

## Research Article

# High Levels of Anxiety and Psychological Well-Being in College Students: A Dual Factor Model of Mental Health Approach

Katherine Carver<sup>1</sup>, Hajar Ismail<sup>1</sup>, Christopher Reed<sup>1</sup>, Justin Hayes<sup>1</sup>, Haifa Alsaif<sup>1</sup>, Marisa Villanueva<sup>1</sup>, and Sarah M. Sass<sup>1</sup> 

### Abstract

Anxiety disorders are prevalent among college students and contribute to problems in social and academic functioning. The primary focus in the anxiety literature has been on symptoms and deficits in functioning rather than psychological well-being. The present study investigated the extent to which high levels of anxiety co-occurred with self-reported psychological well-being using a dual-factor model of mental health approach. Participants ( $n = 100$ ) were categorized into two groups (high anxiety crossed with low and high life satisfaction), and groups were compared on several psychological well-being indicators. Supporting a dual-factor approach, students reporting high levels of anxiety and life satisfaction reported higher levels of hope, grit, gratitude, self-focused positive rumination, and savoring of positive emotions than students reporting high levels of anxiety and low levels of life satisfaction. Groups did not differ in emotion-focused positive rumination or in dampening of positive emotion. These results highlight well-being heterogeneity within individuals reporting high levels of anxiety, with implications for treatment and prevention efforts.

**Keywords:** Anxiety, dual-factor model, life satisfaction, psychological well-being

Anxiety disorders are prevalent among college students (Blanco et al. 2008) and are associated with problems in social relationships, academic performance, and retention in college classes (Auerbach et al., 2016). “Mental health” research, including the anxiety literature, has historically been dominated by a focus on illness or psychopathology (Albee, 1998). A focus on illness or distress is consistent with a unidimensional model of mental health, which assumes that psychological distress and well-being are on opposite ends of a unipolar continuum (e.g., Keyes, 2005; Renshaw & Cohen, 2014). An alternative conceptualization, a dual-factor model of mental health, asserts that anxiety and psychological well-being exist along separate but correlated dimensions (for review, see Renshaw & Cohen, 2014), which allows individuals to simultaneously have high levels of anxiety and high to low levels of well-being.

Psychological well-being is a multidimensional construct that has been linked to broad domains such as life satisfaction, physical and mental health, social and occupational functioning, and experiences of positive and negative affect (e.g., Diener & Ryan, 2009; Dodge et al., 2012). Subjective well-being has been defined as the combination of high levels of life satisfaction, high self-reported positive affect, and low self-reported negative affect (Kansky & Diener, 2017). According to this definition, individuals with higher levels of negative affect (including individuals who report high levels of anxiety), might be expected to show lower levels of self-reported well-being indicators, consistent with a unipolar model.

An emerging literature has begun to incorporate a dual-factor model of mental health into research with psychologically distressed samples, including non-clinical samples of college students with a range of

<sup>1</sup>Department of Psychology and Counseling, The University of Texas at Tyler, Tyler, Texas, United States

psychological distress (typically including a mixture of anxiety and depression symptoms; e.g., Eklund et al., 2011; Renshaw & Cohen, 2014) as well as clinical samples who meet criteria for psychological disorders and report a mixture of anxiety and depression symptoms (e.g., Franken et al., 2018). These studies have generally found support for the dual-factor model in that participants who report high levels of psychological distress also report a range of levels on well-being indicators, from low to high, including on measures such as life satisfaction, psychological well-being, gratitude, grit, and hope (Eklund et al., 2011; Franken et al., 2018; Renshaw & Cohen, 2014).

In the anxiety literature, the tripartite and quadripartite models (Clark and Watson, 1991; Watson, Clark, et al., 1995; Watson, 2009) have attempted to model shared and unshared features of anxiety and depression using negative and positive affect. Evidence in support of these models show that high levels of negative affect are shared by anxiety and depression while low levels of positive affect are more strongly negatively related to anhedonic depression (e.g., Clark and Watson, 1991; Watson, Clark, et al., 1995; Watson, 2009). There are noted exceptions to this pattern, including that individuals with some forms of anxiety, especially social anxiety, report lower levels of positive affect than other individuals with anxiety (e.g., Doorley et al., 2020; Khazanov & Ruscio, 2016; Naragon-Gainey et al., 2009; Watson & Naragon-Gainey, 2010). Individuals with anxiety have also shown evidence of down-regulation or dampening of positive emotional experiences (e.g., Bosley et al., 2018; Carl et al., 2013; Carl et al., 2014; Eisner et al., 2009; Sass et al., 2017), which is suggestive of disruptions in positive affect.

Despite evidence of differing relationships to positive affect in individuals reporting high levels of anxiety and anhedonic depression, the present study represents the first study (to our knowledge) that uses a dual-factor approach to investigate how high levels of anxiety co-occur with indicators of well-being. Critically, we controlled for low levels of anhedonic depression symptoms, allowing for the investigation of the relatively “pure” relationship of high levels of anxiety and well-being indicators without the influence of the well-established negative relationship between anhedonic depression and positive affect (Clark and Watson, 1991; Watson, Clark, et al., 1995; Watson, 2009).

