Spotlight on eudaimonia and depression. A systematic review of the literature over the past 5 years

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Background and aim: Recent investigations pointed out to the important role of well-being in influencing physical and mental health, with robust findings for the dimension of depression. The aim of this systematic review is to provide an updated summary of articles focused on eudaimonia and depression, including psychosocial interventions that addressed both issues.

Method: The literature search was performed by entering the keywords: “eudaimonia” OR “eudaimonic well-being (EWB)” and “depression” and by limiting to “journal article” and to the English language. To be included in this, review articles had to present at least one EWB measure and one depression measure, and had to investigate young and adult populations, including populations with mental health disorders. Articles were excluded if they were published before 2014.

Results: Thirty-four articles were included, with a total of 81,987 participants. About the majority of participants were recruited in two twin studies, followed by college students, and by adults belonging to the general and clinical populations. Sixteen different instruments assessed eudaimonia, being Ryff’s psychological well-being scale the most frequently used. The most used instrument for assessing depression was the Depression Anxiety Stress Scale, followed by Center for Epidemiological Studies Depression Scale. The studies confirmed the robust, inverse correlation between eudaimonia and depression, which was only partially explained by genetic common factors and which was mediated by other factors, as self-compassion, personality traits, and defense mechanisms. Various interventions were found to be effective both in promoting eudaimonia and in addressing depression, ranging from cognitive-behavioral therapy, acceptance and commitment therapy, mindfulness, to positive psychotherapy.

Conclusion: Clinicians, counselors, and practitioners can select different strategies to promote EWB and to address depression. The findings also suggest the need for a larger consensus on the definition of eudaimonia and on the specific measure(s) to evaluate it in different populations and in different life stages.

Keywords: eudaimonia, depression, well-being, recovery, adulthood, mental health

Introduction
The recent, growing research in positive psychology has focused on the domains of health and well-being and it distinguished between the hedonic approach and the eudaimonic one.\textsuperscript{1–4} The concept of hedonic or subjective well-being refers to the pursuit of pleasure and the presence of a sense of life satisfaction.\textsuperscript{5,6} The concept of eudaimonic well-being (EWB), on the other hand, refers to optimal human
functioning and the endeavor to achieve meaningful goals in life.\textsuperscript{2,4} It is referred to in the literature also as psychological well-being (PWB),\textsuperscript{1,2} or personal expressiveness,\textsuperscript{7} self-realization,\textsuperscript{8} meaning in life,\textsuperscript{9} or engaged/full life,\textsuperscript{10,11} among others. Huta and Waterman\textsuperscript{4} distilled eleven models with comprehensive measures of EWB, which included those referring to orientations, goals, and motivations and those involving emotional, cognitive, and social well-being components. According to Huta and Waterman, the model of EWB that received more consensus is the one proposed by Ryff,\textsuperscript{2} which encompasses six interrelated dimensions: autonomy, purpose in life, positive relations, self-acceptance, personal growth, and environmental mastery. On the same vein, Waterman and Ryan, and Huta and Deci\textsuperscript{8} described eudaimonia as the capacity to develop oneself over time, by cultivating specific personal characteristics such as autonomy and self-determination, positive interpersonal functioning, and a sense of mastery in managing life circumstances. On the other hand, Steger et al\textsuperscript{9} emphasized the dimension of meaning, which gives a sense of purpose to daily activities. Another different definition of eudaimonia derives from the model of “full life”,\textsuperscript{11} where the dimension of meaning is linked to the one of life engagement, as opposed to the “empty life”, where meaning and engagement are lacking.

However, a comprehensive and unique approach to eudaimonia is not available in the current positive psychology literature. Furthermore, the term “eudaimonia” has become scientifically recognized and used in psychological literature only very recently.\textsuperscript{3} This term has been generally applied to investigate the global “optimal” or “positive” functioning of individuals.\textsuperscript{2,4} Under the EWBumbrella, thus, investigators measured and addressed either Ryff’s model,\textsuperscript{1,2} or Waterman’s\textsuperscript{7} or Ryan et al’s one,\textsuperscript{8} often without specific selection criteria.

Despite this variety of definitions and approaches, there is an emerging concordance in recent investigations, which points out to the important role of EWB in influencing physical and mental health. A recent review by Ryff\textsuperscript{2} documented the significant inverse association between eudaimonia and mortality, chronic illness, and adverse health outcomes. Further investigations documented the same pattern of relationships, particularly for the dimension of purpose in life.\textsuperscript{1,2,13} More recently, investigations about the genetic underpinning of EWB\textsuperscript{14,15} shed more light on the biological mechanisms involved in this protective role for health. Higher levels of EWB (but not hedonic) were found to be associated with a diminished activation of the conserved transcriptional response to adversity (CTRA) mechanism. CTRA is characterized by increased expression of genes involved in inflammation and decreased expression of genes involved in antiviral and antibody responses. Thus, individuals with high levels of eudaimonia may present a healthier profile when confronted with stress, particularly when it comes from social situations or interactions.\textsuperscript{16} This finding might also explain the strong, inverse correlations between eudaimonia and mental health.

The model of EWB proposed by Ryff,\textsuperscript{1,2} in fact, was found to be negatively associated with depression in adults\textsuperscript{17–21} older adults\textsuperscript{22–24} and adolescent populations.\textsuperscript{25–27} A pivotal longitudinal investigation\textsuperscript{28} found that individuals with initial low EWB were over twice as likely to be depressed 10 years later compared to those with higher levels, after controlling for personality, negative functioning, prior depression, demographic, economic, and physical heath variables. In clinical settings, a specific sequential psychotherapy, which combined traditional cognitive-behavioral strategies with the promotion of eudaimonia (well-being therapy), was found to reduce the risk of relapse in recurrent depression up to 6 years.\textsuperscript{18} Another study with older adults living in residential care demonstrated that one specific dimension of EWB – ie, environmental mastery – could predict up to 50% of the variance in participants’ depression.\textsuperscript{29}

Thus, a growing number of investigations suggested that EWB protects mental health, but few studies involved clinical samples.\textsuperscript{30} The few exceptions suggested that factors relating to positive psychological functioning might be involved in the psychopathological mechanisms contributing to depression,\textsuperscript{31} such as the difficulties in experiencing and maintaining positive emotions\textsuperscript{32} or specific self-judgment bias.\textsuperscript{33}

A recent systematic review\textsuperscript{30} also found that EWB was impaired in adults with depression and other psychiatric disorders, and that the specific dimension of autonomy appeared to influence patients’ motivation to seek and to adhere to treatment. The same review\textsuperscript{30} documented that the impairments in EWB may be improved by specific interventions such as acceptance and commitment therapy, mindfulness, positive psychotherapy, or other positive interventions. Other recent meta-analyses\textsuperscript{34,35} confirmed the efficacy of positive interventions – those explicitly aimed at promoting well-being – in improving well-being dimensions as well as in improving depression, or other symptoms of psychological distress. On the same vein, traditional interventions such as cognitive-behavioral therapy (CBT)
demonstrated their beneficial effects on both symptoms of
depression and on indicators of positive functioning.18,36,37
However, to the best of our knowledge, previous reviews
and meta-analyses30,34,35 addressed well-being and distress
at a more general level, without scoping into eudaimonic
dimensions and into their relationships with depression.
Eudaimonia and depression appear to be connected by
interwined mechanisms. These mechanisms rely on the
balance between positive and negative affects.38,39 If treat-
ment of symptoms induces improvement of EWB, it is
conceivable that also changes in well-being may affect the
balance of positive and negative affects and the depressive
state of individuals.40
Shedding more light on these mechanisms appears to
be fundamental, both in general and clinical populations.
Considering the availability of previous literature and
review articles2,34,35 and the rapidly growing research in
this field, an updated review on the relationship between
eudaimonia and depression is the primary aim of the pre-
sent article, which will be focused over the last 5 years.
We selected this time frame since the term eudaimonia was
systematically used in psychological literature only recently,
particularly after Ryff’s and Huta and Waterman’s reviews.2,4
In the present review, we aim to
provide an updated summary of articles focused on euda-
imonia and depression, including psychosocial interven-
tions that addressed both issues.

