]. In addition, they are very difficult conditions to treat and in many cases patients remain ill during years, even becoming chronic patients[3,4]. In regards to evidence-based treatments for these conditions, only bulimia nervosa and binge eating disorder are shown to be effectively treated with cognitive-behavioral therapy (CBT [5]), but it does not exist any recommended treatment over another for anorexia nervosa or non-specified eating disorders [6,7].

Given the limited efficacy of conventional treatments, a new treatment approach, called the recovery approach, has emerged with a change on the focus of treatment goals, from the full recovery and weight restoration, to the reestablishment of quality of life and well-being [8,9]. This approach is specially addressed to severe and enduring eating disordered patients, who have low motivation for change and a lifestyle dominated by the illness [10,11]. Thus, within this approach, patients are encouraged to be proactive, optimistic and decisions about treatment are taken collaboratively between patients and their practitioners [12]. Furthermore, this approach has also collected the meaning that patients have about recovery, finding that they understand recovery not only as the absence of ED symptoms, but also in terms of visualizing a self with emotional well-being, better relationships and achievements [13,14].

Literature shows that ED patients are impaired in many areas, beyond the ED symptomatology, such as social, psychological and physical areas, having a high impact in their quality of life [15,16]. Even more, Brannan and Petrie [17] found that young females with bulimic symptomatology reported lower levels of life satisfaction and optimism. These authors also suggest that positive factors might act as buffers against the emergence of these harmful effects. However, existing research on prevention and treatment of eating disorders use to focus on identifying, explaining and reducing ED symptomatology, without considering the promotion of quality of life and well-being [18,19]. Following this vein, some authors have proposed the inclusion of positive psychology strategies for the prevention and treatment of patients with ED [20,21]. They claim that the

development of interventions focused on improving well-being and meaning in life on patients with ED could act as a protective factor against the negative impact of ED symptoms and body dissatisfaction [17,22]. Also, Tchanturia and colleagues [19] suggest that the inclusion of positive psychological interventions (PPI) could play a role in recovery of patients with EDs by enriching current programs and even enhancing their impact.

These PPIs have been found effective for depressive patients on improving subjective well-being and decreasing depressive symptoms [23–25]. To our knowledge, there are no randomized control trials testing the effects of PPIs on well-being for ED patients. Indeed, only one study has carried out a pilot study by analyzing the feasibility of a positive psychology group intervention in an ED inpatient service with young females [26]. The intervention was composed by a mix of different PPIs (i.e. three good things, gratitude letter, acts of kindness, loving-kindness meditation and identifying strengths). Preliminary results showed that a high rate of participants benefited from the program in regard to life satisfaction and subjective well-being. Furthermore, the group was well-rated in terms of acceptability and feasibility.

Given the possible benefits of implementing PPIs in patients with ED, it is important to select interventions with the greatest ability to produce benefits. In this regard, various studies have shown that patients with ED have an impoverished self-concept characterized by many negative self-schemas and few positive ones, contributing to the formation and persistence of the disorder [27,28]. Consequently, these patients often have a pessimistic view of recovery, and they find it quite difficult to imagine a better future [14,29]. Therefore, some authors suggest that therapeutic practices aimed to develop personally meaningful and optimistic views about recovery and reflect on a prospective self beyond the disorder might be of considerable benefit [14]. In this line of research, PPIs have shown their effectiveness in improving optimism [30]. Specifically, this review brought to light that the most powerful exercise to enhance optimism levels was the Best Possible Self (BPS) exercise. This exercise consists on thinking and imagining about a future in which everything has turned out as well as it possibly could [31,32]. Besides, this exercise has also been tested with depressive patients,



showing that it is able to promote positive affect and life satisfaction, and to reduce depressive symptoms [33,34].

For this reason, this study set different goals. First, the main goal is to test the efficacy of the BPS in inducing optimistic thinking and affect, compared to a control condition in a sample of patients with ED. Second, given ED impaired self-concept and difficulty in imagining a better future, this study explores the relationship between baseline measures and the narratives developed by patients with ED when they are encouraged to think about their best possible selves. Based on these goals, the main hypothesis is that participants in the BPS condition will increase their levels of positive affect and optimistic thinking compared to the control condition. Regarding the second hypothesis, no prior studies have analyzed this relationship, and so it approached in an exploratory way.

4.2 METHOD

Design

This is an experimental, repeated-measures (pre, post-exercise) study with two independent groups. Participants (N=54) were randomly assigned to two conditions: 29 participants who performed the BPS exercise and the other 25 performed the daily activity exercise (control condition). The random assignment of the participants to the BPS and the control condition was carried out by an independent researcher who had no knowledge about the study. Random allocation was performed through a randomization list created by the Random Allocation Software, version 1.0. To ensure the homogeneity of the two experimental conditions, randomization was stratified by the level of functional impairment (mild-moderate-severe) rated by the therapists (GAF). The participants did not know the characteristics of the different experimental groups.

The study was registered in the United States National Institute of Health Registration System (<http://www.clinicaltrials.gov>) with Clinical Trials Registration Number: NCT03003910. Moreover, the study was approved by the Research Ethics Committee of the Provincial Hospital of Castellón. The recruitment processes and the data collection took place from October 2014 to September 2015.

Participants

The total sample was composed by 54 participants, 52 women (96.3%) and 2 men (3.7%), who were recruited from four different outpatient psychology clinics where they were receiving ongoing treatment. Mean age was 27.1 years (SD=8.6). Primary diagnoses of the patients were: eating disorder (51.9%), or a comorbid diagnosis of eating and personality disorder (48.1%). Functional impairment of the patients was also collected, according to the Global Assessment of Functioning (GAF) of the Diagnostic and Statistical Manual of Mental Disorders [35] and they were categorized into mild (> 60), moderate (51-60), and severe (< 51). The GAF was measured by the personal therapist of each patient. At this regard, 64.8% were categorized as mild, 31.5% as moderate, and 3.7% as severe in terms of functional impairment. Table 4.1 includes detailed information of the participants regarding the assigned condition.

Table 4.1 - Descriptive data about demographic variables, diagnosis, functional impairment and medication

	BPS condition	Control condition
Age		
Mean (SD)	27.65 (9.00)	26.44 (8.22)
Sex		
Male	1 (3.4%)	1 (4%)
Female	28 (96.6%)	24 (96%)
Marital Status		
Single	24 (82.8%)	24 (96%)
Married	3 (10.3%)	1 (4%)
Divorced	2 (6.9%)	0 (0%)
Level of Studies		
Elementary school	1 (3.4%)	1 (4%)
High School	10 (34.5%)	12 (48%)
University Degree	18 (62.1%)	12 (48%)
Diagnosis		
Anorexia Nervosa	4 (13.8%)	5 (20%)
Bulimia Nervosa	7 (24.1%)	4 (16%)
Binge Eating Disorder	2 (6.9%)	2 (8%)
EDNOS	16 (55.2%)	14 (56%)
Functional Impairment		
Mild	19 (65.5%)	16 (64%)
Moderate	9 (31%)	8 (32%)
Severe	1 (3.4%)	1 (4%)
Medication		
No medication	16 (55.2%)	12 (48%)
Only Anxiolytics	0 (0%)	1 (4%)
Only Antidepressants	2 (6.9%)	1 (4%)
Only Antiepileptics	1 (3.4%)	1 (4%)



Only Antipsychotics	0 (0%)	0 (0%)
Combination of medications	10 (34.5%)	10 (40%)

BPS: Best Possible Self; *EDNOS*: Eating Disorder Not Otherwise Specified; *Combination of medications*: Any combination that include more than one type of medication.

Inclusion and exclusion criteria

The inclusion criteria used to select the participants were: 1) Aged between 18 and 70 years old, 2) Not suffering from a severe physical illness, 3) Not suffering from substance dependence, 4) Suffering from an eating disorder condition.

Measures

Primary Outcomes

Positive and Negative Expectations. We used the Spanish adaptation of the Subjective Probability Task (SPT; [36]). This instrument measures positive and negative expectations about events that will occur in the future. It consists of 30 items, 20 of them related to negative expectations about events that can take place in the future and 10 referring to positive expectations. The instrument asks individuals to judge the likelihood of an event happening in the future on a 7-point scale (from 1 “Not at all likely to occur to 7 “extremely likely to occur”). Some studies have found appropriate internal consistency levels for positive and negative expectations ($\alpha=0.80-0.82$ and 0.91 , respectively [37,38]).

Positive and Negative Affect. To measure affect, we used the Spanish adaptation of the Positive and Negative Affect Scale (PANAS [39,40]). This instrument is composed of 20 items: 10 items measuring positive affective states and 10 items measuring negative affect states. Participants rate on a five-point scale (from “Not at all” to “Extremely”) the degree to which they usually feel a specific affective state. PANAS is one of the most widely-used instruments to measure affect because it shows excellent psychometric properties (Cronbach Alpha’s from $0.87-0.91$).

Control measures

Eating Attitudes. We used the shortened version of the Eating Attitudes Test (EAT-26 [41]). This is a self-report measure that assesses disordered eating behaviors and attitudes. It is composed by 26 items rated following a 6-point Likert scale, in which "never", "rarely" and "sometimes" are scored as 0, "often" is 1, "usually" is 2 and "always" is 3. Higher scores indicate greater eating pathology. Scores of 20 or more indicate elevated risk of ED pathology. The instrument has shown excellent psychometric properties [42,43].

Neuroticism. The neuroticism subscale of the Eysenck personality questionnaire was used (Eysenck Personality Questionnaire – Revised – Neuroticism, EPQ-R-N [44]). This scale assesses the neuroticism level of the individual, showing if he is stable or neurotic. This subscale is composed by 12 items of dicotomic response (yes-not). Higher scores show higher levels of anxiety and emotional instability, while lower scores show higher levels of stability and emotional control. Regarding psychometric properties it got an alpha coefficient between 0.73 and 0.82 [45].

Dispositional Optimism. We used the Spanish adaptation of the Life Orientation Test (LOT-R [46,47]). This scale measures the extent to which a person generally expects favorable outcomes. It includes 10 items: 3 items refer to positive expectations, 3 items refer to negative expectations, and 4 items are fillers. Answers are rated on a 5-point scale (from 0 “strongly disagree” to 4 “strongly agree”). Higher scores reflect a higher level of dispositional optimism. Other studies have found an internal consistency for the eight items of $\alpha=0.76$ [37].

Interventions

BPS: Participants in this condition were asked to write and imagine about a future in which all has gone in the best possible way and they have reached all their goals in four different domains: personal, professional, social and health domains. Participants performed the exercise in a computerized program developed by our laboratory, which is composed of different activity modules (Earth of Wellbeing [48,49]). In this case, a module with different chapters where users have to write about different topics and support the essay with multimedia content was selected. Specifically, one of the chapters was adapted by removing



all the instructions, since they were provided by the investigator. Thus, participants wrote about their best possible self and they could support the essay with multimedia content (images, music and videos) provided by the virtual system, in order to enrich the experience and enhance the content of what they had written.

Daily activities (control condition): Participants in this condition were asked to report activities, thoughts and feelings that had happened in the past 24 hours. They were told that this exercise would help them to identify problematic areas in their lives and work on improving them. These instructions were adapted from other studies [32,37]. Participants in this condition were provided with a PowerPoint document where they wrote about the daily experiences, feelings and thoughts that happened to them in the last 24 hours. The first slide included the instructions of the exercise and participant could add as much slides as they wanted.

All the participants were encouraged to write the content of the exercise in the format of a personal story to facilitate the visualization.

Coding the BPS essay and generating scores

The coding system used in this study was based on the Nun Study [50]. It is important to note that all coding and review of the essays were done without knowledge of the author of the narratives. Two coders reviewed the 29 essays belonging to the participants of the BPS condition. Coders were instructed to detect different categories of information. Table 4.2 shows the description of each category of information.

Table 4.2 - Best Possible Self Essay Codification

Category	Description
Length	Number of words of the BPS essay
Valence of the essay	<ul style="list-style-type: none"> • <i>Positive elements</i>: Experiences and emotions that include or reflect positive emotional states like: happiness, interest, love, hope, gratitude, joy, accomplishment, contentment and similar states. • <i>Neutral elements</i>. Those experiences and emotions that include or reflect a state of surprise. • <i>Negative elements</i>: Those experiences and emotions that include or reflect negative emotional states, like: sadness, worry, fear,

	contempt, disinterest, shame, frustration, anger, anxiety or any state of suffering.
Valence of the Goals	<ul style="list-style-type: none"> • <i>Positive goals</i>: expression of goals in a positive tone, that is, including positive emotions and experiences adhered to the attainment of these goals; for instance, "I'll be very happy when I have children" or "When I'll get the degree, I'll feel very satisfied". • <i>Neutral goals</i>: expression of goals in a neutral tone, that is, just describing the goal without including any emotion; for instance "get a degree" or "to have children". • <i>Negative goals</i>: Goals expressed in a negative tone in terms of describing difficulties for the attainment of the goals or setting goals as the absence of a specific problem; for instance "I want to get a degree but I don't feel able to reach it" or "not having this eating disorder".
Total number of goals	Total amount of goals adding positive, negative and neutral goals

Disagreement between reviewers were solved through consensus and a third reviewer was asked in order to facilitate coming to an agreement when needed. Once the codification was done, five different categories were computed: 1) Length: total number of words; 2) Positivity: Ratio of positive elements out of the total number of positive, neutral, and negative elements; 3) Positive Goals Balance: ratio of positive goals out of the total number of positive, negative and neutral goals; 4) Negative Goals Balance: ratio of negative goals out of the total number of positive, negative and neutral goals; 5) Total number of Goals: total number of goals, adding together the positive, negative, and neutral goals.

Intercoder reliability

Intercoder reliability was assessed for the categories of narrative valence of the essay and the valence of the goals. In both categories it was assessed the reliability for positive, neutral and negative elements and goals. Kappa coefficients assess agreement between coders on the selection and classification of both categories of information. Thus, Table 4.3 shows the Kappa coefficients for each category and also the Pearson product-moment correlation of the frequencies collected by the two coders. In addition, means and standard deviations of the final version of the narrative analysis, after solving the disagreements, are also included in the table. The coefficient values ranged from $K=.68$ to $.81$, indicating



adequate levels of agreement. Correlations between coders were large, ranging from $r = .80$ to $.99$. Thus, findings from both analyses indicate appropriate intercoder reliability.

Table 4.3 - Kappa values, intercoder correlations and means and standard deviations of the different units of analysis.

Unit of analysis	Kappa values (K)	Correlation of counts ^a	Mean (SD)
1 st category: Length			313.55 (145.08)
Number of words	--	--	
2 nd category: Valence of the essay			
Positive elements	.77	.99	6.93 (4.46)
Neutral elements	--	--	0
Negative elements	.65	.97	4.52 (3.62)
3 rd category: Valence of goals			
Positive goals	.68	.96	4.21 (3.06)
Neutral goals	.70	.80	7.52 (3.88)
Negative goals	.77	.97	2.17 (1.77)
Total of goals	.81	.99	13.90 (6.09)

Note Reliability was not calculated for number of words because it is the computation of the total of written words. Neutral elements were not found in any essay by any coder, so it prevents to compute Kappa values and intercoder correlations.

^aFor all correlations, $p < .001$

Procedure

Sample recruitment was carried out by contacting with the different coordinators of the outpatient clinical services. These clinics were specialized in the treatment of eating disorders conditions. They were told that the study could have a positive influence on patients' mood. Once they were contacted and accepted to collaborate, they explained the information of the study to the psychologists of these units and they informed about the study to those patients who met the inclusion criteria. Thus, patients were explained about the features of the study and, if they agreed to participate, they were enrolled in a list of potential participants together with contact information. The experimental sessions were carried out in the clinical centers or in the university (depending on the preference of the patients) and they were carried out by the researchers. Patients were contacted by the researchers in order to make an appointment for the first session. When participants arrived, they were explained about the study and they signed an informed consent stating that they participated in the study voluntarily. Next, they

were briefly screened about demographic information and completed the pre-test assessment (primary outcomes and control measures). After that, the participants received the instructions for the corresponding exercise in audio format and on paper. For the performance of the exercise, participants on the BPS condition used the computerized program and the participants on the control condition used a PowerPoint file. Then, participants were left alone in the room in order to avoid distracters and stimulate concentration on the exercise. All participants in both conditions prepared the exercise during 20 minutes. In the case of BPS condition, if multimedia content was not still selected, participants were encouraged to do it, allowing them to spend a maximum of 5 minutes. When the established time was over, participants of both conditions were asked to visualize the content of the developed exercise during 5 minutes. Specifically, participants of the BPS condition performed the imagery exercise through another display of the positive technology, where they visualized the content of the exercise together with the multimedia content selected previously. In the case of the control condition, participants were also asked to read and visualize the content of their essays through the full screen mode of the PowerPoint file, in order to reproduce a similar methodology in both conditions. To end the session, all the participants completed again the PANAS and SPT questionnaires with the items disorganized to reduce repetition effects.

Data analysis

Paired t-tests and chi-squared tests were conducted to explore the existence of significant differences in socio-demographic variables and baseline measures between conditions. Correlation analyses of the ED pathology severity, dispositional optimism, and neuroticism levels and changes in the outcome measures (post-exercise score minus baseline score) were conducted in order to decide whether we would include them as covariates in further analyses. Next, a Multivariate Analysis of Variance (MANOVA) for repeated measures (pre-post) was used to compare the effects of the intervention on the outcome measures. Effect sizes (Cohen's d [51,52]) and confidence intervals were calculated for within-group changes. Additionally, based on the second aim of the study, exploratory analyses were conducted to examine the relationship between baseline measures and the characteristics of the BPS essay. Only participants in the BPS



condition (n=29) were included in these analyses. First, correlation analyses with baseline measures and BPS categories were conducted. Second, multivariate regression analyses were calculated. In the regressions, we only included baseline measures that correlated significantly with each BPS category. When only one baseline measure was related to a BPS category, a multivariate regression was not performed. To correct for multiple comparisons (reducing the risk of type I errors), we used a Bonferroni correction. The new adjusted alpha level was established by dividing 0.05 by the number of comparisons ($\alpha = .05 / 12 = .004$). However, because this second hypothesis is exploratory, significant associations using an alpha level of .01 and .05 will also be presented to reduce the risk of type II errors.

4.3 RESULTS

Pre-treatment data

We first explored differences between groups at pre-treatment on any demographic variables, diagnosis, functional impairment and medication. The statistical analyses did not find significant differences between conditions on any of these variables. Regarding primary outcome variables and control measures, no differences were found between condition on any of these measures at pre-treatment.

Intervention effects

First of all, correlation analyses of dispositional optimism, ED pathology severity, and neuroticism levels and changes in the outcome measures were conducted. None of these correlations were significant, indicating that LOT-R and EPQ-N were not related to the changes in the outcome measures. Hence, these variables were not included for subsequent analyses. Next, a repeated-measures MANOVA involving baseline and post-exercise scores was conducted with both subscales of the PANAS and SPT. A significant main effect of time [$F(4,49) = 5.52, p = .001$] showed that scores on affect and future expectations, improved from baseline to post-exercise for both groups. In addition, a significant interaction of time x group emerged ($F(4,49) = 4.28, p = .005$), indicating that the BPS group experienced greater improvement than the control group. Univariate tests for the group-by-time interaction effects were significant for SPT-POS ($F(1,$

52)= 10.56, $p=.002$) and SPT-NEG ($F(1, 52)= 9.28, p=.004$), revealing that improvements in future expectations were greater in the BPS group than in the control group. In the case of affect, univariate tests did not find significant differences between conditions. For within-groups effect sizes, Table 4.4 shows descriptive data and effect sizes (measured by Cohen's d) for the outcome measures. In addition, both positive and negative future expectations revealed a significant moderate effect size ($d= .53, 95\% \text{ CI } 0.2 \text{ to } 0.8; d = .48, 95\% \text{ CI } 0.3 \text{ to } 0.7$, respectively) in the BPS condition, whereas no effect was found in the control condition. Regarding affect, participants in the BPS condition reached a significant small effect size ($d= .24, 95\% \text{ CI } 0.1 \text{ to } 0.4$) for positive affect and a non-significant small effect size for negative affect ($d= .20, 95\% \text{ CI } -0.1 \text{ to } 0.4$). In the control condition, both the positive and negative affect subscales revealed non-significant effects.

Table 4.4 - Means, standard deviations and within-group effect sizes for the outcome measures of each condition

Measure	Condition	Mean (SD)		Within-group effect size, d [95% CI]
		Pre	Post	Pre—Post-
SPT-POS	BPS (n=29)	4.03 (0.95)	4.55 (1.05)	0.53 [0.25, 0.81]
	DA (n=25)	4.22 (1.20)	4.12 (1.31)	0.08 [-0.18, 0.34]
	Total	4.12 (1.06)	4.35 (1.19)	
SPT-NEG	BPS (n=29)	3.61 (1.31)	2.96 (1.27)	0.48 [0.26, 0.71]
	DA (n=25)	3.35 (1.51)	3.22 (1.50)	0.08 [-0.11, 0.27]
	Total	3.49 (1.40)	3.08 (1.37)	
PA	BPS (n=29)	2.57 (0.64)	2.73 (0.62)	0.24 [0.02, 0.45]
	DA (n=25)	2.48 (0.86)	2.62 (0.97)	0.16 [-0.06, 0.40]
	Total	2.53 (0.74)	2.68 (0.79)	
NA	BPS (n=29)	2.64 (1.00)	2.45 (0.90)	0.20 [-0.02, 0.39]
	DA (n=25)	2.48 (0.84)	2.42 (1.04)	0.06 [-0.15, 0.28]
	Total	2.56 (0.93)	2.43 (0.96)	

Note. Values marked in bold indicate significant effect sizes based on the Confidence Intervals (CI), which do not include zero. *SPT-POS*: Positive expectations; *SPT-NEG*: Negative Expectations; *PA*: Positive Affect; *NA*: Negative Affect

Narrative content analysis of the BPS exercise

First, correlation analyses between baseline measures and the BPS categories were conducted (Table 4.5). Results showed that positivity was



significantly correlated with positive affect ($r = .56, p < .004$) and positive expectations ($r = .52, p < .004$). For the balance of negative goals, significant associations were only found with baseline measures when using a more flexible significance criterion ($p < .05$). Specifically, correlations emerged with positive affect ($r = -.38, p < .05$), dispositional optimism ($r = -.42, p < .05$), and eating attitudes ($r = .41, p < .05$). Total number of established goals was significantly correlated with eating attitudes ($r = -.56, p < .004$) and, using a more flexible criterion, with positive expectations ($r = .37, p < .05$). Besides, the total number of established goals was significantly correlated with the length of the essay ($r = .53, p < .004$).

Then, when a BPS category was associated with more than one baseline measure (see Table 4.5), we computed a multivariate regression to explore the contribution of each predictor. This was the case for positivity and balance of negative goals. Regarding the former, positive affect and positive expectations explained 32% of the variance in positivity ($F(2, 28) = 7.53, p < .004$). However, none of the predictors contributed significantly to the prediction of positivity (positive affect: $\beta = .39, p = .053$; positive expectations: $\beta = .29, p = .142$). Regarding the balance of negative goals, baseline measures explained 21% of the variance in this BPS category ($F(3, 28) = 3.51, p < .05$). Again, none of the predictors was significantly associated with the dependent variable (eating attitudes: $\beta = .24, p = .215$; dispositional optimism: $\beta = -.30, p = .100$; positive affect: $\beta = -.19, p = .315$). Concerning the total number of established goals, the predictors explained a 33% of its variance ($F(2, 28) = 7.96, p < .004$). Eating attitudes contributed significantly to the prediction of the total of goals (eating attitudes: $\beta = -.50, p < .004$), but this was not the case for positive expectations (positive expectations: $\beta = .27, p = .103$).

4.4 DISCUSSION

This is the first randomized control trial to test the efficacy of a positive psychological exercise, the BPS, in inducing positive affect and optimistic thinking in patients with eating disorders. Regarding the first hypothesis, it is partially confirmed. Results indicate that participants in the BPS condition significantly improved their levels of optimistic thinking compared to those in the

control condition. However, these differences were not statistically significant for positive and negative affect, although in the case of positive affect, participants in the BPS condition reached a significant small effect size. These results agree with previous studies on the BPS exercise in the general population [38,53], indicating that this exercise is also effective in inducing optimistic thinking and positive affect in patients with ED. Likewise, the lack of effect on negative affect found in this study is similar to results obtained in other trials with the BPS [38,54], suggesting that this exercise does not have a direct impact on this measure. It is important to note that the intervention's effectiveness was not influenced by ED pathology severity, dispositional optimism, or neuroticism levels, suggesting that BPS can produce short-term benefits in spite of the individual's basal state. In this regard, future studies should explore whether these single-session effects are maintained over time.