Specifically, extending previous dual-factor investigations, we categorized individuals screened to have high levels of anxiety and low levels of co-occurring anhedonic depression into high and low life

satisfaction groups, and asked whether these groups would differ in self-reported well-being indicators. Following a dual-factor model of mental health, we hypothesized that students reporting high levels of anxiety and higher levels of life satisfaction would report higher levels of savoring of positive experiences, ruminating on positive experiences, gratitude, grit, and hope, and lower levels of dampening positive affect compared to students reporting high levels of anxiety and lower levels of life satisfaction (e.g., Arnau et al., 2007; Bourland et al., 2000; Daig et al., 2009; Eisner et al., 2009; McCullough et al., 2002; Sheridan et al., 2015).

## Method

### Participants

Of 473 (75% female, mean age = 21.6, SD = 6.3, 66% White or Caucasian, 12% Black or African American, 11% other or multiracial, 5% Asian, 2% American Indian/Alaskan Native, <1% Native Hawaiian or Pacific Islander, 3% unknown or preferred not to report) participants screened for the study, 100 students met inclusion criteria for high levels of anxiety and low levels of co-occurring depression. Participants were selected to score similarly to individuals diagnosed with generalized anxiety disorder on the Penn State Worry Questionnaire (PSWQ, Meyer et al., 1990), or similarly to individuals diagnosed with panic disorder on the anxious arousal subscale of the Mood and Anxiety Symptom Questionnaire (MASQ-AA, Watson, Clark, et al., 1995; Watson, Weber, et al., 1995). A cut-off score of 63 or above on the PSWQ (Behar et al., 2003; Fresco et al., 2003; Molina & Borkovec, 1994) or 33 or above on the MASQ-AA (e.g., Keogh, & Reidy 2000) was used. All participants scored 20 or below on an 8-item subscale of the MASQ-Anhedonic Depression scale MASQ-AD, Watson, Clark, et al., 1995; Watson, Weber, et al., 1995; Nitschke et al., 2001; Sass et al., 2017).

Participants were categorized into high or low life satisfaction groups based on their responses to a 6-item Brief Multidimensional Student Life Satisfaction Survey (BMSLSS; Zullig et al., 2005). Life satisfaction is rated in five areas: family, school, friends, self, and living environment using a 7-point scale from 1 (terrible) to 7 (delighted), and an additional item was used to rate global satisfaction. The score used in the present study was an average taken across the five domains. Cronbach’s alpha was 0.78 in the present sample. Participants scoring at the median of 5.2 or above on these 5 items were considered “high” and below 5.2 were considered “low” life satisfaction. The

mean BMSLSS scores in the present sample were slightly lower than previous studies employing college student samples unselected for anxiety (e.g., Seligson et al., 2003; Zullig et al., 2005), but consistent with other non-selected cross-cultural samples of emerging adults (Abubakar et al., 2016, see Table 1 for descriptive statistics).

## Measures

**Questionnaire Measures of Well-being.** The Gratitude Scale (GS-6; McCullough et al., 2002) is a 6-item measure of trait gratitude. Participants were asked to read 6 statements, including “I have so much in life to be thankful for,” and “I am grateful to a wide variety of people” and rate them from 1 (“strongly disagree”) to 7 (“strongly agree”). Higher scores represent higher levels of trait gratitude. Cronbach’s alpha was 0.79 in the present sample.

The Grit scale (Duckworth et al., 2007) is a 12-item measure of persistence and passion for long-term goals despite challenges. It includes items such as, “I have overcome setbacks to conquer an important challenge,” or “I finish whatever I begin.” Items are rated from 1 (“not like me at all”) to 5 (“very much like me”). Cronbach’s alpha was 0.73 in the present sample.

The Trait Hope Scale (THS; Snyder et al., 1991) consists of an Agency subscale (4 items) which regards motivation to approach goals (“My past experiences have prepared me well for my future”), and a Pathways subscale (4 items) which regards how to achieve goals (“Even when others get discouraged, I know I can find

a way to solve the problem”). A total score consists of the sum of the two subscales. The measure includes four filler items not included in the total score. Items range from 1 (definitely false) to 8 (definitely true). Cronbach’s alpha was 0.68 in the present sample.

The Savoring Beliefs Inventory (SBI; Bryant, 2003) contains three subscales: anticipating (e.g., “Before a good thing happens, I look forward to it in ways that give me pleasure in the present”), savoring the moment (e.g., “I know how to make the most of a good time”), and reminiscing (e.g., “I can make myself feel good by remembering pleasant events from my past”). The 24 items are rated from 1 (strongly disagree) to 7 (strongly agree). A total score is the result of subtracting the sum of the 12 negatively-worded items from the sum of the 12 positively-worded items. Higher total scores represent higher beliefs in one’s ability to savor positive experiences. Cronbach’s alpha was 0.93 in the present sample for the total score.

The Responses to Positive Affect Scale (RPA; Feldman et al., 2008) is a 17-item measure including three subscales: emotion-focused positive rumination which involves thinking about positive emotional states (e.g., “Think about how happy you feel”), self-focused positive rumination which involves thinking about positive self-qualities or goal-oriented states (e.g., “Think about how proud you are of yourself”), and dampening which involves thinking about experiences that can disrupt positive mood (e.g., “Think about things that could go wrong”). Items were rated from 1 (almost never) to 4 (almost always).

