

Research Paper

The contribution of emotion regulation in determining individuals' profiles of positive mental health

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A B S T R A C T

Keyes' model of positive mental health (PMH) received considerable attention in recent years, but few studies associated flourishing, languishing and moderate mental health with emotion regulation (ER), that showed significant correlations with well-being and distress. The aim of this research is to add the evaluation of ER to the assessment of PMH in a group of university students, in order to obtain more accurate profiles in terms of well-being and psychological distress. 345 students were screened with the Mental Health Continuum (MHC), the Difficulties in Emotion Regulation Strategies (DERS) and with the Depression Anxiety Stress Scale (DASS) and classified according to MHC categories only, or with a cluster procedure based on MHC and DERS scores. Roc analyses were also performed. 86 participants presented severe psychological distress according to DASS and 43 had a diagnosed mental illness. Almost 60% of them were categorized under the MHC moderate mental health, while cluster analyses classified them mostly into the Impaired mental health category. Adding DERS to MHC evaluation improved the accuracy of profiling individuals according to their mental health status. This new classification offers a more straightforward strategy for identifying individuals needing mental health interventions, either focused on well-being dimensions or on ER, according to their clinical profiles.

1. Introduction

With the expansion of the positive mental health research over the past twenty years, the role of well-being has become central in the definition of mental health. Mental health does not simply equate with the absence of psychopathology/psychological distress, rather it requires the presence of well-being and of dimensions of positive functioning (Jahoda, 1958). In this case, mental well-being is considered a key component of mental health. According to Keyes' conceptualization, mental health can be defined as a specific syndrome, that can be evaluated using the Mental Health Continuum (MHC, Keyes, 2002, 2005). In this framework, high levels of well-being correspond with complete mental health (also known as the state of flourishing) characterized by positive feelings (i.e., hedonic well-being) and good social and psychological functioning (social well-being and eudaimonic well-being,

respectively). Individuals with low levels of hedonic, eudaimonic and social well-being are categorized into the "incomplete" side of the spectrum, within the condition of languishing (i.e., more vulnerable for mental illnesses). Individuals whose mental health tends to fall in between the conditions of flourishing and languishing are referred to as having moderate mental health; thus presenting with impairments in some dimensions of well-being (Keyes, 2002). Drawing upon several epidemiological studies (Keyes, 2006, 2005; Keyes et al., 2010), Keyes further explored the conditions of flourishing, languishing and moderate mental health in association with psychological distress or mental illness. He formulated the dual continua model of mental health (Keyes, 2009) where symptoms of mental illness and dimensions of well-being co-exist on two separate yet related continua. This model of mental health can be visually represented with two orthogonal axes: the horizontal one illustrates the dimensions of mental illness (from severe to

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mild and low/absent) and the vertical axis illustrates the dimension of mental well-being (from languishing to flourishing) and individuals' mental health could be determined by combining their scores on both axes. Hence, this model proposes that high levels of mental illness and mental well-being are coincidentally possible (Mason Stephens, Iasiello, Ali, van Agteren, Fassnacht 2023). As a consequence, individuals can be categorized into six different conditions: flourishing + flourishing with mental illness; moderate mental health + moderate mental health with mental illness; languishing + languishing with mental illness. This latter is considered the most serious condition because it includes the presence of high levels of psychological distress together with severe impairments in well-being. Conversely, individuals with mental illness could nevertheless presents with high levels of well-being, and have a positive psychosocial functioning, despite their clinical condition. This model highlights the need to measure both psychological distress and mental well-being together if one wishes to accurately understand and subsequently address an individual's general mental health. Recent reviews (Iasiello et al., 2020; Magalhães, 2024) provided empirical support to the psychometric robustness and the greater explanatory power of this approach in describing the mental health conditions of clinical and non clinical populations. While there is a general consensus on the utility of measuring both components of mental health profile (i.e., psychological distress and dimensions of well-being), Malghaes documented the great heterogeneity of methodologies applied and the variety of instruments used for the assessment of mental well-being and psychological distress. In this recent review, the Author reported that researchers used either cut-off scores, or cluster analyses, or latent profiles analyses, or other statistical procedures to classify individuals, besides the one proposed by Keyes. As a result, a diversity of mental health groups was identified in existing literature, ranging from the traditional Complete Mental Health (aka Positive Mental Health) condition, to other subgroups such as: Symptomatic but Content, Vulnerable, and Troubled (e.g.,c Brailovskaia et al., 2022) or Well-adjusted, Ambivalent, At risk, Distressed (Antaramian, 2015); or Flourishing, Struggling, Languishing, and Floundering (Bersia et al., 2022). Other authors described mental health groups according to the dual continua perspective (i.e., Languishing and Flourishing), and combined these categories with several diagnoses or symptom scores measured with different indicators (i.e., depression, general anxiety, social anxiety; stress, suicide ideation, burnout, etc.... (e.g., Kim et al., 2019). This great heterogeneity of methodologies, thus, resulted in inconclusive and confusing findings that may hamper the future applications of the complete mental health approach in clinical and epidemiological research.

Furthermore, most of the studies identified the groups with high well-being/low distress and the opposite one (high distress/low well-being) as the most prevalent ones (Malghaes 2024; Iasiello 2020). This finding appears to be more in line with a bipolar or dichotomous representation of well-being and distress, where psychological distress and well-being operate on a single continuum separated into two parts (Mason Stephens, Iasiello, Ali, van Agteren, Fassnacht 2023). In this case, it would be important to assess the pattern of mental well-being at various severity levels of psychological distress, as suggested by other authors within the clinical psychology (Haedey et al., 1985) and positive psychology research (Ramirez-Maestre et al., 2017; Zhao and Tay, 2023). With a large international database and a data-driven methodology, Zhao and Tay found that among different individuals' profiles, none of them had coexisting high levels of well-being and ill-being (symptomatic yet flourishing) or coexisting low levels of wellbeing and ill-being (vulnerable). The Authors have concluded that well-being and illbeing were inversely correlated, locating at opposite ends of a single bipolar continuum. Similarly, Ramirez-Maestre et al. (2017) compared flourishing indicators in college students and in individuals with chronic pain and they found the same single factor explaining well-being and negative affect in both samples. Accordingly, only two categories of mental health could be sufficient to classify individuals according to their levels of well-being and distress.

All these investigations pointed out that Keyes' categories of mental health cannot be considered as definitive and well-supported by clinical evidence. Rather, a bipolar or dichotomous classification of mental health (that includes psychological distress and mental well-being) seems to emerge more frequently in recent articles.