Table 4.5 - Means, Standard deviations and intercorrelations between measures at baseline and the BPS categories for participants of the BPS condition (n=29)

Measures	Mean (SD)	Length	Positivity	Positive Goals Balance	Negative Goals Balance	Total number of goals
		313.55 (145.08)	59.40% (26.60)	29.46% (16.41)	16.95% (14.16)	13.90 (6.09)
EAT-26	21.72 (16.40)	-.17	-.23	-.01	.41*	-.56***
LOT-R	18.24 (5.16)	-.07	.18	.17	-.42*	.02
EPQ-N	8.59 (3.34)	-.02	-.29	-.17	.26	-.06
SPT-POS	4.03 (0.95)	.29	.52***	.19	-.40*	.37*
SPT-NEG	3.61 (1.31)	.20	-.26	.14	.24	-.01
PANAS- POS	2.57 (0.64)	.13	.56***	.20	-.38*	.29
PANAS- NEG	2.64 (1.00)	-.04	-.17	-.09	.16	-.19

* $p < 0.05$; ** $p < 0.01$; *** $p < .004$ (Adjusted using Bonferroni correction for multiple comparisons). *EAT-26*: Eating Attitudes Test; *LOT-R*: Life Orientation Test; *EPQ-N*: Eysenck Personality Questionnaire-Neuroticism; *SPT-POS*: Positive expectations; *SPT-NEG*: Negative Expectations; *PANAS-POS*: Positive Affect; *PANAS-NEG*: Negative Affect



Related to the second goal, participants' narratives endorsed in the BPS condition were analyzed in terms of length of the essay, the ratio of positive elements (positive emotions and experiences), and the type and total number of goals established in the BPS essay. Results showed that the level of ED pathology led to the establishment of fewer goals, and these goals tended to be expressed as the absence of problems or suggesting the difficulty of attaining them. These findings shed light on ED patients' difficulties in envisaging a broader future beyond the eating symptomatology, and the struggle to reach those goals [14]. The establishment of goals as the absence of specific problems (negative goals), might contribute to a focus on errors and problems without encouraging the formation of constructive alternatives [55]. Indeed, a greater proportion of avoidance goals has been related with lower levels of well-being [56]. In addition, prior levels of positive affect and optimism were related to the development of an essay with a more positive tone, suggesting that positive functioning factors might play an important role in thinking about recovery and future outlooks in a more positive way. On the whole, this content analysis denotes that longer training in thinking about a better future (we only provided a short instruction) might help patients with ED to develop a self beyond recovery and to promote optimistic thinking [14,29]. In this regard, the inclusion of hope therapy components [55], such as thinking about ways to attain these goals (pathways-thinking) and feeling capable of reaching them (agency thinking), might help to improve the view about the future that ED patients often hold.

This study has some limitations. First, the control condition focuses on the past because the participants had to think about the last 24 hours, whereas the BPS exercise is future-oriented. Although other studies about BPS have used the same control condition [38,53], future studies should include a control condition with the same temporal orientation in order to compare the results. Another limitation is related to the description of the clinical sample because we did not collect information about the body mass index or the duration of the disorder, and both factors might influence the results obtained in this study. Furthermore, half of the sample had a comorbid diagnosis of personality disorders, which keeps us from drawing conclusions only in terms of patients suffering from ED conditions. Thus, future studies should study the efficacy of PPIs in a sample with pure ED

conditions in order to explore whether these PPIs act in the same way. Regarding the outcome measures, this study included a measure of optimistic thinking and a measure of affect. However, it would be interesting for future studies to explore whether the effects of this intervention have an impact on other positive functioning measures.

This study has explored the quality of the BPS narratives developed by patients with ED conditions following a systematic analysis based on prior studies [50]. Thus, it provides a proved methodology for assessing the quality of this future thinking, which is crucial for the understanding of how BPS exercise works in individuals with ED. In this regard, it is known that our thoughts about a possible future are influenced by our self-concept, which refers to the current perception about our abilities and limitations [57]. Therefore, further studies should explore whether the self-concept of patients with ED have an influence on the BPS developed by them. Alternatively, further studies could also explore whether the continued practice of the Best Possible Self exercise has an influence on the self-concept.

In sum, this study suggests that patients can benefit from the BPS exercise, even with the difficulties they have in envisioning a positive future self. Nevertheless, the development of new positive self-schemas and conceptions about recovery that may contribute to reducing the ED symptomatology [29] have to be taken into account and addressed in future studies. From a general perspective, this study provides evidence about the efficacy of a PPI in the short term in patients with eating disorders. More empirical attention is needed to explore the potential benefits of PPIs as supporting tools in the prevention and treatment of eating disorders. There is a compelling need to provide these patients with positive resources to help them face the harmful effects of the disorder and to support their recovery process.

Acknowledgments

The authors would like to thank all therapists and patients who contributed to the study.

Funding



Funding for the study was provided by grants: Red de Excelencia (PSI2014-56303-REDT) PROMOSAM: Research in processes, mechanisms and psychological treatments for mental health promotion from the Ministerio de Economía y Competitividad (2014); a PhD grant from Jaume I University (PREDOC/2012/51), and CIBER: CIBER Fisiopatología de la Obesidad y Nutrición is an initiative of ISCIII.

Availability of data and materials

The datasets analyzed during the current study are not publicly available due to ethical restrictions but are available from the corresponding author on reasonable request.

Authors' contributions

AE drafted the manuscript with important contributions from JB-L, FF-A and CB. AE, in collaboration with GL, CB and JB-L designed the study and participated in each of its phases. GM collaborated in the manuscript development and participated in each study phase. VG and GL made important contributions in terms of sample recruitment. All authors participated in the review and revision of the manuscript and have approved the final manuscript to be published.

Competing Interests

The authors declare that they have no conflict of interest.

Consent for publication

Not applicable

Ethics approval and consent to participate

We declare that any aspect of the study covered in this manuscript that has involved human patients has been carried out with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript. The study was approved by the Research Ethics Committee of the Provincial Hospital of Castellón (Spain) on October 24th, 2014 (Ref. No. DG NRI5 14-24-10). All participants interested in the study signed an informed consent form.

References

1. Hudson JI, Hiripi E, Pope HG, Kessler RC. The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biol. Psychiatry*. Elsevier; 2007;61:348–58.
2. Milos G, Spindler A, Schnyder U, Fairburn CG. Instability of eating disorder diagnoses: prospective study. *Br. J. Psychiatry*. 2005;187:573–8.
3. Geller J, Williams K, Srikameswaran S. Clinician stance in the treatment of chronic eating disorders. *Eur. Eat. Disord. Rev.* 2001;9:365–73.
4. Noordenbos G, Oldenhave A, Muschter J, Terpstra N. Characteristics and treatment of patients with chronic eating disorders. *Eat. Disord. J. Treat. Prev.* 2002;10:15–29.
5. Pike K, Gianini L, Loeb K, Le Grange D. Treatments for Eating Disorders. In: Nathan P, Gorman J, editors. *A Guid. to Treat. that Work*. 4th ed. New York, NY, USA: Oxford University Press; 2015. p. 641–58.
6. Fairburn CG. Evidence-based treatment of anorexia nervosa. *Int. J. Eat. Disord.* 2005;37:S26–30.
7. Fairburn CG, Harrison PJ. Eating disorders. *Lancet*. 2003;361:407–16.
8. Dawson L, Rhodes P, Touyz S. The recovery model and anorexia nervosa. *Aust. N. Z. J. Psychiatry*. 2014;48:1009–16.
9. Slade M. Mental illness and well-being: the central importance of positive psychology and recovery approaches. *BMC Health Serv. Res.* 2010;10:26.
10. Touyz S, Le Grange D, Lacey H, Hay PJ, Smith R, Maguire S, et al. Treating severe and enduring anorexia nervosa: a randomized controlled trial. *Psychol. Med.* 2013;43:2501–11.
11. Treasure J, Russell G. The case for early intervention in anorexia nervosa: Theoretical exploration of maintaining factors. *Br. J. Psychiatry*. 2011;199:5–7.
12. Turton P, Demetriou A, Boland W, Gillard S, Kavuma M, Mezey G, et al. One size fits all: Or horses for courses? Recovery-based care in specialist mental health services. *Soc. Psychiatry Psychiatr. Epidemiol.* 2011;46:127–36.
13. Keski-Rahkonen A, Tozzi F. The process of recovery in eating disorder sufferers' own words: An internet-based study. *Int. J. Eat. Disord.* 2005;37:S80–6.



14. Malson H, Lin B, Clarke S, Treasure J, Anderson G, Kohn M. Un/imaginable future selves: A discourse analysis of in-patients' talk about recovery from an "eating disorder." *Eur. Eat. Disord. Rev.* 2011;19:25–36.
15. Engel SG, Adair CE, Hayas C Las, Abraham S. Health-related quality of life and eating disorders: A review and update. *Int. J. Eat. Disord.* 2009;42:179–87.
16. Jenkins PE, Hoste RR, Meyer C, Blissett JM. Eating disorders and quality of life: A review of the literature. *Clin. Psychol. Rev.* 2011;31:113–21.
17. Brannan ME, Petrie TA. Psychological well-being and the body dissatisfaction-bulimic symptomatology relationship: An examination of moderators. *Eat. Behav. Elsevier Ltd*; 2011;12:233–41.
18. Magallares A, Jauregui-Lobera I, Gamiz-Jimenez N, Santed MA. Subjective Well-Being in a Sample of Women with Eating Disorders. *Psychol. Rec.* 2014;64:769–76.
19. Tchanturia K, Dapelo MAM, Harrison A, Hambrook D. Why Study Positive Emotions in the Context of Eating Disorders? *Curr. Psychiatry Rep.* 2015;17.
20. Kirsten DK, du Plessis WF. Positive Psychology and Subclinical Eating Disorders. In: Wissing MP, editor. *Well-Being Res. South Africa.* Dordrecht: Springer Netherlands; 2013. p. 557–80.
21. Steck EL, Abrams LM, Phelps L. Positive psychology in the prevention of eating disorders. *Psychol. Sch.* 2004;41:111–7.
22. Góngora VC. Satisfaction with life, well-being, and meaning in life as protective factors of eating disorder symptoms and body dissatisfaction in adolescents. *Eat. Disord. J. Treat. Prev.* 2014;22:435–49.
23. Bolier L, Haverman M, Westerhof GJ, Riper H, Smit F, Bohlmeijer E. Positive psychology interventions: a meta-analysis of randomized controlled studies. *BMC Public Health.* 2013;13:119.
24. Chaves C, Lopez-Gomez I, Hervas G, Vazquez C. A Comparative Study on the Efficacy of a Positive Psychology Intervention and a Cognitive Behavioral Therapy for Clinical Depression. *Cognit. Ther. Res.* Springer US; 2016;1–17.
25. Mongrain M, Komeylian Z, Barnhart R. Happiness vs. mindfulness exercises for individuals vulnerable to depression. *J. Posit. Psychol.* 2015;9760:1–12.

26. Harrison A, Al-Khairulla H, Kikoler M. The feasibility, acceptability and possible benefit of a positive psychology intervention group in an adolescent inpatient eating disorder service. *J. Posit. Psychol.* 2015;Feb:1–11.
27. Cash TF, Deagle EA. The nature and extent of body-image disturbances in anorexia nervosa and bulimia nervosa: A meta-analysis. *Int. J. Eat. Disord.* 1997;22:107–25.
28. Fairburn CG, Cooper Z, Shafran R. Cognitive behaviour therapy for eating disorders: A “transdiagnostic” theory and treatment. *Behav. Res. Ther.* 2003;41:509–28.
29. Stein KF, Corte C. Identity impairment and the eating disorders: Content and organization of the self-concept in women with anorexia nervosa and bulimia nervosa. *Eur. Eat. Disord. Rev.* 2007;15:58–69.
30. Malouff JM, Schutte NS. Can psychological interventions increase optimism? A meta-analysis. *J. Posit. Psychol.* 2016;Aug:1–11.
31. King L a. The Health Benefits of Writing about Life Goals. *Personal. Soc. Psychol. Bull.* 2001;27:798–807.
32. Sheldon KM, Lyubomirsky S. How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *J. Posit. Psychol.* 2006;1:73–82.
33. Pietrowsky R, Mikutta J. Effects of Positive Psychology Interventions in Depressive Patients — A Randomized Control Study. *Psychology.* 2012;3:1067–73.
34. Sergeant S, Mongrain M. Distressed users report a better response to online positive psychology interventions than nondistressed users. *Can. Psychol. Can.* 2015;56:322–31.
35. Association AP. DSM-IV-TR: Diagnostic and statistical manual of mental disorders, text revision. Am. Psychiatr. Assoc. Washington, DC; 2000.
36. MacLeod AK. Affect, emotional disorder, and future-directed thinking. *Cogn. Emot.* 1996;10:69–86.
37. Meevissen YMC, Peters ML, Alberts HJEM. Become more optimistic by imagining a best possible self: effects of a two week intervention. *J. Behav. Ther. Exp. Psychiatry.* 2011;42:371–8.
38. Peters ML, Flink IK, Boersma K, Linton SJ. Manipulating optimism: Can imagining a best possible self be used to increase positive future expectancies? *J. Posit. Psychol.* 2010;5:204–11.



39. Sandín B, Chorot P, Lostao L, Joiner TE, Santed MA, Valiente RM. Escalas PANAS de afecto positivo y negativo: validación factorial y convergencia transcultural. *Psicothema*. 1999;11:37–51.
40. Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: the PANAS scales. *J. Pers. Soc. Psychol.* American Psychological Association; 1988;54:1063.
41. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The eating attitudes test: psychometric features and clinical correlates. *Psychol. Med.* Cambridge Univ Press; 1982;12:871–8.
42. Toro J, Castro J, Garcia M, Perez P, Cuesta L. Eating attitudes, sociodemographic factors and body shape evaluation in adolescence. *Br. J. Med. Psychol.* Wiley Online Library; 1989;62:61–70.
43. Rivas T, Bersabé R, Jiménez M, Berrocal C. The Eating Attitudes Test (EAT-26): Reliability and Validity in Spanish Female Samples. *Span. J. Psychol.* 2010;13:1044–56.
44. Eysenck SBG, Eysenck HJ, Barrett P. A revised version of the psychoticism scale. *Pers. Individ. Dif.* Elsevier; 1985;6:21–9.
45. Eysenck HJ, i Fabregat GO, Eysenck SBG. EPQ-R: cuestionario revisado de personalidad de Eysenck: versiones completa (EPQ-R) y abreviada (EPQ-RS): manual. TEA Ediciones; 1997.
46. Otero-López JM, Luengo A, Romero E, Gómez JA, Castro C. *Psicología de la personalidad. Man. prácticas.* Barcelona: Ariel Practicum; 1998.
47. Scheier MF, Carver CS, Bridges MW. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *J. Pers. Soc. Psychol.* American Psychological Association; 1994;67:1063.
48. Baños RM, Etchemendy E, Farfallini L, García-Palacios A, Quero S, Botella C. EARTH of Well-Being System: A pilot study of an Information and Communication Technology-based positive psychology intervention. *J. Posit. Psychol.* Informa UK Limited; 2014;9:482–8.
49. Botella C, Baños RM, Etchemendy E, García-Palacios A, Alcañiz M. Psychological countermeasures in manned space missions: “EARTH” system for the Mars-500 project. *Comput. Human Behav.* Elsevier; 2016;55:898–908.

50. Danner DD, Snowdon D a, Friesen W V. Positive emotions in early life and longevity: findings from the nun study. *J. Pers. Soc. Psychol.* 2001;80:804–13.

51. Cohen J. A power primer. *Psychol. Bull.* 1992;112:155–9.

52. Botella J, Sánchez-Meca J. Meta-análisis en ciencias sociales y de la salud. *Síntesis*; 2015.

53. Sheldon KM, Lyubomirsky S. How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *J. Posit. Psychol.* 2006;1:73–82.

54. Burton CM, King L a. The health benefits of writing about intensely positive experiences. *J. Res. Pers.* 2004;38:150–63.

55. Snyder CR, Lehman KA, Kluck B, Monsson Y. Hope for Rehabilitation and Vice Versa. *Rehabil. Psychol. APA*; 2006;51:89–112.

56. Elliot AJ, Sheldon KM, Church MA. Avoidance personal goals and subjective well-being. *Personal. Soc. Psychol. Bull.* Sage Publications Sage CA: Thousand Oaks, CA; 1997;23:915–27.

57. Erikson MG. The meaning of the future: Toward a more specific definition of possible selves. *Rev. Gen. Psychol.* 2007;11:348–58.

Chapter 5. Efficacy of a positive psychological intervention in patients with eating disorders: a Randomized Control Trial.

This chapter has been submitted to *International Journal of Eating Disorders* as:

Enrique, A., Bretón-López, J., Molinari, G., Roca, P., & Botella, C. Efficacy of a positive psychological intervention in patients with eating disorders: a Randomized Control Trial.



Efficacy of a positive psychological intervention in patients with eating disorders: a Randomized Control Trial.

Angel ENRIQUE¹, Juana BRETÓN-LÓPEZ^{1,2}, Guadalupe MOLINARI¹, Pablo ROCA³, & Cristina BOTELLA^{1,2}

¹Universitat Jaume I, Castellón, Spain

²CIBER de Fisiopatología de la Obesidad y Nutrición (CIBEROBN)

³Universitat Complutense de Madrid, Madrid, Spain

Abstract

Objective: This study tested the efficacy of a positive psychological intervention, *Best Possible Self* (BPS), carried out for one month, in improving positive functioning measures in patients with eating disorders (ED). In addition, maintenance of these effects was explored up to three months later.

Method: 54 outpatients, who were receiving specialized treatment in eating disorder services were enrolled in a randomized control trial with two experimental conditions. In the intervention group participants had to write and imagine their best possible future, after reaching all their goals. In the control group participants had to write down and reflect on their daily activities. Measures of future expectations, affect, dispositional optimism, hope and self-efficacy were assessed in different time frames.

Results: Findings showed that all participants improved over time but there were no statistically significant differences between conditions on the specific measures. However, it is clinically relevant that within-group effect sizes suggested a greater benefit for the participants in the BPS condition, compared to the control condition, on nearly all the measures. Qualitative analyses of the essays developed by the participants in the BPS condition suggest that more severe patients produced a BPS essay with fewer goals and less detailed, resulting in less benefit from the exercise.

Discussion: Results suggest that positive psychological interventions can act as supporting tools in the treatment of EDs by promoting positive functioning

factors that can protect them from the harmful effects caused by ED pathologies. Possible implications derived from the qualitative analyses are also discussed.

Trial registration clinicaltrials.gov Identifier: NCT03003910

Keywords: Eating Disorders, Positive Psychological intervention, Best Possible Self, optimistic thinking, affect



5.1 INTRODUCTION

Eating disorders (ED) are challenging conditions to treat, and patients usually remain ill for years (Geller, Williams, & Srikameswaran, 2001). Even with the advances made in understanding the action mechanisms and developing evidence-based treatments (Pike, Gianini, Loeb, & Le Grange, 2015), the recovery process is usually a difficult journey full of distress and hopelessness (Williams, Dobney, & Geller, 2010). In fact, during this process, drop-out rates can reach 73% (Fassino, Piero, Tomba, & Abbate-Daga, 2009). Moreover, factors such as fear of losing control over the illness and fear of change associated with the treatment produce low motivation for change, which impedes help-seeking (Ali et al., 2016).

In addition, patients with EDs are impaired in many areas apart from the eating symptomatology, such as social or psychological areas, producing a high impact on their quality of life (Engel, Adair, Hayas, & Abraham, 2009). Findings indicate that patients with eating disorders exhibit an impaired positive functioning, such as paucity of positive emotions, low optimism levels, and less life satisfaction (Tomba, Offidani, Tecuta, Schumann, & Ballardini, 2014). Indeed, these levels of well-being remain low in remitted patients who have received treatment, which may contribute to a higher risk of relapse (Tomba, Tecuta, Schumann, & Ballardini, 2017). In this regard, some authors claim that the main target of the treatments should be the disorder's impact on quality of life, rather than the ED symptoms (Wonderlich et al., 2012). Focusing on these variables might help patients, who do not want to focus on restoring their weight, to be more motivated to improve specific impaired areas, which could result in a reduction in the drop-out rate (Bamford & Mountford, 2012). Based on this approach, one study (Touyz et al., 2013) compared the effectiveness of two treatments for severe patients with anorexia nervosa by making quality of life the focus of the treatment, instead of weight restoration. Results showed that, even with the shift in the treatment goals, changes in weight restoration and symptom reduction were achieved, along with high retention rates at the end of the treatment.

Given the potential benefits of well-being in the recovery process, some authors have defended the inclusion of interventions designed to improve well-being in patients with ED as a way to buffer the negative impact of ED symptoms and body dissatisfaction (Góngora, 2014). In this regard, the inclusion of positive psychology interventions (PPIs) in the prevention and treatment of patients with ED disorders has been suggested (Kirsten & du Plessis, 2013; Steck, Abrams, & Phelps, 2004). These PPIs have been shown to be effective for patients with depression or anxiety disorders, either as a whole treatment or as a specific component of larger interventions (Bolier et al., 2013). To our knowledge, no randomized control trials have tested the effects of PPIs on positive emotions and well-being in patients with ED. Given the potential benefits of these interventions, it is important to select those strategies that might meet the specific needs of the patients (Lyubomirsky & Layous, 2013). Thus, it has been largely shown that patients with ED have an altered self-concept, which functions as a core vulnerability to formation and persistence of the disorder (Stein & Corte, 2007). In this sense, patients often view recovery as unimaginable, as they are unable to imagine a better personal future, given the internalization of an essentially anorexic/bulimic self (Malson et al., 2011). Therefore, interventions aimed to develop a self beyond the parameters of an eating disorder and to promote optimistic thinking in ED patients are strongly encouraged (Stein & Corte, 2007). For this reason, the present study tested the efficacy of a PPI called Best Possible Self (BPS), a low-intensity exercise that has shown efficacy in improving positive affect and optimistic thinking (Malouff & Schutte, 2016). It consists of writing about and envisioning a future where everything has turned out in the best possible way in different life domains and individuals have reached all their goals (King, 2001).

The present study outlines a first approach to of PPI in the ED field by studying the efficacy of BPS in a sample of patients who are receiving treatment. In a previous study, we found that this exercise was able to induce positive affect and optimistic thinking in ED patients in a single session, compared to a control condition (Enrique et al., submitted). In this prior study, a qualitative analysis of the narratives developed by the patients was conducted, based on the Nun study (Danner, Snowdon, & Friesen, 2001). The results indicated that more severe



patients developed a BPS with a less amount of goals. Therefore, the first goal of the present study is to test whether the changes observed after one session in the prior study (Enrique et al, submitted) remain after a one-month training period and a three-month follow-up in those participants. Furthermore, other measures related to positive traits such as self-efficacy, dispositional optimism, and hope are also analyzed. The second goal is to analyze whether the severity of the ED pathology affects the quality of the essay, attending to different categories of information, developed by patients in the BPS condition, and whether this quality affects improvements on the primary outcome measures. Based on previous studies, it is expected that participants in the BPS condition will improve more than those in the control condition on positive functioning variables. Regarding the second goal, given ED patients' difficulty in thinking about a better future, it is expected that more severe patients will develop an essay with fewer goals and less detailed producing less benefits from the exercise.

5.2 METHOD

Participants

The sample was composed of 54 outpatients who were receiving treatment as usual (TAU) for eating and personality disorders (cognitive-behavioral therapy (Pike et al., 2015), dialectical-behavior therapy (Linehan, 1993). Mean age was 27 years (SD = 8.6). Moreover, 28 had a primary diagnosis of an eating disorder and 26 had a comorbid diagnosis of eating and personality disorders. Following the Global Assessment of Functioning (GAF) from the DSM-IV-TR, therapists assessed the functional impairment of their patients. Sociodemographic and clinical data of the total sample is shown in Table 5.1.

Inclusion Criteria

Participants were selected if they met the inclusion criteria: 1) Aged between 18 and 70 years old, 2) Not suffering from a severe physical illness, 3) Not suffering from substance dependence, 4) Suffering from an eating disorder condition.

Table 5.1 - Descriptive data about demographic variables, diagnosis, functional impairment and medication (n= 54)

		<i>N</i>	%
Sex	Male	2	3.7
	Female	52	96.3
Marital Status	Single	48	88.9
	Married	4	7.4
	Divorced	2	3.7
Level of Studies	Elementary school	2	3.7
	High School	22	40.7
	University Degree	30	55.6
Diagnosis	Anorexia Nervosa	9	16.7
	Bulimia Nervosa	11	20.4
	Binge Eating Disorder	4	7.4
	EDNOS	30	55.6
Functional Impairment	Mild	35	64.8
	Moderate	17	31.5
	Severe	2	3.7
Current Medication	No medication	28	51.9
	Only Anxiolytics	1	1.9
	Only Antidepressants	3	5.6
	Only Antiepileptics	2	3.7
	Only Antipsychotics	0	0
	Combination of medications	20	37

EDNOS: Eating Disorder Not Otherwise Specified; *Combination of medications*: Any combination that include more than one type of medication.

Measures

Primary Outcomes

Positive and negative expectations. The Spanish version of the Subjective Probability Task was used (SPT) (MacLeod, 1996). This is a 7-point Likert scale that measures positive and negative expectations about future events. It consists of 20 statements referring to negative expectations and 10 statements referring to positive expectations. Participants use a 7-point scale to rate the likelihood of a potential future event. The SPT has shown adequate levels of internal consistency for positive and negative expectancies ($\alpha=0.74$ and 0.80 , respectively).