**Table 1.** Group means and standard deviations

Measure	High life satisfaction		Low life satisfaction	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PSWQ	66.18	9.40	64.16	11.65
MASQ-AA	28.34	8.83	30.58	8.70
MASQ-AD	14.28	3.24	16.42	3.02
GS-6	38.12	4.69	35.11	5.08
Hope	51.60	6.62	45.98	7.31
Grit	42.50	6.19	39.29	6.38
SBI Total	37.02	19.20	26.58	21.54
RPA Emotion-Focused	15.66	3.23	14.71	3.43
RPA Self-Focused	11.48	3.14	10.13	3.17
RPA Dampening	15.94	4.79	17.76	5.76

*Note.* PSWQ = Penn State Worry Questionnaire; MASQ-AA = the Anxious Arousal subscale of the Mood and Anxiety Symptom Inventory; MASQ-AD = the 8-item subset of the Anhedonic Depression subscale of the Mood and Anxiety Symptom Inventory; GS-6 = Gratitude Scale; Hope = Trait Hope Scale; Grit = the Grit scale, SBI = Savoring Beliefs Inventory, RPA = Responses to Positive Affect Scale. Data in this table reflect  $n = 95$  (50 high anxiety, high life satisfaction, 45 high anxiety low life satisfaction) complete data available for the MANOVA.

Higher scores on each of the subscales reflect higher emotion- and self-focused positive rumination, or higher dampening of positive moods, respectively. Cronbach's alpha was 0.84, 0.83, and 0.83 for emotion, self, and dampening subscales in the present study, respectively.

### Procedure

After providing anonymous informed consent, participants completed questionnaire and demographic measures online via Qualtrics. All procedures were approved by The University of Texas at Tyler's Institutional Review Board and were offered to students in qualifying psychology courses that offered course credit or extra credit for research participation.

### Results

Of the 100 participants who qualified for the study based on high anxiety and low anhedonic depression scores ( $n = 53$  high anxiety, high life satisfaction;  $n = 47$  high anxiety, low life satisfaction), 2 individuals scored 3 SD below the mean on PSWQ score (1 low life satisfaction, 1 high life satisfaction) and were not included in analyses. There were no other outliers (defined as 3 SD above or below the mean) for any other questionnaire measure. Three participants ( $n = 2$  high life satisfaction and  $n = 1$  low life satisfaction) had missing data on one or more questionnaire measures and were not included in analyses involving those questionnaires. Pearson's correlations amongst questionnaire measures are presented in Table 2. Life

satisfaction correlated positively with measures of gratitude, grit, hope, savoring, and emotion- and self-focused positive rumination, but not with dampening of positive emotions. Life satisfaction correlated negatively with the low levels of depression represented in the sample and did not correlate with the high levels of anxious arousal or worry.

Following the hypothesis that high and not low levels of life satisfaction would be associated with higher self-reported indicators of psychological well-being, a Group (high anxiety crossed with high and low life satisfaction) MANOVA was run with the psychological well-being indicators as dependent variables (gratitude, grit, hope, savoring, and positive rumination). Descriptive statistics for questionnaire measures for both groups are presented in Table 1. An overall multivariate Group effect was evident using the Wilks' lambda criterion,  $F(7, 87) = 3.72, p = .001$ . Univariate follow-up tests showed that consistent with expectation, the high anxious and high life satisfaction group reported higher levels of gratitude,  $F(1, 97) = 10.40, p = .002$ , grit,  $F(1, 97) = 6.57, p = .012$ , hope,  $F(1, 97) = 18.32, p < .001$ , savoring,  $F(1, 96) = 5.73, p = .019$ , and self-focused positive rumination  $F(1, 97) = 5.08, p = .027$  than the high anxious low life satisfaction group. High anxiety groups did not differ on emotion-focused positive rumination,  $F(1, 96) = 2.02, p = .158$ , or dampening of positive rumination,  $F(1, 96) = 3.21, p = .076$ .

**Table 2.** Correlations amongst questionnaire measures

	1	2	3	4	5	6	7	8	9	10	11
1. PSWQ	1.0										
2. MASQ-AA	-.47**	1.0									
3. MASQ-AD	-.31**	.52**	1.0								
4. BMSLSS	.19	-.16	-.38**	1.0							
5. GS-6	.08	-.09	-.19	.43**	1.0						
6. Hope	-.00	-.13	-.32**	.54**	.21*	1.0					
7. Grit	.17	-.22*	-.30**	.36**	.25*	.40**	1.0				
8. SBI-Total	.04	.09	-.06	.31**	.37**	.25*	.17	1.0			
9. RPA-EF	.08	-.16	-.31**	.26*	.16	.42**	.15	.43**	1.0		
10. RPA-SF	.16	-.22*	-.46**	.38**	.22*	.46**	.27**	.28**	.76**	1.0	
11. RPA D	.02	-.14	.05	-.11	-.12	.01	-.06	-.35**	-.04	.01	1.0

**Note.** \*\* Indicates correlation is significant at  $p < .01$  level, \* indicates correlation is significant at  $p < .05$  level. PSWQ = Penn State Worry Questionnaire; MASQ-AA = the Anxious Arousal subscale of the Mood and Anxiety Symptom Inventory; MASQ-AD = the 8-item subset of the Anhedonic Depression subscale of the Mood and Anxiety Symptom Inventory; BMSLSS = Brief Multidimensional Student Life Satisfaction Survey; GS-6 = Gratitude Scale; Hope = Trait Hope Scale; Grit = the Grit scale, SBI = Savoring Beliefs Inventory, RPA = Responses to Positive Affect Scale,; EF= Emotion-Focused Positive Rumination; SF = Self-Focused Positive Rumination; D = Dampening Positive Emotion.

