Psychological Distress and Indicators of Wellbeing Using the Dual Continua Model in a Rural Sample

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A growing body of research provides support for a dual continua model of mental health where psychological distress and wellbeing are separable and related dimensions. This model contrasts with the unipolar model of mental health, which suggests that psychological distress and wellbeing are on opposite ends of the same continuum. The present study expands on the dual continua model of mental health literature within a rural clinical sample. Participants (n = 127) were categorized into 4 groups (higher and lower levels of anxiety and/or depression crossed with high and low levels of life satisfaction) and assessed on wellbeing indicators (gratitude and quality of life). Present results partially supported both the unipolar and dual continua model of mental health models. Specifically, consistent with the dual continua model of mental health, higher levels of psychological distress were not uniformly associated with lower levels of gratitude or quality of life, and conversely, lower levels of distress were not uniformly associated with higher levels of gratitude or quality of life. Consistent with the dual continua model of mental health and unipolar models of mental health, the low distress and high life satisfaction group reported higher levels of both gratitude and quality of life. Results extend the dual continua model of mental health literature in a rural, treatment-seeking sample. The results suggest wellbeing measures should be included when assessing and treating psychological distress in order to holistically treat the individual.

Keywords: Dual continua model of mental health, psychological distress, satisfaction with life, quality of life, gratitude

Traditionally, mental illness has been described as the presence of psychological distress, and mental wellbeing as the absence of distress, known as the unipolar model of mental health, where psychological distress and wellbeing exist as two opposite points on a continuum (Arslan & Allen, 2020; Carver et al., 2021; Keyes, 2005, 2007). However, a growing body of research suggests that individuals can experience symptoms of psychological distress while simultaneously experiencing elevated levels of psychological wellbeing and can conversely experience low levels of psychological distress while simultaneously experiencing low levels of psychological wellbeing (e.g., Arslan et al., 2024; Franken et al.,

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2018; Keyes et al., 2005). This duality implies that mental health and well-being exist not on a single spectrum, where wellbeing is merely the absence of psychological distress and vice versa. Instead, wellbeing and psychological distress represent two separate, but related dimensions, a concept known as the dual continua model (DCM) of mental health (Arslan, 2018; Carver et al., 2021; Greenspoon & Sasklofske, 2001). The DCM model challenges and is broader than the traditional unipolar model of mental health.

It is important to understand the definitions of psychological wellbeing and psychological distress to better understand the DCM. Psychological wellbeing has been described as a multidimensional construct encompassing broad domains such as autonomy, personal growth, positive relationships, self-acceptance, purpose in life, and environmental mastery (Ryff, 2013). In contrast, psychological distress is often defined as unpleasant experiences or symptoms including but not limited to feelings of stress, anxiety, and/or depression which can be indicative of mental illness at high levels

(Cuijpers et al., 2009).

Researchers operating from the DCM have identified satisfaction with life (SWL), gratitude, and quality of life (QOL) as predictors of psychological wellbeing (Kardas et al., 2019). Satisfaction with life refers to a set of self-imposed standards that individuals judge themselves on. The degree to which these standards are met denotes a high or low level of satisfaction with life (Pavot & Diener, 1993). Quality of life encompasses individuals' perceptions of various aspects of their life, including personal health, relationships, education status, work environment, social status, wealth, sense of security and safety, freedom, autonomy, and physical surroundings (Teoli & Bhardwaj, 2023). Moreover, quality of life has been found to be a strong predictor of subjective wellbeing and happiness, which has made it a particularly useful construct to measure in health settings to better capture the needs of patients more broadly than merely monitoring illness (Medvedev & Landhuis, 2018). Gratitude is a person's ability to recognize the positive characteristics of their life and appreciate those experiences regardless of difficulties (Bhullar et al., 2015; Hill et al., 2013). It involves acknowledging the good things in life and being thankful for them. Gratitude has emerged as a crucial factor that influences wellbeing (Kardas et al., 2019). Individuals who exhibit gratitude tend to have higher levels of life satisfaction (Armenta et al., 2022; Szcześniak & Soares, 2011). Additionally, gratitude can mitigate the effects of poor mental health and enhance satisfaction with life (Valikhani et al., 2019). Recent studies indicate that gratitude interventions significantly improve depression and anxiety symptoms (e.g., Diniz et al., 2023).