Affect. It was measured through the Spanish adaptation of the Positive and Negative Affect Scale (PANAS) (Sandín et al., 1999). This questionnaire is



composed of 20 items: 10 for positive affective states and 10 for negative affect states. This scale has excellent psychometric properties ($\alpha=0.87-0.91$).

Secondary Measures

Dispositional optimism. The Spanish adaptation of the Life Orientation Test was used (LOT-R) (Otero-López, Luengo, Romero, Gómez, & Castro, 1998). This is a 5-point Likert scale that measures the extent to which a person generally expects favorable outcomes. It includes 10 items: 3 items refer to positive expectations, 3 items refer to negative expectations, and 4 items are fillers. This scale has shown adequate psychometric properties ($\alpha=0.78$).

Self-Efficacy. The Spanish version of the General Self-Efficacy Scale-12 was used (GSES-12) (Herrero et al., 2014). This questionnaire evaluates a general dimension of self-efficacy. The internal consistency coefficient is adequate ($\alpha=0.86$).

Dispositional Hope. The Spanish version of the Dispositional Hope Scale (DHS) was used (Espinoza et al., 2016). This instrument evaluates dispositional hope. It is composed of 12 items rated on an 8-point Likert scale. It has shown good psychometric properties ($\alpha=.89$).

Severity Measurement

Eating attitudes. We used the Spanish version of the Eating Attitudes Test (EAT-26) (Rivas, Bersabé, Jiménez, & Berrocal, 2010). This is a self-report measure of behaviors and attitudes related to eating disorders. It is composed of 26 items rated on a 6-point Likert scale from 0 (never) to 6 (always), based on the frequency with which individuals perform the behavior or have the thought described by the item. The instrument has shown excellent psychometric properties ($\alpha=.93$).

Study Design

This is a single-blind randomized control trial with two independent groups. 54 participants were randomized to: a) the Best Possible Self condition or b) the Daily activities condition. The randomization was conducted by an independent researcher who had no knowledge about the study, using a random allocation software. Randomization of the patients was stratified by the level of

functional impairment (GAF; mild-moderate-severe) in order to assure homogeneity between the experimental conditions. The study was registered under clinicaltrials.gov (NCT03003910) and approved by the Research Ethics Committee of the Provincial Hospital of Castellón.

Interventions

Best Possible Self condition. Participants were asked to write about and imagine a future where they have reached all their goals and everything has turned out in the best possible way in four different life domains: personal, professional, social, and health. The exercise was first implemented through a computerized program developed by our laboratory (“Earth of Wellbeing”) (Botella, Baños, Etchemendy, García-Palacios, & Alcañiz, 2016). This program is composed of different modules. This study used an adaptation of the Book of Life module, which is composed of different chapters where users can write about different topics and support the content of the essay with multimedia content. Thus, the exercise was developed within the system, and participants could add multimedia content in order to enrich the experience and enhance the content of what they had written. Second, the content included by the participants in the Book of Life was exported to a web platform (with a personal user and password), so that they could continue to practice the exercise at home in the same format.

Control condition. Participants were encouraged to think and write about everything they had done in the past 24 hours. They were told that this exercise could help them to identify problematic areas in their lives and work on improving them. These instructions were adapted from prior studies (Sheldon & Lyubomirsky, 2006). To conduct the exercise, a PowerPoint file was provided to write about daily experiences, feelings, and thoughts that had occurred in the last 24 hours. The first slide included the instructions for the exercise, and participants could add as many slides as they wished. They kept this document, so that they could continue to write at home.

In both conditions, participants were encouraged to develop the exercise following a personal story format in order to facilitate visualization.

BPS Essay Codification



Essays developed by the participants assigned to the BPS condition were coded attending to different categories of information, based on the Nun study (Danner et al., 2001). Codification was conducted for the prior study by two independent reviewers (submitted) and for the present study we selected those BPS categories that matched our second hypothesis. Specifically, we selected: a) ‘length’ of the essay (total number of words) and b) ‘total number of goals’ established among the essay.

Procedure

Sample recruitment was carried out by contacting the coordinators of different outpatient clinics specialized in the treatment of eating disorders. They were told that the experiment could have a positive impact on patients' mood. Once therapists had been contacted and agreed to collaborate, investigators met with the therapists and explained the inclusion criteria to them. Thus, the therapists explained the features of the study to those patients who met the inclusion criteria. If patients agreed to participate, they were placed on a list of potential participants, along with their contact information. These participants were contacted by the investigators to make an appointment for the first session. When participants arrived, they were told about the study, and they signed an informed consent stating that their participation in the study was voluntary. After that, they were briefly asked for demographic information and completed the pre-test assessment. Next, participants received the instructions in audio format and on paper. Then, they were left alone in the room to avoid distracters and stimulate concentration on the exercise. All participants prepared the exercise for 20 minutes, and then they were immediately asked to visualize the content of the essay for 5 minutes, and this content was reproduced on a full-screen mode display.

To end the session, participants in both conditions were asked to practice the visualization exercise 5 minutes a day during a one-month period. During this training period, two weekly text messages were sent to the participants' mobile phones to remind them to perform the exercise. At the end of the month, participants were given a second appointment to complete the post-assessment. Finally, a follow-up assessment was conducted online one and three months after the second session. During this follow-up, all participants were encouraged to

continue to practice the exercise. In addition, a text message was sent once a week until the end of the follow-up period.

Data analysis

The Intention to treat (ITT) approach was applied using Maximum Likelihood (ML) estimation performed via the Expectation Maximization (EM) imputation method, following Newman's guidelines (Newman, 2014). Sensitivity analyses were carried out, comparing results of completers to the estimated values, and the results were fairly similar. Multivariate Analyses of Variance (MANOVA) for repeated measures were performed after checking that assumptions for MANOVA were met and did not affect the interpretation of the results. These analyses were conducted to explore treatment effects on positive and negative functioning measures.(Chaves, Lopez-Gomez, Hervas, & Vazquez, 2016) Effect sizes (Cohen's *d*) (Cohen, 1992) and confidence intervals were calculated for within-group changes. In addition, multivariate analyses were conducted to analyze the role of the BPS categories in the relationship between the severity of the disorder (measured through EAT-26) and improvement on the primary outcome measures. Only participants in the BPS condition who completed the post-assessment (n=26) were included in these analyses. Thus, a path analysis was conducted using structural equation models (SEM) estimated with ML methods using AMOS (version 19). To perform an appropriate SEM, competing models were proposed to find the best model fit in terms of relations, explanation levels, and goodness-of-fit indexes (McCallum, 1995). These indexes were tested through different methods (Gondar Nores, 1999). Specifically, χ^2 , GFI and RMSA values were computed to assess the global fit of the model, and other analyses were computed to assess the incremental fit and parsimony of the models. Moreover, univariate (asymmetry < 3; kurtosis < 4) and multivariate (Multivariate C.r.= .761 < 1.96) normality criteria were assessed for the different measures, showing that this sample followed multivariate normality.

5.3 RESULTS

Participant flow



Of the 75 patients initially included on the list of potential participants, 59 met the inclusion criteria, and they were randomly allocated to the conditions (Figure 5.1). Finally, the total sample receiving the allocated intervention was composed of 54 participants. During the training, the drop-out rate was 24.1% in the BPS condition and 16% in the control condition. A total of 7 participants did not respond to the online assessments at the follow-ups. There were no significant differences in drop-out rates between groups, $\chi^2(1, 54) = .55, p = .46$.

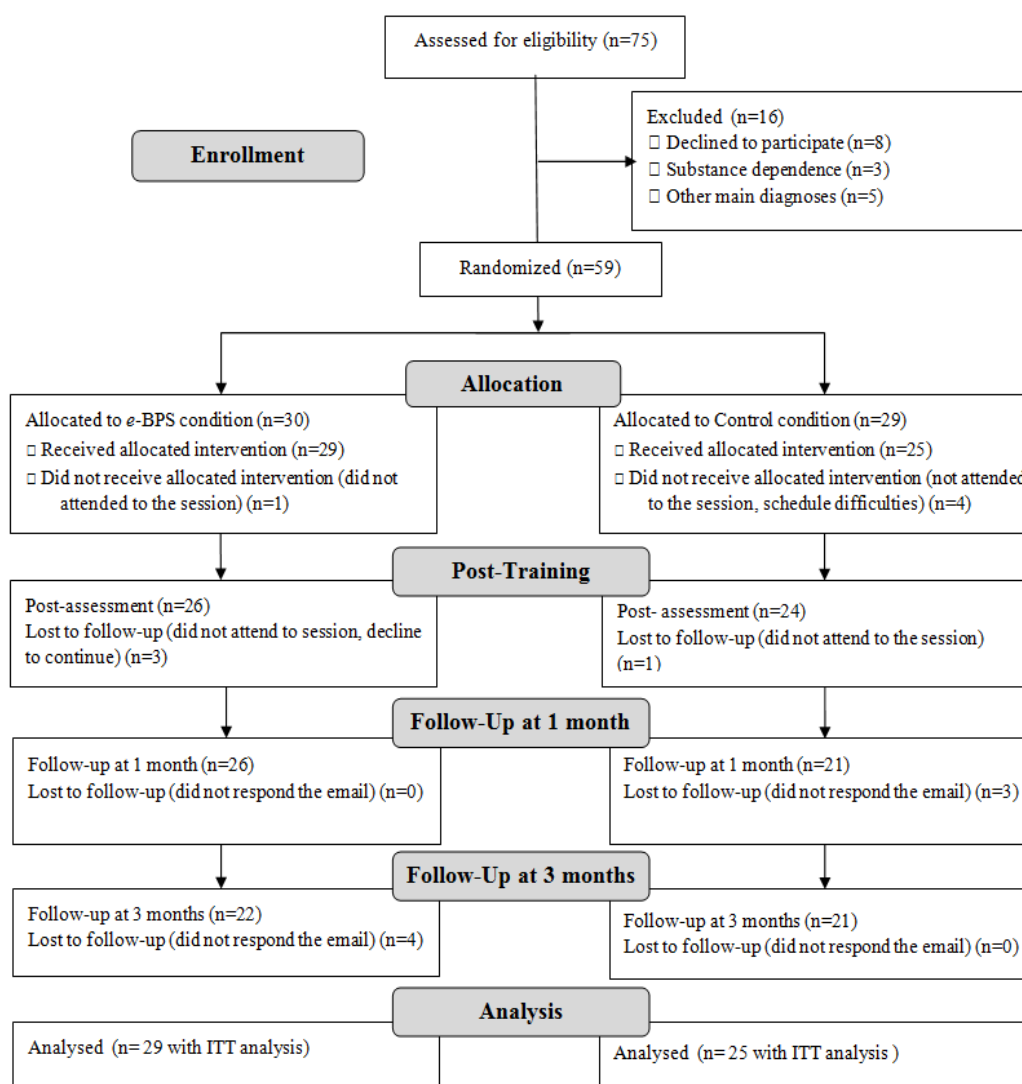


Figure 5.1 - Participant flow (following consort flow diagram 2010)

Intervention effects

Regarding the first hypothesis, two repeated-measures MANOVAs with the four moments (pre, post and follow-ups) were conducted for all participants. Variables were clustered into two factors: positive functioning measures (SPT-

POS, PANAS-PA, LOT-R, DHS and GSES) and negative functioning measures (SPT-NEG and PANAS-NA). Interaction effects of the MANOVAs did not show significant differences between conditions on positive ($F[12, 41]= 0.69, p> .05$) and negative ($F[3, 50]= 2.23, p> .05$) measures, indicating that the effects observed over time did not differ between conditions. However, a significant main effect of time indicated significant changes over time in the outcome measures of both positive ($F[3, 50]= 6.23, p< .01$) and negative functioning ($F[3, 50]= 6.31, p< .01$).

Analyzing within-group effect sizes, comparing pre-assessment to the different assessment moments (Table 5.2), there was an increasing trend across time assessments in both conditions; however, these improvements were more pronounced in the BPS condition. Specifically, the average effect size for the different outcomes when comparing pre-post was 0.28 for the BPS condition and 0.18 for the control condition. On the 1st follow-up, the average effect size increased to $d=0.37$ for the BPS condition and $d=0.17$ for the control condition. Along the same lines, at the 2nd follow-up, an average effect size of 0.43 was found for the BPS condition, and 0.28 for the control condition.

Focusing on the primary outcome measures, in the 1st follow-up, the positive subscales (SPT-POS and PANAS-POS) reached moderate effect sizes in the BPS condition ($d= 0.66$ and $d= 0.56$, respectively), and small to moderate in the control condition ($d= 0.25$ and $d= 0.46$, respectively). At the 2nd follow-up, in the case of SPT-POS, a large effect size was found for the BPS condition ($d= 0.80$), in contrast to a moderate effect size for the control condition ($d= 0.50$). Likewise, on the negative subscales, at the 2nd follow-up (SPT-NEG and NA), only the BPS condition reached a moderate effect size. Regarding secondary outcome measures, LOT-R and DHS showed a small effect size in the BPS condition in the different time frames, in contrast to the control condition, which did not produce observable effects. Finally, the effect size for GSES-12 was small for both conditions, with similar results.

Table 5.2 - Means, standard deviations and within-group effect sizes for the outcome measures in the different time-point assessments

		Mean (<i>SD</i>)		Within-group effect size, <i>d</i> [95% CI]	Mean (<i>SD</i>)		Within-group effect size, <i>d</i> [95% CI]	Within-group effect size, <i>d</i> [95% CI]
		Pre	Post	Pre—Post-training-	1 st Follow-Up	2 nd Follow-Up	Pre—1 st F-Up	Pre—2 nd F-Up
SPT-POS	BPS	4.03 (0.95)	4.12 (1.44)	0.09[-0.32-0.50]	4.67 (1.08)	4.81 (1.17)	0.66[0.23-1.08]	0.80[0.31-1.28]
	Control	4.22 (1.20)	4.37 (1.46)	0.12[-0.20-0.44]	4.53 (1.42)	4.84 (1.10)	0.25[0.02-0.48]	0.50[0.02-0.98]
	Total	4.12 (1.06)	4.24 (1.45)		4.60 (1.24)	4.83 (1.13)		
SPT-NEG	BPS	3.61 (1.31)	2.84 (1.12)	0.57[0.21-0.92]	3.32 (1.42)	3.07 (1.29)	0.22[-0.11-0.55]	0.40[0.08-0.72]
	Control	3.35 (1.51)	3.11 (1.60)	0.15[-0.04-0.35]	3.30 (1.61)	3.28 (1.61)	0.03[-0.18-0.24]	0.04[-0.15-0.23]
	Total	3.49 (1.40)	2.97 (1.35)		3.31 (1.50)	3.17 (1.44)		
PA	BPS	2.57 (0.64)	2.69 (0.98)	0.18[-0.12-0.49]	2.94 (0.91)	2.95 (0.96)	0.56[0.16-0.96]	0.58[0.12-1.03]
	Control	2.48 (0.86)	2.79 (0.96)	0.35[0.07-0.62]	2.89 (1.15)	2.99 (0.88)	0.46[0.12-0.80]	0.57[0.06-1.09]
	Total	2.53 (0.74)	2.74 (0.96)		2.92 (1.02)	2.97 (0.92)		
NA	BPS	2.64 (1.00)	2.29 (0.84)	0.34[0.06-0.62]	2.26 (0.98)	2.19 (0.81)	0.37[0.09-0.65]	0.44[0.05-0.82]
	Control	2.48 (0.84)	2.16 (0.91)	0.37[0.07-0.67]	2.27 (1.07)	2.30 (1.07)	0.24[-0.06-0.55]	0.21[-0.08-0.50]
	Total	2.56 (0.93)	2.23 (0.87)		2.27 (1.01)	2.24 (0.93)		
LOT-R	BPS	18.24 (5.16)	18.94 (4.55)	0.13[-0.24-0.5]	19.27 (5.10)	19.68 (5.27)	0.19[-0.04-0.43]	0.27[-0.01-0.55]
	Control	18.84 (5.31)	18.23 (6.76)	-0.11[-0.39-0.17]	18.87 (6.84)	19.49 (6.01)	0.01[-0.28-0.29]	0.12[-0.25-0.49]
	Total	18.52 (5.19)	18.61 (5.64)		19.09 (5.92)	19.59 (5.57)		
DHS	BPS	40.58 (10.68)	44.17 (9.31)	0.33[-0.02-0.67]	43.76 (9.76)	42.92 (11.78)	0.29[-0.03-0.61]	0.21[-0.09-0.52]
	Control	42.16 (13.32)	42.89 (12.64)	0.05[-0.22-0.33]	43.40 (11.77)	43.84 (14.10)	0.09[-0.21-0.39]	0.12[-0.28-0.52]
	Total	41.31 (11.88)	43.58 (10.88)		43.59 (10.63)	43.35 (12.79)		

	BPS	39.71 (6.66)	41.99 (6.94)	0.33[0.03-0.63]	41.76 (7.54)	41.82 (7.54)	0.30[-0.09-0.69]	0.31[-0.06-0.67]
GSES	Control	37.12 (9.19)	40.73 (10.16)	0.35[0.04-0.66]	39.63 (10.89)	41.80 (7.81)	0.14[-0.14-0.41]	0.40[0.02-0.78]
	Total	38.51 (7.97)	41.40 (8.52)		40.77 (9.21)	41.81 (7.59)		

Values marked in bold indicate significant effect sizes based on the Confidence Intervals (CI), which do not include zero. SPT-POS: Positive expectations; SPT-NEG: Negative Expectations; PA: Positive Affect; NA: Negative Affect; LOT-R: Life Orientation Test; DHS: Dispositional Hope Scale; GSES: General Self-Efficacy Scale; BPS: Best Possible Self



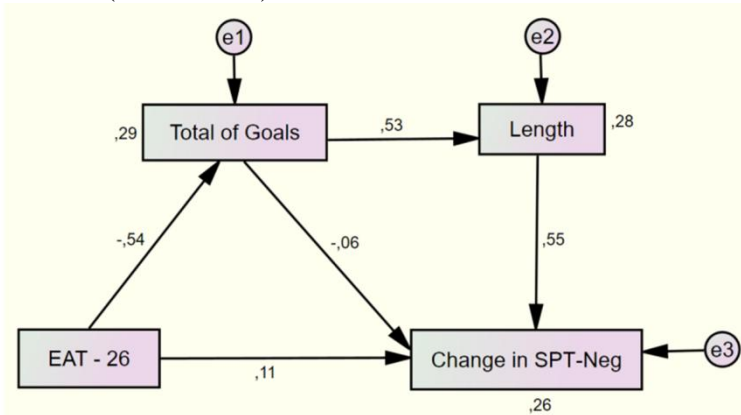
Analyzing the relationship between eating attitudes and primary outcomes in BPS condition

Regarding the second hypothesis, the relationships were analyzed between eating attitudes (EAT-26), the BPS categories, and the improvement obtained on the primary outcomes at post-training. Given that only negative expectations (SPT-NEG) showed a differential effect size in favor of the BPS condition at post-training, only the change in this outcome (pre minus post) was considered. SEM analyses explored whether the length and total number of established goals on the BPS essay would mediate between eating attitudes and the change in negative expectations. Figure 5.2 displays the tested structural models. Model 1 (base model) hypothesizes a double partial mediation, where eating attitudes would have a direct impact on improvements in negative expectations (Change in SPT-NEG), and a mediated effect through the total number of established goals (Total of Goals). Furthermore, the results show that the relationship between the total number of goals and the change in negative expectations is mediated by the length of the essay. Model 2 proposes another double partial mediation; however, in this case, the tested hypothesis is that the effect of eating attitudes on the improvement in negative expectations is mediated by the length, which, in turn, is mediated by the total number of goals. Finally, Model 3 is similar to model 1, proposing a total mediation by removing the direct effects of eating attitudes and total number of goals on the change in SPT-NEG.

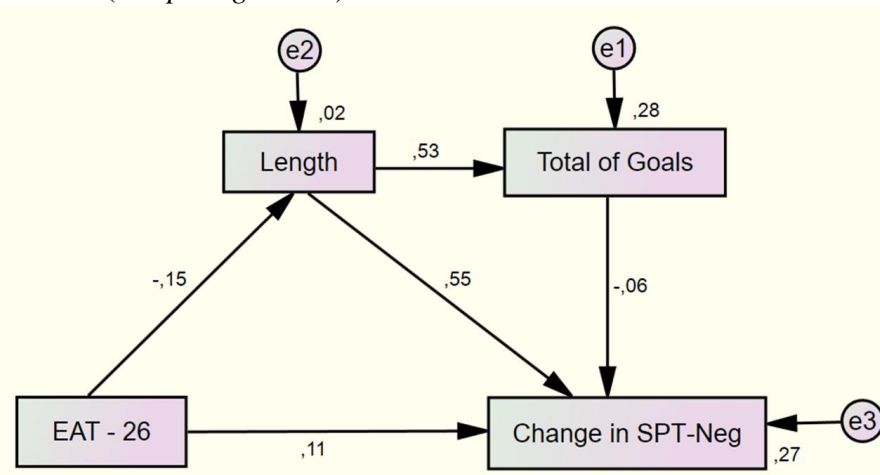
Table 5.3 contains the goodness-of-fit indexes for the proposed models. Results show that model 1 had an adequate fit ($\chi^2(1) = .96, p > 0,05$). However, the change in the order of the mediation variables proposed in model 2 (competing model) deteriorates the model fit ($\chi^2(1) = 9.96, p < 0,05$). Regarding model 3, it again showed a good fit ($\chi^2(3) = 1.73, p > 0,05$). On the whole, based on: a) the good fit of model 3; b) the significant indirect effect ($p = .015$) of eating attitudes on the change in SPT-NEG in Model 3 (unlike model 1 where this effect is not observed; Table 5.4); and c) the parsimony criteria, it is concluded that Model 3 is the best predictor of the change in negative expectations. After establishing the empirical priority of Model 3 over the other two models, the weights of the different relations were assessed. Results depicted in Table 5.4 indicate that all the standardized effects of Model 3, both direct and indirect, are statistically

significant, and the values range from medium to high (Kline, 2015). Thus, the final model explains a 25% of the change in negative expectations.

Model 1 (base model)



Model 2 (competing model)



Model 3 (competing model – final model)

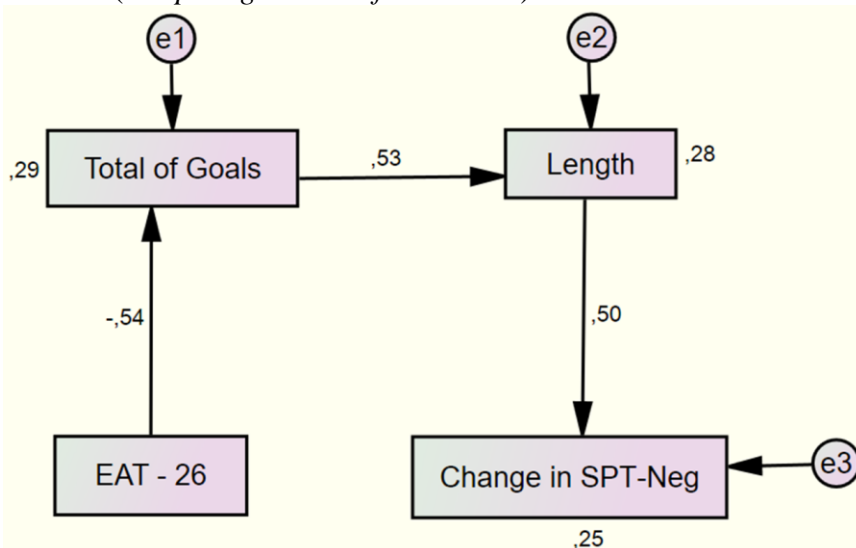


Figure 5.2 - Diagrams of the structural equation models evaluated

**Table 5.3 - Goodness-of-Fit Indexes for the tested models**

	GOODNESS OF FIT INDEXES	Base Model		
		Model 1	Model 2	Model 3
Global Adjustment Measures	Chi-square (χ^2)	.961	9.955	1.727
	Degrees of freedom (df)	1	1	3
	Significance (p value)	.327	.002	.631
	χ^2/df	.961	9.955	.576
	Goodness-of-Fit Index (GFI)	.983	.870	.969
	Root Mean Square Error of Approximation (RMSEA)	.000	.566	.000
Incremental Adjustment Measures	Adjusted Goodness of Fit Index (AGFI)	.834	-.301	.898
	Tucker Lewis Index (TLI)	1.010	-1.384	1.113
	Confirmatory Fit Index (CFI)	1.000	.603	1.000
	Normed Fit Index (NFI)	.966	.651	.939
Parsimony Adjustment Measures	Parsimonious Normed Fit Index (PNFI)	.161	.109	.470
	Parsimonious Goodness of Fit Index (PGFI)	.167	.100	.500
	Akaike Information Criterion (AIC)	18.961	27.955	15.727
	Bayes Information Criterion (BIC)	31.267	40.261	25.298

Table 5.4 - Factor loadings and significance levels of the variables included in the different structural models

CAUSAL RELATIONSHIPS				Standardized Regression Weights	p value
MODEL 1 (BASE MODEL)					
Direct Effects	EAT-26	→	Total of Goals	-.540	.000
	EAT-26	→	Change in SPT-Neg	.113	.559
	Total of Goals	→	Length	.526	.001
	Total of Goals	→	Change in SPT-Neg	-.056	.798
	Length	→	Change in SPT-Neg	.552	.004

Indirect Effects	EAT-26	→	Length	-.284	.020
	EAT-26	→	Change in SPT-Neg	-.127	.077
	Total of Goals	→	Change in SPT-Neg	.290	.020
MODEL 2 (COMPETING MODEL)					
Direct Effects	EAT-26	→	Length	-.152	.415
	EAT-26	→	Change in SPT-Neg	.112	.493
	Length	→	Total of Goals	.526	.001
	Length	→	Change in SPT-Neg	.549	.004
	Total of Goals	→	Change in SPT-Neg	-.056	.770
Indirect Effects	EAT-26	→	Total of Goals	-.080	.294
	EAT-26	→	Change in SPT-Neg	-.079	.310
	Length	→	Change in SPT-Neg	-.029	.518
MODEL 3 (COMPETING MODEL - FINAL MODEL)					
Direct Effects	EAT-26	→	Total of Goals	-.540	.000
	Total of Goals	→	Length	.526	.001
	Length	→	Change in SPT-Neg	.501	.002
Indirect Effects	EAT-26	→	Length	-.284	.020
	EAT-26	→	Change in SPT-Neg	-.142	.015
	Total of Goals	→	Change in SPT-Neg	.264	.015

EAT-26: Eating Attitudes Test; *SPT-NEG*: Negative Expectations

5.4 DISCUSSION

The main goal of this study was to test the efficacy of a PPI in a sample of patients diagnosed with ED who were receiving TAU. The effects were explored after one month of training and at a three-month follow-up. The overall patterns of results showed that both conditions improved after the training and no significant differences between conditions were found.