## Discussion

The present study examined whether college students reporting high levels of anxiety and low levels of co-occurring anhedonic depression who were categorized into high or low life satisfaction groups would differ in self-reported gratitude, grit, hope, savoring of positive affect, and rumination on positive emotions. Consistent with a dual factor model of mental health and with hypotheses, students with high levels of anxiety who reported high and not low levels of life satisfaction also reported higher levels of gratitude, grit, hope, savoring of positive experiences, and self-focused positive rumination. This finding stands in contrast to negative associations found in the literature between anxiety and measures of life satisfaction, gratitude, grit, hope, and savoring of positive experiences (e.g., Arnau et al., 2007; Bourland et al., 2000; Daig et al., 2009; Eisner et al., 2009; McCullough et al., 2002; Sheridan et al., 2015; although see Headley et al., 1993; MacCann & Roberts, 2010). It is important to note that the previous anxiety literature has not controlled for the confound of anhedonic depression, addressed in the present study.

Present results caution against viewing individuals with high levels of anxiety monolithically. Participants in the present study displayed a range of life satisfaction levels, and higher life satisfaction was associated with higher self-reported gratitude, grit, hope, savoring of positive experiences, and self-focused positive rumination, consistent with a dual factor model of mental health. Life satisfaction, the grouping variable used in the present study in line with previous dual factor studies, correlated positively and moderately with most of the well-being indicators in the present study. This result is consistent with the idea of covitality, or the co-occurrence of positive mental health indicators with one another (for review see, Jones et al., 2013; Renshaw & Bolognino, 2016). The presence of covitality has implications for measuring potentially one or two key psychological well-being indicators alongside psychological distress, and broadening anxiety intervention and prevention targets to include a focus on these key well-being indicators in addition to anxiety symptoms.

A unidimensional approach has encouraged a myopic focus on anxiety symptom reduction to the relative exclusion of enhancing psychological well-being in standard intervention studies (e.g., Tirpak et al., 2019; Widnall et al., 2019). A dual factor conceptualization could meaningfully broaden intervention and prevention targets for individuals with

high levels of anxiety. For example, individuals with high levels of anxiety who also report low levels of psychological well-being may benefit from positive activity interventions in order to increase well-being, as was the case in a sample of treatment-seeking adults with anxiety and depression symptoms, where positive activity interventions were associated with positive affect increases as well as anxiety and depression symptom reduction (Taylor et al., 2017).

In another study, an intervention targeted to positive affect (PAT) was compared to an intervention targeted to negative affect (NAT; Craske et al., 2019). Results indicated that the PAT intervention was associated not only with increased positive affect but also reduced anxiety and depression symptoms. Furthermore, the authors concluded that PAT was associated with greater increases in positive affect, reductions in anxiety and depression symptoms, and lower probability of suicidality at a 6-month follow-up than NAT (Craske et al., 2019). These results are important as traditional interventions for anxiety target symptom (and presumably negative affect) reduction rather than pursuing the alternative, possibly more efficacious, pathway of increasing positive affect. Taken together, measuring psychological indicators of well-being and considering them as treatment targets alongside anxiety symptom reduction appears to be a worthwhile and attainable goal in intervention research.

Anxiety prevention efforts may be similarly enhanced by considering a dual-factor conceptualization. For example, in addition to screening students for symptoms of anxiety in order to offer tertiary prevention programs on college campuses (e.g., Kenardy et al., 2003, 2006; Schmidt et al., 2007), screening for low levels of life satisfaction may provide an important converging indicator of students who need support. In addition, tracking psychological well-being indicators alongside measures of distress can provide important converging indicators of the effectiveness of universal prevention programs targeted to college students (for review see, Conley et al., 2013).

Contrary to expectation, emotion-focused positive rumination did not differ as a function of life satisfaction within students reporting high levels of anxiety in the present study. In the present sample, emotion-focused positive rumination did not correlate with the measures of anxiety used, consistent with previous undergraduate student samples unselected for anxiety that also did not find a correlation between these measures (e.g., Eisner et al., 2009; Feldman et al.,

2008; McEvoy et al., 2018). Although life satisfaction is positively associated with emotion-focused positive rumination in the present study and in the literature (e.g., Yang & Guo, 2014), the high levels of anxiety that were selected for in the present study may temper the usefulness of emotion-focused positive rumination in differentiating between those who report higher than lower levels of life satisfaction.