In addition to being associated with higher levels of satisfaction with life, gratitude is strongly associated with higher levels of QOL (Crouch et al., 2020; Kardas et al., 2019; Mills et al., 2015). Practicing gratitude fosters a sense of connectedness, social support, and personal health (Boggiss et al., 2020; Crouch et al., 2020), which are components of QOL (Teoli & Bhardwaj, 2023). It also contributes to strengthening QOL by fostering positive mental health (Diniz et al., 2023). and buffering against the negative effects of mental health issues (Armenta et al., 2022; Szcześniak & Soares, 2011). While poor mental health is generally associated with a diminished quality of life (Bhullar et al., 2015; Eaton et al., 2014; Hill et al., 2013), gratitude can bring attention to the positive aspects of an individual's life which may allow for an increase in QOL overall. Even in the presence of psychological distress, gratitude enables individuals to find satisfaction with life, highlighting the interconnectedness of gratitude, satisfaction with life, and quality of life and their significance in promoting overall wellbeing (Diniz et al., 2023).

Underserved Individuals in Rural Areas

Over time, rural areas have faced complex challenges regarding access to health and mental healthcare (Douthit et al., 2015; Nguyen et al., 2016). The Northeast Texas region is comprised of multiple rural communities where mental health problems such as depression and anxiety have been reported at levels greater than the national average (Nehme et al., 2021). This risk for developing untreated mental health issues is exacerbated by a lack of access to mental healthcare. This is due to various social, logistical, and geographical barriers such as too few providers, stigma, and long distances that

must be traveled to receive treatment (Gamm et al., 2010; Komiti et al., 2006; Wong et al., 2019). Such factors contribute to mental health disparities and unmet mental health needs compared to individuals living in urban areas. It is therefore important that primary care physicians, often the first point of contact for individuals with mental health concerns in rural areas, appropriately assess and treat patients in rural areas (Douthit et al., 2015; Nguyen et al., 2016). The dual continua model of mental health provides a more holistic approach to mental health and addressing mental health concerns, and this model has been understudied in clinical samples (e.g., Franken et al., 2018), including rural samples.

Purpose of the Present Study

The goal of the present study was to investigate the relationship between indicators of psychological wellbeing (quality of life, satisfaction with life, and gratitude) and psychological distress (e.g., depression and anxiety) among adults in a rural area of Northeast Texas who are seeking mental health care. This study aims to build upon previous research using the dual-continua model by exploring it within a clinical population in a rural area with significant unmet mental health needs. Consistent with previous studies (e.g., Carver et al., 2021; Kennedy et al., 2023; Kirby et al., 2022), we categorized individuals with elevated levels of anxiety and/or depression symptoms and those with lower levels of these symptoms into high and low life satisfaction groups. We then investigated whether these four groups differed in self-reported wellbeing indicators, such as quality of life and gratitude.

Previous literature has not frequently explored whether high life satisfaction is associated with higher levels of reported wellbeing indicators (Maddux, 2017) and whether low life satisfaction is associated with lower levels of wellbeing indicators, regardless of levels of psychological distress, addressed in the present study. In line with the DCM (Greenspoon & Sasklofske, 2001) we hypothesized that individuals reporting elevated levels of anxiety and/or depression would not uniformly report lower levels of wellbeing indicators, as would be expected by the unipolar model of mental health. Specifically, we predicted that high distress and high life satisfaction would be associated with higher levels of gratitude and quality of life, compared to those with higher levels of distress and low life satisfaction. Consistent with previous literature and the dual continua model, (Carver et al., 2021; Kennedy et al., 2023; Kirby et al., 2022) on non-treatment seeking populations, we predicted that individuals with lower levels of distress and high life satisfaction would similarly report higher levels of gratitude and quality of life than those with low levels of distress and low life satisfaction.