The first hypothesis was that the BPS condition would be more effective in improving the measured variables compared to the control condition. Contrary to our expectations, based on prior studies (Sergeant & Mongrain, 2014), no significant differences were found when comparing the two conditions. However, it should be pointed out that, regarding the within-groups change, the average effect size is higher in the BPS condition across the different time frames. Thus, the lack of statistically significant differences in the MANOVAs could be explained by the fact that participants in both conditions showed a trend toward improvement, possibly explained by patients' involvement in TAU, which might impede the emergence of significant differences. These results are in line with a prior study that compared a treatment based on PPIs to another treatment based on CBT in depressed patients. No significant differences were found in positive functioning measures, but differences in within-group changes suggested a higher effect in the PPI group (Chaves et al., 2016). It is also possible that the control condition would experience improvements in the outcome measures by creating a higher level of awareness of good and bad moments, as shown in other studies (Renner, Schwarz, Peters, & Huibers, 2014).

Focusing on the differences between conditions of the within-group effect sizes on the primary outcomes, future expectations showed more pronounced differences between conditions, suggesting that the BPS exercise produced higher improvements in this measure, even reaching a large effect size on positive expectations at the second follow-up. These results suggest that BPS could be effective in improving future expectations, an important factor in the recovery process that plays a role in engagement with the treatment (Turton et al., 2011). In terms of affect, results for positive affect were quite similar between conditions, suggesting that the change might be due to the treatment and not to a condition effect. Effects on negative affect were more pronounced in the BPS condition in the long term, suggesting that the BPS exercise might have had an influence on this decrease. These results are not consistent with prior literature with depressed samples where the impact was greater on positive affect than on negative affect (Pietrowsky & Mikutta, 2012). In this case, it is observed an inverse pattern in patients with ED, having a more powerful impact in negative, rather than positive

affect. The different pattern might be explained by the fact that they are different disorders with different symptomatology.

Regarding the secondary measures, dispositional optimism and hope reached a small effect size in the BPS condition, and no effect was found in the control condition. The lesser improvement on these measures could be explained by the fact that optimism and hope are personality traits that can hardly be changed (Pietrowsky & Mikutta, 2012). In this direction, it is noteworthy that results on these measures were slightly better in participants in the BPS condition, suggesting a potential impact of BPS on these measures. Regarding self-efficacy, the observed gains were quite similar between conditions, suggesting that benefits were due to the TAU, since self-efficacy improves in ED patients following CBT (Ohmann et al., 2013).

Concerning the second hypothesis, it was expected that more severe patients would develop a less detailed BPS essay with fewer goal. The final SEM analysis model shows that more severe patients obtained less reduction in negative expectations (explaining 25% of variance in this measure), and this relationship is mediated by the number of established goals and the length of the essay. In this regard, these results suggest that more severe patients show worse performance on the BPS essay, by developing a BPS with fewer goals and less detailed, resulting in less improvement on negative expectations. In other words, these results show that individuals who are able to set more goals in a more detailed way (length) receive greater benefits from the BPS exercise.

These results support the notion that ED patients have less ability to imagine a better future, beyond recovery (Malson et al., 2011). The establishment of less goals, which besides were less detailed, could be explained by such difficulties. Implications of these results are important at two levels. On the one hand, the difficulties to envision desired possible selves have to be tackled when designing interventions aimed to construct possible selves. In this sense, providing more detailed instructions and focusing on steps to reach those goals, could enhance the sense of agency and the ability to imagine a much wider and positive future (Snyder, Lehman, Kluck, & Monsson, 2006). On the other hand, given that the view of ourselves today is highly influenced by our future expectations (Erikson, 2007), encouraging patients to think on a better future could help to



develop a more positive self-concept, which is a key factor in the persistence of the disorder (Stein, Corte, Chen, Nuliyalu, & Wing, 2013).

This study has some limitations. First, the fact that patients were receiving treatment in both conditions reduces the possibility of obtaining significant differences between conditions. However, overcoming this issue would be ethically controversial, given that evidence-based treatments have priority over these types of low-intensity interventions. Next, the power of the sample was not previously calculated resulting in a reduced sample size. This fact could act as a barrier to observing significant differences and affect to the generalization of the results. Moreover, the modest impact produced by the exercise on the other primary outcomes has kept us from performing SEM analyses with the other scales, making it impossible to assess whether the pattern observed in the improvement in negative expectations also occurred in the other outcomes. Another limitation is that we have not taken into account important information about BMI or the duration of the disorder, and both factors might influence the benefits obtained from the exercise.

In conclusion, this is the first study to test the efficacy of a PPI in an ED sample. In this regard, it can serve as a reference for designing new interventions aimed to promote well-being or quality of life on samples with ED. Our results are highly encouraging and support the hypothesis that PPIs can act as supportive tools in the treatment of EDs by promoting positive functioning factors that can protect patients from the harmful effects of the ED conditions (Brannan & Petrie, 2011). The fact that PPIs can be self-applied facilitate that they might be prescribed by therapists at any time. Future studies should continue to explore the efficacy of PPIs and their combination in ED samples in order to find out which strategies work better in what types of patients (Layous, Nelson, & Lyubomirsky, 2012), thus contributing to generating positive resources to support their recovery process.

References

- Ali, K., Farrer, L., Fassnacht, D. B., Gulliver, A., Bauer, S., & Griffiths, K. M. (2016). Perceived barriers and facilitators towards help-seeking for eating disorders: A

-
- systematic review. *International Journal of Eating Disorders*, 50, 9-21.
<http://doi.org/10.1002/eat.22598>
- Bamford, B. H., & Mountford, V. A. (2012). Cognitive behavioural therapy for individuals with longstanding anorexia nervosa: Adaptations, clinician survival and system issues. *European Eating Disorders Review*, 20(1), 49-59.
<http://doi.org/10.1002/erv.1080>
- Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive psychology interventions: a meta-analysis of randomized controlled studies. *BMC public health*, 13, 119. <http://doi.org/10.1186/1471-2458-13-119>
- Botella, C., Baños, R. M., Etchemendy, E., García-Palacios, A., & Alcañiz, M. (2016). Psychological countermeasures in manned space missions: «EARTH» system for the Mars-500 project. *Computers in Human Behavior*, 55, 898-908.
- Brannan, M. E., & Petrie, T. A. (2011). Psychological well-being and the body dissatisfaction-bulimic symptomatology relationship: An examination of moderators. *Eating Behaviors*, 12(4), 233-241.
<http://doi.org/10.1016/j.eatbeh.2011.06.002>
- Chaves, C., Lopez-Gomez, I., Hervás, G., & Vazquez, C. (2016). A Comparative Study on the Efficacy of a Positive Psychology Intervention and a Cognitive Behavioral Therapy for Clinical Depression. *Cognitive Therapy and Research*, 1-17.
<http://doi.org/10.1007/s10608-016-9778-9>
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.
<http://doi.org/10.1037/0033-2909.112.1.155>
- Danner, D. D., Snowdon, D. a., & Friesen, W. V. (2001). Positive emotions in early life and longevity: findings from the nun study. *Journal of personality and social psychology*, 80(5), 804-13. <http://doi.org/10.1037/0022-3514.80.5.804>
- Engel, S. G., Adair, C. E., Hayas, C. Las, & Abraham, S. (2009). Health-related quality of life and eating disorders: A review and update. *International Journal of Eating Disorders*, 42(2), 179-187. <http://doi.org/10.1002/eat.20602>
- Enrique, Á., Bretón-López, J., Molinari, G., Fernández-Aranda, F., Llorca, G., Guillén, V., & Botella, C. (submitted). *Efficacy of a positive psychological intervention in patients with eating disorders: a Randomized Control Trial.*
- Erikson, M. G. (2007). The meaning of the future: Toward a more specific definition of possible selves. *Review of General Psychology*, 11(4), 348-358.
<http://doi.org/10.1037/1089-2680.11.4.348>
-



- Espinoza, M., Molinari, G., Etchemendy, E., Herrero, R., Botella, C., & Baños Rivera, R. M. (2016). Understanding Dispositional Hope in General and Clinical Populations. *Applied Research in Quality of Life*. <http://doi.org/10.1007/s11482-016-9469-4>
- Fassino, S., Piero, A., Tomba, E., & Abbate-Daga, G. (2009). Factors associated with dropout from treatment for eating disorders: a comprehensive literature review. *BMC psychiatry*, 9, 67. <http://doi.org/10.1186/1471-244X-9-67>
- Geller, J., Williams, K., & Srikameswaran, S. (2001). Clinician stance in the treatment of chronic eating disorders. *European Eating Disorders Review*, 9(6), 365-373.
- Gondar Nores, J. E. (1999). *Técnicas estadísticas con SPSS. Amos*. Madrid: Estudios Estadísticos.
- Góngora, V. C. (2014). Satisfaction with life, well-being, and meaning in life as protective factors of eating disorder symptoms and body dissatisfaction in adolescents. *Eating disorders*, 22(5), 435-49. <http://doi.org/10.1080/10640266.2014.931765>
- Herrero, R., Espinoza, M., Molinari, G., Etchemendy, E., Garcia-Palacios, A., Botella, C., & Baños, R. M. (2014). Psychometric properties of the General Self Efficacy-12 Scale in Spanish: General and clinical population samples. *Comprehensive Psychiatry*, 55(7), 1738-1743. <http://doi.org/10.1016/j.comppsy.2014.05.015>
- King, L. a. (2001). The Health Benefits of Writing about Life Goals. *Personality and Social Psychology Bulletin*, 27(7), 798-807. <http://doi.org/10.1177/0146167201277003>
- Kirsten, D. K., & du Plessis, W. F. (2013). Positive Psychology and Subclinical Eating Disorders. En M. P. Wissing (Ed.), *Well-Being Research in South Africa* (pp. 557-580). Dordrecht: Springer Netherlands. http://doi.org/10.1007/978-94-007-6368-5_26
- Kline, R. B. (2015). *Principles and practice of structural equation modeling*. New York, NY, USA: Guilford publications.
- Layous, K., Nelson, K. S., & Lyubomirsky, S. (2012). What Is the Optimal Way to Deliver a Positive Activity Intervention? The Case of Writing About One's Best Possible Selves. *Journal of Happiness Studies*, 14(2), 635-654. <http://doi.org/10.1007/s10902-012-9346-2>
- Linehan, M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, NY, USA: Guilford press.

-
- Lyubomirsky, S., & Layous, K. (2013). How Do Simple Positive Activities Increase Well-Being? *Current Directions in Psychological Science*, 22(1), 57-62. <http://doi.org/10.1177/0963721412469809>
- MacLeod, A. K. (1996). Affect, emotional disorder, and future-directed thinking. *Cognition & Emotion*, 10, 69-86.
- Malouff, J. M., & Schutte, N. S. (2016). Can psychological interventions increase optimism? A meta-analysis. *The Journal of Positive Psychology*, Aug, 1-11. <http://doi.org/10.1080/17439760.2016.1221122>
- Malson, H., Lin, B., Clarke, S., Treasure, J., Anderson, G., & Kohn, M. (2011). Un/imaginable future selves: A discourse analysis of in-patients' talk about recovery from an «eating disorder». *European Eating Disorders Review*, 19(1), 25-36. <http://doi.org/10.1002/erv.1011>
- McCallum, R. C. (1995). Model specification: Procedures, strategies, and related issues. En R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications*. (pp. 16-36). Thousand Oaks, CA, US: SAGE Publications.
- Newman, D. A. (2014). Missing data: Five practical guidelines. *Organizational Research Methods*, 17(4), 372-411. <http://doi.org/10.1177/1094428114548590>
- Ohmann, S., Popow, C., Wurzer, M., Karwautz, A., Sackl-Pammer, P., & Schuch, B. (2013). Emotional aspects of anorexia nervosa: results of prospective naturalistic cognitive behavioral group therapy. *Neuropsychiatrie: Klinik, Diagnostik, Therapie und Rehabilitation: Organ der Gesellschaft Osterreichischer Nervenärzte und Psychiater*, 27(3), 119-128. <http://doi.org/10.1007/s40211-013-0065-7>
- Otero-López, J. M., Luengo, A., Romero, E., Gómez, J. A., & Castro, C. (1998). *Psicología de la personalidad. Manual de prácticas*. Barcelona: Ariel Practicum.
- Pietrowsky, R., & Mikutta, J. (2012). Effects of Positive Psychology Interventions in Depressive Patients — A Randomized Control Study. *Psychology*, 3(12), 1067-1073.
- Pike, K., Gianini, L., Loeb, K., & Le Grange, D. (2015). Treatments for Eating Disorders. En P. Nathan & J. Gorman (Eds.), *A guide to treatments that work, 4th ed* (pp. 641-658). New York, NY, USA: Oxford University Press.
- Renner, F., Schwarz, P., Peters, M. L., & Huibers, M. J. H. (2014). Effects of a best-possible-self mental imagery exercise on mood and dysfunctional attitudes.
-



- Psychiatry research*, 215(1), 105-10.
<http://doi.org/10.1016/j.psychres.2013.10.033>
- Rivas, T., Bersabé, R., Jiménez, M., & Berrocal, C. (2010). The eating attitudes test (EAT-26): reliability and validity in Spanish female samples. *The Spanish journal of psychology*, 13(2), 1044-1056.
- Sandín, B., Chorot, P., Lostao, L., Joiner, T. E., Santed, M. A., & Valiente, R. M. (1999). Escalas PANAS de afecto positivo y negativo: validación factorial y convergencia transcultural. *Psicothema*, 11(1), 37-51.
- Sergeant, S., & Mongrain, M. (2014). An online optimism intervention reduces depression in pessimistic individuals. *Journal of consulting and clinical psychology*, 82(2), 263-74. <http://doi.org/10.1037/a0035536>
- Sheldon, K. M., & Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *The Journal of Positive Psychology*, 1(2), 73-82. <http://doi.org/10.1080/17439760500510676>
- Snyder, C. R., Lehman, K. A., Kluck, B., & Monsson, Y. (2006). Hope for Rehabilitation and Vice Versa. *Rehabilitation Psychology*, 51(2), 89-112. <http://doi.org/10.1037/0090-5550.51.2.89>
- Steck, E. L., Abrams, L. M., & Phelps, L. (2004). Positive psychology in the prevention of eating disorders. *Psychology in the Schools*, 41(1), 111-117. <http://doi.org/10.1002/pits.10143>
- Stein, K. F., & Corte, C. (2007). Identity impairment and the eating disorders: Content and organization of the self-concept in women with anorexia nervosa and bulimia nervosa. *European Eating Disorders Review*, 15(1), 58-69. <http://doi.org/10.1002/erv.726>
- Stein, K. F., Corte, C., Chen, D.-G. (Din), Nuliyalu, U., & Wing, J. (2013). A Randomized Clinical Trial of an Identity Intervention Programme for Women with Eating Disorders. *European Eating Disorders Review*, 21(2), 130-142. <http://doi.org/10.1002/erv.2195>
- Tomba, E., Offidani, E., Tecuta, L., Schumann, R., & Ballardini, D. (2014). Psychological well-being in out-patients with eating disorders: A controlled study. *International Journal of Eating Disorders*, 47(3), 252-258. <http://doi.org/10.1002/eat.22197>

- Tomba, E., Tecuta, L., Schumann, R., & Ballardini, D. (2017). Does psychological well-being change following treatment? An exploratory study on outpatients with eating disorders. *Comprehensive Psychiatry*, *74*, 61-69. <http://doi.org/10.1016/j.comppsy.2017.01.001>
- Touyz, S., Le Grange, D., Lacey, H., Hay, P. J., Smith, R., Maguire, S., ... Crosby, R. D. (2013). Treating severe and enduring anorexia nervosa: a randomized controlled trial. *Psychological medicine*, *43*(12), 2501-11. <http://doi.org/10.1017/S0033291713000949>
- Turton, P., Demetriou, A., Boland, W., Gillard, S., Kavuma, M., Mezey, G., ... Wright, C. (2011). One size fits all: Or horses for courses? Recovery-based care in specialist mental health services. *Social Psychiatry and Psychiatric Epidemiology*, *46*(2), 127-136. <http://doi.org/10.1007/s00127-009-0174-6>
- Williams, K. D., Dobney, T., & Geller, J. (2010). Setting the eating disorder aside: An alternative model of care. *European Eating Disorders Review*, *18*(2), 90-96. <http://doi.org/10.1002/erv.989>
- Wonderlich, S., Mitchell, J. E., Crosby, R. D., Myers, T. C., Kadlec, K., Lahaise, K., ... Schander, L. (2012). Minimizing and treating chronicity in the eating disorders: A clinical overview. *International Journal of Eating Disorders*, *45*(4), 467-475. <http://doi.org/10.1002/eat.20978>



Addendum

The prior study collected additional information about acceptability and perceived usefulness of the exercise and the technology used to implement it rated by the participants of the study. However, due to length restrictions of the journal, this information was not included in the manuscript.

Participants rated on a Likert scale (from 0 to 10) the degree of satisfaction and perceived usefulness about the exercise and technologies used.

Participants of both conditions reported adequate levels of satisfaction with the exercises ($M = 6.70$, $SD = 2.54$ for the BPS condition, and $M = 6.70$, $SD = 1.72$ for the DA condition) and they found the exercises useful ($M = 7.00$, $SD = 2.63$ for the BPS condition, and $M = 6.70$, $SD = 1.82$ for the DA condition).

In case of the positive technologies used to perform the exercises, Figure 5.3 depicts the levels of satisfaction and usefulness for each one. Participants of the BPS condition reported to feel satisfied with both the technologies they used (Book of Life and TEO) and they found them useful. Regarding the control condition, participants reported similar levels of satisfaction and usefulness with the PowerPoint file.

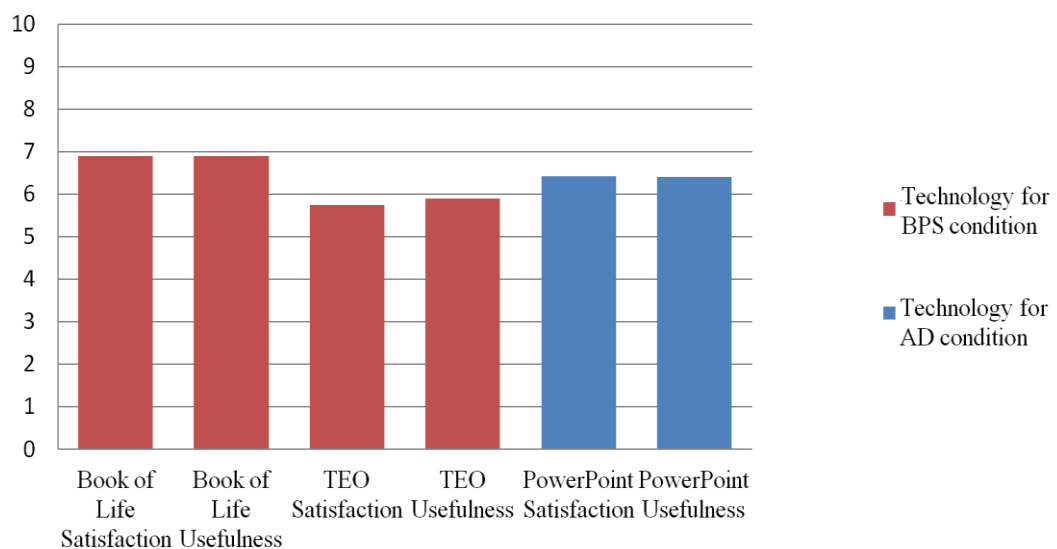


Figure 5.3 - Acceptability levels for the different Positive Technologies reported by participants

Testing assumptions of the Structural Equations Model Analyses

In order to clarify the process followed for checking whether assumptions of structural equations model analyses were met, an additional file was uploaded to the journal. This file was available only for reviewers.

A path analysis through structural equations models estimated by Maximum Likelihood (ML) methods was conducted using AMOS (version 19). To perform an appropriate SEM, competing models were proposed in order to assess which of them offered the best adjustment (McCallum, 1995). Competing models (alternatives to base model) were built including little variations aimed to improve the relations, the explanation levels and good-of-fit indexes of the base model, but keeping the initial structure and basing decisions on theoretical and empirical criteria. Goodness-of-fit of each model (Nores, 1999) was assessed by different indexes through the following procedure: a) Firstly, it was calculated the factorial weights (direct and indirect effects) of the different exogenous variables (independent variables), together with its predictive power over the endogenous variable (dependent variable). All those values with $p < 0,05$ were considered as appropriate (Stevens, 2009); b) Next, χ^2 value was computed to assess the global adjustment of each model, taking values of $p > 0,05$ as indicators of good adjustment (Kline, 2005); c) Other indexes were calculated to assess the global adjustment (GFI y RMSA) and the incremental adjustment (AGFI, TLI, CFI and NFI), considering punctuations above 0.95 as a good adjustment of the model (Hu & Bentler, 1999); d) Complementarily, adjustment of the models was also assessed through the Root Mean Square Error of Approximation (RMSEA) considering punctuation under 0.6 as a good adjustment (Hu & Bentler, 1999). Furthermore, before assessing the different SEM models, univariate and multivariate normality assumptions were checked. Punctuations of all measures met the criteria for univariate normality, showing an asymmetry < 3 and a kurtosis < 4 for all the measures (Kline, 2005). Likewise, multivariate normality was under 1.96 (*Multivariate C.r.* = .761), indicating that multivariate normality assumption was also met.



References

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6, 1-55. doi: 10.1080/10705519909540118

Kline, R. B. (2005). *Principals and practices of structural equation modeling* (2nd ed.). New York: Guilford.

McCallum, R.C. (1995). Model specification: Procedures, strategies, and related issues. In Rick H. Hoyle, (Ed). *Structural equation modeling: Concepts, issues, and applications*. (pp. 16-36). Thousand Oaks, CA, US: Sage Publications.

Nores, G. (1999) *Técnicas estadísticas con SPSS. Amos*. Estudios Estadísticos: Madrid.

Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). New York: Routledge.

Chapter 6. Implementation of a positive psychology group program in an inpatients eating disorder service. A pilot study

This chapter has been submitted to *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity* as:

Enrique, A., Bretón-López, J., Molinari, G., Llorca, G., & Botella, C.
Implementation of a positive psychology group program in an inpatient eating disorder service. A pilot Study



Implementation of a positive psychology group program in an inpatient eating disorder service. A pilot Study

Angel ENRIQUE¹, Juana BRETÓN-LÓPEZ^{1,2}, Guadalupe MOLINARI¹, Ginés LLORCA³, & Cristina BOTELLA^{1,2}

¹Universitat Jaume I, Castellón, Spain

²CIBER de Fisiopatología de la Obesidad y Nutrición (CIBEROBN)

³Consorcio Hospitalario Provincial de Castellón

Abstract

Context. Eating disorders (ED) are very difficult conditions to treat. Therefore, interventions in this field are shifting their main target towards the disorder's impact in quality of life, rather than ED symptomatology in itself. In this sense, a focus in the promotion of positive emotions and well-being is emerging in order to buffer from the harmful effects caused by ED. However, evidence of potential benefits of this type of interventions is still scarce.

Purpose. This study is aimed to introduce a 4-week positive psychology group program specifically designed for ED patients' needs and to present data about feasibility and acceptability.

Method. Seven female inpatients of an eating disorder service aged from 13 to 38 years old attended the group. Measures of affect and optimistic thinking were taken before the program and after each session.

Results. The program was very well rated by participants, and there was no attrition. Furthermore, possible benefits were found in terms of optimistic thinking at the end of the group program, and these benefits were noticeable, but non-significant, in the case of affect.

Conclusions. This study opens the door to carry out larger and controlled studies for testing interventions aimed to promote positive emotions and well-being in ED populations. If profitable, these interventions could support the efficacy of current treatments, in order to improve patients' quality of life.