Also contrary to expectation, dampening of positive emotions did not differ as a function of life satisfaction within students reporting high levels of anxiety in the present study. It is important to note that dampening of positive emotion was higher in the present study compared to unselected samples of college students (e.g., Feldman et al., 2008; McEvoy et al., 2018). Evidence in the anxiety literature suggests that individuals reporting high levels of anxiety may find emotional experiences distressing, including unpleasant and pleasant ones (Keough et al., 2010; Kashdan & Breen 2008), and efforts are engaged in to avoid or dampen these emotional experiences (Stapinski et al., 2010; Zvolensky & Forsyth, 2002). Present results indicate that students reporting high levels of anxiety and higher life satisfaction levels do not dampen positive emotions less than those reporting high levels of anxiety and lower life satisfaction levels, consistent with recommendations to help clients with high levels of anxiety learn tools to upregulate positive emotions as a useful treatment target (e.g., Carl et al., 2013; Tirpak et al., 2019).

This study had several limitations including that all psychological well-being indicators were measured using self-report. Future research should attempt to include collateral information such as academic or health records, if appropriate, as such data can expand to real-world objective indicators of well-being on performance and health. The present sample included mostly female, young, White, and highly educated participants, limiting generalizability, and future research should attempt to include other samples of individuals reporting high levels of anxiety that are more diverse. For example, individuals negotiating lower levels of educational opportunity or who are in a clinical setting may not show as much variance in well-being indicators. Finally, although anxiety is generally characterized by high negative affect and varying levels of positive affect, it would have been useful to measure trait positive and negative affect in the present study as converging indicators of well-being alongside the measures used in the present study. Doing so would have allowed for a more complete characterization of positive and negative affect in the present sample,

including the relationship of these measures to the well-being indicators that were measured.

Despite its limitations, the present study represents a novel application of the dual factor model of mental health with a sample of college students reporting high levels of anxiety. Contrary to a unipolar model of mental health, high levels of anxiety were not associated exclusively with low levels of life satisfaction. These data argue against a monolithic symptoms-based view of individuals reporting high levels of anxiety. Indeed, targeting psychological well-being alongside symptom reduction in both intervention and prevention efforts appears to provide a promising and underutilized pathway in optimizing mental health for individuals reporting high levels of anxiety.

## Compliance with Ethical Standards

### Ethical Standards

All study procedures involving human participants followed institutional and/or national research committee ethical standards and the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All procedures were also approved by The University of Texas at Tyler's Institutional Review Board and were offered to students in qualifying psychology courses that offered course credit or extra credit for research participation.


### Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

## ORCID

Sarah M. Sass  <https://orcid.org/0000-0001-6843-8736>

Received: September 23, 2020

Accepted: November 24, 2020

Published Online: December 04, 2020

## References

- Abubakar, A., van de Vijver, F., Alonso-Arbiol, I., He, J., Adams, B., Aldhafri, S., Aydinli-Karakulak, A., Arasa, J., Boer, D., Celenk, O., Dimitrova, R., Ferreira, M., Fischer, R., Mbebeb, F., Frías, M.,