Method

Participants

The data collection protocol was approved by the University of Texas Health Science Center at Tyler (number: HSC 1101 UTHSC Tyler; date: 09/23/2020) IRB. Participants were recruited from a rural academic health center in Northeast Texas. They were required to be at least 18 years old and current Northeast Texas residents. The data were collected as part of a larger study investigating the health and economic costs of undertreated mental health conditions in the region. A total of 249 participants were invited to complete the

survey via Qualtrics of whom 127 completed all measures. Participants were grouped based on their responses to Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001), Generalized Anxiety Disorder questionnaire (GAD-7; Spitzer, 2006), and Satisfaction with Life Survey (SWLS; Diener, 1985) responses. Participants were predominantly female ($n = 92$, 72.4%), white ($n = 77$, 60.6%) and between the ages of 24 – 81 years old ($M = 57.1$, $SD = 15.4$).

Measures

The data reported in the present paper are part of a larger Qualtrics survey that included questions about general healthcare utilization and barriers to accessing care, but these were not reported here as they are not part of the research question of the present paper and will be reported in a separate study.

Patient Health questionnaire (PHQ-9). The PHQ-9 is a nine-item measure used to assess the severity of depression symptoms and is used to monitor changes in the severity of depression symptoms in response to treatment. Final scores range from 0-27, with cut-off scores for mild depression symptoms (5-9), moderate depression symptoms (10-14), moderately severe depression symptoms (15-19), and severe depression symptoms (20-27). The assessment has been shown to have strong construct and external validity (Kroenke et al., 2001).

Generalized Anxiety Disorder questionnaire (GAD-7). The GAD-7 is a seven-item measure used to assess the severity of anxiety symptoms. Final scores range from 0-21, with cut-off scores for mild anxiety symptoms (5-9), moderate anxiety symptoms (10-14), and severe anxiety symptoms (15-21). This measure has been found to have good reliability and validity (Spitzer et al., 2006).

Satisfaction with Life Scale. The SWLS is a five-item measure used to measure global cognitive judgments of one's life satisfaction (Diener et al., 1985). A seven-point Likert scale is used to indicate how much they agree or disagree with each item ranging from 7 strongly agree to 1 strongly disagree. The scores are summed up and compared to a normative sample (Pavot & Diener, 2008): extremely dissatisfied (5-9), dissatisfied (10-14), slightly dissatisfied (15-19), neutral (20), slightly satisfied (21-25), satisfied (26-30), and extremely satisfied (31-35). The SWLS has been found to have good reliability and validity in previous studies with a Cronbach's alpha ranging from .84-.87 (Diener et al., 1985; Adler & Fagley, 2005; Galanakis et al., 2017)

Quality of Life Scale (QOLS). The QOLS (Burckhardt & Anderson, 2003) is a 16-item self-report questionnaire designed to assess an individuals' perception of their personal health, relationships, education status, work environment, social status, wealth, sense of security and safety, freedom, autonomy, and physical surroundings (Teoli & Bhardwaj, 2023). Respondents endorse each item on a 7-point Likert-type scale (where 1 = terrible and 7 = delighted) with total scores ranging from 16-112 and higher scores indicating better quality of life. The QOLS has been found to have good internal validity with Cronbach's alpha ranging from .82-.88 (Burckhardt & Anderson, 2003).

Gratitude Questionnaire - Six-Item Form (GQ-6). The GQ-6 (McCollough et al., 2002) is a six-item self-report questionnaire designed to assess individual differences in the proneness to experience gratitude in daily life. Gratitude, like other affects, conceivably could exist as an affective trait, a mood, or an emotion. Respondents endorse each item on a 7-point Likert-type scale (where 1 = strongly disagree and 7 = strongly agree). The GQ-6 has been found to have good reliability with a Cronbach's alpha ranging from .82-.87 (McCollough et al., 2002).