Keywords: eating disorders, positive psychology, affect, optimistic thinking, anorexia nervosa



6.1 INTRODUCTION

Eating Disorders (ED), including anorexia nervosa (AN), bulimia nervosa (BN), and non-specified (EDNOS) eating disorders, are considered an important cause of physical and psychosocial morbidity and mortality in young individuals (Arcelus, Mitchell, Wales & Nielsen, 2011). Evidence-based treatments for EDs have shown the efficacy of cognitive-behavioral therapy for bulimia nervosa (Watson & Bulik, 2013). However, there is no empirical evidence to support the use of one treatment over another for AN and EDNOS patients (Fairburn, 2005). Due to the difficulty of treating these conditions, epidemiological studies have shown that many patients follow a severe and enduring course and at least one-third in ongoing treatments drop out (Wonderlich et al., 2012).

Furthermore, the burden of the disease causes impairment in many areas, beyond the eating disorders symptomatology, such as social, psychological and physical aspects, producing a strong impact on their quality of life (Jenkins, Hoste, Meyer & Blissett, 2011). In this sense, it has been found that several eating disorder-related symptoms, such as extreme worry about weight, body dissatisfaction, and exercising to lose weight, are negatively related to life satisfaction (Brannan & Petrie, 2011). Kitsantas and colleagues (2003) found that individuals with eating disorders reported lower levels of positive affect and higher levels of negative affect compared to unaffected peers.

Given this broad impairment and the limited treatment efficacy, some authors maintain that the main target of the treatments should be the disorder's impact on quality of life, rather than the ED symptomatology itself (Wonderlich et al., 2012). This approach, along with patients' perspectives about recovery, claims that recovery is more than just the absence of ED symptoms, focusing on the need of promoting positive functioning aspects (Tozzi, Sullivan, Fear, McKenzie & Bulik, 2003). Following this vein, factors such as optimism, self-determination, self-esteem, and satisfaction with life have been found as buffers from the harmful effects of body dissatisfaction on women with bulimic symptomatology (Brannan & Petrie, 2011). Thus, these authors claimed that, in women who are satisfied with their lives, feel good about themselves, and are optimistic about the future, body dissatisfaction may be less impairing in determining their experiences, goals,

values, and feelings about the self. However, in the ED framework, the inclusion of interventions aimed to improve positive emotions and well-being is still very recent and scarce. Given the potential benefits of these emotions, Tchanturia and colleagues (2015) suggest that the introduction of Positive Psychological Interventions (PPIs) could play a role in the recovery of patients with EDs. Thus, these strategies could help them to promote the emergence of positive emotions, which would allow them to improve problem-solving strategies related to their health behaviors. Moreover, Tchanturia (2015) stated that the inclusion of PPIs in ED prevention could enrich treatment programs and even enhance their impact. In terms of AN treatment, focusing on patients' strengths might help to improve the efficacy of current treatments (Tchanturia et al., 2015). To our knowledge, only one pilot study has tested the feasibility of a 5-session PPI group program in an adolescent ED inpatient service (Harrison, Al-Khairulla & Kikoler, 2015). The program was composed of a combination of PPIs (i.e. three good things, gratitude letter, acts of kindness, loving-kindness meditation, and identifying strengths), showing potential benefits in majority of participants in terms of life satisfaction and subjective happiness, and the attrition rate was zero.

Otherwise, the selection of specific PPIs should be based on the needs reported by the patients, the features of the intervention and the fit between both in order to design tailored treatments and enhance their effectiveness (Lyubomirsky & Layous, 2013). In this sense, it has been shown that patients with ED often view recovery as unimaginable because they cannot imagine a better personal future (Malson et al., 2011). However, ED patients' level of optimism about their futures, goals, and expectations is crucial for recovery, and it plays a role in their engagement with the treatment (Turton et al., 2011). For this reason, Malson et al. (2011) stated that strategies aimed to generate alternative self-constructions that challenge the essential bulimic/anorexic self might be quite useful for recovery. Thus, improving optimistic thinking in patients with ED would be expected to have a strong impact on reducing potential negative effects of eating symptomatology. In this regard, one PPI that has been found to be very useful in improving positive affect and optimistic thinking is the Best Possible Self exercise (BPS; for a review, see Malouff & Schutte, 2016). It consists of writing about and envisioning a future where everything has turned out in the best



possible way in different life domains (King, 2001). Taking ED patients' needs into account, this study proposes an adaptation of the BPS exercise that can help to construct a new prospective self, beyond the anorexic or bulimic one. Given that this is a first approach to the inclusion of PPIs in clinical settings, along with the pilot study carried out by Harrison and colleagues (2015), other pilot studies are needed in order to generate pilot data. These studies make it possible to develop consistent practices and protect human subjects from potential harmful effects, which are crucial factors before developing larger trials (Leon, Davis & Kraemer, 2011).

In sum, this pilot study is designed to present the development and implementation of a 4-week group intervention focused on the development of the BPS and strategies to reach these goals, such as the components of hope theory (Snyder, 2000), in an ED clinical service. In addition, it was decided to use a group therapy format because this format has proven to promote factors such as social feedback, cohesion, and social learning, which contribute to the therapeutic process (Ogrodniczuk & Piper, 2003). Furthermore, feasibility and acceptability data were collected at the end of the group intervention. Given that a pilot study is not designed for hypothesis testing (Leon et al., 2011), we do not propose any hypotheses, although the intervention is expected to be accepted by the patients and produce some improvements in affect and optimistic thinking.

6.2 METHOD

Participants

The sample was composed of 7 female patients. Five patients were diagnosed with anorexia nervosa, and two had a diagnosis of non-specified ED. They were inpatients of the ED service of a public hospital in Castellón (Spain). The ages of the patients ranged from 13 to 38 years old (Mean= 22,8, SD=11,85).

Measures

Feasibility and acceptability measures

Subjective Probability Task (SPT; MacLeod, 1996; Molinari et al., in press). To This scale measures positive and negative expectations about possible events that might happen in the future. It is composed of 30 items, 20 related to

negative expectations that can occur in the future (e.g. "Other people won't like you "), and the other 10 focused on positive expectations (e.g. You'll have a lot of good moments with friends). The items are rated on a 7-point Likert scale, on which participants are asked to estimate the likelihood of each situation happening to them in the future, from 1 (not at all likely to occur) to 7 (extremely likely to occur). Higher scores on the different subscales represent a higher perceived likelihood of the occurrence of positive and negative events in the future. It has shown appropriate levels of internal consistency for positive and negative expectations ($\alpha=0.82$ and 0.91 , respectively; Meevissen, Peters & Alberts, 2011).

Positive and Negative Affect Scale (PANAS; Watson, Clark & Tellegen, 1988). To assess affect, a Spanish adaptation of the PANAS was used (Sandín et al., 1999). This scale is composed of 20 items: 10 items measuring positive affect states and 10 items measuring negative affect states. The items are rated on a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely). PANAS is one of the most widely used instruments to measure affect because it shows excellent psychometric properties (Cronbach's alphas from 0.87-0.91).

Credibility/ Expectancy Questionnaire (Borkovec & Nau, 1972). This questionnaire was adapted from Borkovec and Nau's instrument for assessing patients' opinions and acceptability ratings of the treatment at the end of the final session. Thus, they were asked to indicate on a 10-point Likert scale from 0 (not at all) to 10 (very much) their degree of satisfaction, the usefulness of the program as a whole, and whether they would recommend it to a friend. Moreover, they were asked about their levels of satisfaction with and usefulness of the technology implemented, the Book of Life. The questionnaire also included open questions about the perceived benefits and troubles with the intervention.

Additional Measures

Eating Attitudes Test (EAT-26; Garner, Olmsted, Bohr & Garfinkel, 1982). This questionnaire assesses a broad range of attitudes and behaviors related to anorexia nervosa. It is composed of 26 items rated on a 6-point Likert scale from 0 (never) to 6 (always), based on the frequency with which the individual carries out the behavior or has the thought described by the item. The instrument



has shown excellent psychometric properties (Toro, Castro, Garcia, Perez & Cuesta, 1989; Rivas, Bersabé, Jiménez & Berrocal, 2010).

Imagen (Solano & Cano, 2010). This questionnaire assesses body dissatisfaction, which means feelings of discomfort about one's body image. It is composed of 37 items rated on a 5-point Likert scale from 0 (almost never/ never) to 4 (almost always/ always). The instrument has shown adequate psychometric properties in a clinical population for the total score and each subscale (Cronbach's alphas from 0.87-0.97; Solano & Cano, 2010).

Positive Technology Application

Book of Life. This is a module of the Earth of Well-being system, a computerized program composed of different activity modules. Each module is targeted to promote specific positive emotions (such as relaxation or joy) through emotional induction procedures implemented in the system. As a whole, it has shown efficacy in promoting positive emotions (Baños et al., 2014, Botella et al., 2016). Specifically for this study, the "Book of Life" module was selected. This module looks like a personal diary with different chapters, each with its own instructions, in order to write about different topics. In addition, the essay can be supported with multimedia content. In this case, one of the chapters was adapted by removing the instructions, since they were provided by the therapist. Thus, the program allows pictures, music and videos to be added, either selected from the system or introduced by the user (adding their own pictures, music and videos). Hence, it is considered a flexible tool and can be used in different contexts (Baños et al., 2014; Botella et al., 2016).

Design

A longitudinal design was employed to explore potential differences in affect and optimistic thinking throughout the 4-week program, comparing the scores at pre-assessment to the scores on these measures after each session and at the end of the group intervention program. Furthermore, the study was approved by the Ethics Committee of the Castellón Provincial Hospital.

Procedure

The group program took place in the ED service. It was carried out by one of the authors (AE), who has postgraduate studies in Eating Disorders. The

program was called “My Best Self” because it was based on the development of an ideal self and the ways to reach it. It was composed of 4 sessions (one per week) lasting 2 hours each. Before the program, all the patients signed an informed consent form, and in the case of under-age patients, this consent form was signed by their parents. After that, participants completed two measures of feasibility, PANAS and SPT, along with additional measures, EAT-26 and IMAGEN, to find out the patients’ severity levels. They were asked to deliver these questionnaires before starting the first session. The sessions were all conducted in the same room and by the same therapist, who supported the content of each session with a PowerPoint presentation. Participants sat in a circle around the therapist. At the end of each session, participants filled out the PANAS and SPT measures. In addition, as a homework task, patients were asked to write the essay in the Book of Life system, and they were invited to visualize the content of the essay every day for at least 5 minutes. Patients were provided with a unique username and password to log on to the virtual platform during their free time in the service. Once the four-week program was over, patients were asked to complete the post-assessment, which included acceptability and feasibility measures. Once the post-assessment was completed, each participant received a CD with a video of the content developed in the system, and they were invited to continue practicing the exercise to the extent that it would be useful for them.

Group intervention development

Content development

The use of the visualization of a best possible self as a central exercise was based on prior literature that indicates the effectiveness of this exercise in improving optimism (Malouff & Schutte, 2016). Moreover, given that ED patients find it difficult to imagine a better future, we included components of the hope theory (Snyder, 2000) to facilitate the exploration of ways to reach these goals (pathways thinking) and the persistence to get them (agency thinking). In addition, we expected that sharing goals with peers would help patients to gain more insight into their own goals and enhance their engagement with reaching them. The work group was led by an external clinician who also paid attention to the content of the essay, making sure that patients did not develop damaging prospective selves in terms of their ED.



Setting and context

The group intervention emerged as a supportive tool for promoting optimism and positive affect in a forced environment (inpatient service), where patients usually lose external reinforcements. The 4 group sessions were implemented in a 2-hour, weekly format. This program took place during the morning, and it was presented to patients as a complementary workshop to the activities that they usually did in the service (manual arts workshop, reading workshop, and so on). For this reason, all the inpatients who were receiving ongoing treatment in the service were invited to participate in the group intervention. Attendance was voluntary, and they were told that they could drop out if they did not feel comfortable or if they found it boring.

Description of the group intervention

The content of each session is described in Table 6.1. Session 1 and 2 introduced the psychoeducation and program rationale to the patients, along with the instructions for the development of the ideal self and the ways to reach it. Session 3 was more focused on reviewing all the content introduced in prior sessions and possible troubles. Last session was used as a summary of the program as a whole and the importance of setting life goals according to values was also remarked.

Data Analysis

Given the nature of a pilot study, with a small sample size, we used non-parametric analyses for the exploration of the potential benefits. Pre-post non-parametric Wilcoxon Signed-rank analyses were performed to explore changes in affect and future expectations. Furthermore, the pre-post change was also explored using reliable change scores (RC) that were calculated for each patient for the two outcome measures, PANAS and SPT. The equation used for this analysis was extracted from Jacobson and Truax's guidelines (1991). Thus, to show reliable improvement, a RC score equal to or above a predetermined cut-off is needed. This cut-off is established by subtracting the standard deviation of a reference group on the outcome measure from their group mean and dividing this score by 2 (Jacobson & Truax, 1991). The data used to calculate the cut-off for

Table 6.1 - Group protocol

Session	Session content
1	<ul style="list-style-type: none">• Introduction of participants and group rules.• Group discussion about positive psychology, BPS, hope theory and the importance of values and goals.• Instructions to BPS exercise (based on instructions of Meevissen et al., 2011). Patients were encouraged to think about 4 different domains: personal, professional, social and health.• Development of the BPS exercise during 20 minutes on a piece of paper.• Imagery training in which they were guided by therapist to image a lemon using all their senses (cf. Holmes, Coughtrey & Connor, 2008)• 5-min mental imagery exercise about the BPS• For homework, re-write the developed BPS in the Book of Life program, including multimedia content. Imagery exercise with BPS, 5 minutes per day.
2	<ul style="list-style-type: none">• Group review of the homework, focusing on difficulties and troubles.• Review of the goal setting, analyzing if goals were realistic and attainable.• Welcome the new future self. Participants had to blow out a virtual candle to pretend to celebrate their first birthday, in order to represent the origin of the new best self. This activity is in line with theories about capitalizing on one's positive events, which refers to the process of beneficially interpreting these positive experiences (Carl, Soskin, Kerns & Barlow, 2013).• Introduction to hope training components (Snyder, 2000). Participants were told about the importance of exploring what paths and steps they should take to reach their goals and the need to be persistent and constant to reach those goals.• For homework, they had to include in their Book of Life the steps they would have to take to reach each of their goals, and how they would notice and feel when the goal was reached. Imagery exercise with the BPS, 5 minutes per day.
3	<ul style="list-style-type: none">• Round-table discussion to share the steps proposed by each patient to reach their goals, and how they would notice and feel when the goal was reached. Difficulties and doubts about the exercise were addressed.• For homework, participants were encouraged to continue to modify the content of the Book of Life, adding more personalized multimedia content. Imagery exercise with the BPS, 5 minutes per day.
4	<ul style="list-style-type: none">• Exploration of difficulties when developing the content or performing the visualization.• Review of the contents explained during the program. Perceived progress and opinion of each patient were explored.• Explanation of the importance of having defined life goals, and that these goals had to be consistent with their values. It was also emphasized that many of the goals we set in our lives can change or may not to be reached, which involves the ability to adapt to the situation and reconsider or change some of our goals.



SPT were taken from the Spanish validation of this instrument in a clinical population (Molinari et al., in press). In the case of PANAS, we used the Spanish validation in general population, given there is no validation with clinical samples (Sandín et al., 1999). Lastly, in order to explore the evolution of the scores over time, a non-parametric Friedman's test for multiple time points was used.

6.3 RESULTS

Results

In terms of the control measures at baseline, scores on the EAT-26 ranged from 15 to 64, and the total score was 31.6 (SD= 16.75), indicating the presence of ED symptoms because it was above the predetermined cut-off score, 20 (Toro et al., 1989; Ribas et al., 2010). In fact, only one patient scored below 20. Regarding the body-dissatisfaction scale (IMAGEN), the average of the total scores was 79.71 (SD=26.04), and patients were classified according to severity degrees of body-dissatisfaction, based on women at risk of eating pathology (Solano & Cano, 2010). Thus, 14.28% were considered severe, 42.86% moderate, and 42.8% mild in terms of body-dissatisfaction.

Dropout

Regarding session attendance, all seven patients attended sessions 1 and 3, six attended session 2, and five attended session 4. All the non-attendance cases were due to personal problems that kept them from attending the specific session.

Possible benefit derived from the group

Table 6.2 shows the results obtained by the participants before and after the group program on the outcome measures, namely PANAS and SPT.

Table 6.2 - Pre- and post-test descriptive analysis and Wilcoxon signed-rank test

Measures	PRE M (SD)	POST M (SD)	Sig. Wilcoxon matched-pairs signed-ranks test
SPT-POS	3.69 (1.33)	4.68 (1)	$z = -2.38, p < 0.05$
SPT-NEG	3.44 (0.95)	2.15 (1.18)	$z = -2.37, p < 0.05$
PA	2.61 (1.03)	3.03 (1.14)	$z = -1.35, p > 0.05$
NA	2.54(1.19)	1.87 (1.04)	$z = -1.27, p > 0.05$

SPT-POS: Positive expectations; SPT-NEG: Negative Expectations; PA: Positive Affect; NA: Negative Affect

Results of the related-samples Wilcoxon signed-rank tests showed a significant improvement on both subscales of the SPT measure, positive and negative. In the case of the two PANAS subscales, there was an improvement, but without reaching statistical significance.

The reliable change index analyses indicated that for positive future expectations, 43% of the participants reported a reliable clinical change in this outcome. In terms of negative expectations, these analyses showed that 85.7% of the participants also experienced a meaningful change in this subscale. Regarding positive affect, 28.5% of the participants reached a clinical change, and for negative affect, 43% of the sample showed a reliable change.

Evolution of the scores over time

Figure 6.1 and Figure 6.2 display the scores obtained by the participants on the different outcome measures across the different time frames. For the comparison between moments, Friedman's test was performed for each measure.

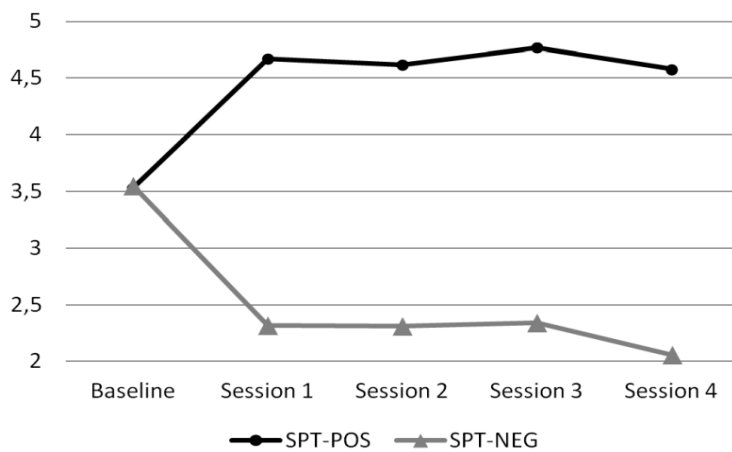


Figure 6.1 - Evolution of positive and negative expectations over time

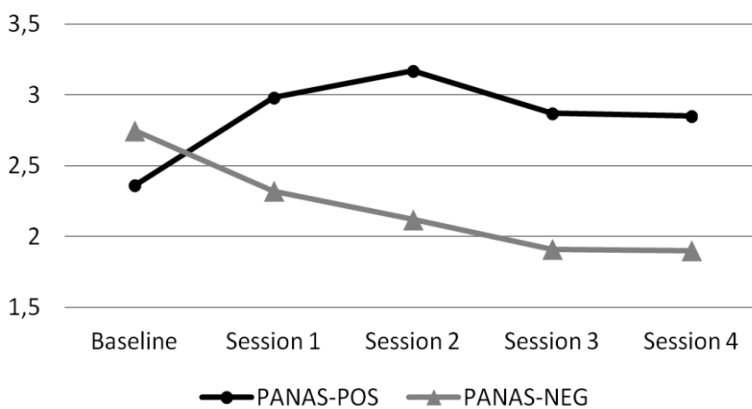


Figure 6.2 - Evolution of positive and negative affect



Regarding the future expectations measure, results showed an improvement from baseline to the first session, and then the results were maintained in the following sessions. In terms of positive expectations, Friedman's test showed a trend toward significance ($\chi^2=9.13$; $p=0.058$), indicating a change in the scores in the different time frames. With regard to negative expectations, Friedman's test showed a significant change between time assessments ($\chi^2=11.26$; $p=0.024$). In the case of affect, there was an observable trend toward improvement from baseline on both subscales across the four sessions. In terms of positive affect, Friedman's Test did not show a significant change between time assessments ($\chi^2=5.74$; $p=0.22$), in contrast to negative affect, which showed a nearly significant change ($\chi^2=9.38$; $p=0.052$).

Acceptability

The Credibility/Expectancy questionnaire was applied to measure the patients' ratings of the positive psychology group program. Figure 6.3 displays the patients' average score on the different questions. Results showed high levels of satisfaction, usefulness, and recommendation of the program, suggesting high acceptance of the program by the patients. Regarding the positive technology used, the Book of Life, the levels reported by participants were also very high, suggesting that they valued the supporting role of the technology in performing the exercise.

Regarding qualitative feedback, some participants left comments about the benefits and difficulties found in doing the exercise and with the group. Thus, some benefits reported by the patients were 'Now I have my goals clearer and I've learned to be patient with long-term goals', 'Being able to imagine an ideal self and feeling that I can reach my own goals' or 'now I am more aware of my goals'. Regarding difficulties, one participant reported that 'facing my actual self and being aware of how far I am from my ideal self'.

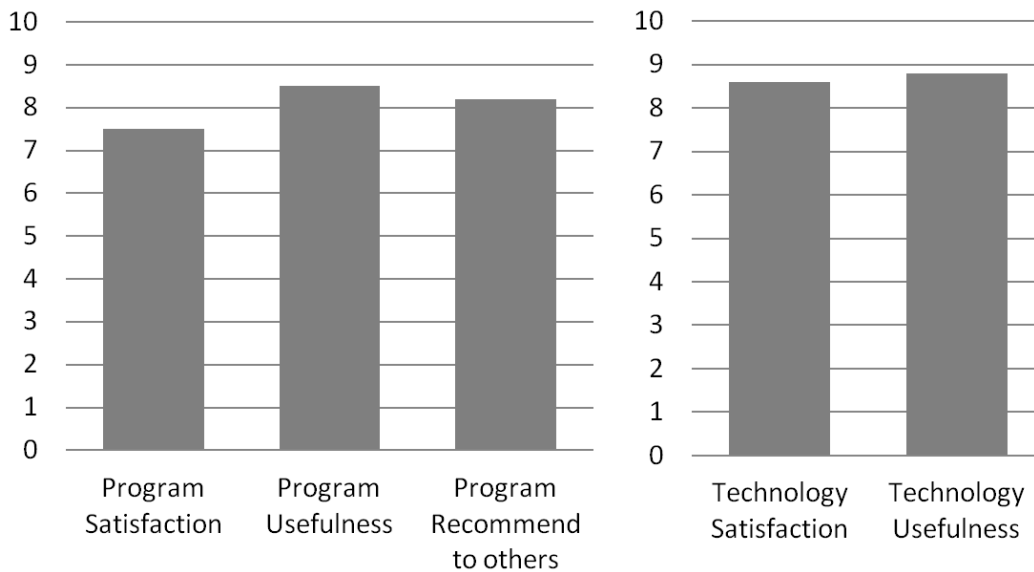


Figure 6.3 - Acceptability levels for the group program and the technology reported by participants

6.4 DISCUSSION

This pilot study presented the development of a four-session group intervention aimed to improve affect and optimistic thinking in ED patients who attended a specialized mental health service. These effects were explored after each session and at the end of the 4-week program, along with the levels of acceptance and usefulness of the group program and the technology implemented.

Results show that there was no dropout at the end of the program because all the patients remained in the group until the last session. This is consistent with the previous pilot study, which also found no dropouts (Harrison et al., 2015), suggesting that patients usually show good adherence to these group programs that include PPIs.

Regarding the possible benefits derived from the program, there was a significant improvement in negative future expectations at the end of the program, and this change showed a trend toward significance in the case of positive expectations. The change in affect, on both the positive and negative subscales, did not reach significance, although it was noticeable at a clinical level. Most of the patients had a meaningful change in negative expectations, but these percentages decreased to less than half of the sample in the case of positive expectations. The difference between these percentages might be explained by the



fact that those patients who did not reach a meaningful change in positive expectations started with higher scores on positive expectations, and so there could have been a ceiling effect. With regard to affect, the exercise seemed less powerful at improving these variables, which would explain the lower rates of meaningful change.

Examining the scores over time, there was a significant improvement in future expectations, both positive and negative. Specifically, the scores improved from the first to the second session, and they stabilized over the following sessions. In the case of affect, the change over time was more gradual, and scores tended to be stable after the third session. Moreover, in this case, the change was almost significant for negative affect, and it did not reach significance for positive affect. These results suggest that this group program, focused on the future in terms of values and goals, was able to improve optimistic thinking in patients who usually have difficulties in visualizing a better future (Malson et al., 2011). Furthermore, the changes in affect, even though not entirely significant, suggest that affect can be improved in patients who usually have this area affected (DeJong et al., 2013).