Method
Design
A systematic review was performed in order to extract
recently published scientific papers that dealt with mea-
ures of EWB and measures of depression in adult and
emerging adult populations. We focused on the last 5 years
(from 2014 on) in order to provide an update of the
literature on eudaimonia and depression. The present
review followed the guidelines for Preferred Reporting
Items for Systematic reviews and Meta-Analyses.41

Search method
A systematic literature search was conducted on the fol-
lowing electronic databases: EBSCO host
(PsychARTICLES, PsychINFO), PubMed, and Scopus.
The literature search was performed by entering the key-
words: “eudaimonia” OR “eudaimonic well-being” AND
“depression” and by limiting to “journal article” and to the
English language. Books, book chapters, dissertation or
unpublished manuscript and review articles were excluded. No other search method was applied. Search
strings were adapted according to the database, but spell-
ing options were not permitted, in order to limit the
results on the focus of the present review. The full search
was conducted including articles up to January 2019.
Additionally, reference lists of previous reviews or meta-
analyses were screened in order to include potentially
eligible studies.

Selection criteria
To be selected for this review, studies were required to 1) be full-text articles published in English, 2) include at least
one EWB measure AND one depression measure, 3) investi-gate adult populations, including populations with
mental health disorders. Articles were excluded if they
were 4) published before 2014, 5) study protocols, 6)
reviews, 7) validation studies, 8) qualitative investigations,
and 9) if they included older adults or aging populations
(>65 years old). This latter criterion was selected since
depression in later life has specific clinical features, which
include cognitive impairments, somatic complaints, spec-
fic treatments options, and clinical outcomes. Thus, the
clinical characteristics of depression in this life stage are
not comparable to those of other age populations, and
articles were excluded if they entirely focused on older
adults or aging populations, or community dwellers.

Search outcome
The first screening identified 365 articles. The majority
of them were extracted from EBSCO host and Scopus data-
bases. Only few articles were extracted from PubMed.
After removing duplicates, 330 publications were identi-
fied and individually assessed based on the study’s title
and the information provided in the abstract (see review
flowchart as depicted in Figure 1). Of these works, 224
papers were excluded according to the inclusion and
exclusion criteria described above, while the full texts of
106 articles were examined before the decision was made
to include them or not. Of these 106 articles, 50 papers did
not assess EWB in combination with depressive measures
and they were excluded Further ten papers were excluded
as they were published before 2014. Fourteen more papers
were excluded, as they included only older adults or aging
populations. Two additional articles were added out of
manual screening of reference list. A total of 34 papers
met all the inclusion criteria, and were included in the
present review.
**Data collection**

The titles and abstracts for the articles assessed for potential inclusion were identified and independently inspected by one reviewer, who excluded duplicates and articles that clearly did not meet inclusion criteria. All potentially relevant articles were then fully assessed by another reviewer who decided upon inclusion. Uncertainty was resolved by coming to consensus. Data were extracted using a pre-designed template (see Table 1) with the following specified headings: measure of EWB and measure of depression used, country where the study was performed, population investigated, numbers of participants, study design, main objectives, and main results with effect sizes (when available).

**Results**

Thirty-four articles were included, with a total of 81,987 participants (including adolescents/young adults and middle-aged individuals). Sixteen articles were cross-sectional (eight with a descriptive design, eight with a comparative one). Other eight articles had a longitudinal design, six articles were randomized controlled studies, and other two studies included only twins and assessed genetic variables associated with EWB and depression. (see Table 2)

**Instruments for assessing eudaimonia**

Table 3 indicates the quantitative measures used for evaluating eudaimonia. The most used one was Ryff’s PWB scale, which was applied in 13 investigations of 34. Ryff’s PWB was used in its longer version (84 items) or in its shorter ones (42 or 18 items). Some investigations applied just one dimension of the six included in the full model.

The second most used quantitative measure of eudaimonia was the Mental Health Continuum (MHC), which was used in six investigations. MHC was computed as a quantitative variable (the higher the score, the higher the well-being), or as a categorical variable for evaluating the conditions of flourishing, languishing, or moderate mental health. Flourishing was also assessed with the Flourishing Scale in two investigations.

Eudaimonia was also measured with the Meaning in Life Questionnaire in two articles, with the Pemberton Happiness Index in two articles, with the Eudaimonic and Hedonic Happiness Investigation

### Figure 1 Review flowchart.
# Table 1 Review template of eudaimonia and depression

<table>
<thead>
<tr>
<th>Eudaimonia and depression</th>
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<tbody>
<tr>
<td><strong>Author(s)</strong> (year) and country</td>
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<tr>
<td>Avsec et al (2016) Multicountry study</td>
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<td>Bartrés-Faz et al (2018) Spain</td>
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## Table 1 (Continued).

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<tbody>
<tr>
<td><strong>Author(s) (year) and country</strong></td>
<td><strong>Measurement</strong></td>
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<tr>
<td>Baselmans et al (2018) the Netherlands</td>
<td>“Anxious/Depressed” subscale of the age-appropriate survey of the Achenbach’s System of Empirical-based Assessment Cantril Ladder 10 steps: 10 indicates the best possible life, and 1 indicates the worst possible life.</td>
</tr>
<tr>
<td>Bassi et al (2017) Italy</td>
<td>Ryff PWB, 42 items Edinburgh Postnatal Depression Scale</td>
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### Table 1 (Continued).