Furthermore, current directions in clinical psychology and psychiatry call for a transdiagnostic approach to mental health, as opposed to the traditional categorical one endorsed by DSM (Fusar-Poli et al., 2019). The transdiagnostic approach consists of focusing on underlying processes and commonalities across different mental health disorders, rather than emphasizing and assessing specific symptoms of each condition. One of the core transdiagnostic factors which has been receiving increasing attention in clinical research is emotion regulation. Different strategies used to regulate one's emotions resulted to be correlated with different psychiatric conditions, from affective disorders (Mennin et al., 2007) to eating disorders (Bydlowski et al., 2005) to personality disorders (Lynch et al., 2007). Thus, dysfunctional emotion regulation strategies are indicative of various forms of psychological distress. At the same time, recent investigations have also found associations between well-being and emotion regulation. For instance, a group of Italian investigators found that specific cognitive strategies of emotion regulation such as positive reappraisal and refocus on planning were positively related to both hedonic and eudaimonic well-being, while other maladaptive ones, such as rumination, catastrophizing and self-blame were related to poorer well-being (Balzarotti et al., 2016).

In another recent meta-analysis with different clinical populations, deficits in emotion regulation showed a negative moderate correlation with both hedonic and eudaimonic well-being (Kraiss et al., 2020). The Authors confirmed that emotion regulation is not merely related to psychopathology, but also to well-being, and they suggested to focus future investigations on the component of emotion regulation when aiming to improve well-being in people.

For these reasons, the present research aimed at adding the evaluation of emotion regulation strategies to the assessment of positive mental health in a group of university students in order to obtain more accurate profiles in terms of well-being and psychological distress. We also tested the appropriateness of Keyes classification (i.e., flourishing, languishing and moderate mental health) as opposed to a dichotomous classification (good mental health vs impaired mental health) for classifying our sample according to their levels of well-being, emotion regulation and distress. We formulated the following hypotheses: a) the levels of well-being would be inversely correlated with psychological distress and with dysfunctional emotion regulation; b) individuals with pre-existing mental illness or reporting high levels of psychological distress or deficits in emotion regulations would present with low well-being and they would more likely belong to the languishing or impaired mental health categories; c) the dichotomous solution would provide a better and simpler classification of individuals according to their mental health status as compared with Keyes's classification.

2. Methods

2.1. Sample and procedures

Participants for this study were recruited from three Italian universities—two public institutions (one large-sized and one medium-sized) and one private university with campuses across the country. The research project was conducted following Helsinki declaration and was approved by the three Universities' ethical board.

Recruitment targeted students enrolled in university courses related to health professions. A total of 358 university students were initially included in the study. They all signed a written informed consent and participated voluntarily.

Recruitment was conducted via email invitations and promotional materials shared through the universities' official webpages and social media platforms. Students who expressed interest in participating were

provided with a digital link to an online platform where they could access detailed project information. To be included in the study, students were required to read the project description, provide informed consent through the platform, and complete the online screening. Only students who completed the screening were included in the final sample for analysis.

2.2. Assessment

The screening was conducted using an online survey hosted on the Qualtrics platform, where data on participants' sociodemographic characteristics, including age, gender, income, marital status, level of education, and university course attendance were collected anonymously. Additionally, participants were asked to report the presence of any mental illness or neurological disorders.

To evaluate participants' mental health profiles, the following validated psychometric instruments were used:

- Difficulties in Emotion Regulation Scale (DERS-16) (Sighinolfi et al., 2010): a 16-item scale designed to assess various aspects of emotion regulation, including the ability to identify, differentiate, and accept emotional experiences, engage in goal-directed behavior, inhibit impulsive behavior in negative emotional contexts, and use effective emotion modulation strategies. Respondents will rate each item on a 5-point Likert scale ranging from 1 (not at all) to 5 (completely), with total scores ranging from 16 to 80. Higher scores indicate greater emotional dysregulation. Usually, subscale scores are not calculated for the DERS-16, due to its limited number of items per factor, and because it only retained 5 of the 6 original subscales (removing "awareness"). In fact, the validation studies for the DERS-16 version excluded the Awareness subscale, since previous studies documented limited reliability or validity for the Awareness subscale in 6 factor models (Burton et al., 2022). Due to this, the authors recommend only calculating a total score for interpretation (Burton et al., 2022). The DERS has demonstrated good psychometric properties, including in its Italian validation (Sighinolfi et al., 2010). The Cronbach's α of the DERS-16 is 0.946 in this sample.

- Mental Health Continuum Short Form (MHC-SF) (Petrillo et al., 2015; Keyes, 2002): a 14 items scale assessing hedonic well-being (items 1–3), social well-being (items 4–8), and eudaimonic well-being (items 9–14). Participants indicated how frequently they experienced each symptom of well-being over the past month, ranging from 0 (none of the time) to 5 (all of the time). Scores are totaled to provide a quantitative indicator of mental health, with a range of 0–70. In the present investigation the Cronbach's α value was 0.923. Additionally, Keyes' categorical diagnosis was used to cluster participants according to their levels of well-being. The diagnosis of flourishing was made if a participant rated at least one of the three hedonic well-being items "every day" or "almost every day," and at least six of the 11 eudaimonic and social well-being items as "every day" or "almost every day." The diagnosis of languishing was made if participant rated at least one of the three hedonic well-being items as "never" or "once," and at least six of the 11 eudaimonic and social well-being items as "never" or "once." Participants who neither qualify as flourishing nor languishing were categorized as moderately mentally health. The instruments have demonstrated good psychometric properties in several international validation studies, including those conducted in Italy (Petrillo et al., 2015; Keyes, 2002).

- Depression Anxiety Stress Scales (DASS-21) (Bottesi et al., 2015; Lovibond and Lovibond, 1995) a self-report questionnaire comprising 21 items measuring depression (7 items), anxiety (7 items), and stress (7 items). The scores on the 3 subscales are summed to provide an overall assessment of individual psychological distress. Participants rated each item on a scale from 0 (did not apply to me at all) to 3 (applied to me very much). Total scores range from

0 to 120, with subscales scores ranging from 0 to 42. The Italian validation of the questionnaire demonstrated good psychometric properties. Clinical cut-off scores have been established: scores ≥ 60 and ≥ 30 for the DASS-total are considered as "high" or "severe" and as "mild" or "moderate," respectively. (Lovibond and Lovibond, 1995; Beaufort et al., 2017). In the present investigation the Cronbach's α value for the total score was 0.939

2.3. Statistical analysis

Data from the screening, including sociodemographic, clinical, and anamnestic variables, were analyzed using descriptive statistics such as frequencies, percentiles and mean scores.

Bivariate correlations were calculated among MHC, DERS and DASS scales to describe their relationships.

Then, participants were classified according to their MHC categories, their levels of distress (DASS total cut-off score ≥ 60) and presence of any mental illness. Chi-square values were calculated. To account for multiple pairwise comparisons and prevent alpha inflation, we set a more conservative p-value of 0.001 and used Fisher exact test when cells' size was not appropriate for Chi-square test. We also used Z test to calculate the sample proportion as distributed in the contingency tables' cells.

