THE PHQ-9 AND GAD-7 DEPRESSIVE AND ANXIETY MULTIPURPOSE MEASURES: EXPLORING GENDER DIFFERENCES AND CLINICAL UTILITY REGARDING PSYCHOLOGICAL FLEXIBILITY

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Abstract

Background: The rising global prevalence of depressive and anxiety symptoms underscores the urgent need to update and refine the tools used for screening, diagnosing, and monitoring these conditions. The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) includes nine items corresponding to each symptom of major depressive disorder as outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). The General Anxiety Disorder 7-item (GAD-7; Spitzer et al., 2006) includes seven items, with three addressing the core criteria A and B from the DSM-IV and the remaining four derived from existing anxiety scales. To further enhance the clinical understanding of these disorders, the examination of specific depressive and anxiety symptoms in relation to pillars of psychological flexibility, namely openness to experience, behavioural awareness, and valued action (Francis et al., 2016), was undertaken. This approach should strengthen intervention planning by providing deeper insights into psychological flexibility as a protective factor that could alleviate some symptoms. *Method:* In total, 1,143 participants (291 men, 830 women, and 22 with other gender identities) completed an online questionnaire package that included the PHQ-9, GAD-7, and CompACT. Cut-off scores for the PHQ-9 and GAD-7 were used to categorize participants. *Results:* Chi-square tests of independence indicated that more men than women (36.5% vs. 27.9%) reported minimal depressive symptoms; more women reported mild depressive symptoms than men (28.5% vs. 22.2%). Similarly, a higher proportion of men reported minimal anxiety symptoms (41.4% vs. 27.4%), and more women experienced severe anxiety symptoms (20.7% vs. 7.6%). Two one-way ANOVAs revealed disproportionate levels of psychological flexibility across different PHQ-9 severity levels; interestingly, there were no differences according to the GAD-7 categorization. Furthermore, when controlling for gender in multiple hierarchical regression analyses, depressive and anxiety symptoms emerged as significant predictors of psychological flexibility pillars. Specifically, depressive symptoms related to changes in weight and appetite, fatigue, feelings of worthlessness or guilt, and anxiety symptoms like excessive worry, fear of anticipated events, and irritability were especially influential. *Conclusion:* Various depressive and anxiety symptoms demonstrated predictive relationships with different pillars of psychological flexibility, highlighting the nuanced associations between specific symptoms and aspects of adaptive coping strategies. Interventions that focus on enhancing psychological flexibility pillars (e.g., acceptance and commitment therapy) should be able to target specific depressive and anxiety symptoms.

Keywords: *Depressive symptoms, anxiety symptoms, psychological flexibility, gender.*

1. Introduction

In recent years, there has been a notable rise in the global prevalence of major depressive disorder, which increased by 27.6%, and anxiety disorders, which increased by 25.6% (World Health Organization, 2022). These elevations underscore the urgent need to update and refine the tools used for screening, diagnosing, and monitoring these conditions. The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) encompasses nine items corresponding to each of the symptoms of major depressive disorder that are outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). The General Anxiety Disorder 7-item (GAD-7; Spitzer et al., 2006) includes seven items–three items address core criteria A and B from the DSM-IV, and the four items are derived from existing anxiety scales. Both the PHQ-9 and GAD-7 include cut-off scores to classify respondents based on the assessment of their symptom severity. For the PHQ-9, total scores between 0–4 indicate minimal depressive symptoms, 5–9 indicate mild, 10–14 moderate, 15–19 moderately severe, and 20–27 are of severe severity (Kroenke et al.,

2001). For the GAD-7, symptom severity score categorization is similar (0–4 = minimal, 5–9 = mild, and 10–14 = moderate), with scores equal to or greater than 15 indicative of severe anxiety symptoms. Although these categorization schemes aid in clinical communications and intervention planning, several limitations emerge, including loss of heterogeneity of clinical populations and oversimplification of the complexity of mental disorder symptoms (Stein et al., 2013).