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<thead>
<tr>
<th>Author(s) (year) and country</th>
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<th>Main objective(s)</th>
<th>Main results</th>
<th>Effect size(s)</th>
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<tbody>
<tr>
<td>Bhullar et al (2014)</td>
<td>Ryff PWB – 84 items Depression Anxiety Stress Scales-21 (DASS-21 items)</td>
<td>207 Australian university students (Mean age=30.16 years)</td>
<td>Cross-sectional, comparative design</td>
<td>To identify profiles of PWB in a sample of Australian university students and to verify if these profile membership would predict depression.</td>
<td>Profiles 1 (2% of the sample) and 2 (10% of the sample) consisted of individuals who scored very low (Profile 1) or low (Profile 2) on all six PWB scales. Profile 3 (25% of the sample) scores fell below the mean on five of the six PWB markers, but Autonomy. Individuals comprising Profiles 4 (33% of the sample) and 5 (30% of the sample) exhibited high (Profile 4) and very high (Profile 5) on all six indicators of PWB. There were significant differences between Profiles 1 and 2 and Profiles 4 and 5, with the latter groups reporting lower levels of depression.</td>
<td>Differences among profiles ranging from $\eta^2=0.46$ to 0.85 for eudaimonic well-being; $\eta^2=0.48$ for differences in depression</td>
</tr>
<tr>
<td>Bohlmeijer et al (2015)</td>
<td>Mental Health Continuum (MHC), 14 items, CES-D, 20 items</td>
<td>376 adults (mean age=42 years) with mild to moderate depressive symptoms</td>
<td>Randomized controlled trial with follow-up</td>
<td>To evaluate the impacts of a guided self-help intervention based on Acceptance and Commitment Therapy (ACT) vs waiting list on flourishing</td>
<td>ACT had a positive effect on flourishing. Baseline levels of positive mental health and decrease in depressive symptoms during treatment predicted flourishing at follow-up.</td>
<td>Not available</td>
</tr>
<tr>
<td>Brandel et al (2018)</td>
<td>Ryff’s Psychological Wellbeing Scales 42 items Edinburgh Postnatal Depression Scale</td>
<td>50 pregnant couples (n=50 fathers-to-be; n=50 mothers-to-be; age range 24–53 years)</td>
<td>Comparative and longitudinal design</td>
<td>To examine eudaimonic well-being during the transition to parenthood, considering depressive symptoms and gender differences.</td>
<td>Having a child increased well-being in both parents, but improvements were more robust for fathers. Gender differences accounted for 4.6% of the variance in postnatal eudaimonic well-being, while prenatal levels of eudaimonic well-being accounted for 70%.</td>
<td>Predictors of postnatal eudaimonic: gender: $\eta^2=0.46$ baseline PWB: $\eta^2=0.700$, gender$\times$change in depression $\eta^2=0.009$ change in depression: $\eta^2=0.002$</td>
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<tr>
<td>Brooks et al (2017) Canada</td>
<td>Elevation Experience Scale 9 items DASS 21 items</td>
<td>121 undergraduate students (mean age=21.54 years)</td>
<td>Cross-sectional, 3 experimental studies</td>
<td>To show the beneficial effect of nature contact on mood and human well-being.</td>
<td>Across three different experiments, it was found that both actual and pictorial nature contact benefitted moods, even though actual nature was more effective. Nature contact of both types decreased depression and increased eudaimonic well-being. The authors suggest to use pictured nature as an emotion management technique suitable as a clinical treatment for mood disorders.</td>
<td>Pre-post effect of setting (actual vs picture contact with nature) η²=0.116 Pre-post changes in positive affect and well-being η²=0.769 Pre-post changes in depression η²=0.112</td>
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<td>Brown et al (2015) Australia</td>
<td>Satisfaction with Life Scale (SWLS), Warwick–Edinburgh mental well-being scale (WEMWBS), CES-D</td>
<td>206 women aged 40–60, (Mean age =53.64 years)</td>
<td>Cross-sectional study</td>
<td>To test two hypothesized models of well-being of midlife women, considering well-being, depression and self-compassion</td>
<td>Psychological aspects of the menopause appear more strongly linked to well-being than physiological aspects such as menopausal stage and hot flush frequency. Self-compassion and beliefs about control of menopause are associated with well-being. No evidence found of a link between menopausal stage and depressive symptoms.</td>
<td>Not available</td>
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<tr>
<td>Browne et al (2017) Canada, USA</td>
<td>Scales of Psychological Well-being – 18 items, Mental Health Recovery Measure (MHRM); Calgary Depression Scale for Schizophrenia (CDSS)</td>
<td>404 participants (mean age =23.3 years) who had experienced a single episode of non-affective psychosis assigned to active treatment or community care</td>
<td>Randomized controlled trial</td>
<td>(1) To examine the impact of treatment on PWB and mental health recovery, (2) to examine the impact of duration of untreated psychosis (DUP) on these outcomes, and (3) to examine the relationships among these outcomes and quality of life</td>
<td>PWB and mental health recovery improved over the course of the 2-year treatment. DUP was associated with the Positive Relationships and Environmental Mastery dimensions of PWB.</td>
<td>The intervention yielded fixed effect sizes (time×group) ranging from -0.16 (PWB) to −0.013 (MHRM)</td>
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<tr>
<td>Chan et al 201564 USA</td>
<td>Meaning in Life Questionnaire (MLQ), Center for Epidemiologic Studies Depression scale (CES-D).</td>
<td>744 students (mean age=17.9 years)</td>
<td>Longitudinal study</td>
<td>To test associations between religiosity and sense of meaning and purpose and depressive symptoms.</td>
<td>Religiosity was more consistently linked with a greater sense of meaning and purpose than with fewer depressive symptoms across the transition to adulthood, suggesting that it may be particularly important for eudaimonic well-being.</td>
<td>Not available</td>
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<tr>
<td>Chaves et al (2016)67 Spain</td>
<td>Beck Depression Inventory-II Penmberton Happiness Index, Ryff PWB</td>
<td>96 adult women (mean age =52.02 years) with a DSM-IV diagnosis of major depression or dysthymia</td>
<td>Randomized controlled trial</td>
<td>To compare the efficacy of a positive psychology intervention (PPI) with a cognitive-behavioral therapy (CBT)</td>
<td>Both interventions were effective in reducing psychopathology and increasing positive functioning, but there were no significant differences in terms of depressive symptoms, nor well-being dimensions</td>
<td>Effect sizes (time × group interaction) ranged between $\eta^2=0.006$ and $0.01$ for well-being measures; and from $\eta^2=0.000$ to 0.01 for distress measures</td>
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<tr>
<td>de Manincor et al (2016)63 Australia</td>
<td>DASS 21 items Flourishing Scale 8 items Connor Resilience Scale Scale of Positive and Negative Experience (SPANE)</td>
<td>101 individuals (mean age=39.5 years) with mild to moderate depressive symptoms</td>
<td>Randomized controlled trial</td>
<td>To test the effectiveness of a 6-week individualized yoga intervention in the reduction of symptoms of depression and/or anxiety, and associated increases in mental health and well-being</td>
<td>There were statistically significant differences between yoga treatment and control group on reduction of depression and on improvement of mental well-being and resilience at post-therapy. These differences were not significant at a 6- week follow-up.</td>
<td>Adjusted mean differences (AMD) at post intervention ranged from −0.50 for depression to 0.47 for resilience to 0.27 for flourishing</td>
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<td>Dezutter et al (2014)</td>
<td>Meaning in Life-MLQ, Ryff PWB, CES-D</td>
<td>8492 university students (mean age=19.98 year)</td>
<td>Descriptive study, cluster analyses</td>
<td>To identify distinct profiles based on the dimensions of Presence of Meaning and Search for Meaning in a sample of emerging adults.</td>
<td>5 clusters were found: “High Presence–High Search”, “Undifferentiated”, “High Presence–Low Search”, “Low Presence–High Search”, and “Low Presence–Low Search”.</td>
<td>Effect sizes for differences among the clusters ranged from $\eta^2=0.05$ for depression to $\eta^2=0.17$ for eudaimonia and life satisfaction</td>
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<td>Fianco et al (2015)</td>
<td>Caregiver Burden Inventory (CBI), Depression Anxiety Stress Scale (DASS), Eudaimonic and Hedonic Happiness Investigation (EHHI)</td>
<td>91 caregivers (mean age=50.4 years)</td>
<td>Cross-sectional study</td>
<td>To investigate the association between perceived levels of burden and well-being indicators among informal caregivers.</td>
<td>Participants perceiving high burden reported higher levels of depression lower life satisfaction and lower resilience than participants perceiving low burden. Life satisfaction was the best predictor of perceived burden, while depression did not provide significant contribution.</td>
<td>Not available</td>
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<tr>
<td>Grouden and Jose (2014)</td>
<td>Eudaimonic and Hedonic Happiness Investigation (EHHI), Mental Health Continuum (MHC), The Basic Psychological Needs Scale (BPNS), Depression Anxiety Stress Scales (DASS)</td>
<td>247 individuals (Mean age =44.28 years)</td>
<td>Cross-national study</td>
<td>To examine how central sources of meaning varied according to age, gender, and level of education, and whether these sources predicted well-being differentially</td>
<td>Family was the most important source of meaning in life, followed by interpersonal relationships, personal growth and work. Differences were found by age, gender, and amount of education. Younger individuals were more likely to find personal growth meaningful, whereas older people were more likely to find standard of living and community activities meaningful.</td>
<td>Multivariate main effect of age (partial $\eta^2=0.08$), for personal growth ($\eta^2=0.03$). Main effect for educational level ($\eta^2=0.09$) on family</td>
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<td>Hallam et al (2014)77 Australia</td>
<td>Adolescent eudaimonic behaviors at age 19-20 years. DASS</td>
<td>991 young adults (age range: 19–24 years)</td>
<td>Cohort longitudinal study</td>
<td>To examine prospective relationships between adolescence eudaimonic values development and indicators of emotional competence and psychopathology in young adulthood</td>
<td>No evidence of a direct prospective relationship between adolescent eudaimonic behaviors and anxious-depressive symptoms. Findings suggest that eudaimonic values development in adolescence may indirectly reduce risk for anxious-depressive symptoms in young adulthood through a process of promoting emotional competence across emerging adulthood</td>
<td>Not available</td>
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<tr>
<td>Harris et al (2018)69 UK, USA, Australia</td>
<td>Depression Anxiety Stress Scales (DASS- 21); Ryff’s Scales of Psychological Well-being (SPWB); Adult Hope Scale (AHS)</td>
<td>88 dental hygiene students (age range 18–49) from UK and Australia</td>
<td>Cross-sectional, comparative study</td>
<td>To explore United Kingdom and Australian dental hygiene and dental therapy students’ perception of stress and well-being during their undergraduate education.</td>
<td>Purpose in life and self-acceptance positively correlated with hope agency and negatively correlated with the depression subscale of the DASS. The majority of respondents reported levels of depression, anxiety and stress to be within the normal- to-moderate range. All students reported high levels of positive well-being, with no significant differences between the 2 countries.</td>
<td>Not available</td>
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<tr>
<td>Kryza-Lacombe et al (2018)69 USA</td>
<td>Hedonic Eudaimonic Motives for Activities (HEMA) scale 9 items DASS</td>
<td>119 Undergraduate students (Mean age=21.24 years)</td>
<td>Cross-sectional study</td>
<td>To investigate hedonic and eudaimonic motives as predictors of academic achievement and negative emotional states in a sample of college students with diverse cultural and socioeconomic backgrounds</td>
<td>35 individuals (29.4%) fell into the Full Life group; 30 (25.2%) into the Eudaimonia Life group; 31 (26.1%) into the Hedonic Life group and 23 (19.3%) fell into the Empty Life group. Individuals with high levels of both Hedonia and Eudaimonia (the Full Life) had higher academic performance compared to individuals with low Eudaimonia. Eudaimonia was also significantly negatively associated with depression and stress.</td>
<td>$\eta^2=0.10$ on depression score partial $\eta^2=0.08$.</td>
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Differences among eudaimonia group on grade point average (GPA): $\eta^2=0.10$ on depression score partial $\eta^2=0.08$. |
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<td>Merrick et al (2017) UK</td>
<td>Hedonic and Eudaimonic Motives for Activities scale (HEMA-R). The Hospital Anxiety and Depression Scale (HADS).</td>
<td>99 participants from six organizations providing autism-specific adult services (years 42.2)</td>
<td>Cross-sectional, descriptive study</td>
<td>To investigate the relationships between motivational orientation (eudaimonic or hedonic), challenging behavior frequency and type and psychological impacts (anxiety, depression and life satisfaction).</td>
<td>Eudaimonic motivation significantly reduced the likelihood of anxiety while also predicted higher life satisfaction. Having high levels of eudaimonic motivation appeared to moderate the impact of weekly challenging behavior exposure on anxiety. No motivational orientation or challenging behavior factor significantly predicted depression.</td>
<td>Not available</td>
</tr>
<tr>
<td>Muñiz-Velázquez et al (2017) Spain</td>
<td>Pemberton Happiness Index (11 items) Major Depression Inventory. Material Values Scale.</td>
<td>327 Spanish consumers (mean age=38.69 years)</td>
<td>Cross-sectional, descriptive study</td>
<td>To investigate the links between psychological well-being and materialism and between depression and materialism</td>
<td>Only explicit measures of materialism were associated with self-reported happiness and depression. Specifically, increased happiness and less depressive symptoms were observed in those participants with lower explicit materialism.</td>
<td>Not available</td>
</tr>
<tr>
<td>Osafo Hounkpatin et al (2015) UK</td>
<td>Ryff Psychological Well-being (PWB) Centre for Epidemiological Studies-Depression (CES-D); Hostility : 3 item scale</td>
<td>Participants were from the Wisconsin Longitudinal Study (WLS), a cohort of 10,317 individuals (age range 53–65 years) who graduated from Wisconsin high schools in 1957</td>
<td>Longitudinal, cohort study</td>
<td>To examine how personality change relates to changes in other well-being measures such as depression, hostility, and life satisfaction in order to assess the importance of personality change for PWB over other well-being measures.</td>
<td>Personality change was significantly associated with change in psychological well-being (PWB). Moreover, personality change was more strongly related to change in PWB than changes in other well-being indicators such as depression, hostility and life satisfaction.</td>
<td>Not available</td>
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Table 1 (Continued).