Furthermore, a cluster analysis was conducted using the MHC scores and the DERS scores to identify groups of participants based on these combined indicators. The main goal of the clustering analysis was exploratory and comparative, that is, to examine whether grouping participants based on MHC scores alone versus using the combined MHC and DERS scores would lead to a more informative classification in terms of psychological distress and mental illness. For this purpose, k-means offers a straightforward way of grouping individuals based directly on their observed score patterns without making strong assumptions about the underlying data structure, as Latent Class Analyses or other grouping procedures usually do (Liu et al., 2022). Furthermore, we used only continuous variable and not categorical ones (i.e., gender). The K-means clustering method was employed, and models with 2, 3 and 4 clusters were compared. The optimal model was determined using the Cubic Clustering Criterion (CCC).

To compare continuous variables (DASS and DERS scales) across mental health subgroups, general linear models (GLM) were applied.

Finally two ROC curve analyses were performed, one with only the MHC score and one with MHC and DERS scores to test the ability of these instruments in classifying individuals based on the presence/absence of mental illness/severe psychological distress. ROC curve analyses enable assessment of the area under the curve (AUC) that best discriminates between individuals with and without mental illness/severe psychological distress.

All analyses were conducted using the Statistical Package for the Social Sciences (SPSS), version 28.

3. Results

Bivariate correlations among the assessment measures (DASS, DERS and MHC) are described in Table 1.

A total of 358 participants completed the survey. After data cleaning, 13 participants were excluded due to missing data (one or more questionnaires not answered). The final dataset included 345 responders: $n = 270$ female (78 %); $n = 75$ males (22 %). Their mean age was 28.76 years (SD = 10.51; age range: 18–65) and the large majority (78 %) was unmarried. The students attended different courses: bachelor (60.9 %), master (32.2 %), Single Cycle (6.3 %) and PhD program (0.6 %). (See Table 2).

Forty-three participants (12.5 % of the total sample) reported to have been diagnosed with a mental illness (depressive disorders, bipolar disorder, anxiety disorders, personality disorders) and /or being in treatment with psychotropic drugs (SSRI, benzodiazepine, mood

Table 1
Correlation matrix showing the relationships between psychological distress (DASS), well-being (MHC), and emotion regulation (DERS).

	DASS Anxiety	DASS Depression	DASS Stress	DASS TOT	Hedonic Wellbeing	Social Wellbeing	Psychological Wellbeing	MHC TOT
DASS Anxiety	–							
DASS Depression	,623**	–						
DASS Stress	,703**	,720**	–					
DASS TOT	,863**	,888**	,911**	–				
Hedonic Wellbeing	–,283**	–,619**	–,393**	–,494**	–			
Social Wellbeing	–,260**	–,478**	–,348**	–,413**	,688**	–		
Psychological Wellbeing	–,362**	–,652**	–,439**	–,552**	,754**	,701**	–	
MHC TOT	–,344**	–,648**	–,441**	–,545**	,864**	,886**	,937**	–
DERS TOT	,598**	,705**	,689**	,750**	–,419**	–,445**	–,563**	–,546**

** $p < .001$ ($N = 345$).

Table 2
Sociodemographic characteristics of the sample.

	Total Sample ($n = 345$)	Flourishing ($n = 94$) M(SD)	Moderate ($n = 193$) M(SD)	Languishing ($n = 58$) M(SD)	F	Good Mental Health (GMH) ($n = 187$) M(SD)	Impaired Mental Health (IMH) ($n = 158$) M(SD)	F
Mean Age	28.8(10.5)	33.3 (12.5)	27.4 (9)	25.9 (9.4)	13.630**	31.6 (11.4)	5.4 (8.2)	31.959**
	Total Sample ($n = 345$)	Flourishing ($n = 94$) n(%)	Moderate ($n = 193$) n(%)	Languishing ($n = 58$) n(%)	Chi square	GMH ($n = 187$) n(%)	IMH($n = 158$) n(%)	Chi square
Income								
>50K	50 (14.5 %)	16 (17 %)	28 (14.5 %)	6 (10.3 %)	2.825ns	32 (17.1 %)	18 (11.4 %)	4.611ns
25K-50K	157 (45.5 %)	41 (43.6 %)	92 (47.7 %)	24 (41.4 %)		89 (47.6 %)	68 (43 %)	
<25K	138 (40 %)	37 (39.4 %)	73 (37.8 %)	28 (48.3 %)		66 (35.3 %)	72 (45.6 %)	
Marital Status								
Unmarried	269 (78 %)	63 67 %)	156 (80.8 %)	50 (86.2 %)	9.770ns	134 (71.7 %)	135 (85.4 %)	9.475ns
Married	76 (22 %)	31 (33 %)	37 (19.2 %)	8 (13.8 %)		53 (28.3)	23 (14.6 %)	
Course								
Bachelor	208 (60.5 %)	52 (55.9 %)	121 (62.7 %)	35 (60.3 %)	4.339ns	104 (52.6 %)	104 (65.8 %)	5.905ns
Master	111 (32.3 %)	34 (36.6 %)	59 (30.6 %)	18 (31 %)		70 (40.5 %)	41 (25.9 %)	
Single-cycle	22 (6.4 %)	5 (5.4 %)	12 (6.2 %)	5 (8.7 %)		10 (5.8 %)	12 (7.6 %)	
PhD	3 (0.8 %)	2 (2.1 %)	1 (0.5 %)	0 (0 %)		2 (1.1 %)	1 (0.7 %)	

Ns= non significant * $p < .05$ ** $p < .001$.

stabilizers).

According to DASS cut off score (≥ 60) 86 individuals (24.9 % of the total sample) presented severe psychological distress.

3.1. Mental health categories according to Keyes' formulation

Twenty-seven percent (27.20 %) of the participants ($n = 94$) were in the flourishing category, 55.9 % were in the moderate mental health category ($n = 193$) and 16.8 % were in the languishing category ($n = 58$). Their sociodemographic and clinical characteristics are described in Tables 2 and 3. No significant differences were observed between most of the sociodemographic characteristics, except age.

Table 3
Clinical characteristics of the sample and Keyes mental health categories.

MHC Categories	Mental illness (N; %)		Severe psychological distress (Dass>60) (N; %)		Total
	No	Yes	No	Yes	
Flourishing	88 _a	6 _b	92 _a	2 _b	94
	29.1 %	14.0 %	35.5 %	2.3 %	27.2 %
Languishing	45 _a	13 _b	26 _a	32 _b	58
	14.9 %	30.2 %	10.0 %	37.2 %	16.8 %
ModerateMental Health	169 _a	24 _a	141 _a	52 _a	193
	56.0 %	55.8 %	54.4 %	60.5 %	55.9 %
Total	302	43	259	86	345
	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

Letters a and b indicate that proportions are not different at $p < .05$ according to Z test.