Analysis Strategy

Consistent with previous studies (Carver et al., 2021; Kennedy et al., 2023; Kirby et al., 2022) categorical grouping variables were created using scores on the PHQ-9, GAD-7, and SWLS. The high distress group included participants with a score of 5 or greater on the GAD-7 and/or a score of 5 or greater on the PHQ-9. The low distress group included participants with a score of below 5 on both the GAD-7 and PHQ-9. The higher and lower distress groups were crossed with high or low life satisfaction groups. Specifically, high life satisfaction was defined as the SWLS median of 24 or higher, and low life satisfaction was defined as an SWLS score of 23 or lower. See Table 1 for sample sizes of each group.

Outliers were defined as 3 SD above or below the mean and were excluded from analyses involving the measure, including: one outlier below the mean on the QOL, two outliers above the mean on the GAD-7, and one outlier above the mean on the PHQ-9. There were no outliers identified on SWLS or GQ6. Group means and standard deviations for each questionnaire and each group can be found in Table 1. The mean and standard error for the high distress group is described in Figure 1 and Figure 2. The mean and standard error for the low distress group is described in Figure 3 and Figure 4. Analyses were repeated including all outliers, and there was no difference in the pattern of significance of results.

Table 1. Group means and standard deviations

Measure	High Distress				Low Distress			
	High SWLS $n = 18$		Low SWLS $n = 34$		High SWLS $n = 51$		Low SWLS $n = 24$	
	M	SD	M	SD	M	SD	M	SD
PHQ-9	7.72	3.20	8.26	3.86	1.49	1.35	1.38	1.47
GAD-7	6.06	3.83	7.38	3.55	1.08	1.25	1.08	1.53
GQ-6	5.99	0.65	5.52	1.02	6.39	0.66	5.67	1.07
SWLS	27.61	3.24	14.59	5.33	28.78	3.29	19.08	3.23
QOL	84.83	10.73	70.97	11.54	93.20	9.59	78.63	11.03

Note. PHQ-9 = Patient Health Questionnaire – 9; GAD-7 = Generalized Anxiety Disorder – 7; GQ-6 = Gratitude questionnaire 6 item; SWLS = Satisfaction with Life Scale; QOL = Quality of Lif

A 4 Group (higher and lower psychological distress crossed with high and low life satisfaction) multivariate analysis of variance (MANOVA) was conducted with GQ-6 and QOLS total scores as the dependent variables, consistent with previous studies (e.g., Carver et al., 2021; Kennedy et al., 2023; Kirby et al., 2022). Data were analyzed using IBM SPSS Statistics (Version 28). Prior to conducting analyses, we confirmed that baseline PHQ-9 scores did not differ among the high distress, $F(1, 51) = 3.46$, $p = .612$ and low distress groups, $F(1, 74) = 0.22$, $p = .738$, and that GAD-7 did not differ among the high distress, $F(1, 51) = 20.72$, $p = .218$ and low distress groups, $F(1, 74) = 0.00$, $p = .988$.

Results

An overall MANOVA Group effect was evident using the Wilks' lambda criterion, $F(6, 244) = 14.967$, $p < .001$. We ran 2 separate univariate ANOVAs to follow up the group effect, in line with our a priori hypotheses. A Bonferroni correction (an alpha of .05 divided by 2 tests for QOL and GQ-6) required $p < .025$ to achieve statistical significance and reduce the risk of type I error.
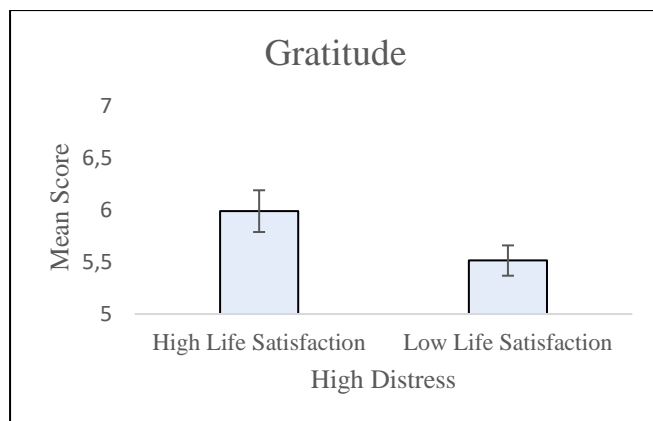