<table>
<thead>
<tr>
<th>Author(s) (year) and country</th>
<th>Measurement</th>
<th>Population and sample size (mean age or age range)</th>
<th>Study design</th>
<th>Main objective(s)</th>
<th>Main results</th>
<th>Effect size(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pots et al (2014)</td>
<td>CES-D</td>
<td>151 adults (mean age=48 years) from the general population</td>
<td>Randomized controlled study</td>
<td>To evaluate a community-based mindfulness intervention vs waiting list in adults with mild to moderate depressive symptomatology</td>
<td>Significant reductions in depression, anxiety, and improvements in mindfulness and mental health were found in the mindfulness condition. These improvements were maintained at follow-up</td>
<td>Moderate effect sizes on depressive symptoms at post-treatment (d=0.50) and follow-up (d=0.40). Moderate to large effect sizes on eudaimonia at post-treatment (d=0.34); and at follow-up (d=0.56).</td>
</tr>
<tr>
<td>Quitasol et al (2018)</td>
<td>Beck Depression Inventory-II (BDI-II) Balanced Measure of Psychological Needs (BMPN)</td>
<td>51 patients with a diagnosis for major depressive disorder (mean age=35.30 years)</td>
<td>Randomized, controlled study, with a longitudinal design</td>
<td>To examine the role of psychological need fulfillment in a clinical sample undergoing treatment for major depressive disorder (CBT vs antidepressants).</td>
<td>Psychological need increased over the course of treatment and did not differ significantly between treatment conditions. Increases in psychological need were associated with decreases in depression severity over and above the effects of time, cognitive errors, and dysfunctional attitudes.</td>
<td>Not available</td>
</tr>
<tr>
<td>Ravert et al (2019)</td>
<td>Waterman Questionnaire on Eudaimonic Well-being, Ryff PWB 18 CES-D</td>
<td>8020 undergraduate students (mean age=20 years)</td>
<td>Cross-sectional study</td>
<td>To examine how sensation seeking was associated with well-being in a large, multiethnic sample of college-attending emerging adults.</td>
<td>Eudaimonic and psychological well-being were both associated with being female and with low levels of depressive symptoms. Eudaimonic and psychological well-being were found to be associated with high novelty seeking but with low intensity seeking. This latter dimension was associated with high levels of risk behavior. In contrast, novelty sensation seeking was not significantly associated with risk behavior.</td>
<td>Not available</td>
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**Table 1 (Continued).**