To further enhance the clinical understanding of these disorders, it is essential to examine other factors beyond the predisposing, precipitating, and perpetuating issues related to the development and maintenance of depressive and anxiety symptoms (Ellis et al., 2017). Minimal research has examined these measures in relation to psychological flexibility despite the positive impact of this concept on well-being (Masuda & Tulley, 2012). Psychological flexibility is a concept that involves understanding and evaluating one's current state and choosing to apply oneself in a manner that is befitting of one's goals and values (Doorley et al., 2020; Hayes et al., 2011). Acceptance and Commitment Therapy (ACT) is a therapeutic approach intending to increase psychological flexibility in clinical populations through six core skills: 1) defusion (distancing an individual from their internal experiences); 2) experiential avoidance and acceptance (accepting internal experiences as part of the human experience rather than trying to avoid them); 3) contacting the present moment (fully engaging in the present moment); 4) self-as-context (perceiving oneself beyond the object of inner experiences); 5) values (personal needs and desires); and 6) committed action (choosing behaviours leading to a fulfilled life; Hayes et al., 2011). Interventions that focus on enhancing psychological flexibility are associated with lower rates of anxiety (Masuda & Tulley, 2012) and depression (Fonseca et al., 2020). Taken together, understanding how the pillars of psychological flexibility are related to symptom severity measured by the PH-9 and GAD-7 may inform the development of comprehensive treatment approaches and improved overall well-being among individuals struggling with these conditions. Thus, our objective was to investigate the relationship between the severity of depressive and anxiety symptoms and distinct aspects of psychological flexibility.

2. Methods

2.1. Participants

Given the data sample is part of a larger research project, participants were recruited from May 2021 until December 2023. In total, 1,143 participants (291 men, 830 women, and 22 with other gender identities) completed a questionnaire package online. Overall, 29.7% of participants reported minimal depressive symptoms, 26.6% had mild symptoms, 23.7% had moderate symptoms, 12.2% had moderately severe symptoms, and 7.0% had severe depressive symptoms. Moreover, 30.6% reported minimal anxiety symptoms, 27.4% had mild, 24.1% had moderate, and 17.7% had severe anxiety symptoms. Overall, 42.9% of participants met the cut-off score warranting further evaluation for a potential diagnosis of a depressive disorder, while 41.8% met the criteria for anxiety disorder assessment.

2.2. Measures

The PHQ-9 (Spitzer et al., 1999) operationalizes depressive symptoms and severity using nine items based on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). A score higher than 10 indicates moderate to severe depression severity, which may warrant further clinical intervention. This cut-off score has shown a sensitivity and specificity of both 88% for major depressive disorder (Kroenke et al., 2001). The scale indicated good internal consistency ($\alpha = .89$).

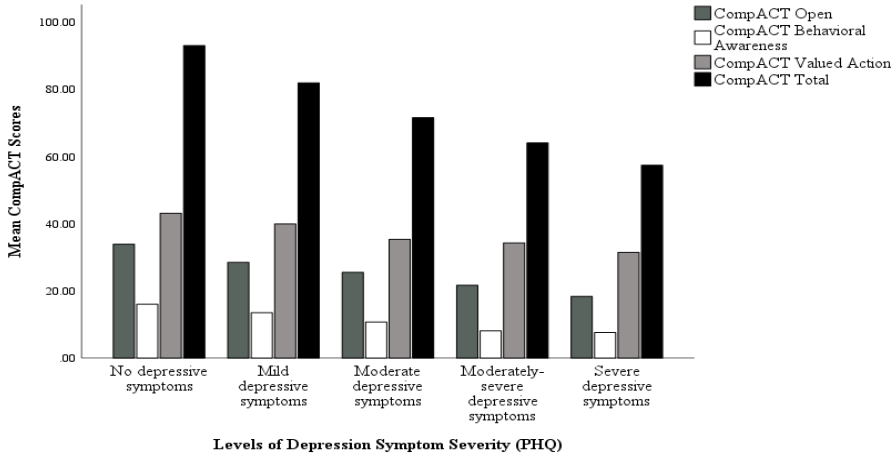
The GAD-7 (Spitzer et al., 2006) operationalizes anxiety symptoms and severity with seven items using a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). Scores greater than 10 suggest the presence of a clinically significant condition. This cut-off score has shown a sensitivity of 89% and specificity of 82% for generalized anxiety disorder (Spitzer et al., 2006). The GAD-7 has good internal consistency ($\alpha = .93$).

The Comprehensive Assessment of Acceptance and Commitment Therapy Processes (CompACT; Francis et al., 2016) assesses psychological flexibility with 23 items through three ACT processes: Openness to Experience (acceptance and defusion), Behavioural Awareness (present-moment awareness and self-as-context), and Valued Action (values and committed actions). The 7-point Likert scale ranges from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores indicating greater psychological flexibility. The CompACT total and subscales scores showed good internal consistency: total scale ($\alpha = .86$), Openness to Experience ($\alpha = .77$), Behavioural Awareness ($\alpha = .85$), and Valued Action ($\alpha = .89$).