- Fresno, A., Gillath, O., Harb, C., ...Tair, E. (2016). Measurement invariance of the Brief Multidimensional Student's Life Satisfaction Scale among adolescents and emerging adults across 23 cultural contexts. *Journal of Psychoeducational Assessment, 34*(1), 28-38. <https://doi.org/10.1177/0734282915611284>
- Albee, G. W. (1998). Fifty years of clinical psychology: Selling our soul to the devil. *Applied and Preventive Psychology, 7*(3), 189-194. [https://doi.org/10.1016/S0962-1849\(05\)80021-6](https://doi.org/10.1016/S0962-1849(05)80021-6)
- Auerbach, R. P., Alonso, J., Axinn, W. G., Cuijpers, P., Ebert, D. D., Green, J. G., Hwang, I., Kessler, R. C., Liu, H., Mortier, P., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Aguilar-Gaxiola, S., Al-Hamzawi, A., Anrade, L. H., Benjet, C., Caldas-de-Almeida, J. M., Florescu, S., ... Bruffaerts, R. (2016). Mental disorders among college students in the World Health Organization World Mental Health Surveys. *Psychological Medicine, 46*(14), 2955-2970. <https://doi.org/10.1017/S0033291716001665>
- Arnau, R. C., Rosen, D. H., Finch, J. F., Rhudy, J. L., & Fortunato, V. J. (2007). Longitudinal effects of hope on depression and anxiety: A latent variable analysis. *Journal of Personality, 75*(1), 43-64. <https://doi.org/10.1111/j.1467-6494.2006.00432.x>
- Barlow, D.H., & Craske, M.G. (2006). *Mastery of your anxiety and panic: Workbook*. 4th ed. Oxford University Press.
- Behar, E., Alcaine, O., Zullig, A. R., & Borkovec, T. D. (2003). Screening for generalized anxiety disorder using the Penn State Worry Questionnaire: A receiver operating characteristics analysis. *Journal of Behavior Therapy and Experimental Psychiatry, 34*(1), 25-43. [https://doi.org/10.1016/S0005-7916\(03\)00004-1](https://doi.org/10.1016/S0005-7916(03)00004-1)
- Blanco, C., Okuda, M., Wright, C., Hasin, D. S., Grant, B. F., Liu, S.-M., & Olfson, M. (2008). Mental health of college students and their non-college-attending peers: Results from the National Epidemiologic Study on Alcohol and Related Conditions. *Archives of General Psychiatry, 65*(12), 1429-1437. <https://doi.org/10.1001/archpsyc.65.12.1429>
- Bosley, H. G., Fisher, A. J., & Taylor, C. B. (2018). Differential responses of positive affect, negative affect, and worry in CBT for generalized anxiety disorder: A person-specific analysis of symptom course during therapy. *Psychotherapy Research, 28*(4), 630-642. <https://doi.org/10.1080/10503307.2016.1233366>
- Bourland, S. L., Stanley, M. A., Snyder, A. G., Novy, D. M., Beck, J. G., Averill, P. M., & Swann, A. C. (2000). Quality of life in older adults with generalized anxiety disorder. *Aging & Mental Health, 4*(4), 315-323. <https://doi.org/10.1080/0713649960>
- Bryant, F. (2003). Savoring Beliefs Inventory (SBI): A scale for measuring beliefs about savouring. *Journal of Mental Health, 12*(3), 175-196. <https://doi.org/10.1080/0963823031000103489>
- Carl, J. R., Soskin, D. P., Kerns, C., & Barlow, D. H. (2013). Positive emotion regulation in emotional disorders: A theoretical review. *Clinical Psychology Review, 33*(3), 343-360. <https://doi.org/10.1016/j.cpr.2013.01.003>
- Carl, J. R., Fairholme, C. P., Gallagher, M. W., Thompson-Hollands, J., & Barlow, D. H. (2014). The effects of anxiety and depressive symptoms on daily positive emotion regulation. *Journal of Psychopathology and Behavioral Assessment, 36*(2), 224-236. <https://doi.org/10.1007/s10862-013-9387-9>
- Clark, L. A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology, 100*(3), 316-336. <https://doi.org/10.1037/0021-843X.100.3.316>
- Conley, C. S., Durlak, J. A., & Dickson, D. A. (2013). An evaluative review of outcome research on universal mental health promotion and prevention programs for higher education students. *Journal of American College Health, 61*(5), 286-301. <https://doi.org/10.1080/07448481.2013.802237>
- Craske, M. G., Meuret, A. E., Ritz, T., Treanor, M., Dour, H., & Rosenfield, D. (2019). Positive affect treatment for depression and anxiety: A randomized clinical trial for a core feature of anhedonia. *Journal of Consulting and Clinical Psychology, 87*(5), 457-471. <https://doi.org/10.1037/ccp0000396>
- Daig, I., Herschbach, P., Lehmann, A., Knoll, N., & Decker, O. (2009). Gender and age differences in domain-specific life satisfaction and the impact of depressive and anxiety symptoms: A general population survey from Germany. *Quality of Life Research, 18*(6), 669-678. <https://doi.org/10.1007/s11136-009-9481-3>