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<tbody>
<tr>
<td>Routledge et al (2016) 72</td>
<td>Depression, Anxiety and Stress Scale (DASS-42); 26-item COMPAS-W scale of well-being</td>
<td>1486 twins (mean age=39.79 years)</td>
<td>Cross-sectional, descriptive study</td>
<td>To examine the relationship between mental well-being and the normative range of anxiety and depression symptoms.</td>
<td>An absence of clinically significant symptoms of depression and anxiety did not necessarily indicate that an individual is flourishing. Both unique and shared genetic and environmental factors may determine why some individuals flourish in the absence of symptoms while others do not.</td>
<td>Not available</td>
</tr>
<tr>
<td>Schotanus-Dijkstra et al (2017) 51</td>
<td>14-item Mental Health Continuum MHC-SF; 8-item Flourishing Scale (FS); HADS-D</td>
<td>275 participants (mean age=48 years)</td>
<td>Randomized controlled trial, with longitudinal design</td>
<td>To examine a 9-week comprehensive positive self-help intervention with email support (TL-E) in enhancing well-being and flourishing and decreasing anxiety and depressive symptoms in a non-clinical sample.</td>
<td>At post-intervention, there were significant more improvements on mental well-being and depression in the email support group versus control group. The proportion of flourishing in the TL-E group increased from 7% to 30% after 3 months and to 34% after 6 months. All within group effects were maintained up to 12 months.</td>
<td>Effect size d for well-being measures ranged from d=0.34 to 0.69. Effect size d for depression: d=0.13</td>
</tr>
<tr>
<td>Seow et al (2016) 90</td>
<td>Positive Mental Health instrument (47 items); 8-item Patient Health Questionnaire; Global assessment of functioning (interview)</td>
<td>218 outpatients with affective disorders (38.4 years)</td>
<td>Cross-sectional study</td>
<td>To assess the level of PMH in a group of outpatients with affective disorders; to evaluate the sociodemographic and clinical correlates of PMH, and the association of PMH with life satisfaction and general functioning</td>
<td>The mean PMH total scores did not differ among groups across gender, ethnicity, education, diagnosis, and clinical status even though PMH scores varied largely within patients with depressive and anxiety disorders. PMH was associated with both life satisfaction and general functioning.</td>
<td>Not available</td>
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<th>Effect size(s)</th>
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<tbody>
<tr>
<td>Singh et al (2015) Italy, India</td>
<td>Mental Health Continuum (MHC), Depression Anxiety and Stress Scales-21, Strengths and Difficulties Questionnaire</td>
<td>539 Indian students (age range: 13–18 years)</td>
<td>Cross-sectional, descriptive study</td>
<td>To estimate the prevalence of mental health in Indian adolescents and to examine its associations with mental distress and psychosocial functioning.</td>
<td>46.4% participants were flourishing, 51.2% were moderately mentally healthy, and only 2.4% were languishing. Flourishing students reported lower prevalence of depression and adjustment difficulties, and more prosocial behavior.</td>
<td>Differences according to flourishing groups had significant effects for adjustment difficulties (partial h²=0.06) and for prosocial behaviors (partial h²=0.09)</td>
</tr>
<tr>
<td>Tecuta and Tomba (2018) Italy</td>
<td>Subjective Incompetence Scale (SIS), Beck Depression Inventory (BDI-II), Ryff Psychological Well-being Scales (PWB).</td>
<td>60 female outpatients with eating disorders (mean age=27.83 years)</td>
<td>Longitudinal study</td>
<td>To investigate subjective incompetence and whether its early modification in therapy was associated with treatment response in terms of both psychological distress and well-being.</td>
<td>Gains in three PWB dimensions (environmental mastery, purpose in life, self-acceptance) were predicted by changes in subjective incompetence and by levels of depression.</td>
<td>Partial $\eta^2$ for depression=0.318 (post-treatment)</td>
</tr>
<tr>
<td>Teismann et al (2018) Germany</td>
<td>Positive mental health scale (PMH-scale), DASS, Clinical global impression – severity scale (CGI-S);</td>
<td>130 adult outpatients (mean age=41.98 years) suffering from panic disorder, agoraphobia, or specific phobia</td>
<td>Longitudinal study</td>
<td>To evaluate the association between (1) pre-treatment positive mental health and post-treatment remission status as well as symptom severity and between (2) post-treatment positive mental health, remission status and symptom severity at a 6-month follow-up</td>
<td>Pre-treatment positive mental health was the only predictor of post-treatment symptom severity and remission status. Post-treatment positive mental health and avoidance behavior predicted symptom severity and remission status at the follow-up assessment 6 months after treatment termination.</td>
<td>Not available</td>
</tr>
<tr>
<td>Trompetter et al (2017) The Netherlands</td>
<td>Mental Health Continuum – Short Form (MHC-SF), Self-Compassion Scale 12-item, Hospital Anxiety Depression Scale (HADS)</td>
<td>349 participants, (mean age=32.88 years)</td>
<td>Cross-sectional study</td>
<td>To assess if self-compassion mediated the relationship between positive mental health and psychopathology</td>
<td>Self-compassion significantly mediated the negative relationship between positive mental health and psychopathology. Individuals with high levels of positive mental health possessed self-compassion skills that promoted resilience against psychopathology.</td>
<td>$\chi^2=0.22$ (mediation of self-compassion on positive mental health and psychopathology)</td>
</tr>
</tbody>
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Table 1 (Continued).

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<th>Population and sample size (mean age or age range)</th>
<th>Study design</th>
<th>Main objective(s)</th>
<th>Main results</th>
<th>Effect size(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walker and Lampropoulos (2014) USA</td>
<td>MHC-SF, 14 items, CES-D Behavior Activation for Depression Scale</td>
<td>94 college students (mean age =20.67 years) with mild or more depressive symptoms</td>
<td>Randomized controlled trial</td>
<td>To compare the effects of different homework assignments (CBT or positive psychology intervention) vs waiting list on mental health, symptoms and positive states</td>
<td>Homework assignments based on CBT and positive psychology were equally effective in reducing depressive symptoms and increasing positive affect compared to a control group.</td>
<td>The intervention accounted for 24% of the variance in depression. Differences between control and active treatment: Cohen's $d=1.38$</td>
</tr>
<tr>
<td>Ziadni et al (2017)</td>
<td>Ryff SPWB, CES-D, Defense Mechanisms Inventory (DMI; 4 vignettes), Ego strengths short form</td>
<td>415 participants (mean age=48.3 years)</td>
<td>Cross-sectional and longitudinal study</td>
<td>To examine interrelationships among three affect regulation constructs: alexithymia, defense mechanisms, and ego strength and their influence on well-being and depression, both cross-sectionally and over a 6-year period</td>
<td>Alexithymia and depression and well-being dimensions were inversely correlated and correlated to the use of immature defense mechanisms. Well-being dimensions were significantly associated with the use of more mature defense and with higher ego strengths. Low alexithymia, more mature defenses, and high ego strength at baseline predicted increases in well-being, but not changes in depression 6 years later, suggesting an important difference between well-being and depression in long-term outcomes.</td>
<td>Not available</td>
</tr>
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</table>
in other two articles, and with the Hedonic and Eudaimonic Motives for Activities in two articles.

Table 3 Instruments used to assess eudaimonia and depression

<table>
<thead>
<tr>
<th>Measures of eudaimonia</th>
<th>Number of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Well-being scale - PWB</td>
<td>42–54</td>
</tr>
<tr>
<td>Mental Health Continuum (MHC)</td>
<td>56</td>
</tr>
<tr>
<td>Meaning in Life Questionnaire (MLQ)</td>
<td>9</td>
</tr>
<tr>
<td>Flourishing Scale</td>
<td>52</td>
</tr>
<tr>
<td>Eudaimonic and Hedonic Happiness Investigation (EHII)</td>
<td>67</td>
</tr>
<tr>
<td>Pemberton Happiness Index</td>
<td>55</td>
</tr>
<tr>
<td>Hedonic and Eudaimonic Motives for Activities (HEMA)</td>
<td>8</td>
</tr>
<tr>
<td>Adolescents Eudaimonic Behavior – Social Capital</td>
<td>83</td>
</tr>
<tr>
<td>Balanced Measure of Psychological Needs (BMPN)</td>
<td>79</td>
</tr>
<tr>
<td>Basic Psychological Needs Scale</td>
<td>80</td>
</tr>
<tr>
<td>Cantril Ladder</td>
<td>82</td>
</tr>
<tr>
<td>COMPAS-W of well-being</td>
<td>80</td>
</tr>
<tr>
<td>Elevation Experience Scale</td>
<td>3</td>
</tr>
<tr>
<td>Orientation to happiness</td>
<td>11</td>
</tr>
<tr>
<td>Questionnaire for Eudaimonic Well-being</td>
<td>7</td>
</tr>
<tr>
<td>Warwick–Edinburgh Mental Well-being</td>
<td>81</td>
</tr>
</tbody>
</table>