3. Results

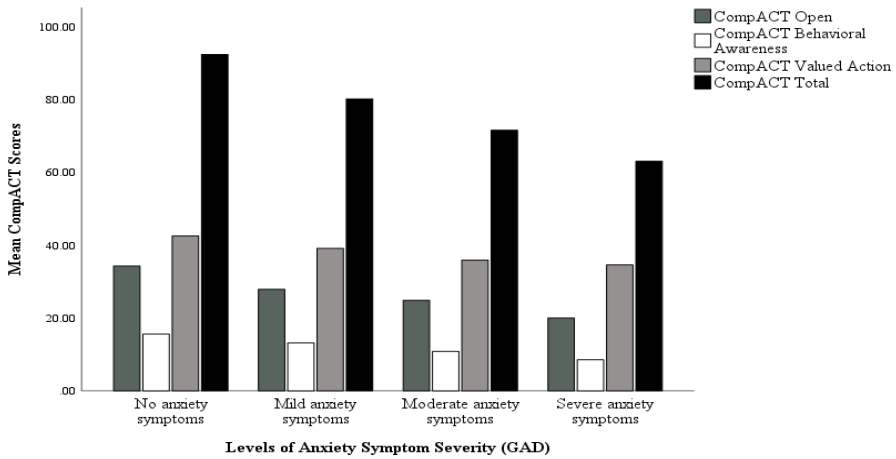
Two one-way analyses of variance (ANOVA) were performed to compare the differences between PHQ-9 and GAD-7 symptom severity categories in terms of pillars of psychological flexibility. For the PHQ-9, significant Welch's *F*s confirmed large differences among severity categories relative to pillars of psychological flexibility: Openness to Experience, $F(4,216.55) = 80.90$, $p < .001$, $\eta^2 = .25$, Behavioural Awareness, $F(4,623.22) = 83.62$, $p < .001$, $\eta^2 = .23$, and Valued Action, $F(4,356.44) = 43.99$, $p < .001$, $\eta^2 = .14$. Given a significant Levene's test confirmed unequal population variances, Games-Howell posthoc analyses were conducted to understand variation between symptom severity categories (see Figure 1). Across each pillar of psychological flexibility, the differences between moderately severe and severe depressive symptoms were non-significant: Openness to Experience ($p = .08$), Behavioural Awareness ($p = .91$), Valued Action ($p = .99$), and total score of psychological flexibility ($p = .07$). Interestingly, for Valued Action, there were no significant differences between moderate and moderately severe ($p = .58$) and severe depressive symptoms ($p = .54$). All other comparisons revealed significant differences at $p < .001$ level across psychological flexibility pillars.

Figure 1. Means of PHQ-9 Symptom Severity Scores Based on Psychological Flexibility Levels.



A second one-way ANOVA compared differences in variance of the GAD-7 symptom severity categories across the pillars of psychological flexibility. Welch's *F*s revealed significant differences between symptoms category according to their levels of Openness to Experience, $F(3,375.77) = 107.58$, $p < .001$, $\eta^2 = .27$, Behavioural Awareness, $F(3,502.89) = 73.78$, $p < .001$, $\eta^2 = .16$, and Valued Action, $F(3,578.91) = 32.53$, $p < .001$, $\eta^2 = .08$. Games-Howell posthoc analyses revealed statistically significant differences across all severity categories (minimal, mild, moderate and severe) of the GAD-7 across Openness to Experience, Behavioral Awareness, and the Total scores of psychological flexibility at the $p < .001$ level for each comparison; however, participants with moderate and severe GAD-7 symptoms had similar Valued Action scores, $p = .46$ (see Figure 2).

Figure 2. Means of GAD-7 Symptom Severity Scores Based on Psychological Flexibility Levels.



Chi-square tests of independence were conducted to compare the prevalence rates of men and women in each PHQ-9 and GAD-7 symptom severity category. There was a significant association between gender and PHQ-9 symptom severity category, χ^2 (4) = 10.43, p = .034. To compare proportions across genders, a series of z-tests with adjusted p-values using the Bonferroni correction ($p < .05$) indicated there were significantly more men than women with minimal (36.5% vs. 27.9%) and mild (28.5% vs. 22.2%) symptoms of depression. Moreover, there was a significant association between gender and GAD-7 symptom severity category, χ^2 (3) = 35.14, $p < .001$. There were significantly more men than women with minimal (41.4% vs. 27.4%) anxiety symptoms, whereas the opposite was true for severe anxiety symptoms (7.6% vs. 20.7%).