Additionally, participants with a mental illness ($n = 43$) were distributed between Languishing ($n = 13$; 30.2 %) and moderate mental health ($n = 24$; 55.8 %) categories, with a small portion falling in the flourishing group ($n = 6$; 14 %). Even if the small number of individuals with mental illness is not sufficient to draw any statistically significant conclusions (Fisher Exact test = 8.095, $p < 0.05$), it is worth noting that the moderate mental health category included a similar sample proportion of individuals with (55.8 %) and without a mental illness (56 %) (see Table 3).

The 86 participants reporting severe psychological distress according to DASS cut-off score (≥ 60) were distributed mostly under the moderate mental health group ($N = 52$; 60.5 %) and under the languishing group ($N = 32$; 37.2 %), with only 2 individuals in the flourishing group (2.3 %) (Chi-square = 54.882, Fisher Exact test = 61.620; $p < 0.001$). Also in this case, the moderate mental health category included a similar sample proportion of individuals with (60.5 %) and without severe psychological distress (54.5 %) (see Table 3).

A General linear model was performed to compare the three MHC categories according to their DASS scores and DERS scores. Since age resulted to be significantly different in the three group, it was added as a covariate in the model. The multivariate test was significant (Wilks' Lambda = 0.653 $f_{8;672} = 22.19.972$; $p < .001$). Univariate tests and post hoc comparison showed that the flourishing participants were older and had lower scores on all the subscales of DASS and DERS ($p < .001$) compared to the languishing and moderate groups. Moreover, DASS scores were higher for participants belonging to the languishing category, compared to moderate for all the subscales ($p < .001$) except for the anxiety scale ($p = .055$) (see Table 5). The inclusion of age as a covariate did not alter these differences, since it remained significant in all the test of between subject effects, with p values ranging from .049 for Dass

Depression to 0.000 for DERS total score.

3.2. Cluster analysis results

The K-means analysis indicated that the two-cluster solution provided the best fit, as evidenced by the optimal CCC value (-2.2795). In this solution, Cluster 1 included 187 participants and was labeled as “Good Mental Health” (GMH), with a mean MHC score of 46.20 (SD= 8.95) and a mean DERS score of 28.08 (SD=8.51). Cluster 2, which consisted of 158 participants, was labeled as “Impaired Mental Health” (IMH) and was characterized by a mean MHC score of 26.16 (SD= 9.75) and a mean DERS score of 50.80 (SD=12.08). The clusters are illustrated in Fig. 1. Their sociodemographic and clinical characteristics are indicated in Tables 2 and 4.

Additionally, participants with a mental illness (N = 43) were mostly classified within the impaired mental health cluster (n = 34; 79.1 %). Seventy-eight out of 86 participants (90.7 %) reporting severe psychological distress according to DASS cut-off score (≥60) were distributed under the impaired mental health cluster, while only 8 (9.3 %) were categorized under the good mental health group (Chi-square = 93.038, p < 0.001; Fisher exact test<0.001). Thus, the sample proportion of individuals with mental illness or severe psychological distress were significantly higher in the impaired mental health cluster (see Table 4).

General linear model was used to compare the two clusters at DASS score, with age as a covariate. Age was not significant at multivariate test (Wilks’ Lambda= 0.989 f_{3,338} = 1.256; p<.290), while the general model remained significant (Wilks’ Lambda= 0.580 f_{3,338} = 81.540; p<.001). Belonging to good mental health cluster or to impaired mental health cluster had a statistically significant effect on all the DASS-21 subscales: respectively on anxiety score (f₁₃₄₃ = 44.831; p ≤ .001, partial eta squared = .209), on depression score (f₁₃₄₃ = 133.556; p ≤ .001, partial eta squared = .440) and on stress score (f₁₃₄₃ = 75.981; p ≤ .001, partial eta squared = .309) (see Table 5).

3.3. Roc analyses

Two ROC curve analyses were conducted to evaluate discriminative ability for the MHC first, and then for the MHC and the DERS. For the ROC curve analyses, two sub-groups of participants based on their mental health condition were entered, the normal (n = 302) and mentally ill (n = 43) first, and the normal (n = 259) and the individuals with severe psychological distress (N = 86) secondly. In the first ROC analysis, the AUC value was 0.649 (p=.002) for the MHC only. The Roc analysis with MHC and DERS displayed an AUC value of 0.649 and 0.738 respectively (z=-1.991 p=.05) with an overall good quality of the

Table 4

Clinical characteristics of the sample and clustered mental health categories.

	Total Sample (n = 345)	GMH (n = 187) n(%)	IMH(n = 158) n(%)	Chi square
Mental illness				
No	302 (87.5 %)	178 (95.2 %)	124 (78.5 %)	22.757**
Yes	43 (12.5 %)	9 (4.8 %)	34 (21.5 %)	
Severe Psy Distress (Dass>60)	86 (24.9 %)	8 (9.3 %)	78 (90.7 %)	93.038**

**p<.001.

model (value=0.66) (see Fig. 2) for identifying individuals with mental illness. For the second ROC analysis (i.e., normal individuals vs those with severe psychological distress), with the MHC only, the AUC value was 0.770 (p=.000). The Roc analysis with MHC and DERS displayed an AUC value of 0.770 and 0.865 respectively (z=-3.016 p=.003) with an overall very good quality of the model (value=0.82) (see Fig. 3).

4. Discussion

The aim of this research was to assess the levels positive mental health in a group of university students and to integrate the current Keyes’s MHC categorical classification with the evaluation of emotion regulation, in order to obtain more accurate profiles in terms of well-being and psychological distress. We therefore tested the appropriateness of the traditional Keyes classification (i.e., flourishing, languishing and moderate mental health) as opposed to a bipolar classification (good mental health vs impaired mental health), which was obtained with a clustering procedure based on participants’ scores at MHC and DERS. Considering the important role of emotion regulation in influencing both psychological well-being and distress, we hypothesized that individuals with poor emotion regulation would present with low well-being and they would more likely belong to the languishing or impaired mental health categories. In fact, we found that DERS scores were significantly and inversely correlated with MHC scores and directly correlated with DASS scores. This first finding confirms recent investigations by other authors (Balzarotti et al. 2016; Kraiss et al., 2020) who documented that emotion regulation is a transdiagnostic factor common to various psychopathologies, but it is also moderately correlated with hedonic and eudaimonic well-being. For this reason, emotion regulation can have a crucial role in determining mental health profiles.