Table 2 Type of studies included in the review

<table>
<thead>
<tr>
<th>Type of study</th>
<th>Number of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-sectional (comparative design)</td>
<td>68,4,5,57,69,73,74,90</td>
</tr>
<tr>
<td>Cross-sectional (descriptive design)</td>
<td>68,49,59,60,66,68,70,75</td>
</tr>
<tr>
<td>Longitudinal study</td>
<td>63,45,50,53,54,64,77,85</td>
</tr>
<tr>
<td>Twin study</td>
<td>72,76</td>
</tr>
<tr>
<td>Randomized controlled study</td>
<td>86,47,51,56,58,61,63,71</td>
</tr>
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</table>

Other nine articles assessed eudaimonia with nine additional instruments: the Balanced Measure of Psychological Needs, the Basic Psychological Needs Scale, the COMPS-W of well-being, the Elevation Experience Scale, the Orientation to Happiness Scale, the Questionnaire for Eudaimonic Well-being, the Warwick Edinburgh mental well-being scale, and the Adolescents Eudaimonic Behavior, respectively.

In conclusion, eudaimonia was assessed with 16 different quantitative measures, being Ryff’s PWB and Keyes’s MHC the most frequently used (see Table 3).

Instruments for assessing depression

Table 3 indicates the quantitative measures used for evaluating depression. The most used one was the Depression Anxiety and Stress Scale (DASS), which was applied in 42,44,49,59,63,68,69,72,73,77,85 of 34 studies. DASS was used in its complete version or by selecting only the depression subscale. The second most used quantitative measure of depression was the Center for Epidemiological Studies Depression Scale (CES-D), which was used in ten investigations.

Depression was also measured with the Hospital Anxiety and Depression Scale (HADS) in four articles with Beck Depression Inventory in three articles, and with the Edinburgh Postnatal Depression Scale in two articles.

Other five articles assessed depression with Anxiety and Depression Subscale of the Achenbach System of Empirical-based Assessment, with the Calgary Depression Scale, with the Behavior Activation for Depression Scale, with the Major Depressive Inventory, and with the Patient Health Questionnaire, respectively.

In conclusion, depression was assessed with 10 different quantitative measures (see Table 3).

Populations included

Table 4 summarizes the type and the total number of participants evaluated in the 34 selected articles. The populations included ranged from adults within the general and clinical populations, to college/ university students, to adolescents and to young adults entering adulthood. A total of 81,987 individuals were included.

Twin studies

Almost half of the total sample was recruited in two twin studies aimed at investigating the genetic underpinning of EWB and depression/negative affectivity. The first
study had a longitudinal design and was focused on examining the association between EWB and depression across the lifespan in 43,427 twins. It was found that EWB and depressive symptoms were significantly correlated and the correlation increased with age, ranging from −0.34 during childhood to −0.49 in adulthood, with the highest correlations in young adults (−0.57). Bivariate twin models revealed that shared environmental factors played an important role in explaining the relationship between eudaimonic well-being and depressive symptoms in childhood, while in adolescence and adulthood genetic factors became increasingly important.

Similarly, Routledge et al found that genetic factors contributed to about half of the phenotypic correlation between depression and anxiety symptoms and well-being (ie, 56.34%) in a sample of 1486 Australian twins who were classified into the normative levels of depression. However, authors found that two-thirds of the total variance in EWB scores was completely distinct from anxiety and depression, as measured with the DASS. Authors suggested that the majority of genetic and environmental factors influencing EWB do not impact anxiety and depressive symptoms. Moreover, authors also found a gap between the assessment of distress and the presence of optimal well-being: 93% of their twin participants were classified into the normal range of symptoms, but only 23% of them were also classified as “flourishing” on the COMPAS-W well-being scale. Authors concluded that both unique and shared genetic and environmental factors may determine why some individuals flourish in the absence of symptoms, while others do not.

Young populations, college, and university students
The second large category of population included in the present review is the one composed by college and university students. Ten different investigations focused on this category. The one including most of the college students (N=8492) assessed eudaimonia with Ryff’s scale, together with Meaning in Life Questionnaire, and depression was measured with the CES-D. College students were classified into five clusters, according to the different combination of the presence of meaning in life versus search for meaning. Individuals in the High Presence–Low Search cluster reported the highest levels of positive psychosocial functioning, as well as the lowest levels of depression. Meaning in life was measured in another investigation with 744 American college students. Also in this case, meaning in life was strongly associated with purpose in life and with depression. Importantly, authors found that religiosity was an important source of meaning and emphasized its role for promoting eudaimonia.

On the same vein, Kryza et al applied a classification of 119 undergraduate students based on their levels of eudaimonia in order to predict academic achievements and negative emotional states. Authors used the HEMA measure for identifying four groups of students: the Full Life group (scores at or above the median on both Hedonia and Eudaimonia scales), the Eudaimonia Life group (scores at or above the median on Eudaimonia, but below the median on Hedonia), the Hedonic Life group (scores below the median on Eudaimonia, but at or above the median on Hedonia), Empty Life group (scores below the median on both Hedonia and Eudaimonia scales). Individuals in the Full Life group had higher academic performance compared to students with low Eudaimonia. Eudaimonia was also significantly negatively associated with depression and stress, measured with the DASS questionnaire.

Similarly, Bhullar et al aimed at classifying 207 Australian university students in 5 clusters, according to their levels of EWB, ranging from low to very high levels in all Ryff’s six domains. Thirty percent of the sample exhibited high and very high levels on all six indicators of PWB, and they had also lower levels of depression, compared to individuals classified in low profile of EWB.

Another group of 88 Australian university students was assessed with Ryff’s scale and with DASS and was
compared to a matched group of British students. No significant differences emerged between these groups, but eudaimonia was consistently and negatively correlated to depression in both groups.

Another Canadian investigation confirmed the inverse correlations between eudaimonia and depression in 121 undergraduate students. In this case, the authors aimed at demonstrating the beneficial effect of nature on mental health. Three different experiments showed that the conditions of virtual and real contact with nature increased EWB and decreased depression (measured with the DASS).

Another study assigned 94 university students with mild to moderate depression to different treatment conditions based on homework assignment, including standard CBT or a positive psychology intervention. Homework assignments based on CBT and positive psychology were equally effective in reducing depressive symptoms and increasing EWB, compared to a waiting list (WL) control group.

Finally, the other investigation with a large multiethnic sample of college students (N=8020) aimed at examining the relationship between sensation seeking and eudaimonia. Female gender and low depressive symptoms were associated with eudaimonia, which was associated with high novelty seeking. However, novelty seeking was manifested with a low-intensity pattern, which was not correlated to risky behavior.

Eudaimonia was also assessed in two studies involving young populations, not recruited in college institutions. The first one included 539 Indian adolescents and found that 46.4% of the participants were flourishing, 51.2% were moderately mentally healthy, and only 2.4% were languishing. The flourishing Indians reported lower prevalence of depression and more prosocial behaviors. The second study included a large cohort of Australians (N=991) and, with a prospective design, it was found that eudaimonia was not directly related to the development of anxious-depressive symptoms. Rather, authors (Hallam et al) suggested that eudaimonia in adolescence may indirectly reduce the risk for anxious-depressive symptoms by promoting emotional competence across emerging adulthood.