In terms of acceptability, the data collected suggest that the group intervention was well received by patients, and that they enjoyed their participation. Perceptions about acceptability reflect high levels of satisfaction with the program and with the positive technology used. Furthermore, the program was perceived as very useful, and patients reported that they would recommend it to a friend. High rates of treatment acceptability reported by patients are important in order to enhance the effectiveness of interventions (de Graff et al., 2009). With regard to the qualitative feedback, patients reported that focusing on their goals and thinking about ways to reach them was not only useful in clarifying their goals, but also for allowing them to feel that these goals were attainable. In this sense, it is suggested that the presence of hope in patients with mental illness could enhance their motivation to engage in the recovery process (Park & Chen, 2016). Incidentally, we cannot overlook the possible frustration of the patient who reported feeling far from her ideal self. In these cases, it is important to highlight that setting goals based on our values is the only way to make sure that the path toward the goals will be meaningful and comforting in

itself (Hayes, Luoma, Bond, Masuda & Lillis, 2006). Furthermore, another important way to avoid these kinds of feelings when implementing exercises focused on life goals, like the BPS, is to make clear that we do not reach all our life goals, as these goals sometimes change over time or need to be adjusted, and individuals have to be prepared for this (King & Raspin, 2004).

In spite of the large age range found in the present group (from 13 to 38), patients reported feeling comfortable when sharing their experiences and goals, suggesting that the group was suitable for all of them and that they all benefitted from the group. In addition, the introduction of positive technology to support the development of their best self was very highly rated, as patients could accompany their essays with their own pictures and music, enhancing their ability to become immersed in the visualization (Botella et al., 2012). In addition, the implementation of the program in a mental health service was also feasible from a cost-effectiveness viewpoint because it was a short, low-cost, and low-intensity intervention that did not require any expensive materials and was carried out in a simple room. This is important, given the decrease in public health resources, because the improvement in the quality of the services would not involve a large investment.

Regarding the study limitations, it is important to note that, given the small sample size, the results derived from the implementation of the exercise can hardly be generalized to other populations (Leon et al., 2011), although they can be taken in account when designing novel interventions focused on improving quality of life and well-being. Another important limitation was the lack of a control group because it keeps us from attributing the possible benefits to the group program, instead of to other uncontrollable factors, such as the ongoing treatment they were receiving. However, the clinical symptomatology continued active at the end of the treatment, and none of the patients were discharged during that time, suggesting that the improvements in affect and optimistic thinking could be attributable to the program. In any case, future studies should explore whether the combination of this group program with the Treatment as Usual (TAU) that ED patients use to follow produce larger benefits in positive functioning variables, compared to patients who only receive the TAU. Furthermore, a follow-up of the patients would make it possible to explore whether participants continued to



practice the exercises and whether the changes were maintained over time. To examine the possible benefits of the intervention, it would be interesting to include other measures of psychological and subjective well-being that could also be enhanced by the program, such as hope, self-efficacy, or life satisfaction.

In conclusion, the potential benefits observed in this study, along with the results obtained in another pilot study (Harrison et al., 2015), open the door to carrying out randomized clinical trials (RCTs) with severe populations, such as ED patients, in order to draw firmer conclusions about the real benefits of PPI group interventions. Demonstrating benefits in these future RCTs would make possible the inclusion of PPIs in the context of mental health services, in order to focus not only on the disease symptomatology, but also on positive aspects of functioning (Tomba, Tecuta, Schumann & Ballardini, 2017). As noted by different authors, the presence of well-being in individuals with clinical disorders could act as a buffer for the detrimental effects of the symptoms (Bos et al., 2016). Indeed, the effect of positive emotions could support their recovery process by helping patients to improve their problem-solving skills for facing the disorder (Tchanturia et al., 2015). This new approach, which has been gaining relevance in recent years, opens up a new window on patient recovery and is expected to support the efficacy of current treatments, even acting as a complementary objective, in order to improve their quality of life.

Compliance with Ethical Standards

Funding for the study was provided by grants: Red de Excelencia (PSI2014-56303-REDT) PROMOSAM: Research in processes, mechanisms and psychological treatments for mental health promotion from the Ministerio de Economía y Competitividad (2014); a PhD grant from Jaume I University (PREDOC/2012/51), and CIBER: CIBER Fisiopatología de la Obesidad y Nutrición is an initiative of ISCIII.

All the authors declare that they have no conflict of interest.

We confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript. The study was approved by the Research Ethics Committee of the Provincial

Hospital of Castellón (Spain; October 31st, 2014). All the patients signed an informed consent form, and in the case of under-age patients, this consent form was signed by their parents.

References

- Arcelus, J., Mitchell, A. J., Wales, J., & Nielsen, S. (2011). Mortality rates in patients with anorexia nervosa and other eating disorders: a meta-analysis of 36 studies. *Archives of general psychiatry*, *68*(7), 724-731. Doi: 10.1001/archgenpsychiatry.2011.74.
- Baños, R. M., Etchemendy, E., Farfallini, L., García-Palacios, A., Quero, S., & Botella, C. (2014). EARTH of Well-Being System: A pilot study of an Information and Communication Technology-based positive psychology intervention. *The Journal of Positive Psychology*, *9*(6), 482-488. Doi: 10.1080/17439760.2014.927906.
- Borkovec, T. D., & Nau, S. D. (1972). Credibility of analogue therapy rationales. *Journal of Behavior Therapy and Experimental Psychiatry*, *3*(4), 257-260. Doi: 10.1016/0005-7916(72)90045-6.
- Bos, E. H., Snippe, E., de Jonge, P., & Jeronimus, B. F. (2016). Preserving Subjective Wellbeing in the Face of Psychopathology: Buffering Effects of Personal Strengths and Resources. *PloS one*, *11*(3), e0150867. Doi: 10.1371/journal.pone.0150867.
- Botella C., Baños R.M., Etchemendy E., García-Palacios A., Alcañiz M. (2016). Psychological countermeasures in manned space missions: "EARTH" system for the mars-500 project. *Computers in Human Behavior*, *55*, 898-908. doi:10.1016/j.chb.2015.10.010. Doi: 10.1016/j.chb.2015.10.010.
- Botella, C., Riva, G., Gaggioli, A., Wiederhold, B. K., Alcaniz, M., & Baños, R. M. (2012). The present and future of positive technologies. *Cyberpsychology, Behavior, and Social Networking*, *15*(2), 78-84. Doi: 10.1089/cyber.2011.0140.
- Brannan, M. E., & Petrie, T. A. (2011). Psychological well-being and the body dissatisfaction–bulimic symptomatology relationship: An examination of



- moderators. *Eating behaviors*, 12(4), 233-241. Doi: 10.1016/j.eatbeh.2011.06.002.
- Carl, J. R., Soskin, D. P., Kerns, C., & Barlow, D. H. (2013). Positive emotion regulation in emotional disorders: A theoretical review. *Clinical Psychology Review*, 33(3), 343-360. Doi: 10.1016/j.cpr.2013.01.003.
- de Graff, L. E., Huibers, M. J., Riper, H., Gerhards, S. A., & Arntz, A. (2009). Use and acceptability of unsupported online computerized cognitive behavioral therapy for depression and associations with clinical outcome. *Journal of affective disorders*, 116(3), 227-231. Doi: 10.1016/j.jad.2008.12.009.
- DeJong, H., Oldershaw, A., Sternheim, L., Samarawickrema, N., Kenyon, M. D., Broadbent, H., ... & Schmidt, U. (2013). Quality of life in anorexia nervosa, bulimia nervosa and eating disorder not-otherwise-specified. *Journal of eating disorders*, 1(1), 1. Doi: 10.1186/2050-2974-1-43.
- Fairburn, C. G. (2005). Evidence-based treatment of anorexia nervosa. *International Journal of Eating Disorders*, 37(S1), S26-S30. Doi: 10.1002/eat.20112.
- Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The eating attitudes test: psychometric features and clinical correlates. *Psychological medicine*, 12(04), 871-878. Doi: 10.1017/s0033291700049163.
- Harrison, A., Al-Khairulla, H., & Kikoler, M. (2015). The feasibility, acceptability and possible benefit of a positive psychology intervention group in an adolescent inpatient eating disorder service. *The Journal of Positive Psychology*, 1-11. Doi: 10.1080/17439760.2015.1117125.
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour research and therapy*, 44(1), 1-25. Doi: 10.1016/j.brat.2005.06.006.
- Holmes, E. A., Coughtrey, A. E., & Connor, A. (2008). Looking at or through rose-tinted glasses? Imagery perspective and positive mood. *Emotion*, 8(6), 875. Doi: 10.1037/a0013617.

-
- Jacobson, N. S., & Truax, P. (1991). Clinical significance: a statistical approach to defining meaningful change in psychotherapy research. *Journal of consulting and clinical psychology*, 59(1), 12. Doi: 10.1037//0022-006x.59.1.12.
- Jenkins, P. E., Hoste, R. R., Meyer, C., & Blissett, J. M. (2011). Eating disorders and quality of life: A review of the literature. *Clinical psychology review*, 31(1), 113-121. Doi: 10.1016/j.cpr.2010.08.003.
- King, L. A. (2001). The health benefits of writing about life goals. *Personality and Social Psychology Bulletin*, 27(7), 798-807. Doi: 10.1177/0146167201277003.
- King, L. A., & Raspin, C. (2004). Lost and found possible selves, subjective well-being, and ego development in divorced women. *Journal of personality*, 72(3), 603-632. Doi: 10.1111/j.0022-3506.2004.00274.x.
- Kitsantas, A., Gilligan, T. D., & Kamata, A. (2003). College women with eating disorders: Self-regulation, life satisfaction, and positive/negative affect. *The Journal of psychology*, 137(4), 381-395. Doi: 10.1080/00223980309600622.
- Leon, A. C., Davis, L. L., & Kraemer, H. C. (2011). The role and interpretation of pilot studies in clinical research. *Journal of psychiatric research*, 45(5), 626-629. Doi: 10.1016/j.jpsychires.2010.10.008.
- Lyubomirsky, S., & Layous, K. (2013). How do simple positive activities increase well-being?. *Current Directions in Psychological Science*, 22(1), 57-62. Doi: 10.1177/0963721412469809.
- MacLeod, A.K. (1996). Affect, emotional disorder, and future-directed thinking. *Cognition & Emotion*, 10, 69–86. Doi: 10.1080/026999396380394.
- Malouff, J. M., & Schutte, N. S. (2016). Can psychological interventions increase optimism? A meta-analysis. *The Journal of Positive Psychology*, 1-11. Doi: 10.1080/17439760.2016.1221122.
- Malson, H., Bailey, L., Clarke, S., Treasure, J., Anderson, G., & Kohn, M. (2011). Un/imaginable future selves: A discourse analysis of in-patients' talk about



- recovery from an 'eating disorder'. *European Eating Disorders Review*, 19(1), 25-36. Doi: 10.1002/erv.1011.
- Meevissen, Y. M., Peters, M. L., & Alberts, H. J. (2011). Become more optimistic by imagining a best possible self: Effects of a two week intervention. *Journal of behavior therapy and experimental psychiatry*, 42(3), 371-378. Doi: 10.1016/j.jbtep.2011.02.012.
- Molinari, G., Dragomir-Davis, A.M., Enrique, A., García-Palacios, A., Baños, R.M. & Botella, C. (submitted). The contribution of future-directed thinking to affect dimensions: differences in general and clinical populations.
- Ogrodniczuk, J. S., & Piper, W. E. (2003). The effect of group climate on outcome in two forms of short-term group therapy. *Group Dynamics: Theory, Research, and Practice*, 7(1), 64. Doi: 10.1037/1089-2699.7.1.64.
- Park, J., & Chen, R. K. (2016). Positive Psychology and Hope as Means to Recovery from Mental Illness. *Journal of Applied Rehabilitation Counseling*, 47(2), 34.
- Rivas, T., Bersabé, R., Jiménez, M., & Berrocal, C. (2010). The eating attitudes test (EAT-26): reliability and validity in Spanish female samples. *The Spanish journal of psychology*, 13(02), 1044-1056. Doi: 10.1017/s1138741600002687.
- Sandín, B., Chorot, P., Lostao, L., Joiner, T., Santed, M. & Valiente, R.M. (1999). Escala PANAS de afecto positivo y negativo: Validación factorial y convergencia transcultural. *Psicothema*, 11, 37-51.
- Snyder, C. R. (Ed.). (2000). *Handbook of hope: Theory, measures, and applications*. Academic press.
- Solano, N., & Cano, A. (2010). *IMAGEN. Evaluación de la Insatisfacción con la Imagen Corporal*. Madrid: TEA
- Tchanturia, K., Dapelo, M. A. M., Harrison, A., & Hambrook, D. (2015). Why study positive emotions in the context of eating disorders?. *Current psychiatry reports*, 17(1), 1-12. Doi: 10.1007/s11920-014-0537-x.

-
- Tomba, E., Tecuta, L., Schumann, R., & Ballardini, D. (2017). Does psychological well-being change following treatment? An exploratory study on outpatients with eating disorders. *Comprehensive Psychiatry*, 74, 61–69. Doi:10.1016/j.comppsy.2017.01.001
- Toro, J., Castro, J., Garcia, M., Perez, P., & Cuesta, L. (1989). Eating attitudes, sociodemographic factors and body shape evaluation in adolescence. *British Journal of Medical Psychology*, 62(1), 61-70. Doi: 10.1111/j.2044-8341.1989.tb02811.x.
- Tozzi, F., Sullivan, P. F., Fear, J. L., McKenzie, J., & Bulik, C. M. (2003). Causes and recovery in anorexia nervosa: The patient's perspective. *International Journal of Eating Disorders*, 33(2), 143-154. Doi: 10.1002/eat.10120.
- Turton, P., Demetriou, A., Boland, W., Gillard, S., Kavuma, M., Mezey, G., ... & Wright, C. (2011). One size fits all: or horses for courses? Recovery-based care in specialist mental health services. *Social psychiatry and psychiatric epidemiology*, 46(2), 127-136. Doi: 10.1007/s00127-009-0174-6.
- Watson, D., Clark, L. & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1.063-1.070. Doi: 10.1037//0022-3514.54.6.1063.
- Watson, H. J., & Bulik, C. M. (2013). Update on the treatment of anorexia nervosa: review of clinical trials, practice guidelines and emerging interventions. *Psychological medicine*, 43(12), 2477-2500. Doi: 10.1017/s0033291712002620.
- Wonderlich, S., Mitchell, J. E., Crosby, R. D., Myers, T. C., Kadlec, K., LaHaise, K., ... & Jorgensen, M. (2012). Minimizing and treating chronicity in the eating disorders: a clinical overview. *International Journal of Eating Disorders*, 45(4), 467-475. Doi: 10.1002/eat.20978.

Chapter 7. GENERAL DISCUSSION



Summary of the Main Findings

The general aim of this thesis was to test the effectiveness of a specific type of PPI, that is, those with a future temporal orientation, in promoting well-being. This general aim was translated into four specific goals that are summarized here: 1) to examine the overall effectiveness of PPIs focused on a future temporal orientation; 2) to study the efficacy of the BPS exercise in promoting optimism and other well-being variables in the general population; 3) to study the efficacy of the BPS exercise in promoting optimism and other well-being variables in patients with eating disorders; and 4) to develop and analyze the feasibility of a future-oriented PPI delivered in a group format in an inpatient eating disorder service.

This section begins with a discussion of the four specific goals described in the introduction of this thesis. The discussion is followed by the general strengths and limitations found across the studies. Next, a description of future directions and recommendations for research are presented. Finally, general conclusions are highlighted.

Overall effectiveness of PPIs focused on a future temporal orientation

Literature has shown that there is a need for further research to explore the effectiveness of specific types of PPIs (Sin & Lyubomirsky, 2009; Quoidbach et al., 2015). The meta-analysis presented in Chapter 2 made it possible to identify different future-oriented PPIs found in the literature and test their overall effectiveness. Our search yielded a large number of PPIs focused on the future, and they were divided into two main groups. On the one hand, some interventions asked participants to just think about and envision a future in a positive way. They were categorized as optimism-based interventions. On the other hand, another set of PPIs focused more on establishing goals and the pathways to reach them. These were all operationalized as a more comprehensive group that we called goal-based interventions.

The results show that PPIs focused on a future time orientation are effective in enhancing subjective and psychological well-being compared to controls (placebo, waiting list, no intervention). The effect size found for both

domains of well-being was moderate. These results are quite similar to those found in other recent meta-analyses (Boehlmeijer et al., 2016; Bolier et al., 2013; Malouff & Schutte, 2016), but lower than the results found in the meta-analysis by Sin and Lyubomirsky (2009). Regarding the characteristics of the interventions, we found that future-oriented PPIs implemented for more than one month showed significantly greater effects on psychological well-being than shorter interventions. These results coincide with the effects found by Sin and Lyubomirsky (2009). Furthermore, two other moderators showed a trend. On the one hand, the way the intervention was delivered demonstrated that interventions applied in group format generated higher effect sizes on subjective well-being than individual or self-help formats. On the other hand, the type of intervention showed that goal-based interventions were more effective in improving subjective well-being than optimism-based interventions. It is noteworthy that follow-up effects were not explored because only one study included further assessments beyond three months. The exploration of follow-up effects of PPIs is especially important in order to study the maintenance of the results in the long-term and analyze ways to address hedonic adaptation (Diener, Lucas & Scollon, 2006).

Different implications can be extracted from the results obtained in this meta-analysis. First of all, the results support the notion that the temporal orientation of the PPIs should be taken into account when designing studies to test their efficacy (Wellenzohn et al., 2016). Our moderator analyses show that future-oriented PPIs can be more beneficial if they are implemented for more than one month. Furthermore, comprehensive studies of past-oriented and present-oriented PPIs would make it possible to explore whether they have similar efficacy and work in similar ways. Additionally, although this is not directly derived from our meta-analysis, it is suggested that when combining different PPIs into a "package", strategies should be integrated that cover the three time frames (past-present-future) because each of them might be triggering specific working mechanisms (Quoidbach et al., 2015; Wellenzohn et al., 2016).

Effectiveness of BPS in the enhancement of optimism and other well-being variables in the general population



The effectiveness of the BPS exercise in the general population is discussed in Chapter 3. In order to present a clear summary of the findings, we divided the results into two parts: a) single-session effects and b) post-training and follow-up effects.

Single-session effects of the BPS exercise

Chapter 3 collects data about the efficacy of the exercise in improving optimistic thinking and affect after one session. Results for future expectations showed that the BPS was able to generate a significant improvement in positive and negative expectations compared to controls, with moderate effect sizes for both subscales. These results agree with prior studies and support the consolidated efficacy of the BPS as an inductor of optimism (Malouff & Schutte, 2016).

Regarding mood, the results did not show statistically significant differences between conditions in improving affect. However, positive affect showed a significant moderate effect size for the participants in the BPS condition, whereas a non-significant small effect size was obtained for the control condition. The absence of significant differences might be explained by the effects found in the control condition. Thus, although the BPS exercise generated a moderate effect size for positive affect, the control condition also produced a change to a lesser extent. Thus, the similar pattern produced by both conditions, along with the fact that samples were relatively small, could be masking the existence of significant results. Findings on this matter are mixed because some studies have found BPS to be an effective inductor of positive mood compared to controls (Meevissen et al., 2011; Peters et al., 2010), and others found no difference (Odou & Vella-Brodrick, 2013). As Loveday and colleagues (2016) suggest, these differences might be explained by the choice of different populations and the different delivery methods.

Furthermore, the results show that the effects produced by the BPS on optimism are more noticeable than the effects on mood. This difference could be attributed to the temporal orientation of the exercise, in such a way that positive emotions oriented to the future, such as optimism or hope, would be more likely to be impacted, as suggested in other studies (Peters, Meevissen & Hansen, 2013).

Post-training and follow-up effects of the BPS exercise

Regarding the effects obtained after the repeated practice of the BPS exercise, the results did not show significant interaction effects across the different time assessments for any of the outcome measures. However, the time effect was significant, indicating that there was a change over time in the different outcome measures for the whole sample. When observing the within-group effect sizes at post-training, the two conditions followed a similar pattern of improvement, but the effect sizes were higher for the BPS condition. Generally speaking, the most impacted measure was future expectations, both the positive and negative subscales. This result agrees with prior literature showing that expectancy measures are more sensitive to change than other measures such as dispositional optimism (Malouff & Schutte, 2016). In addition, the results showed that the effects observed at post-training disappeared at second follow-up. This could be the result of hedonic adaptation to the exercise (Diener, Lucas & Scollon, 2006), as the continued practice of the same exercise could produce a habituation to the effects and, therefore, no further benefits.

The disappearance of the effects of the BPS exercise in the long-term are in line with other studies (Lyubomirsky, Dickerhoof, Boehm & Sheldon, 2011) and allow us to infer that there was hedonic adaptation. Thus, some authors suggest that factors such as variety in the exercises could help to avoid adaptation to these exercises (Lyubomirsky & Layous, 2013).

Performing the two exercises produced adequate levels of satisfaction and usefulness. Regarding the use of technology, participants also reported adequate levels of satisfaction and usefulness of positive technology. The Book of Life was rated significantly higher in terms of satisfaction and usefulness, compared to the use of the PowerPoint in the control condition. These results suggest that participants enjoyed and took advantage of the practice of the exercise through positive technologies.

Effectiveness of BPS in the enhancement of optimism and other well-being variables in patients diagnosed with eating disorders



Single-session effects of the BPS exercise

Chapter 4 includes data about the short-term benefits of the BPS exercise on improving affect and future expectations in patients with eating disorders. The design was the same one used with the general population. The results showed that participants in the BPS condition exhibited statistically significant improvements in future expectations, compared to controls. These effect sizes were moderate for both subscales. In the case of affect, differences between conditions were not significant. However, in the BPS condition positive affect showed a significant small effect size, although this effect size did not differ much from the effect size of the control condition. Furthermore, these benefits obtained from the exercise were not moderated by the severity of the ED pathology or the neuroticism of the patients. Generally speaking, these results followed a similar pattern to the results obtained in the study with the general population (Chapter 3). The similar effects obtained in both studies in the short-term suggest that BPS is effective in promoting optimistic thinking in healthy adults and in patients with eating disorders.

Post-training and follow-up effects of the BPS exercise

The results at post-training and at follow-up produced by the BPS exercise in patients with eating disorders are depicted in Chapter 5. In this regard, results did not show significant differences when comparing the effects produced by the two conditions on any of the measures. However, the results showed a significant time effect, indicating a change in the scores for the whole sample. Thus, the average of the within-group effect sizes for the different measures showed that participants in the BPS condition showed higher effect sizes for the different outcome measures across the different time frames, compared to controls. More specifically, the largest effect sizes were found in the follow-up for future expectations, affect, and self-efficacy. It is important to note that in the follow-up, the participants continued to receive psychological treatment, which might explain the larger effect sizes for both conditions, compared to the prior study. However,

the effect sizes were more pronounced in the BPS condition, even reaching a large effect size for positive expectations.

These results allow us to infer that ED patients receiving psychological treatment, along with the practice of the BPS exercise, obtained greater improvements in positive functioning measures than controls. This finding agrees with the notion that PPIs could be used as supporting tools in the recovery process of patients with ED by promoting positive functioning factors (Tchanturia et al., 2015; Góngora, 2014).

Another aspect to be discussed is the impact on dispositional measures, optimism, and hope. Focusing on dispositional optimism, the effects were more perceptible in the follow-up, and these effects were more pronounced in the BPS condition. In this regard, it is possible that the benefits produced by the practice of the BPS would take effect gradually. In the case of dispositional hope, a similar pattern is observed, but the effects were slightly better at post-training. On the whole, both measures showed small effect sizes, and they were less impacted by the exercise than the other measures. The lower impact on these measures could be explained by the fact that both are measuring stable traits that can hardly be changed (Pietrowsky & Mikutta, 2012).

Regarding the satisfaction and usefulness levels of the exercises and the positive technologies used, participants reported that they felt satisfied and found them useful. The design of therapeutic procedures well rated by patients with ED is important in order to promote adherence to the treatment, given that conventional treatments of these conditions often are not aligned with patients aims, resulting in high drop-out (Wonderlich et al., 2012).

Narratives of the BPS essay developed by patients with ED

The second part of the analyses presented in Chapter 4 shows the qualitative analysis of the narratives developed by patients with ED when they are asked to think about their best possible future. This analysis was based on the Nun study, which coded the emotional experiences expressed in a series of narratives and classified them as positive, neutral, or negative (Danner, Snowdon & Friesen, 2001). More specifically, five categories of information were computed: 1) Length of the essay: Total number of words; 2) Positivity: ratio of positive



elements out of a total number of positive, neutral, and negative elements; 3) Positive goals balance: ratio of positive goals out of a total number of positive, neutral, and negative goals; 4) Negative goals balance: ratio of negative goals out of the total number of positive, neutral, and negative goals; 5) Total of goals: Summation of the number of positive, neutral, and negative goals. The results show that the level of ED pathology was not related to positivity or the positive goals balance. By contrast, the level of ED pathology was negatively correlated with the total number of goals, such that the greater the ED pathology, the fewer the goals established. Furthermore, the number of goals was positively correlated with the length of the essay. This correlation showed a moderate level. To a lesser extent, the level of ED pathology was positively correlated with the balance of negative goals, that is, goals expressed as the absence of problems or suggesting the difficulty of attaining these goals. These results were interesting with regard to the prospective future held by these patients. On the one hand, the results obtained in this study support the finding that patients with more ED pathology find it more difficult to imagine a prospective future beyond recovery (Malson et al., 2011). On the other hand, establishing goals as the absence of specific problems (negative goals) tends to contribute to focusing on what is wrong, instead of encouraging the formation of constructive alternatives (Snyder et al., 2006). Indeed, a greater proportion of avoidance goals has been related to lower levels of well-being (Elliot, Sheldon & Church, 1997).