- Diener, E., & Ryan, K. (2009). Subjective well-being: A general overview. *South African Journal of Psychology, 39*(4), 391-406. <https://doi.org/10.1177/008124630903900402>
- Doorley, J. D., Goodman, F. R., Disabato, D. J., Kashdan, T. B., Weinstein, J. S., & Shackman, A. J. (2020). The momentary benefits of positive events for individuals with elevated social anxiety. *Emotion*. Advance online publication. <https://doi.org/10.1037/emo0000725>
- Dodge, R., Daly, A. P., Huyton, J., & Sanders, L. D. (2012). The challenge of defining well-being. *International Journal of Wellbeing, 2*(3), 222-235. <https://doi.org/10.5502/ijw.v2i3.4>
- Duckworth AL, Peterson C, Matthews MD, & Kelly DR. (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology, 92*(6), 1087-1101. <https://doi.org/10.1037/0022-3514.92.6.1087>
- Eisner, L. R., Johnson, S. L., & Carver, C. S. (2009). Positive affect regulation in anxiety disorders. *Journal of Anxiety Disorders, 23*(2), 645-649. <https://doi.org/10.1016/j.janxdis.2009.02.001>
- Eklund, K., Dowdy, E., Jones, C., & Furlong, M. (2011). Applicability of the dual-factor model of mental health for college students. *Journal of College Student Psychotherapy, 25*(1), 79-92. <https://doi.org/10.1080/87568225.2011.532677>
- Feldman, G. C., Joormann, J., & Johnson, S. L. (2008). Responses to positive affect: a self-report measure of rumination and dampening. *Cognitive Therapy and Research, 32*(4), 507-525. <https://doi.org/10.1007/s10608-006-9083-0>
- Franken, K., Lamers, S. M., Ten Klooster, P. M., Bohlmeijer, E. T., & Westerhof, G. J. (2018). Validation of the Mental Health Continuum-Short Form and the dual continua model of well-being and psychopathology in an adult mental health setting. *Journal of Clinical Psychology, 74*(12), 2187-2202. <https://doi.org/10.1002/jclp.22659>
- Fresco, D. M., Mennin, D. S., Heimberg, R. G., & Turk, C. L. (2003). Using the Penn State Worry Questionnaire to identify individuals with generalized anxiety disorder: A receiver operating characteristic analysis. *Journal of Behavior Therapy and Experimental Psychiatry, 34*(3-4), 283-291. <https://doi.org/10.1016/j.jbtep.2003.09.001>
- Jones, C. N., You, S., & Furlong, M. J. (2013). A preliminary examination of covitality as integrated well-being in college students. *Social Indicators Research, 111*(2), 511-526. <https://doi.org/10.1007/s11205-012-0017-9>
- Kansky, J., & Diener, E. (2017). Benefits of well-being: Health, social relationships, work, and resilience. *Journal of Positive School Psychology, 1*(2), 129-169.
- Kashdan, T., & Breen, W. (2008). Social anxiety and positive emotions: A prospective examination of a self-regulatory model with tendencies to suppress or express emotions as a moderating variable. *Behavior Therapy, 39*(1), 1-12. <https://doi.org/10.1016/j.beth.2007.02.003>
- Kenardy, J., McCafferty, K., & Rosa, V. (2003). Internet-delivered indicated prevention for anxiety disorders: A randomized controlled trial. *Behavioural and Cognitive Psychotherapy, 31*(3), 279-289. <https://doi.org/10.1017/S1352465803003047>
- Kenardy, J., McCafferty, K., & Rosa, V. (2006). Internet-delivered indicated prevention for anxiety disorders: Six-month follow-up. *Clinical Psychologist, 10*(1), 39-42. <https://doi.org/10.1080/13284200500378746>
- Keogh, E., & Reidy, J. (2000). Exploring the factor structure of the Mood and Anxiety Symptom Questionnaire (MASQ). *Journal of Personality Assessment, 74*(1), 106-125. <https://doi.org/10.1207/S15327752JPA740108>
- Keough, M., Riccardi, C., Timpano, K., Mitchell, M., & Schmidt, N. (2010). Anxiety symptomatology: The association with distress tolerance and anxiety sensitivity. *Behavior Therapy, 41*(4), 567-574. <https://doi.org/10.1016/j.beth.2010.04.002>
- Keyes, C.L.M. (2005) Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology, 73*(3), 539-548. <https://doi.org/10.1037/0022-006X.73.3.539>
- Khazanov, G. K., & Ruscio, A. M. (2016). Is low positive emotionality a specific risk factor for depression? A meta-analysis of longitudinal studies. *Psychological Bulletin, 142*(9), 991-1015. <https://doi.org/10.1037/bul0000059>
- MacCann, C., & Roberts, R. (2010). Do time management, grit, and self-control relate to academic achievement independently of conscientiousness? In R. Hicks (Ed.). *Personality and individual differences: Current directions* (pp. 79-90). Australian Academic Press.
- McCullough, M. E., Emmons, R. A., & Tsang, J. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and*



- Social Psychology*, 82(1), 112-127. <https://doi.org/10.1037//0022-3514.82.1.112>
- McEvoy, P. M., Hyett, M. P., Ehring, T., Johnson, S. L., Samtani, S., Anderson, R., & Moulds, M. L. (2018). Transdiagnostic assessment of repetitive negative thinking and responses to positive affect: Structure and predictive utility for depression, anxiety, and mania symptoms. *Journal of Affective Disorders*, 232, 375-384. <https://doi.org/10.1016/j.jad.2018.02.072>
- Meyer, T. J., Miller, M. L., Metzger, R. L., Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*, 28(6), 487-495. [https://doi.org/10.1016/0005-7967\(90\)90135-6](https://doi.org/10.1016/0005-7967(90)90135-6)
- Naragon-Gainey, K., Watson, D., & Markon, K. E. (2009). Differential relations of depression and social anxiety symptoms to the facets of extraversion/positive emotionality. *Journal of Abnormal Psychology*, 118(2), 299-310. <https://doi.org/10.1037/a0015637>
- Molina, S., & Borkovec, T. D. (1994). The Penn State Worry Questionnaire: Psychometric properties and associated characteristics. In G. C. L. Davey & F. Tallis (Eds.), *Worrying: Perspectives on theory, assessment and treatment* (pp. 265-283). Wiley.
- Nitschke, J. B., Heller, W., Imig, J. C., McDonald, R. P., & Miller, G. A. (2001). Distinguishing dimensions of anxiety and depression. *Cognitive Therapy and Research*, 25(1), 1-22. <https://doi.org/10.1023/A:1026485530405>
- Renshaw, T. L., & Bolognino, S. J. (2016). The College Student Subjective Well-being Questionnaire: A brief, multidimensional measure of undergraduate's covitality. *Journal of Happiness Studies*, 17(2), 463-484. <https://doi.org/10.1007/s10902-014-9606-4>
- Renshaw, T. L., & Cohen, A. S. (2014). Life satisfaction as a distinguishing indicator of college student functioning: Further validation of the two-continuum model of mental health. *Social Indicators Research*, 117(1), 319-334. <https://doi.org/10.1007/s11205-013-0342-7>
- Sass, S. M., Evans, T. C., Xiong, K., Mirghassemi, F., & Tran, H. (2017). Attention training to pleasant stimuli in anxiety. *Biological Psychology*, 122, 80-92. <https://doi.org/10.1016/j.biopsycho.2016.03.003>
- Schmidt, N. B., Eggleston, A. M., Woolaway-Bickel, K., Fitzpatrick, K. K., Vasey, M. W., & Richey, J. A. (2007). Anxiety sensitivity amelioration training (ASAT): A longitudinal primary prevention program targeting cognitive vulnerability. *Journal of Anxiety Disorders*, 21(3), 302-319. <https://doi.org/10.1016/j.janxdis.2006.06.002>
- Seligson, J., Huebner, E. S., & Valois, R. F. (2003). Preliminary validation of the Brief Multidimensional Students' Life Satisfaction Scale. *Social Indicators Research*, 61(2), 121 - 145. <https://doi.org/10.1023/A:1021326822957>
- Sheridan, Z., Boman, P., Mergler, A., & Furlong, M. J. (2015). Examining well-being, anxiety, and self-deception in university students. *Cogent Psychology*, 2(1). Article 993850. <https://doi.org/10.1080/23311908.2014.993850>
- Smith, N. D., Suldo, S., Hearon, B., & Ferron, J. (2020). An application of the dual-factor model of mental health in elementary school children: Examining academic engagement and social outcomes. *Journal of Positive Psychology & Wellbeing*, 4(1), 49-68.
- Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., Yoshinobu, L., Gibb, J., Langelle, C., & Harney, P. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology*, 60(4), 570-585. <https://doi.org/10.1037//0022-3514.60.4.570>
- Stapinski, L., Abbott, M., & Rapee, R. (2010). Evaluating the cognitive avoidance model of generalised anxiety disorder: Impact of worry on threat appraisal, perceived control and anxious arousal. *Behaviour Research and Therapy*, 48(10), 1032-1040. <https://doi.org/10.1016/j.brat.2010.07.005>
- Suldo, S. M., & Shaffer, E. J. (2008). Looking beyond psychopathology: The dual-factor model of mental health in youth. *School Psychology Review*, 37(1), 52-68. <https://doi.org/10.1080/02796015.2008.12087908>
- Suldo, S. M., Thalji-Raitano, A., Kiefer, S. M., & Ferron, J. M. (2016). Conceptualizing high school students' mental health through a dual-factor model. *School Psychology Review*, 45(4), 434-457. <https://doi.org/10.17105/SPR45-4.434-457>
- Taylor, C. T., Lyubomirsky, S., & Stein, M. B. (2017). Upregulating the positive affect system in anxiety and depression: Outcomes of a positive activity