In conclusions, eudaimonia and depression were found to be negatively correlated in young populations, and college/university students. In these age populations, the presence of high levels of eudaimonia was found to be predictive of higher academic success, of higher meaning in life, lower distress and lower risky behaviors. Furthermore, traditional CBT interventions, psychological interventions based on positive psychology or based on the contact with nature were found to be effective either in addressing depression or in promoting eudaimonia.

Adult general populations

Fourteen studies evaluated EWB and depression in the general population, including a total of 17,429 individuals.

In the largest one, a cohort of 10,317 individuals recruited in the Wisconsin Longitudinal Study was evaluated in terms of eudaimonia, depression, and personality dimensions. Over time, personality change was more strongly related to change in eudaimonia than changes in other indicators, such as depression, hostility, and life satisfaction.

In another large, international study 3690 participants were recruited in 7 different countries, and they were classified into 4 clusters, according to their levels of eudaimonia. Authors used the Orientation to Happiness questionnaire in order to classify individuals into the Full, Empty, Pleasurable, and Meaningful life groups. In all seven countries, individuals classified into the Full Life type reported the highest PWB, the highest life satisfaction, and the lowest depressive symptoms, compared to individuals in the Empty life, who reported the highest depressive symptoms and the lowest well-being.

Another cross-sectional study found that eudaimonia was associated with meaning in life in a sample of 247 individuals from New Zealand. In particular, family was the most important source of meaning in life, followed by interpersonal relationships, personal growth, and work.

In other three investigations, eudaimonia and depression were associated with materialism, self-compassion, and with ego strengths and with the use of specific defense mechanisms. In the first case, eudaimonia and depressive symptoms were measured in a group of 327 Spanish individuals. Those participants with lower explicit materialism reported more EWB and less depressive symptoms. The second study found that the relationship between EWB (measured with the MHC) and depression was mediated by participants’ levels of self-compassion. Accordingly, individuals with high levels of positive mental health possessed self-compassion skills that promoted resilience against psychopathology (measured with the HADS). The third study, which included more than 400 participants, found that depression and EWB dimensions were inversely correlated and correlated to the use of specific defense mechanisms. Eudaimonic well-being dimensions were significantly associated with the use of...
more mature defenses and with higher ego strengths. Importantly, over a 6-year time, it was found that more mature defenses and high ego strength at baseline predicted increases in EWB, but not changes in depression. These findings suggest an important difference between EWB and depression in long-term outcomes.

Two studies examined eudaimonia and depression during the transition to parenthood. The first one focused on 81 mothers and distinguished primiparous from multiparous. Their levels of depressive symptoms did not differ, nor did they change after childbirth. By contrast, after childbirth, primiparous women reported higher environmental mastery and self-acceptance than multiparous women. The second investigation focused on 50 fathers and found that their levels of eudaimonia increased after childbirth, more than those of mothers. However, at post-partum, EWB was largely predicted by pre-natal levels in both parents.

Two other studies examined two other features related to eudaimonia and depression in midlife, namely the cognitive reserve and the menopausal symptoms. In the first case, it was found that a better cognitive status was associated with a lower age, the male gender, and higher EWB in 1081 participants. Conversely, negative affectivity, including depression, anxiety, and stress, only showed an association with eudaimonia, but not with cognitive reserve or cognitive functioning. The second study included a sample of 206 Australian women assessed with the Warwick Edinburgh mental well-being and the CES-D. Psychological aspects of the menopause appeared more strongly linked to EWB than physiological aspects (such as menopausal stage and hot flush frequency). No evidence was found of a link between menopausal stage and depressive symptoms in the sample. The dimension of self-compassion was strongly associated with EWB also in this sample.

Other two studies associated eudaimonia and depression with providing help and support to others, either as a caregiver, or as a member of helping professions. The first study found that 91 caregivers with high burden reported higher levels of depression, lower life satisfaction, and lower resilience. Life satisfaction and resilience were also found to predict perceived burden. The second study involved 99 staff members of organizations providing professional help for autistic patients. The authors studied their levels of motivation with the HEMA and found that eudaimonic motivation significantly reduced the likelihood of anxiety while it also predicted higher life satisfaction. However, depression was not predicted by eudaimonic motivation. The authors recommended to test the effect of interventions in promoting eudaimonic motivation in these staff members, since they may help their assisted patients in framing psychological distress as an opportunity for personal development.

Finally, two Randomized Controlled Trial (RCT) studies evaluated the impact of a positive self-help intervention and of a community mindfulness intervention in promoting EWB and improving psychological distress in non-clinical samples. The first one showed that a 9-week positive intervention improved the proportion of flourishing individuals (N=275) from 7% to 30% after 3 months and to 34% after 6 months. The second study demonstrated significant reductions in depression, anxiety, and improvements in mindfulness and mental health in participants (N=151) treated with a mindfulness group intervention. Importantly, these improvements were maintained at follow-up.

In conclusions, the 14 articles focused on adult general populations found that eudaimonia and depression are inversely correlated. They also showed different pattern of correlations with personality factors, defense mechanisms, materialism, and cognitive reserve, among others. Eudaimonia and depression were found to be related to specific phases of life, such as becoming a parent or entering menopause. Self-compassion, resilience, and meaning in life presented a high influence on eudaimonia and in some cases, they also mediated the relationship between eudaimonia and depression.

**Adult clinical populations**

Eight investigations focused on clinical populations: four are RCT; three have a longitudinal design (pre-post intervention assessments), and one is cross-sectional. Eudaimonia and depression were assessed in 1436 individuals reporting mild to moderate depression or dysthymia, affective disorders (anxiety and depression), anxiety disorders, non-affective psychosis, or eating disorders. Most of these clinical trials relied on the concept of “mental health continuum”, where psychopathology and EWB have a reciprocal influence. Hence, targeting one may result in beneficial effect on the other, or vice-versa.

Four investigations were explicitly focused on patients with depressive disorders and they all are RCT. Chaves compared the efficacy of a positive psychology intervention with a traditional CBT in 96 patients with major...
depressive disorder or dysthymia and found that both interventions were effective in reducing psychopathology and increasing positive functioning. However, there were no significant differences in terms of depressive symptoms, nor EWB dimensions between the two treatments. In a subsequent analyses, authors documented that the only significant difference between conditions was client satisfaction, which was higher in the Positive Psychology Intervention (PPI) group. Similarly, Quitasol applied a protocol of CBT and compared its efficacy with standard antidepressant treatment in a sample of 51 depressed patients, whose psychological needs fulfillment was observed over the course of treatment. Authors found that they did not differ significantly between treatment conditions, but increases in need fulfillment during treatment were associated with decreases in depression severity. Authors suggested to dedicate more attention to the dimension of psychological need fulfillment in the treatment of depression. On the other hand, Bohlmeijer et al and de Manincor et al applied new forms of treatment for depressive patients and compared them to a WL condition. Bohlmeijer et al aimed at evaluating the impacts of a guided self-help intervention based on acceptance and commitment therapy (ACT) on promoting flourishing, measured with MHC in a sample of 376 individuals. The study found that in the ACT condition, almost 30% of the participants were flourishing, whereas this percentage was about 14% for participants in the WL. From baseline to post-intervention, 24% of the participants improved from not-flourishing to flourishing in the ACT condition, as compared to 10.3% in the WL condition. In the ACT condition, the predictors of flourishing at post-intervention were: higher level of positive mental health at baseline, lower levels of depressive symptoms at baseline along with a larger decrease in depressive symptoms during the intervention, and larger increases in psychological flexibility during the intervention. Authors suggested that ACT targets both underlying factors of psychopathology and factors of EWB and flourishing (eg, value clarification and goal-setting). Similarly, de Manincor et al found that a 6-week individualized yoga intervention significantly reduced depressive symptoms and promoted flourishing and resilience in 101 depressed patients, when compared to WL. However, these differences between treatment conditions disappeared after 6 weeks.