According to the traditional Keyes’ categories of mental health (i.e., flourishing, languishing and moderate), we found that the majority of our sample of university students was classified as with moderate mental

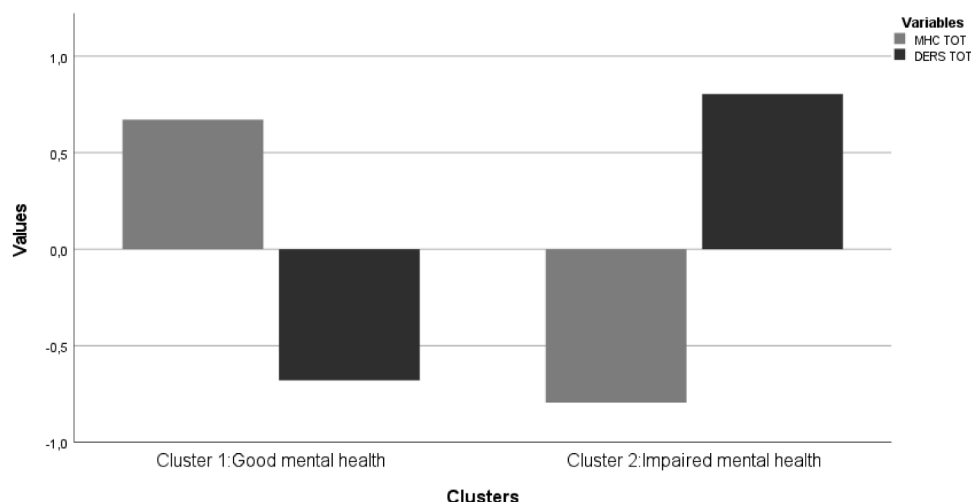


Fig. 1. Clusters based on MHC and DERS Scores: Good Mental Health (GMH) and Impaired Mental Health (IMH).

Table 5
General linear models for comparing MHC categories and Clusters of MH on distress measures.

	Flourishing (n = 94) M(SD)	Moderate (n = 193) M (SD)	Languishing (n = 58) M(SD)	F	Partial Eta Square	GMH (n = 174) M(SD)	IMH (n = 133) M (SD)	F	Partial Eta Square
DASS Depression	6.09 (4.83) ^a	14.15 (8.64) ^b	23.50 (9.41) ^c	60.094**	.346	7.59 (5.95) ^a	20.54 (8.62) ^b	133.556**	.440
DASS Stress	13.36 (7.24) ^a	19.77 (9.14) ^b	24.79 (8.23) ^c	25.537**	.184	14.15 (7.05) ^a	24.46 (8.54) ^b	75.981**	.309
DASS Anxiety	5.6 (5.93) ^a	10.76 (8.82) ^b	13.21 (8.77) ^b	15.207**	.199	6.24 (6.14) ^a	13.94 (9.11) ^b	44.831**	.209
DASS TOT	25.04 (15.51) ^a	44.51 (23.61) ^b	61.52 (21.78) ^c	39.985**	.261	27.98 (16.46) ^a	58.92 (21.82) ^b	191.573**	.360
DERs TOT	27.32 (10.54) ^a	40.75 (14.75) ^b	47.97 (13.41) ^c	41.699**	.270	/	/		

* $p < .05$ ** $p < .01$ Subscripts a and b show graphically the results of the post-hoc test. Mean is significantly different from another mean if they do not share the same letter.

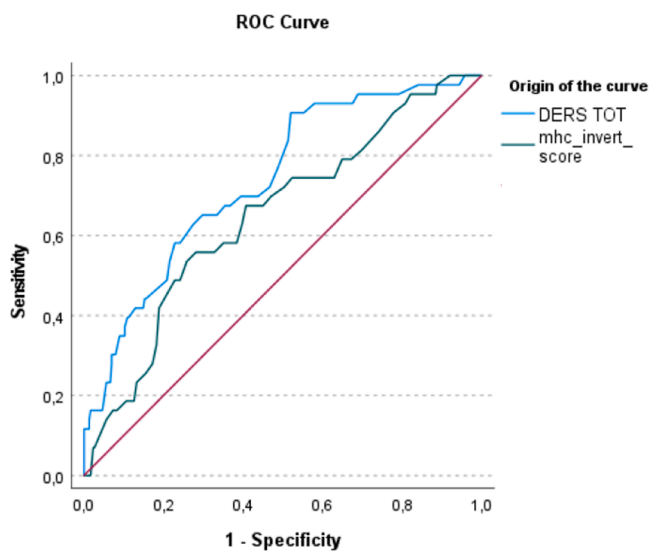


Fig. 2. ROC Curve comparing the performance of DERS TOT and MHC inverted scores in identifying individuals with mental illness. Sensitivity is plotted against 1-Specificity, with the diagonal reference line representing random chance.

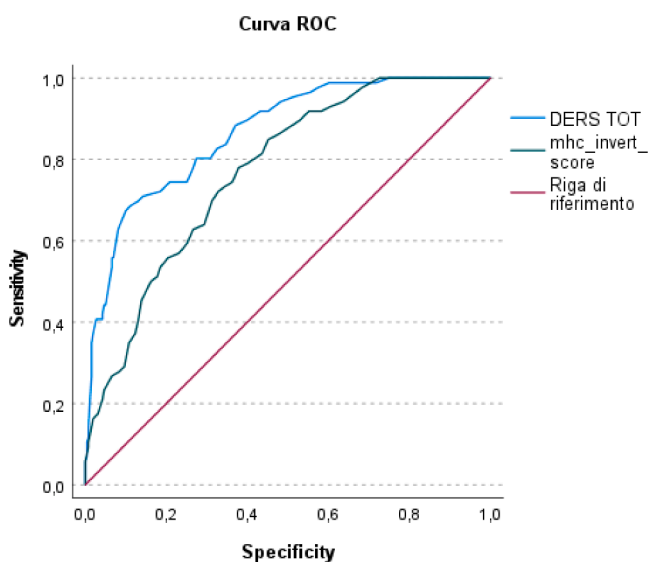


Fig. 3. ROC Curve comparing the performance of DERS TOT and MHC inverted scores in identifying individuals with/without severe psychological distress. Sensitivity is plotted against 1-Specificity, with the diagonal reference line representing random chance.

health (193 individuals out of 345; 55.9 %), followed by flourishing (N

= 94; 27.2 %) and languishing (N = 58; 16.8 %). While these groups did not differ in terms of sociodemographic characteristics (with the sole exception of age, see Table 2); they did present significant differences in terms of psychological distress (DASS scores) and emotion regulation (DERS), where languishing individuals have higher scores when compared to the other two groups. Flourishing individuals have lower scores in emotion dysregulation and psychological distress (DASS scores). These data mirror a large body of existing literature, documenting that the condition of flourishing provides protection for psychological distress (Ruini et al., 2024; Iasiello et al., 2020; Schotanus-Dijkstra et al., 2019).

However, in our sample, students belonging to the moderate mental health do not differ from languishing individuals in anxiety scores. Additionally, participants with a mental illness (n = 43) were distributed between Languishing (30 %) and moderate mental health (56 %), categories. Similar findings emerged also for the 86 individuals reporting severe psychological distress according to DASS cut-off scores: >60 % of them were categorized as moderate mental health. Thus, under the category of moderate mental health we found the majority of individuals with severe psychological distress, with mental illness, with impairments in well-being dimensions, with deficits in emotion regulation, and with anxiety scores similar to the languishing individuals. According to Keyes' dual continua model (2009) this category could be eventually split into: moderate mental health and moderate mental health + mental illness. As a matter of fact, we found a similar proportion of individuals with and without mental illness or severe psychological distress under the moderate mental health category (see Table 3). It is therefore a quite heterogeneous group, that includes, however, the majority of our sample (193 individuals).