In this vein, the structural equation model analysis conducted in Chapter 5 shows a fully mediated relationship between the level of ED pathology and improvements in negative expectations produced by the BPS exercise at post-training. This relationship is mediated by the total number of goals and the length of the essay. Thus, this analysis pointed out that more severe patients developed a BPS essay with fewer goals and fewer details, resulting in less improvement in negative expectations.

As a whole, these results suggest that patients with higher levels of ED symptoms presented more difficulties when envisaging a better future, and these difficulties can be related to the benefits obtained from the exercise, so that these patients would benefit less from the exercise. As suggested by some authors, there is a need for interventions designed to develop a self beyond recovery and

promote optimistic thinking (Stein & Corte, 2007; Stein et al., 2013). Therefore, these patients could benefit from more detailed training in thinking about their BPS (we only provided a short instruction). In this regard, the inclusion of hope therapy components or goal-setting skills could enhance the sense of agency and the ability to imagine a broader and more positive future (Snyder et al., 2006).

In any case, the results suggest that, although the level of ED pathology limits the development of an adequate BPS, patients obtain benefits from the exercise. This is relevant at a clinical level because our results show that BPS can be useful in the recovery process of patients diagnosed with ED. Moreover, it is essential to develop useful strategies, such as the BPS, in patients with anorexia nervosa and eating disorder not otherwise specified (69% of our sample), given that no treatment has shown consolidated efficacy for these specific disorders. Therefore, further studies should test the efficacy of other PPIs in improving positive functioning variables that can buffer the negative impact of these disorders and help in the recovery process (Brannan & Petrie, 2011; Harrison et al., 2015).

Feasibility of a positive psychology group program in patients with ED

The last part of this thesis (Chapter 6) consisted of the development of a 4-week positive psychology group program in an inpatient eating disorder service. This program was developed as a way to tackle the observed difficulties that ED patients had when developing their BPS. It included different future-oriented PPIs, namely, the best possible self and hope therapy components. Moreover, the exercise was developed through a positive technology system (i.e. Book of Life). In addition, although circumstantial, this program is in line with some of the moderators found in our meta-analysis because it is applied in group format and includes instructions about how to establish goals and the pathways to reach them. Both factors might help to maximize the possible benefits produced by the program.

Generally speaking, results showed possible benefits of the program in terms of optimistic thinking and affect. Coinciding with the results obtained in the



prior studies, future expectations were more impacted than affect, suggesting that interventions focused on the future might have a greater impact on future-oriented positive states (i.e. optimism, hope; Peters et al., 2013). Furthermore, the program was very well rated by patients, and they enjoyed participating. The positive technology also received high ratings of satisfaction and usefulness, suggesting that the development of the exercise through this technology produced an engaging user experience. Results about acceptability are important because it has been related to the effectiveness of interventions (de Graff et al., 2009).

Overall, this study shows the feasibility of a positive psychology group program applied in a mental health service. It outlines a first approach to the development of new interventions designed to develop a self beyond the eating disorder and promote optimistic thinking in patients with ED (Stein & Corte, 2007).

Strengths and Limitations

In light of the results obtained across the different studies conducted in the present thesis, general strengths and limitations will be discussed in this section.

Regarding the strengths of the study, we differentiate between methodological and clinical issues.

Methodological Strengths

- In order to conduct and report the meta-analysis properly, we have carefully followed the PRISMA guidelines, for example, providing an introduction with references to participants, intervention comparisons, and outcomes (PICO), and reporting the search strategy.
- The meta-analysis only included studies from peer-reviewed journals, which allow us to ensure a certain level of quality. Although no study met all the quality criteria, our results did not find a relationship between the quality of the results and the effect sizes of the studies.

- The design and report of both Randomized Controlled Trials has followed most of the CONSORT guidelines, for example, random allocation and concealment, intent to treat analyses, or the protocol registration of both studies.

Clinical Strengths

- Our meta-analysis addresses one important question in the positive psychology field, namely, the temporal orientation of PPIs. The results make a contribution to the exploration of the underlying mechanisms through which these PPIs work.
- Given that the studies with general and clinical populations are Randomized Controlled Trials (RCTs) and have followed similar designs, it is possible to compare the effects produced by the BPS exercise in both studies.
- Both RCTs include a 3-month follow-up, which allows us to explore the effects over a longer period, compared to other studies with this type of intervention that do not explore the effects in the follow-up (as shown in the meta-analysis).
- To the best of our knowledge, this thesis includes the first Randomized Controlled Trial that tests the efficacy of a PPI in a sample of young patients diagnosed with Eating Disorders. In this regard, this thesis makes a first contribution from the positive psychology field to improving interventions in this population in order to obtain better therapeutic results, given the limited efficacy of conventional treatments (Pike et al., 2015).
- This thesis has explored the quality of the BPS narratives developed by patients with ED conditions, following a systematic analysis based on prior studies (Danner et al., 2001). This is crucial for understanding how the BPS exercise works in individuals with ED. Thus, it provides a tested methodology for assessing the quality of this future thinking.



- The inclusion of ICTs in both conditions (especially the complex technology used for the BPS exercise) is an original contribution of this thesis compared to conventional implementation methods (Peters et al., 2010; Sheldon & Lyubomirsky, 2006).
- Given the difficulties that patients with ED have when envisioning a better future (Malson et al., 2011), the group intervention aims to address these specific needs of the patients. Thus, a combination of future-oriented PPIs designed to promote a positive view of the future is included.

Along with the strengths, this study also presents some limitations that have to be discussed.

- Given the absence of a consolidated terminology related to PPIs with a future orientation, our search string included a broad range of keywords. Even so, it is possible that we have overlooked other interventions and exercises oriented to the future when developing the search strategy.
- In both RCTs power sample was not previously calculated, resulting in a reduced sample size, which also reduces the statistical power of the analyses and, in turn, affects to the generalization of the results. However, our sample sizes were established based on prior studies (n=54, Meevissen et al., 2011), and they found significant differences between conditions. The within-groups effect sizes found in other studies with BPS range from small to moderate (Meevissen et al., 2011; Sheldon & Lyubomirsky, 2006), which are similar to the ones obtained in our studies.
- The control condition used in both studies might not have been totally innocuous, given that some benefits were observed, which might have contributed to the absence of significant differences between conditions. Furthermore, the control condition focused on the past 24 hours, whereas the BPS exercise was oriented towards

the future. However, this control condition has been used in many studies that test the efficacy of the BPS (King, 2001; Meevissen et al., 2011; Sheldon & Lyubomirsky, 2006). Further studies should include a control condition with the same temporal orientation in order to compare the results.

- The outcome measures might not be covering the potential impacts produced by the BPS exercise in the different studies. In this regard, we have included some trait-measures included in similar studies that can hardly be changed by low-intensity exercises (Liau et al., 2016; Pietrowsky & Mikutta, 2012).
- The design used in both RCTs keeps us from drawing conclusions about the role positive technology played in both studies because we have not compared the effects to a condition without technologies.
- In the studies with eating disorder samples, we did not collect important information such as the Body Mass Index or the stage of treatment. These data might be considered potential moderators of the efficacy of the interventions.

Future directions and recommendations for research

These limitations can also lead to future studies designed to address these deficiencies and some of the concerns arising from each study.

First of all, the meta-analysis emphasizes the importance of conducting and reporting controlled studies following CONSORT statements. In this regard, it reveals that most of the studies do not report crucial methodological issues, or their explanations are misleading, which impedes proper assessment of whether these studies meet quality criteria. In addition, our results have shown the existence of publication bias, which indicates that studies with null or negative effects have not been published. Thus, it is important to encourage researchers to publish these types of studies in order to reduce publication bias in the field of well-being promotion.



Second, given the good results stemming from the qualitative analysis conducted with the BPS narratives, it would be important to explore the narratives developed by healthy adults and individuals with other health conditions. This would make it possible to analyze potential differences and obtain deeper insights into the underlying mechanisms of the intervention and who can benefit more from it.

Third, our qualitative analysis has revealed that patients with ED have an impairment in their ability to think about a better future. This relationship could be explained by the fact that our thoughts about a possible future are influenced by the current perception of our abilities and limitations, that is, our self-concept (Erikson, 2007). Therefore, future studies should explore whether the self-concept of patients with ED has an influence on the BPS they develop. Alternatively, further studies could also explore whether the continued practice of the Best Possible Self exercise has an influence on self-concept. The importance of this relationship lies in the fact that self-concept functions as a core vulnerability to the formation and persistence of these disorders (Stein & Corte, 2007).

Fourth, the encouraging results produced by the BPS in patients with ED support the notion that PPIs can act as support tools in the treatment of these conditions (Brannan & Petrie, 2011). In this vein, more controlled studies are needed in order to test the potential benefits of other PPIs and analyze which ones produce more benefits in patients diagnosed with eating disorders.

Fifth, along the same lines, future studies should explore the efficacy of the BPS and other PPIs in improving positive functioning measures in patients with different serious mental disorders. These findings would provide greater insights about how PPIs can be used as tools in the rehabilitation and recovery of individuals suffering from psychiatric disorders.

Sixth, chapters 3 to 6 of this thesis have shown that the individuals reported high levels of satisfaction and usefulness of the positive technologies used across the different studies. However, our studies do not allow us to explore the role that positive technologies can play in the implementation of PPIs in terms of efficacy or engagement. Further studies should compare the effects of the BPS

exercise implemented through positive technology to a condition without technologies in order to explore the contribution of these technologies.

Seventh, the possible benefits extracted from the implementation of the group program with ED inpatients (Chapter 6) open the door to testing its efficacy in a randomized clinical trial with a larger sample. In this regard, this study should test whether the combination of this group program with the Treatment as Usual (TAU) of ED patients produces greater improvements in positive functioning variables, compared to patients who only receive the TAU.



CONCLUSIONS

Below it is presented a summary of the main findings obtained from this thesis in reference to the objectives and hypothesis established.

1. According to the studies included in our meta-analysis, future-oriented PPIs are effective in improving subjective and psychological well-being levels, compared to controls.
2. Applying future-oriented PPIs for more than one month can maximize the benefits produced by these specific PPIs.
3. Best Possible Self is effective in inducing short-term effects of optimistic thinking and positive affect in healthy adults.
4. Best possible self is effective in inducing short-term effects of optimistic thinking, and it can act as a complementary tool for the improvement of positive functioning measures in patients with ED who are receiving ongoing treatment.
5. Despite its future orientation, the practice of the BPS over time has not been shown to be powerful enough to produce significant changes in other positive functioning measures related to the future, such as dispositional optimism and hope, compared to controls.
6. Patients with more ED pathology establish fewer goals when they are encouraged to envision their best possible future.
7. The relationship between the severity of the ED pathology and the improvement in future expectations produced by the BPS at post-training is fully mediated by the number of established goals and the length of the essay. Thus, more severe patients develop a BPS with fewer goals and fewer details, resulting in less improvement in negative expectations.
8. Overall, positive technologies used across the different studies were well rated, suggesting that they were attractive and engaging for the users.

9. The data collected from the ED inpatients who attended the positive psychology group program suggest that it can be implemented in mental health settings, and that possible benefits can be obtained from it.



References

- Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive psychology interventions: a meta-analysis of randomized controlled studies. *BMC public health, 13*, 119.
- Brannan, M. E., & Petrie, T. A. (2011). Psychological well-being and the body dissatisfaction–bulimic symptomatology relationship: An examination of moderators. *Eating behaviors, 12*(4), 233-241.
- Danner, D. D., Snowdon, D., & Friesen, W. V. (2001). Positive emotions in early life and longevity: findings from the nun study. *Journal of personality and social psychology, 80*(5), 804-13.
- de Graff, L. E., Huibers, M. J., Riper, H., Gerhards, S. A., & Arntz, A. (2009). Use and acceptability of unsupported online computerized cognitive behavioral therapy for depression and associations with clinical outcome. *Journal of affective disorders, 116*(3), 227-231. Doi: 10.1016/j.jad.2008.12.009.
- Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: revising the adaptation theory of well-being. *American psychologist, 61*(4), 305.
- Elliot, A. J., Sheldon, K. M., & Church, M. A. (1997). Avoidance personal goals and subjective well-being. *Personality and Social Psychology Bulletin, 23*(9), 915-927.
- Erikson, M. G. (2007). The meaning of the future: Toward a more specific definition of possible selves. *Review of General Psychology, 11*(4), 348.
- Góngora, V. C. (2014). Satisfaction with life, well-being, and meaning in life as protective factors of eating disorder symptoms and body dissatisfaction in adolescents. *Eating disorders, 22*(5), 435-49.
- Harrison, A., Al-Khairulla, H., & Kikoler, M. (2015). The feasibility, acceptability and possible benefit of a positive psychology intervention group in an adolescent inpatient eating disorder service. *The Journal of Positive Psychology, Feb*, 1-11.
- King, L. A. (2001). The Health Benefits of Writing about Life Goals. *Personality and Social Psychology Bulletin, 27*(7), 798-807.
- Liau, A. K., Neihart, M. F., Teo, C. T., & Lo, C. H. M. (2016). Effects of the Best Possible Self Activity on Subjective Well-Being and Depressive Symptoms. *Asia-Pacific Education Researcher, 25*(3), 473-481.
- Loveday, P. M., Lovell, G. P., & Jones, C. M. (2016). The Best Possible Selves Intervention: A Review of the Literature to Evaluate Efficacy and Guide Future Research. *Journal of Happiness Studies, 1-22*.
- Lyubomirsky, S., & Layous, K. (2013). How Do Simple Positive Activities Increase Well-Being? *Current Directions in Psychological Science, 22*(1), 57-62.
- Lyubomirsky, S., Dickerhoof, R., Boehm, J. K., & Sheldon, K. M. (2011). Becoming happier takes both a will and a proper way: an experimental longitudinal intervention to boost well-being. *Emotion, 11*(2), 391-402.

-
- Malouff, J. M., & Schutte, N. S. (2016). Can psychological interventions increase optimism? A meta-analysis. *The Journal of Positive Psychology*, Aug, 1-11.
- Malson, H., Lin, B., Clarke, S., Treasure, J., Anderson, G., & Kohn, M. (2011). Un/imaginable future selves: A discourse analysis of in-patients' talk about recovery from an «eating disorder». *European Eating Disorders Review*, 19(1), 25-36.
- Meevissen, Y. M. C., Peters, M. L., & Alberts, H. J. E. M. (2011). Become more optimistic by imagining a best possible self: effects of a two week intervention. *Journal of behavior therapy and experimental psychiatry*, 42(3), 371-8.
- Odou, N., & Vella-Brodrick, D. A. (2013). The efficacy of positive psychology interventions to increase well-being and the role of mental imagery ability. *Social Indicators Research*, 110(1), 111-129.
- Peters, M. L., Flink, I. K., Boersma, K., & Linton, S. J. (2010). Manipulating optimism: Can imagining a best possible self be used to increase positive future expectancies? *The Journal of Positive Psychology*, 5(3), 204-211.
- Peters, M. L., Meevissen, Y. M., & Hanssen, M. M. (2013). Specificity of the Best Possible Self intervention for increasing optimism: Comparison with a gratitude intervention. *Terapia psicológica*, 31(1), 93-100.
- Pietrowsky, R., & Mikutta, J. (2012). Effects of Positive Psychology Interventions in Depressive Patients — A Randomized Control Study. *Psychology*, 3(12), 1067-1073.
- Pike, K., Gianini, L., Loeb, K., & Le Grange, D. (2015). Treatments for Eating Disorders. En P. Nathan y J. Gorman (Eds.), *A guide to treatments that work*, 4th ed (pp. 641-658). New York, NY, USA: Oxford University Press.
- Quoidbach, J., Mikolajczak, M., & Gross, J. J. (2015). Positive interventions: An emotion regulation perspective. *Psychological Bulletin*, 141(3), 655.
- Sheldon, K. M., & Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *The Journal of Positive Psychology*, 1(2), 73-82.
- Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: a practice-friendly meta-analysis. *Journal of clinical psychology*, 65(5), 467-87.
- Snyder, C. R., Lehman, K. A., Kluck, B., & Monsson, Y. (2006). Hope for rehabilitation and vice versa. *Rehabilitation Psychology*, 51(2), 89.
- Stein, K. F., & Corte, C. (2007). Identity impairment and the eating disorders: Content and organization of the self-concept in women with anorexia nervosa and bulimia nervosa. *European Eating Disorders Review*, 15(1), 58-69.
- Stein, K. F., Corte, C., Chen, D. G. D., Nuliyalu, U., & Wing, J. (2013). A randomized clinical trial of an identity intervention programme for women with eating disorders. *European Eating Disorders Review*, 21(2), 130-142.
-



- Tchanturia, K., Dapelo, M. A. M., Harrison, A., & Hambrook, D. (2015). Why Study Positive Emotions in the Context of Eating Disorders? *Current Psychiatry Reports, 17*(1).
- Weiss, L. A., Westerhof, G. J., & Bohlmeijer, E. T. (2016). Can we increase psychological well-being? The effects of interventions on psychological well-being: a meta-analysis of randomized controlled trials. *PLoS One, 11*(6), e0158092.
- Wellenzohn, S., Proyer, R. T., & Ruch, W. (2016). Humor-based online positive psychology interventions: A randomized placebo-controlled long-term trial. *The Journal of Positive Psychology, 11*(6), 584-594.
- Wonderlich, S., Mitchell, J. E., Crosby, R. D., Myers, T. C., Kadlec, K., LaHaise, K., ... & Jorgensen, M. (2012). Minimizing and treating chronicity in the eating disorders: a clinical overview. *International Journal of Eating Disorders, 45*(4), 467-475.

ANEXOS

Anexo 1 - Search string of the meta-analysis

PUBMED

("future expectancies"[All fields] OR "goals"[MeSH Terms] OR "goal"[All Fields] OR expectation[All fields] OR "positive affect"[All fields] OR "hope"[MeSH Terms] OR "hope"[All Fields] OR "purpose in life"[All fields] OR "optimism"[MeSH Terms] OR "optimism"[All Fields] OR "happiness"[MeSH Terms] OR "happiness"[All Fields] OR "well-being"[All Fields]) OR "quality of life"[All fields] OR "life satisfaction"[All fields] OR joy[All fields] OR "life purpose"[All fields] OR "motivation"[MeSH Terms] OR "motivation"[All Fields] OR "achievement"[MeSH Terms] OR "achievement"[All Fields] OR aspiration[All fields] OR "positive mood"[All fields] OR positivism[All fields]) AND ("hope the*" [All fields] OR "positive psychology"[All fields] OR "future thinking"[All fields] OR "goal setting"[All fields] OR "goal orientation"[All fields]) AND Clinical Trial[ptyp]

PSYCNET

Any Field: " future expectancies" OR expectation OR " positive affect" OR hope OR " purpose in life" OR optimism OR happiness OR well-being OR " quality of life" OR " life satisfaction" OR " joy" OR " life purpose" OR motivation OR achievement OR aspiration OR " positive mood" OR positivism OR goal AND Any Field : " hope the*" OR " positive psychology" OR " possible sel*" OR " future thinking" OR " goal setting" OR " goal orientation" AND Methodology: Treatment Outcome/Clinical Trial

WEB OF SCIENCE

TS=("future expectancies" OR expectation OR "positive affect" OR hope OR "purpose in life" OR optimism OR happiness OR well-being OR "quality of life" OR "life satisfaction" OR "joy" OR "life purpose" OR motivation OR achievement OR aspiration OR positive mood OR positivism OR goal) AND TS=("hope the*" OR "positive psychology" OR "possible sel*" OR "future thinking" OR "goal setting" OR "goal orientation") Refined by: DOCUMENT TYPES: (CLINICAL TRIAL)

Anexo 2 - Cartel para realizar el llamamiento de los participantes



EL PODER DE LA IMAGINACIÓN



“La felicidad no es un ideal de la razón, sino de la imaginación” Kant

PARTICIPA DE UN NOVEDOSO ESTUDIO DE INVESTIGACIÓN

Participa en nuestro estudio de investigación que puede tener una influencia positiva en tu estado de ánimo y pon a prueba tu poder de imaginación

Si tienes entre 18 y 70 años y deseas participar puedes ponerte en contacto con nosotros en estudiolabpsitec@gmail.com o al: **964387645**

estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645
estudiolabpsitec@gmail.com 964387645

Anexo 3 - Carta de aprobación del estudio en población general por parte del comité de ética de la Universitat Jaume I



Beatriz Tomás Mallén, secretaria de la Comisión Deontológica de la Universitat Jaume I de Castelló de la Plana,

CERTIFICA: Que la Comisión Deontológica de la Universitat Jaume I ha emitido informe favorable sobre el procedimiento de investigación titulado: “Una intervención positiva para la promoción del optimismo y el bienestar físico y psicológico mediante la utilización de TICs”, cuya investigadora principal es Cristina Botella Arbona, por considerar que cumple las normas deontológicas exigidas.

Castellón de la Plana, 26 de febrero de 2013

Anexo 4 - Carta de aprobación del estudio en población clínica por parte del comité de ética del Consorcio Hospitalario Provincial de Castellón



PSICOLOGO CLINICO
D. GINES LLORCA

Ref: DG NR15 14-24-10

ASUNTO: DICTAMEN SOBRE PROYECTO DE INVESTIGACIÓN

Tras la reunión de la Comisión de Investigación el 26 de septiembre de 2014, esta Dirección le informa de la evaluación del Proyecto de Investigación:

“Una intervención positiva para la promoción del optimismo en población con trastornos de la conducta alimentaria mediante la utilización de TICs

Del que se acuerda aprobar el proyecto de investigación.

Atentamente.

Castellón, 24 de octubre de 2014

EL DIRECTOR GERENTE

Fdo. D. Rafael Arce Caparrós



Anexo 5 - Consentimiento informado para participar en el estudio



Servicio de Asistencia Psicológica
- Universitat Jaume I -



CONSENTIMIENTO INFORMADO

Tu participación en este estudio implica la realización de un ejercicio de imaginación. El objetivo de este ejercicio es analizar la influencia de la imaginación en el estado de ánimo.

Diversas investigaciones han encontrado que estos ejercicios pueden tener una influencia positiva en el estado de ánimo.

En el estudio habrá dos grupos, la asignación a cada uno de los grupos será aleatoria.

Acepto de manera libre mi participación en el estudio:

“El poder de la Imaginación”

Entiendo la naturaleza y el propósito de los procedimientos que entraña el presente estudio que se me han comunicado previamente.

Entiendo que la investigación está diseñada para promover el conocimiento científico y que la Universitat Jaume I de Castellón usará los datos que yo le proporcione sólo y exclusivamente para esta investigación.

Entiendo que los datos que proporcione serán considerados como confidenciales. Mi nombre o cualquier otra información no se harán públicos en ninguna presentación o publicación de la investigación. El procesamiento y uso de mis datos anónimos se llevará a cabo y se almacenará en papel y en formato electrónico durante 15 años.

Entiendo que puedo retirarme del estudio en cualquier momento, sin dar ningún tipo de explicación y sin ningún tipo de inconveniente para mí.

Nombre y apellidos en MAYÚSCULAS: _____

DNI: _____

Fecha y Lugar: _____

Firma del participante: _____

Anexo 6 - Consentimiento informado para participar en el taller de 4 sesiones. Versión para padres

CONSENTIMIENTO INFORMADO
PADRES

Yo padre/madre/tutor con DNI..... acepto que mi hijo/a participe en un PROGRAMA DE 4 SESIONES DIRIGIDO A FOMENTAR LAS EMOCIONES POSITIVAS E INFLUIR EN LA MEJORA DEL ESTADO DE ÁNIMO y asimismo, doy mi conformidad para que los datos que se deriven de la participación de mi hijo/a puedan ser utilizados en futuras investigaciones, salvaguardando siempre el derecho a la intimidad y a la confidencialidad de la información obtenida, lo que implica que en ningún caso se podrá deducir de los datos la identidad personal de mi hijo/a.

El taller se realizará en la Unidad de Día de Trastornos de la Conducta alimentaria de Castellón, perteneciente al Consorcio Hospitalario Provincial de Castellón de la Plana.

En Castellón, a de de 201

Fdo.,

Apellidos y Nombre:

Anexo 7 - Manual de instrucciones para la condición BPS



Servicio de Asistencia Psicológica
- Universitat Jaume I -



MANUAL DE USO

“El poder de la Imaginación”



LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retransmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

¡Bienvenido!

Muchas gracias por participar en nuestro estudio de investigación “El poder de la Imaginación”. Las instrucciones que te brindaremos a continuación, te ayudarán paso a paso a mejorar tus habilidades de visualización.

Es importante que sepas que toda la información es tratada de manera absolutamente confidencial y todo el material que generes a partir del ejercicio que te propondremos será leído únicamente por ti.