With a cross-sectional design, Seow et al analyzed the clinical and sociodemographic variables associated with positive mental health in a group of patients with depressive and anxiety disorders (N=2018). The study revealed that positive mental health was significantly associated with life satisfaction and general functioning even after controlling for sociodemographic and clinical variables. Emotional support was found to have a role on depressive symptoms. A younger age with early onset of the disorders was associated with lower positive mental health. However, authors reported a higher variability in positive mental health in this group of outpatients, and these data confirmed the dual model continuum of mental health.

Similarly, Teisman et al measured positive mental health in a sample of 130 patients with various anxiety disorders (phobias, panic attack, agoraphobia) and found that it was the only significant predictor of post-treatment symptom severity and remission status. Authors also applied a longitudinal evaluation and found that post-treatment positive mental health predicted symptom severity and remission status 6 months after treatment termination. The second longitudinal study aimed at evaluating the relationship between eudaimonia and recovery in a sample of 404 patients with psychosis. Authors found that the duration of untreated psychosis was associated with the dimensions of positive relationships and environmental mastery. Active treatment (compared to community care) significantly improved eudaimonia and triggered recovery in psychotic patients. Lastly, with another longitudinal design, Tecuta and Tomba evaluated EWB and depressive symptoms in a sample of 60 outpatients with eating disorders treated with CBT. Changes in depressive symptoms and in subjective incompetence predicted improvements in EWB, particularly in the dimensions of environmental mastery, purpose in life, and self-acceptance.

In conclusions, depression and eudaimonia were found to be inversely correlated in clinical populations. In these groups, the two variables were mostly studied during the course of interventions, including pharmacotherapy or psychotherapy. The treatments applied to address depression and eudaimonia were ACT, CBT, or PPT. Across studies, baseline levels of eudaimonia were significant predictors of recovery, relapse, or flourishing at post-interventions.

**Discussion**

The aim of the present systematic review was to provide an updated summary of articles that evaluated eudaimonia together with depressive symptoms. These issues have been previously investigated, and it was found that...
Eudaimonia could have a protective role for mental health, and that its absence was found to be a risk factor for developing depression. However, previous literature also highlighted the paucity of studies involving clinical populations, and the heterogeneity of assessment tools used to evaluate eudaimonia. Furthermore, it was found that interventions aimed at addressing depression also promoted eudaimonia. On the other hand, positive interventions focused on promoting eudaimonia were found to yield benefits to depressive symptoms. Another relatively new field of investigation is the common biological or genetic underpinnings that the two phenomena may share. Studies on all these issues did not reach definitive conclusions, yet.

The present review provides a first effort in order to address them, by analyzing published works in the recent scientific literature (over the past 5 years). We identified 34 articles, with a total of 81,987 participants (including adolescents/young adults and middle-aged individuals). Eight articles included clinical populations, presenting mood, anxiety, eating, and psychotic disorders. Two large, twin studies examined the genetic underpinnings of eudaimonia and depression, four studies examined eudaimonia and depression in peculiar life stages, such as adolescence, middle age, or during the transition to parenthood. Another large number of articles included young populations recruited in college/university settings. Thus, a first observation that could be drawn is that this review addresses previous limitations of the literature by exploring eudaimonia and depression in a variety of populations, including large clinical samples.

Eudaimonia was assessed mainly with the Ryff’s PWB scale, followed by the MHC. Interestingly, MHC shares the same conceptual framework of the PWB, with six items of 14 derived directly from PWB. However, the specific advantage of using MHC relied on the possibility of categorizing individuals as languishing or flourishing according to specific criteria and scores. Eudaimonia, in this case, was conceived as a state of flourishing, or a state of positive mental health. In any case, the state of flourishing was almost consistently associated with lower levels of depression or a better recovery after clinical interventions. Thus, the use of flourishing diagnoses might provide clinicians a more comprehensive understanding of an individual’s mental health, or it may be used as an indicator of recovery after clinical interventions.

However, other investigations used different models for conceptualizing eudaimonia, such as need fulfillment, orientation to happiness, or meaning in life, among others. Accordingly, individuals were categorized in different groups, such as belonging to the Full Life group, or the Eudaimonia Life group, or to the Presence of Meaning group. In any case, the results are similar across all these investigations: individuals belonging to those categories presented lower levels of depression compared to those classified into the Empty Life group, the Hedonic Life group, or the search for meaning group. Thus, these results provide confirmation to the inverse relationship between eudaimonia and depression. They also confirm the protective role of eudaimonia for mental health, across the population examined (clinical, adults, college students, etc.).

On a different level, these results also confirm the existing heterogeneity of definitions of eudaimonia and the use of different assessment instruments for its evaluation. Depression was similarly assessed with eight different tools, being the DASS the most frequently applied across the 34 studies. Unfortunately, most of the investigations assessed depression by self-report measures only, and this may limit the clinical sensitivity of the evaluation. However, the definition and the clinical characteristics of depression are well established by pre-existing clinical research. In order to be able to generalize and replicate findings on eudaimonia and its association with depression, it would be recommendable to reach for a larger consensus on the definition of eudaimonia and on its most appropriate instrument(s) of assessment.

Beyond its protective role for mental health, EWB has been recently investigated in its biological and/or genetic underpinnings, which might explain its influence on physical health as well. Two twin studies in the present review confirmed the impact of genetic variables in determining the correlations between EWB and depression. These two studies did not assess the CTRA response. However, these studies included large samples and they identified different patterns of genetic influence across life stages and between different groups of individuals, ranging from 1/3 of common genetic factors to almost 50%. In spite of this, both studies concluded by emphasizing the role of environmental factors – which become particularly important in late adulthood – for explaining most of the variability and for identifying individuals who flourish from those who do not. A better understanding of the common biological underpinnings between depression and eudaimonia is a necessary purpose for future research.
Finally, this review summarized different interventions which were found to be effective in promoting eudaimonia and in addressing depression. These interventions ranged from traditional clinical approaches—such as pharmacotherapy or cognitive-behavioral treatment—to third-generation psychotherapies—such as Acceptance and Commitment Therapy or Mindfulness. Interventions also included mind-body approaches, such as yoga therapy or contact with nature. When compared to WT or to controlled conditions, these interventions were found to be more effective, and generally they were appreciated by participants. Thus, clinicians, counselors, and practitioners can select different strategies to promote EWB and to address depressive symptoms, according to participants’ clinical status, or best preference.

Despite the updated findings reported by this review, it has also some limitations. First of all, it is possible that we may have missed in-press articles or articles not written and published in English, since research on EWB is rapidly expanding all over the world. Hence, it is to be expected that a larger number of studies will be available at a future point. Furthermore, this investigation included instruments that only measured EWB together with measures of depression. Thus, articles designed to assess other dimensions of well-being (eg, life satisfaction, positive emotions, subjective well-being, etc.) or other elements (ie, only meaning in life or resilience) were not regarded. Even though we are aware that these dimensions of positive functioning may present important relationships with depression, we opted to select measures of EWB in order to derive a more specific pattern of correlation with depression. Similarly, we excluded articles pertaining to eudaimonia and depression in older adults. Considering the important roles of these two dimensions in influencing aging processes, future review articles should address eudaimonia and depression in this specific population.

In conclusion, this review highlights the need for future research to reach more consensus on the definition of eudaimonia and on the specific measure(s) to evaluate it in different populations and in different life stages, ranging from children to middle age. Importantly, this review confirms the inverse correlations between eudaimonia and depression, and thus, its crucial role in clinical and developmental settings. As a consequence, the presence of EWB should be monitored longitudinally across different life stages, particularly when existential changes may occur (ie, from adolescence to adulthood, or during the transition to parenthood, or when entering middle age and retirement). Finally, findings of this review suggested that EWB could be promoted by different interventions, and its presence should be considered as a key clinical indicator of recovery from depression or from other mental disorders.

Disclosure
The authors have no conflicts of interest to declare in this work.

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