Figure 1. Mean and standard error for high distress group and gratitude

Figure 2. Mean and standard error for high distress group and quality of life

The first set of univariate follow-up tests were conducted separately for GQ-6 and QOLS within the high distress groups following the hypothesis that within the high distress groups, higher life satisfaction would be associated with higher levels of wellbeing

indicators, consistent with a dual continua model. This hypothesis was partially supported. Specifically, within high distress groups, the high life satisfaction group reported higher levels of quality of life, $F(1, 50) = 17.805$, $p < .001$, but not gratitude, $F(1, 50) = 3.193$, $p = .080$, than the low life satisfaction group. Please see Figure 1.
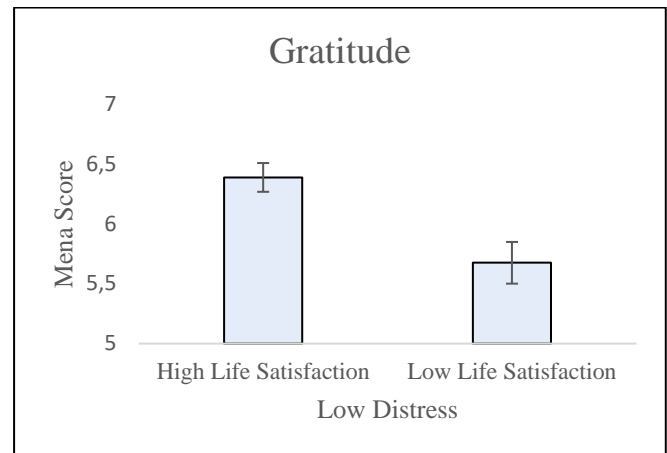

Figure 3. Mean and standard error for low distress group and gratitude

Figure 4. Mean and standard error for low distress group and quality of life

Pearson's correlation coefficients among measures used in the current study are listed in Table 2. The second set of univariate follow-up tests were conducted within the low distress groups following the hypothesis that higher life satisfaction would be associated with higher levels of wellbeing indicators. Consistent with the hypothesis and the DCM literature, the high life satisfaction group reported higher levels of quality of life, $F(1, 73) = 34.174$, $p < .001$ and gratitude, $F(1, 73) = 12.598$, $p < .001$ than the low life satisfaction group.

Discussion

The current study examined the relationship of wellbeing indicators (satisfaction with life, quality of life, and gratitude) and psychological distress (anxiety and depression) for treatment seeking adults in a rural primary care setting. Our results were partially consistent with both the unipolar and DCM models of

Table 2. Correlations amongst questionnaires

	1. PHQ-9	2. GAD-7	3. GQ-6	4. SWLS	5. QOL
1. PHQ-9	1.0				
2. GAD-7	.78**	1.0			
3. GQ-6	-.26**	-.29**	1.0		
4. SWLS	-.41**	-.50**	.44**	1.0	
5. QOL	-.45**	-.40**	.39**	.69**	1.0