Conversely, when we classified participants using a clustering procedure based on their scores at the MHC and their scores at the DERS, we obtained two categories. The two-category solution represented the best fit according to the optimal CCC value. In this model, the Good Mental Health category included 187 participants, with a mean MHC score of 46.20 and a mean DERS score of 28, whereas the Impaired Mental Health category included 158 participants, with a mean MHC score of 26 and a mean DERS score of 50. These two categories also differed significantly in all DASS scores and the Impaired Mental Health cluster included 34 out of 43 individuals presenting a mental illness and 78 out of the 86 individuals reporting severe psychological distress (see Table 4).

Additionally, the ROC curve analyses demonstrated an overall good quality of the MCH+ DERS solution in identifying individuals with and without mental illness/with and without severe psychological distress (see Figs. 2 and 3).

This dichotomous classification of the sample seems to parallel the one obtained in large, international recent research (Hides et al., 2020; Zhao and Tay, 2023). For instance, a recent Australian investigation with young adults found that mental well-being and distress were important subcomponents of overall mental health, with a bifactor model fitting the data best (Zhao and Tay, 2023). Even though our research was not aimed at comparing one single continuum vs dual continua models of mental health, the former also offers a clearer

representation of mental health profiles of our participants. Most of them ($N = 187$), in fact, presented good levels of hedonic, eudaimonic and social well-being, accompanied by healthy emotion regulation strategies. Conversely, the Impaired Mental Health group included individuals at risk or already presenting mental illnesses ($N = 158$). Therefore, they can be easily identified as potential target population for the implementation of psychological interventions aimed at restoring well-being and/or at addressing symptoms and psychological distress. This classification, thus, offers a clear and simpler solution for university counselling services or mental health practices that can address the limited resources available to those individuals who likely need more psychological support (Vescovelli et al., 2017; Antaramian, 2015).

Previous investigations that had adopted the traditional Keyes' classification (either single or dual continua model), selected the languishing group as primary target population for intervention (van Agteren et al., 2021). However, this group is usually the less numerous (as in the present research). Thus, the moderate mental health group may be neglected in intervention studies, even if it included individuals with severe impairments in well-being dimensions and/or high levels of psychological distress (van Agteren et al., 2021; Antaramian, 2015). Another problem of implementing interventions for individuals in the moderate mental health category is represented by its great heterogeneity, as it was found in the present research. Some individuals may need (or may already be in) treatment for their mental illnesses, or others may find it difficult to focus on restoring well-being when their distress is presumably quite disturbing (McAleavey et al., 2019). The dual continua model (Keyes, 2002; 2009), which recognizes the independence of well-being and ill-being within individuals, suggests that interventions should address both dimensions separately (Morrison et al., 2023), but this is not easily applicable in clinical settings or mental health practices. Conversely, the bipolar/dichotomous model offers a more straightforward strategy for identifying individuals needing mental health interventions, according to their clinical profiles. Even if the debate on considering well-being and distress as distinct or opposite constructs is still open (Jasiello et al., 2024), it has indeed important implications for mental health diagnosis and intervention. For the purpose of the current research, the findings indicate that the bipolar/dichotomous classification offers a simpler and valid solution.

Importantly, we added a new, relevant variable that was not considered in previous investigation, that is emotion regulation. To the best of our knowledge, the majority of the published investigations used indicators of well-being (i.e., MHC, or life satisfaction, or general well-being) and various measures of symptoms (i.e., anxiety, depression, stress, burnout etc.) to classify individuals according to the dual continua model or bipolar/dichotomous one (Magalhães, 2024). Conversely, we added the evaluation of emotion regulation, as it is considered nowadays a crucial clinical issue, which is common to various psychopathological conditions (Sloan et al., 2017). Thus, instead of measuring all the specific symptoms of each mental disorder, it could be more convenient to evaluate their common characteristics, which refer to dysfunctional ways to regulate the intensity, the frequency and the behavioral responses/coping mechanisms associated with emotions.

Moreover, poor emotion regulation was found to be significantly correlated with well-being as well. For instance, some authors described the model of positive emotion disturbance (PED) for referring to the negative psychological outcomes that can derive also from positive emotions, when they are experienced with inappropriate intensity, duration, or in unsuitable contexts (Gruber et al., 2020). This model highlights the need for a balanced approach to emotional regulation, where both positive and negative emotions are integrated in a way that aligns with personal goals and environmental contexts. Thus, emotion regulation strategies are intrinsically related to hedonic, eudaimonic and social well-being. For this reason, we tested their additive value in classifying individuals according to their MHC score. When using the traditional Keyes classification, we observed significant differences in DERS scores among the languishing, flourishing and moderate mental

health groups. When using a clustering classification, DERS scores were crucial variables for dividing the sample into good vs impaired mental health groups. ROC analyses further supported the ability of MHC+DERS in recognizing individuals with and without mental illness or severe psychological distress according to DASS.

If future studies will confirm and replicate our preliminary results, the combination of two simple assessment instruments (MHC + DERS) could represent a valid and cost-effective strategy for classifying individuals according to their mental health profiles and for identifying those needing psychological interventions either focused on well-being dimensions or on emotion regulation strategies. The advantage of this approach is that it will avoid the stigmatization of individuals since the language of psychopathology could be dismissed (Hein et al., 2024; Lahey, Tiemeier, Krueger, 2022; Lebowitz and Ahn, 2016). In fact, this innovative screening would be based on general indicators of well-being and emotion regulation, which are largely subjective and depending on cultural issues as well. Therefore, it could be better accepted and replicated in various clinical and epidemiological studies.

4.1. Limitations

Despite these implications, the present research has various limitations. First, it has a naturalistic design, it included only self-rated instruments, administered online and participants were enrolled on a voluntarily basis. The relatively small sample size and its characteristics limit the generalizability of findings. Thus, findings may present some bias and their replicability is absolutely needed to confirm their validity. Second, the assessment lacks a follow up, that could have been crucial for testing the robustness of our findings. Third, we used MHC categories, DASS cut-off scores and K-mean cluster procedure to classify our sample. These methodologies offer simple solutions to be implemented and to be interpreted. However, future research with larger samples and with more rigorous statistical approaches such as Latent Class Analysis (LCA) are needed to better identify complex mental health groups and potentially new subgroups.