- intervention. *Depression and Anxiety*, *34*(3), 267-280. <https://doi.org/10.1002/da.22593>
- Tirpak, J. W., Cassiello-Robbins, C., Ametaj, A., Olesnycky, O. S., Sauer-Zavala, S., Farchione, T. J., & Barlow, D. H. (2019). Changes in positive affect in cognitive-behavioral treatment of anxiety disorders. *General Hospital Psychiatry*, *61*, 111-115. <https://doi.org/10.1016/j.genhosppsy.2019.06.008>
- Watson, D. (2009). Differentiating the mood and anxiety disorders: A quadripartite model. *Annual Review of Clinical Psychology*, *5*, 221-247. <https://doi.org/10.1146/annurev.clinpsy.032408.153510>
- Watson D, Clark L. A., Weber K, Assenheimer J. S., Strauss M. E., McCormick R. A. (1995). Testing a tripartite model: I. Evaluating the convergent and discriminant validity of anxiety and depression symptom scales. *Journal of Abnormal Psychology*, *104*(1), 3-14. <https://doi.org/10.1037/0021-843X.104.1.3>
- Watson, D., & Naragon-Gainey, K. (2010). On the specificity of positive emotional dysfunction in psychopathology: Evidence from the mood and anxiety disorders and schizophrenia/schizotypy. *Clinical Psychology Review*, *30*(7), 839-848. <https://doi.org/10.1016/j.cpr.2009.11.002>
- Watson, D., Weber, K., Assenheimer, J. S., Clark, L. A., Strauss, M. E., & McCormick, R. A. (1995). Testing a tripartite model: I. Evaluating the convergent and discriminant validity of anxiety and depression scales. *Journal of Abnormal Psychology*, *104*(1), 3-14. <https://doi.org/10.1037/0021-843X.104.1.3>
- Widnall, E., Price, A., Trompetter, H., & Dunn, B. D. (2020). Routine cognitive behavioural therapy for anxiety and depression is more effective at repairing symptoms of psychopathology than enhancing well-being. *Cognitive Therapy and Research*, *44*(1), 28-39. <https://doi.org/10.1007/s10608-019-10041-y>
- Yang, H., & Guo, W. (2014). Chinese version of the responses to positive affect questionnaire: Testing the factor structure, reliability, and validity in a college student sample. *Psychological Reports*, *115*(2), 467-484. <https://doi.org/10.2466/08.21.PR.0.115c22z8>
- Zullig, K. J., Huebner, E. S., Gilman, R., Patton, J. M., & Murray, K. A. (2005). Validation of the brief multidimensional students' life satisfaction scale among college students. *American Journal of Health Behavior*, *29*(3), 206-214. <https://doi.org/10.5993/AJHB.29.3.2>
- Zvolensky, M., & Forsyth, J. (2002). Anxiety sensitivity dimensions in the prediction of body vigilance and emotional avoidance. *Cognitive Therapy and Research*, *26*(4), 449-460. <https://doi.org/10.1023/A:1016223716132>