*Note. ** Indicates correlation is significant a p < .01 level. PHQ-9 = Patient Health Questionnaire – 9; GAD-7 = Generalized Anxiety Disorder – 7; GQ-6 = Gratitude questionnaire 6 item; SWLS = Satisfaction with Life Scale; QOL = Quality of Life.*

mental health. Individuals with elevated levels of psychological distress and high life satisfaction reported higher levels of quality of life and higher levels of gratitude if outliers were included (consistent with DCM) but the gratitude result was not stable as it disappeared when outliers were included (consistent with a unipolar model) compared to individuals with elevated levels of psychological distress and lower reported levels of satisfaction with life. This quality-of-life finding is consistent with previous studies (e.g., Kirby et al., 2022) in showing that high levels of distress and quality of life can co-exist. The lack of finding a difference in gratitude between high and low life satisfaction groups within the high distress group is conceptually consistent with a recent meta-analysis conducted by Kerry et al. (2023), which looked at the efficacy of gratitude treatments for individuals who were experiencing psychological distress. They found that while there was a link between gratitude and satisfaction with life, it was not strong enough to explain positive outcomes in gratitude treatment interventions among those reporting psychological distress, and indicated there is likely a mechanism underlying the link between life satisfaction and gratitude that is still unexplained.

Consistent with our hypothesis and the DCM, within the low distress groups, individuals who reported higher levels of life satisfaction also reported higher levels of gratitude and quality of life. This result is consistent with the DCM and not the unipolar model of mental health in that low levels of distress were not uniformly related to higher levels of quality of life. This finding is also consistent with Kirby et al. (2022) who found that individuals that reported higher life satisfaction also reported higher levels of quality of life within those who reported lower levels of distress.

There are a number of limitations to the present study. First, self-report measures were the primary measure. In future studies, including other measures such as health records and interviews to corroborate self-reported data will be important. Although the PHQ-9 and GAD-7 have good psychometric properties such as reliability and validity (Kroenke et al., 2001; Spitzer et al., 2001) more comprehensive instruments such as the Beck Depression Inventory-II (BDI-II; Brown et al., 1996), or Beck Anxiety Inventory (BAI; Beck et al., 1988) could have been used in conjunction with the shorter survey instruments. Finally, this study used cross-sectional data which does not allow for causal relationships or directionality to be interpreted (Savitz & Wellenius, 2023). Future research would benefit from utilizing a longitudinal design.

Conclusion

Despite its limitations, the present study demonstrates the first application, to our knowledge, of the dual continua model of mental health in a rural, clinical sample using quality of life and gratitude as measures of wellbeing alongside traditional measures of psychological distress. Taken together, the present findings suggest the importance of considering wellbeing in primary care and behavioral health treatment settings alongside psychological distress, which could contribute to a more holistic understanding of mental health. In rural treatment-seeking populations with mental health concerns, primary care physicians are often the first and only point of contact for patients facing elevated symptoms of anxiety and/or depression (Terry & Terry, 2019). Present data suggest that a traditional medical model approach focusing on symptom reduction, to the exclusion of an equally weighted focus on optimizing wellbeing when treating physical health conditions, is not the most efficacious approach when approaching patients experiencing psychological distress. Physicians should screen for wellbeing indicators and include satisfaction with life, quality of life, gratitude, and other wellbeing indicators when assessing and treating patients presenting with psychological distress. Future research and its application to clinical work using a more holistic approach, is consistent with the DCM in focusing not only on decreasing psychological distress but also increasing wellbeing. Such an approach would allow physicians to more comprehensively assess and treat the mental health concerns of medical patients in rural settings.

Compliance with Ethical Standards

Author Contributions. Hannah E. Cornwell was the primary researcher and contributed to all components of the study and manuscript including conceptualization, study design, analysis of

results, and discussion of results. Sarah M. Sass oversaw and provided supervision for all components of the research project and manuscript. Nicholas Sims-Rhodes, Emily Barena, and Joseph Brewer lead the literature review and assisted with writing sections of the original manuscript. Anastasia Miller, Kimberly S. Elliott, Yordanos M. Tiruneh, and Karan P. Singh reviewed and edited the original manuscript. All authors contributed to the final version of the manuscript and approved the final submitted version.

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