5. Conclusions

To the best of our knowledge, this is the first investigation where the traditional positive mental health classification according to Keyes' questionnaire was integrated by the evaluation of emotion regulation, in order to better identify individuals with optimal profiles of mental health vs. those presenting impairments. Our data seem to support a dichotomous classification, where participants were divided into two categories of good vs. impaired mental health. These groups do not present significant differences in sociodemographic characteristics, but they differ in terms of psychological distress and presence/absence of mental illness. Even though our data are only preliminary, they document that the assessment of emotion regulation provided a valuable contribution in identifying individuals' profiles of mental health, together with indicators of mental well-being. Importantly, this screening procedure is not totally new, rather it is in line with a modern, transdiagnostic approach in mental health research. This approach calls for a more nuanced distinction between normality and pathology, where emotion regulation is considered a common clinical factor across various mental disorders (Lahey, Tiemeier, Krueger, 2022; Sloan et al., 2017). In fact, it avoids the stigmatization/pathologization of individuals since mental illness labels are not necessary to identify individuals needing psychological support. Future studies are essential in order to confirm these findings and to disseminate these new screening procedures in other clinical and epidemiological settings.

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Ethical statement

The project was conducted following the Helsinki declaration and was approved by the University of Bologna Ethical Board (Prot. N. 0388152_28/12/2023).

CRediT authorship contribution statement

Chiara Ruini: Writing – original draft, Methodology, Funding acquisition, Data curation, Conceptualization. **Francesca Vescovelli:** Writing – review & editing, Methodology, Data curation. **Grazia De Angelis:** Investigation, Data curation, Conceptualization. **Erika De Marco:** Investigation, Formal analysis, Data curation. **Sabrina Castaldo:** Resources, Investigation, Data curation. **Valentina Paola Cesarano:** Resources, Investigation, Data curation. **Elisabetta Lucia De Marco:** Resources, Investigation, Data curation. **Giorgia Polizzotto:** Resources, Data curation. **Luca Pingani:** Methodology, Investigation, Funding acquisition, Conceptualization. **Pierpaolo Limone:** Supervision, Funding acquisition, Data curation, Conceptualization. **Giorgio Li Pira:** Writing – original draft, Methodology, Formal analysis, Data curation.