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retransmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

Mi “mejor yo”

Has sido asignado al azar para participar en una condición en la que vas a pensar sobre tu “mejor yo posible”. Con este posible mejor “yo” queremos que te imagines a ti mismo en un futuro en el que todo se ha desarrollado de la mejor manera posible. Te has esforzado mucho y has conseguido alcanzar todos los objetivos que te habías planteado en tu vida. Puedes imaginártelo como el hecho de haber conseguido todos tus sueños y de haber desarrollado todas tus potencialidades.

Dentro de un momento, te voy a pedir que pienses en la mejor manera posible en que tu vida podría desarrollarse en 4 ámbitos (personal, social, profesional y de la salud), con el objetivo de dirigir las decisiones que estás tomando en la actualidad. Probablemente nunca has pensado acerca de ti mismo de esta manera, pero las investigaciones sugieren que este método puede tener una influencia positiva en tu estado de ánimo. Queremos animarte a que continúes pensando en ti e imaginándote de esta manera durante las próximas cuatro semanas.

Para poder determinar y guiar la construcción de tu mejor posible “yo”, durante los próximos 25 minutos, vas a pensar y a escribir las metas, habilidades y deseos que te gustaría adquirir en un futuro lejano dentro de cada uno de los cuatro ámbitos que hemos mencionado. Tienes que unificarlos en una especie de diario personal. A lo largo de este proceso, piensa en habilidades realistas y en metas/deseos que sean posibles de alcanzar y que te gustaría adquirir o lograr en el futuro.

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retransmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

Ámbito personal

Piensa en objetivos que te gustaría conseguir en el terreno de lo personal (por ejemplo unas habilidades físicas y psicológicas determinadas).

Ámbito profesional

Piensa en objetivos que te gustaría conseguir en el terreno de lo profesional, es decir, relacionados con tu trabajo (por ejemplo un puesto determinado, logros profesionales, nivel de experiencia. También puede ser la adquisición de habilidades, etc.).

Ámbito de las relaciones personales

Piensa en objetivos que te gustaría adquirir en el terreno de las relaciones con los demás (por ejemplo, relaciones y contacto con tus seres queridos, amigos, colegas. También puede ser el hecho de realizar actividades en grupo dentro de tu entorno social).

Ámbito de la salud

Piensa en objetivos que te gustaría adquirir en el terreno de tu salud, es decir, relacionados con tu estado físico y psicológico (por ejemplo, llevar adelante hábitos de salud saludables, ser capaz de hacer frente a los problemas de salud que pudieran aparecer, estar activo e implicado en tu vida, etc.)

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retromisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

Ahora, me gustaría que escribas, de la manera más detallada posible, cuál es tu futuro ideal. Puedes usar las metas que acabas de construir como guía. Cuando describas tus pensamientos, intenta activar todos tus sentidos, emociones y percepciones y haz de todo ello una historia personal.

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retrasmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

Para finalizar, repasa en el “Libro de la Vida” lo que has escrito, vuelve a ver las imágenes que has elegido o la música que has seleccionado, e imagínate durante 5 minutos ese “Mejor Yo Posible” que quieres ver realizado en un futuro...

Te animamos a que continúes pensando en ti e imaginándote de esta manera durante las próximas semanas. Puedes volver a leer lo que has escrito y a mirar los elementos que has utilizado, cuantas veces lo desees. Incluso puedes continuar modificándolos, escribiendo e incluyendo tus propias imágenes y todo lo que desees...

¡No olvides realizar este ejercicio por lo menos 5 minutos al día durante los próximos 30 días!

...Céntrate en ti e imagina tu mejor yo posible...

Anexo 8 - Manual de instrucciones. Condición control



Servicio de Asistencia Psicológica
- Universitat Jaume I -



MANUAL DE USO

“El poder de la Imaginación”



LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retransmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

¡Bienvenido!

Muchas gracias por participar en nuestro estudio de investigación “El poder de la Imaginación”. Las instrucciones que te brindaremos a continuación, te ayudarán paso a paso a mejorar tus habilidades de visualización.

Es importante que sepas que toda la información es tratada de manera absolutamente confidencial y todo el material que generes a partir del ejercicio que te propondremos será leído únicamente por ti.

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retransmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

Mis actividades diarias

Has sido asignado al azar para participar en una condición en la que vas a prestar mayor atención a las actividades que realizas diariamente en tu vida. Esto quiere decir que vas a pensar más en aquellas actividades de tu vida diaria que normalmente pasan desapercibidas, como por ejemplo, reuniones, clases, conversaciones, pensamientos típicos que tienes durante el día, etc. Utiliza tu agenda de las últimas 24 horas como guía. Este ejercicio te ayudará a identificar más fácilmente áreas problemáticas que puedes tener en tu vida y a actuar para mejorarlas.

Probablemente nunca has pensado acerca de ti mismo de esta manera, pero las investigaciones sugieren que este método puede tener una influencia positiva en tu estado de ánimo. Queremos animarte a que continúes pensando en ti e imaginándote de esta manera durante las próximas cuatro semanas.

Para ayudarte a determinar y guiar en lo que centrarte, trabaja de acuerdo a la siguiente estructura. Piensa en tu agenda de las últimas 24 horas y repásala lentamente. Piensa en las actividades, reuniones, etc. y profundiza en las conversaciones, discusiones, pensamientos o en el estado de ánimo que puedes haber tenido.

Durante los próximos 20 minutos te pedimos que escribas tus pensamientos. Cuando describas tus pensamientos, intenta activar todos tus sentidos, sensaciones y percepciones y haz de todo ello una historia personal.

Mis actividades diarias

Para finalizar, repasa lo que has escrito, y piensa durante 5 minutos en las actividades que has realizado....

Te animamos a que continúes pensando en las actividades que realizas durante las próximas semanas. Puedes volver a leer lo que has escrito cuantas veces lo desees. Incluso puedes continuar modificándolo...

¡No olvides realizar este ejercicio por lo menos 5 minutos al día durante los próximos 30 días!

...Continúa pensando en ti e imaginándote de esta manera durante las próximas semanas...

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retransmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

Anexo 9 - Entrevista de admisión



Servicio de Asistencia Psicológica
- Universitat Jaume I -



ENTREVISTA DE ADMISIÓN

(LabPsitec, 1995)

1. DATOS PERSONALES

Nombre: _____ Apellidos: _____

Edad y fecha de nacimiento: _____ Sexo: _____

Estado Civil: _____

DNI: _____

Dirección: _____

Población: _____ CP: _____

Tfnos.: _____

Profesión: _____ Nivel de estudios: _____

2. ¿Tiene algún problema importante económico, legal o familiar en la actualidad? (Deudas, órdenes de embargo, trámites de divorcio, custodia de niños, juicios pendientes...)

3. ¿Ha tenido algún problema psicológico en su vida? ¿Ha recibido algún tipo de tratamiento? (Especificar)

4. ¿Padece alguna enfermedad o problema físico (aparato cardiovascular, respiratorio)? ¿Toma alguna medicación? (En el caso de participantes con fibromialgia, además de ella)

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retrasmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

Anexo 10 - Instrumentos de evaluación utilizados



Servicio de Asistencia Psicológica
- Universitat Jaume I -



ESCALA DE AFECTO POSITIVO Y NEGATIVO (PANAS)

(Watson, Clark y Tellegen, 1988)
(LabPsiTec 2010)

A continuación se indican una serie de palabras que describen sentimientos y emociones. Lee cada una de ellas y contesta hasta qué punto sueles sentirte HABITUALMENTE de la forma que indica cada expresión.

Generalmente me siento:

1 Nada o casi nada 2 Un poco 3 Bastante 4 Mucho 5 Muchísimo

	NADA O CASI NADA	UN POCO	BASTANTE	MUCHO	MUCHÍSIMO
1. Interesado/a por las cosas	1	2	3	4	5
2. Estresado/a, Tenso/a	1	2	3	4	5
3. Emocionado/a, Ilusionado/a	1	2	3	4	5
4. Disgustado/a, Molesto/a	1	2	3	4	5
5. Con energía, con vitalidad	1	2	3	4	5
6. Culpable	1	2	3	4	5
7. Asustado/a	1	2	3	4	5
8. Hostil	1	2	3	4	5
9. Entusiasmado/a	1	2	3	4	5
10. Orgullosa/a (de algo), Satisfecho/a conmigo mismo/a	1	2	3	4	5
11. Irritable, malhumorado/a	1	2	3	4	5
12. Despejado/a, Despierto/a	1	2	3	4	5
13. Avergonzado/a	1	2	3	4	5
14. Inspirado/a	1	2	3	4	5
15. Nervioso/a	1	2	3	4	5
16. Decidido/a	1	2	3	4	5
17. Atento/a (a las cosas), Concentrado/a	1	2	3	4	5
18. Intranquilo/a, Inquieto/a	1	2	3	4	5
19. Activo/a	1	2	3	4	5
20. Con miedo, Miedoso/a	1	2	3	4	5

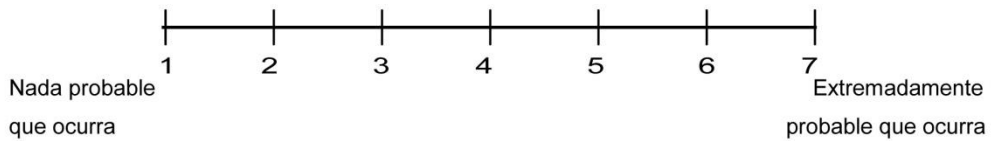
LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retromisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

SUBJECTIVE PROBABILITY TASK (SPT)

(Macleod, 1996)

Conteste rodeando con un círculo la alternativa que mejor refleje la probabilidad en la que crees que pueden ocurrirte las siguientes experiencias, teniendo en cuenta la siguiente gradación:



	1	2	3	4	5	6	7
1. Tendrás un serio desacuerdo serio con un buen amigo							
2. Las personas te admirarán							
3. Tendrás problemas de salud							
4. Tomarás una decisión de la que te arrepentirás							
5. Te sentirás incomprendido							
6. Tendrás mucha energía y entusiasmo							
7. Te irá bien en las actividades que realices							
8. Te culparán por cosas que han salido mal							
9. Lograrás las cosas que te has propuesto							
10. Serás víctima de un delito							
11. Alguien cercano a ti te rechazará							
12. Las cosas no resultarán como habías esperado							
13. No le gustarás a los demás							
14. Estarás en forma y gozarás de buena salud							
15. La gente pensará que eres monótono y aburrido							
16. Tendrás muchos buenos momentos con amigos							
17. Podrás soportar fácilmente la presión							
18. La gente pensará que eres un fracaso							
19. Tu mente estará muy alerta y centrada en tus objetivos							

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retrasmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

20. Tus amigos te excluirán							
21. Tendrás un accidente							
22. Cometerás muchos errores							
23. Irás muy atrasado en tu trabajo							
24. No podrás confiar en nadie							
25. Te sentirás cansado y apático							
26. Harás amistades buenas y duraderas							
27. La gente se burlará de ti							
28. Decepcionarás a una persona cercana							
29. Le gustarás a las personas que conozcas							
30. No podrás sobrellevar tus responsabilidades							

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retransmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

LOT-R

(Scheier, Carver, y Bridges, 1994; Otero, Luengo, Romero, Gómez y Castro, 1998)

Las siguientes preguntas se refieren a como Usted ve la vida en general. Después de cada pregunta, díganos si Usted está de acuerdo o en desacuerdo. No hay respuestas correctas o incorrectas—solo nos interesa su opinión.

5 = Estoy completamente de acuerdo

4 = Estoy parcialmente de acuerdo

3 = No estoy ni de acuerdo ni en desacuerdo

2 = Estoy parcialmente en desacuerdo

1 = Estoy completamente en desacuerdo

1. En tiempos difíciles, suelo esperar lo mejor.	1	2	3	4	5
2. Me resulta fácil relajarme.	1	2	3	4	5
3. Si algo malo me tiene que pasar, estoy seguro de que me pasará.	1	2	3	4	5
4. Siempre soy optimista en cuanto al futuro.	1	2	3	4	5
5. Disfruto un montón de mis amistades.	1	2	3	4	5
6. Para mí es importante estar siempre ocupado.	1	2	3	4	5
7. Rara vez espero que las cosas salgan a mi manera.	1	2	3	4	5
8. No me disgusto fácilmente.	1	2	3	4	5
9. Casi nunca cuento con que me sucedan cosas buenas.	1	2	3	4	5
10. En general, espero que me ocurran más cosas buenas que malas.	1	2	3	4	5

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retrasmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

INVENTARIO DE DEPRESIÓN DE BECK (BDI-II)

(Sanz, Navarro y Vázquez, 2003)

Instrucciones: Este cuestionario consiste en 21 grupos de afirmaciones. Por favor, lea con atención cada uno de ellos y, a continuación, señale cual de las afirmaciones de cada grupo describe mejor el modo en el que se ha sentido **DURANTE LAS 2 ÚLTIMAS SEMANAS, INCLUYENDO EL DÍA DE HOY**. Rodee con un círculo el número que se encuentre escrito a la izquierda de la afirmación que haya elegido. Si dentro del mismo grupo, hay más de una afirmación que considere igualmente aplicable a su caso, señálela también. **Asegúrese de leer todas las afirmaciones dentro de cada grupo antes de efectuar la elección.**

<p>1. Tristeza</p> <p>0 No me siento triste habitualmente. 1 Me siento triste gran parte del tiempo 2 Me siento triste continuamente. 3 Me siento tan triste o tan desgraciado que no puedo soportarlo.</p> <p>2. Pesimismo</p> <p>0 No estoy desanimado sobre mi futuro 1 Me siento más desanimado sobre mi futuro que antes. 2 No espero que las cosas mejoren 3 Siento que mi futuro es desesperanzador y que las cosas solo empeorarán</p> <p>3. Sentimientos de Fracaso</p> <p>0 No me siento fracasado 1 He fracasado más de lo que debería 2 Cuando miro atrás, veo fracaso tras fracaso 3 Me siento una persona totalmente fracasada</p> <p>4. Pérdida de placer</p> <p>0 Disfruto de las cosas que me gustan tanto como antes 1 No disfruto de las cosas tanto como antes. 2 Obtengo muy poco placer de las cosas con las que antes disfrutaba. 3 No obtengo ningún placer de las cosas con las que antes disfrutaba.</p>	<p>5. Sentimientos de Culpa</p> <p>0 No me siento especialmente culpable 1 Me siento culpable de muchas cosas que he hecho o debería haber hecho 2 Me siento bastante culpable la mayor parte del tiempo 3 Me siento culpable constantemente</p> <p>6. Sentimientos de Castigo</p> <p>0 No siento que este siendo castigado. 1 Siento que puedo ser castigado 2 Espero ser castigado. 3 Siento que estoy siendo castigado</p> <p>7. Insatisfacción con uno mismo</p> <p>0 Siento lo mismo que antes sobre mi mismo 1 He perdido confianza en mi mismo 2 Estoy decepcionado conmigo mismo. 3 No me gusto</p> <p>8. Auto-Críticas</p> <p>0 No me critico o me culpo más que antes 1 Soy más crítico conmigo mismo de lo que solía ser. 2 Critico todos mis defectos 3 Me culpo por todo lo malo que me sucede.</p>
--	--

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retromisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

9. Pensamientos o deseos de suicidio

- 0 No tengo ningún pensamiento de suicidio.
- 1 Tengo pensamiento de suicidio pero no los llevaría a cabo.
- 2 Me gustaría suicidarme.
- 3 Me suicidaría si tuviese la oportunidad.

10. Llanto

- 0 No lloro más de lo que solía hacerlo
- 1 Lloro más de lo que solía hacerlo
- 2 Lloro por cualquier cosa
- 3 Tengo ganas de llorar continuamente, pero no puedo.

11. Agitación

- 0 No estoy más inquieto o agitado que de costumbre.
- 1 Me siento más inquieto o agitado que de costumbre.
- 2 Estoy tan inquieto o agitado que me cuesta estar quieto.
- 3 Estoy tan inquieto o agitado que tengo que estar continuamente moviéndome o haciendo algo.

12. Pérdida de Interés

- 0 No he perdido el interés por otras personas o actividades
- 1 Estoy menos interesado que antes por otras personas o actividades
- 2 He perdido la mayor parte de mi interés por los demás o por las cosas.
- 3 Me resulta difícil interesarme en algo

13. Indecisión

- 0 Tomo decisiones más o menos como siempre
- 1 Tomar decisiones me resulta más difícil que de costumbre
- 2 Tengo mucha más dificultad en tomar decisiones que de costumbre
- 3 Tengo problemas para tomar cualquier decisión

14. Inutilidad

- 0 No me siento inútil
- 1 No me considero tan valioso y útil como solía ser
- 2 Me siento inútil en comparación con otras personas
- 3 Me siento completamente inútil

15. Pérdida de energía

- 0 Tengo tanta energía como siempre
- 1 Tengo menos energía de la que solía tener
- 2 No tengo suficiente energía para hacer muchas cosas
- 3 No tengo suficiente energía para hacer nada

16. Cambios en el patrón de sueño

- 0 No experimento ningún cambio en mi patrón de sueño
- 1a Duermo algo más de lo habitual
- 1b Duermo algo menos de lo habitual
- 2a Duermo mucho más de lo habitual
- 2b Duermo mucho menos de lo habitual
- 3a Duermo la mayor parte del día
- 3b Me despierto 1 o 2 horas más temprano y no puedo volver a dormirme

17. Irritabilidad

- 0 No estoy más irritable de lo habitual
- 1 Estoy más irritable de lo habitual
- 2 Estoy mucho más irritable de lo habitual
- 3 Estoy irritable continuamente

18. Cambios en el apetito

- 0 No he experimentado ningún cambio en mi apetito
- 1a Mi apetito es algo menor de lo habitual
- 1b Mi apetito es algo mayor de lo habitual
- 2a Mi apetito es mucho menor que antes
- 2b Mi apetito es mucho mayor que antes
- 3a He perdido completamente el apetito
- 3b Tengo ganas de comer continuamente

19. Dificultad de concentración

- 0 Puedo concentrarme tan bien como siempre
- 1 No puedo concentrarme tan bien como habitualmente
- 2 Me cuesta mantenerme concentrado en algo durante mucho tiempo
- 3 No puedo concentrarme en nada

20. Cansancio o fatiga

- 0 No estoy más cansado o fatigado que de costumbre
- 1 Me canso o fatigo más fácilmente que de costumbre
- 2 Estoy demasiado cansado o fatigado para hacer muchas cosas que antes solía hacer.
- 3 Estoy demasiado cansado fatigado para hacer la mayoría de las cosas que antes solía hacer

21. Pérdida de Interés en el Sexo

- 0 No he notado ningún cambio reciente en mi interés por el sexo
- 1 Estoy menos interesado por el sexo de lo que solía estar.
- 2 Estoy mucho menos interesado por el sexo ahora
- 3 He perdido completamente el interés por el sexo

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, rettransmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

ESCALA GENERAL DE AUTOEFICACIA

(Sherer, Madux, Mercandante, Prentice-Dum, Jacobs y Rogers, 1982)

	Nunca me ocurre	Me ocurre alguna vez	Me ocurre bastantes veces	Me ocurre muchas veces	Siempre me ocurre
1. Si algo parece muy complicado ni siquiera me molesto en intentarlo.	0	1	2	3	4
2. Evito tratar de aprender cosas nuevas cuando parecen demasiado difíciles.	0	1	2	3	4
3. Cuando intento aprender algo nuevo, enseguida desisto si no tengo éxito pronto.	0	1	2	3	4
4. Cuando hago planes, estoy seguro de que puedo cumplirlos.	0	1	2	3	4
5. Si no puedo hacer un trabajo a la primera, sigo intentándolo hasta que lo consigo	0	1	2	3	4
6. Cuando tengo que hacer algo desagradable, me dedico a ello hasta que lo acabo.	0	1	2	3	4
7. Cuando decido hacer algo enseguida me pongo a ello.	0	1	2	3	4
8. El fracaso hace que lo intente con más fuerza.	0	1	2	3	4
9. Cuando me marco metas importantes para mí, raramente lo consigo.	0	1	2	3	4
10. No me siento capaz de enfrentarme a la mayoría de los problemas que acontecen en mi vida.	0	1	2	3	4
11. Cuando aparecen problemas inesperados, no los manejo muy bien.	0	1	2	3	4
12. Me siento inseguro acerca de mi capacidad para hacer cosas.	0	1	2	3	4

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retransmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

Escala Esperanza Rasgo

(Snyder, et. al., 1996)

Lea cada ítem cuidadosamente. Utilice la escala y señale el número que mejor describa cómo se encuentra.

- | | |
|---------------------------|------------------------------|
| 1. Definitivamente falso. | 5. Ligeramente verdadero |
| 2. Mayormente falso. | 6. Algo verdadero |
| 3. Algo falso. | 7. Mayormente verdadero |
| 4. Ligeramente falso | 8. Definitivamente verdadero |

1. Puedo pensar en muchas maneras de salir de un problema.	1	2	3	4	5	6	7	8
2. Persigo mis metas con energía.	1	2	3	4	5	6	7	8
3. Me siento cansado la mayor parte del tiempo.	1	2	3	4	5	6	7	8
4. Hay muchas maneras en torno a cualquier problema.	1	2	3	4	5	6	7	8
5. Soy fácilmente vencido en una discusión.	1	2	3	4	5	6	7	8
6. Puedo pensar muchas maneras de lograr las cosas de la vida que son importantes para mí.	1	2	3	4	5	6	7	8
7. Me preocupo por mi salud.	1	2	3	4	5	6	7	8
8. Aun cuando otros se desaniman, sé que puedo encontrar una forma de resolver el problema.	1	2	3	4	5	6	7	8
9. Mis experiencias anteriores me han preparado bien para mi futuro.	1	2	3	4	5	6	7	8
10. He tenido bastante éxito en mi vida.	1	2	3	4	5	6	7	8
11. En general me encuentro preocupado por algo.	1	2	3	4	5	6	7	8
12. Consigo las metas que me he programado.	1	2	3	4	5	6	7	8

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retrasmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

E.A.T.-26**(Jorquera, Botella-Garneria, Guillen, Marco, Baños, Botella y Perpiñà, 2006)**

	Nunca	Casi nunca	Algunas veces	Bastantes veces	Casi siempre	Siempre
1. Me gusta comer con otras personas						
2. Procuro no comer aunque tenga hambre						
3. Me preocupo mucho por la comida						
4. A veces me he "atracado" de comida, sintiendo que era incapaz de parar de comer						
5. Corto mis alimentos en trozos pequeños						
6. Tengo en cuenta las calorías que tienen los alimentos que como						
7. Evito, especialmente, comer alimentos con muchos hidratos de carbono (por ejemplo: pan, arroz, patatas, etc.)						
8. Noto que los demás preferirían que yo comiese más						
9. Vomito después de haber comido						
10. Me siento muy culpable después de comer						
11. Me preocupa el deseo de estar más delgado/a						
12. Piensa en quemar calorías cuando hago ejercicio						
13. Los demás piensan que estoy demasiado delgado/a						
14. Me preocupa la idea de tener grasa en el cuerpo						
15. Tardo en comer más que las otras personas						
16. Procuro no comer alimentos con azúcar						
17. Como alimento de régimen						
18. Siento que los alimentos controlan mi vida						
19. Me controlo en las comidas						
20. Noto que los demás me						

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retrasmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

presionan para que coma						
21. Paso demasiado tiempo pensando y ocupándome de la comida						
22. Me siento incómodo/a después de comer dulces						
23. Me comprometo a hacer régimen						
24. Me gusta sentir el estómago vacío						
25. Disfruto probando comidas nuevas y sabrosas						
26. Tengo ganas de vomitar después de las comidas						

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retromisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.

EPQ-R-N

(Generós Ortet y cols., 1997)

INSTRUCCIONES:

Por favor, conteste cada pregunta redondeando sobre el SÍ o el NO que le siguen. No hay respuestas correctas o incorrectas, ni preguntas con trampa. Trabaje rápidamente y no piense demasiado en el significado exacto de las mismas.

1. ¿Su estado de ánimo sufre altibajos con frecuencia?	SÍ	NO
2. ¿Se siente a veces desdichado sin motivo?	SÍ	NO
3. ¿Es una persona irritable?	SÍ	NO
4. A menudo, ¿se siente harto/a?	SÍ	NO
5. ¿Tiene a menudo sentimientos de culpabilidad?	SÍ	NO
6. ¿Diría de sí mismo que es una persona nerviosa?	SÍ	NO
7. ¿Es usted una persona sufridora?	SÍ	NO
8. ¿Diría de sí mismo que es una persona tensa o muy nerviosa?	SÍ	NO
9. ¿Se siente a menudo apático/a y cansado/a sin motivo?	SÍ	NO
10. ¿A menudo siente que la vida es muy monótona?	SÍ	NO
11. ¿Sufre de los "nervios"?	SÍ	NO
12. ¿A menudo se siente solo?	SÍ	NO

LABPSITEC, 2012. Castellón de la Plana, España.

Este material es propiedad de Labpsitec. Queda prohibida la reproducción, retrasmisión, copia o cesión por cualquier medio, total o parcial de la información que contiene sin la autorización expresa de los propietarios.