Declaration of competing interest

All authors have nothing to declare

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References

- Antaramian, S., 2015. Assessing psychological symptoms and well-being: application of a dual-factor mental health model to understand college student performance. *J. Psychoeduc. Assess.* 33, 419–429. <https://doi.org/10.1177/0734282914557727>.
- Balzarotti, S., Biassoni, F., Villani, D., Prunas, A., Velotti, P., 2016. Individual differences in cognitive emotion regulation: implications for subjective and psychological well-being. *J. Happiness. Stud.* 17, 125–143. <https://doi.org/10.1007/S10902-014-9587-3/TABLES/5>.
- Beaufort, I.N., De Weert-Van Oene, G.H., Buwalda, V.A.J., De Leeuw, J.R.J., Goudriaan, A.E., 2017. The Depression, Anxiety and Stress scale (DASS-21) as a screener for depression in substance use disorder inpatients: a pilot study. *Eur. Addict. Res.* 23, 260–268. <https://doi.org/10.1159/000485182>.
- Bersia, M., Charrier, L., Berchialla, P., Cosma, A., Comoretto, R.I., Dalmasso, P., 2022. The mental well-being of Italian adolescents in the last decade through the lens of the dual factor model. *Children* 9, 1981. <https://doi.org/10.3390/CHILDREN9121981/S1>.
- Bottesi, G., Ghisi, M., Altoè, G., Conforti, E., Melli, G., Sica, C., 2015. The Italian version of the Depression Anxiety Stress scales-21: factor structure and psychometric properties on community and clinical samples. *Compr. Psychiatry* 60, 170–181. <https://doi.org/10.1016/J.COMPPSYCH.2015.04.005>.
- Brailovskaia, J., Teismann, T., Lewitzka, U., Gao, Z., Zhang, X.C., Margraf, J., 2022. Suicidal ideation, suicide attempts and positive mental health in Chinese medical students. *J. Affect. Disord. Rep.* 9, 100354. <https://doi.org/10.1016/j.jadr.2022.100354>.
- Burton, A.L., Brown, R., Abbott, M.J., 2022. Overcoming difficulties in measuring emotional regulation: assessing and comparing the psychometric properties of the DERS long and short forms. *Cogent. Psychol.* 9. <https://doi.org/10.1080/23311908.2022.2060629>.
- Bydlowski, S., Corcos, M., Jeammot, P., Paterniti, S., Berthoz, S., Laurier, C., et al., 2005. Emotion-processing deficits in eating disorders. *Int. J. Eat. Disord.* 37, 321–329. <https://doi.org/10.1002/EAT.20132>.
- Fusar-Poli, P., Solmi, M., Brondino, N., Davies, C., Chae, C., Politi, P., et al., 2019. Transdiagnostic psychiatry: a systematic review. *World Psychiatry* 18, 192–207. <https://doi.org/10.1002/WPS.20631>.
- Gruber, J., Villanueva, C., Burr, E., Purcell, J.R., Karoly, H., 2020. Understanding and taking stock of positive emotion disturbance. *Soc Pers. Psychol. Compass* 14. <https://doi.org/10.1111/SPC3.12515>.
- Hein, K.E., Dennis, S.J., Folger, L.F., Mullins-Sweatt, S.N., 2024. Perception of stigma across diagnostic models of personality pathology. *Pers. Disord.* 15, 332–340. <https://doi.org/10.1037/PER0000678>.
- Hides, L., Quinn, C., Stoyanov, S., Cockshaw, W., Kavanagh, D.J., Shochet, I., et al., 2020. Testing the interrelationship between mental well-being and mental distress in young people. *J. Posit. Psychol.* 15, 314–324. <https://doi.org/10.1080/17439760.2019.1610478>.
- Iasiello, M., van Agteren, J., Ali, K., Fassnacht, D.B., 2024. Positive psychology is better served by a bivariate rather than bipolar conceptualization of mental health and mental illness: a commentary on Zhao & Tay (2022). *J. Posit. Psychol.* 19, 337–341. <https://doi.org/10.1080/17439760.2023.2179935>.
- Iasiello, M., van Agteren, J., Cochrane, E.M., 2020. Mental health and/or Mental illness: a scoping review of the evidence and implications of the dual-continua model of Mental health. *Evid. Base* 2020, 1–45. <https://doi.org/10.21307/eb-2020-001>.
- Jahoda, M., 1958. *Current Concepts of Positive Mental Health*. Basic Books, New York. <https://doi.org/10.1037/11258-000>.
- Keyes, C.L.M., 2009. Toward a science of mental health. In: Lopez, S.J., Snyder, C.R. (Eds.), *The Oxford Handbook of Positive Psychology*. Oxford University Press, pp. 88–96. <https://doi.org/10.1093/oxfordhb/9780195187243.013.0009>.
- Keyes, C.L.M., 2006. Mental health in adolescence: is America's youth flourishing? *Am. J. Orthopsychiatry* 76, 395–402. <https://doi.org/10.1037/0002-9432.76.3.395>.
- Keyes, C.L.M., 2005. Mental illness and/or mental health? Investigating axioms of the complete state model of health. *J. Consult. Clin. Psychol.* 73, 539–548. <https://doi.org/10.1037/0022-006X.73.3.539>.
- Keyes, C.L.M., 2002. The mental health continuum: from languishing to flourishing in life. *J. Health Soc. Behav.* 43, 207–222. <https://doi.org/10.2307/3090197>.
- Keyes, C.L.M., Dhingra, S.S., Simoes, E.J., 2010. Change in level of positive mental health as a predictor of future risk of mental illness. *Am. J. Public Health* 100, 2366–2371. <https://doi.org/10.2105/AJPH.2010.192245>.
- Kim, E.K., Dowdy, E., Furlong, M.M., You, S., 2019. Complete mental health screening: psychological strengths and life satisfaction in Korean students. *Child Indic. Res.* 12, 901–915. <https://doi.org/10.1007/S12187-018-9561-4/TABLES/5>.
- Kraiss, J.T., ten Klooster, P.M., Moskowitz, J.T., Bohlmeijer, E.T., 2020. The relationship between emotion regulation and well-being in patients with mental disorders: a meta-analysis. *Compr. Psychiatry* 102. <https://doi.org/10.1016/J.COMPPSYCH.2020.152189>.
- Lahey, B.B., Tiemeier, H., Krueger, R.F., 2022. Seven reasons why binary diagnostic categories should be replaced with empirically sounder and less stigmatizing dimensions. *JCPP Adv.* 2 (4), e12108. <https://doi.org/10.1002/jcv2.12108>.
- Lebowitz, M.S., Ahn, W., 2016. Using personification and agency reorientation to reduce mental-health clinicians' stigmatizing attitudes toward patients. *Stig. Health* 1, 176–184. <https://doi.org/10.1037/SAH0000020>.
- Liu, F., Yang, D., Liu, Y., Zhang, Q., Chen, S., Li, W., et al., 2022. Use of latent profile analysis and k-means clustering to identify student anxiety profiles. *BMC. Psychiatry* 22 (1). <https://doi.org/10.1186/s12888-021-03648-7>.
- Lovibond, P.F., Lovibond, S.H., 1995. The structure of negative emotional states: comparison of the Depression anxiety stress scales (DASS) with the Beck Depression and Anxiety inventories. *Behav. Res. Ther.* 33, 335–343. [https://doi.org/10.1016/0005-7967\(94\)00075-U](https://doi.org/10.1016/0005-7967(94)00075-U).
- Lynch, T.R., Trost, W.T., Salsman, N., Linehan, M.M., 2007. Dialectical behavior therapy for borderline personality disorder. *Annu. Rev. Clin. Psychol.* 3, 181–205. <https://doi.org/10.1146/ANNUREV.CLINPSY.2.022305.095229/CITE/REFWORKS>.
- Magalhães, E., 2024. Dual-factor models of mental health: a systematic review of empirical evidence. *Psychosoc. Interv.* 33, 89. <https://doi.org/10.5093/PI2024A6>.
- Mason Stephens, J., Iasiello, M., Ali, K., van Agteren, J., Fassnacht, D.B., 2023. The importance of measuring mental wellbeing in the context of psychological distress: using a theoretical framework to test the dual-continua model of mental health. *Behav. Sci.* 13, 436. <https://doi.org/10.3390/bs13050436>.
- McAleavey, A.A., Youn, S.J., Xiao, H., Castonguay, L.G., Hayes, J.A., Locke, B.D., 2019. Effectiveness of routine psychotherapy: method matters. *Psychother. Res.* 29, 139–156. <https://doi.org/10.1080/10503307.2017.1395921>.
- Mennin, D.S., Holaway, R.M., Fresco, D.M., Moore, M.T., Heimberg, R.G., 2007. Delineating components of emotion and its dysregulation in anxiety and mood psychopathology. *Behav. Ther.* 38, 284–302. <https://doi.org/10.1016/J.BETH.2006.09.001>.
- Morrison, P.S., Liu, I., Zeng, D., 2023. Well-being and ill-being on campus. *Int. J. Wellbeing* 13, 64–93. <https://doi.org/10.5502/ijw.v13i3.2785>.
- Petrillo, G., Capone, V., Caso, D., Keyes, C.L.M., 2015. The mental health continuum—Short form (MHC-SF) as a measure of well-being in the Italian context. *Soc. Indic. Res.* 121, 291–312. <https://doi.org/10.1007/S11205-014-0629-3>.
- Ramirez-Maestre, C., Correa, M., Rivas, T., Lopez-Martinez, A.E., Serrano-Ibáñez, E.R., Esteve, R., 2017. Psychometric characteristics of the Flourishing Scale-Spanish Version (FS-SV). The factorial structure in two samples: Students and patients with chronic pain. *Perso. Indi. Diffe.* 117, 30–36. <https://doi.org/10.1016/j.paid.2017.05.035>.
- Ruini, C., Pira, G.L., Cordella, E., Vescovelli, F., 2024. Positive mental health, depression and burnout in healthcare workers during the second wave of COVID-19 pandemic. *J. Psych. Men. Heal. Nurs.* <https://doi.org/10.1111/jpm.13099>.
- Schotanus-Dijkstra, M., Keyes, C.L.M., de Graaf, R., ten Have, M., 2019. Recovery from mood and anxiety disorders: The influence of positive mental health. *J. Affe. Diso.* 252, 107–113. <https://doi.org/10.1016/j.jad.2019.04.051>.
- Sighinolfi, C., Pala, A.N., Chiri, L.R., Marchetti, I., Sica, C., 2010. Difficulties in emotion regulation scale (DERS): traduzione e adattamento Italiano. [Difficulties in Emotion Regulation Scale (DERS): the Italian translation and adaptation.]. *Psicoter. Cogn. Comport.* 16, 141–170.

- Sloan, E., Hall, K., Moulding, R., Bryce, S., Mildred, H., Staiger, P.K., 2017. Emotion regulation as a transdiagnostic treatment construct across anxiety, depression, substance, eating and borderline personality disorders: a systematic review. *Clin. Psychol. Rev.* 57, 141–163. <https://doi.org/10.1016/j.cpr.2017.09.002>.
- van Agteren, J., Iasiello, M., Lo, L., Bartholomaeus, J., Kopsaftis, Z., Carey, M., et al., 2021. A systematic review and meta-analysis of psychological interventions to improve mental wellbeing. *Nat. Hum. Behav.* 5, 631–652. <https://doi.org/10.1038/S41562-021-01093-W>.
- Vescovelli, F., Melani, P., Ruini, C., Ricci Bitti, Monti, F., 2017. University counseling service for improving students' mental health. *Psycho. serv.* 14 (4), 470. <https://doi.org/10.1037/ser0000166>.
- Zhao, M.Y., Tay, L., 2023. From ill-being to well-being: bipolar or bivariate? *J. Posit. Psychol.* 18, 649–659. <https://doi.org/10.1080/17439760.2022.2109204>.