To determine if gender and specific symptoms from the PHQ-9 or GAD-7 predicted pillars of psychological flexibility, six hierarchical multiple regression analyses were conducted, with the CompACT subscales measuring Openness to Experience, Behavioural Awareness, and Valued Action as outcome variables. The overall model using gender and PHQ-9 to predict Openness to Experience was statistically significant, $F(10, 835) = 31.14$, $p < .001$, $R^2 = .27$, as well as Behavioural Awareness, $F(10, 983) = 29.80$, $p < .001$, $R^2 = .23$, and Valued Action $F(10, 1120) = 21.97$, $p < .001$, $R^2 = .17$ (see Table 1). The overall model of gender and GAD-7 symptoms predicting Openness to Experience was statistically significant, $F(8, 835) = 40.63$, $p < .001$, $R^2 = .28$, as well as Behavioural Awareness, $F(8, 983) = 30.47$, $p < .001$, $R^2 = .20$, and Valued Action, $F(8, 1120) = 14.53$, $p < .001$, $R^2 = .09$.

Table 1. Multiple Hierarchical Regression Models Predicting Psychological Flexibility Pillars.

	Openness to Experience		Behavioural Awareness		Valued Action	
PHQ-9 items	β	*p*	β	*p*	β	*p*
Step 1						
Gender	- 0.04	.436	- 0.00	.924	0.09	.003
Step 2						
Gender	- 0.00	.936	0.02	.557	0.11	< .001
Little interest/pleasure	- 0.05	.224	- 0.09	.019	- 0.05	.168
Feeling down/depressed	- 0.15	.002	- 0.11	.012	- 0.06	.179
Poor sleep or oversleeping	- 0.13	.002	- 0.07	.049	0.08	.032
Tiredness/low energy	- 0.01	.820	0.02	.616	- 0.05	.232
Poor appetite or overeating	0.02	.554	0.01	.892	- 0.07	.053
Feeling bad about self	- 0.23	< .001	- 0.09	.032	- 0.20	< .001
Trouble concentrating	- 0.09	.034	- 0.15	< .001	- 0.08	.039
Psychomotor agitation/retardation	0.00	.957	- 0.11	.003	- 0.02	.552
Suicidal ideation/self-harm	- 0.02	.546	- 0.04	.278	- 0.02	.668
	Openness to Experience		Behavioural Awareness		Valued Action	
GAD-7 items	β	*p*	β	*p*	β	*p*
Step 1						
Gender	- 0.03	.436	- 0.00	.924	0.09	.003
Step 2						
Gender	0.06	.046	0.06	.038	0.14	< .001
Feeling nervous/anxious	- 0.05	.327	0.03	.548	- 0.05	.336
Uncontrollable worry	- 0.09	.133	- 0.05	.361	- 0.03	.609
Worry about different things	- 0.18	.002	- 0.01	.847	- 0.16	.007
Trouble relaxing	- 0.06	.193	- 0.10	.039	0.02	.728
Restlessness	- 0.07	.103	- 0.15	< .001	- 0.08	.057
Easily annoyed/irritable	- 0.07	.090	- 0.08	.049	- 0.11	.008
Afraid something awful happening	- 0.12	.009	- 0.18	< .001	- 0.04	.391

4. Discussion

Comparing levels of psychological flexibility across varying degrees of depressive and anxiety symptom severity may provide important information about how symptom severity is associated with general psychological wellness. The current results revealed no significant differences between the moderately severe and severe PHQ-9 across levels of psychological flexibility. Based on cut-off scores established more than two decades ago, we found no distinctions between symptoms of moderately severe and severe depression. Additionally, there were no significant differences between the moderate and severe categories of the GAD-7 for the valued action pillar of psychological flexibility. This suggests that for this dimension of psychological flexibility, the severity of the symptoms continues to negatively impact one's ability to act in line with their values to a particular level. Based on the current findings, it seems plausible that categorizing the severity of depressive symptoms is only somewhat practical. The results indicate no statistically significant differences between the highest levels of severity for both scales, suggesting a

ceiling effect and the need to re-evaluate the symptom severity categories. Moreover, depressive symptoms related to changes in weight and appetite, fatigue or loss of energy, and feelings of worthlessness or inappropriate guilt were significant predictors of all three pillars of psychological flexibility. Anxiety symptoms associated with excessive worry about various things, fear of future events, and irritability were the most common symptoms predicting the pillars of psychological flexibility. In summary, various depressive and anxiety symptoms demonstrated predictive relationships with different pillars of psychological flexibility, highlighting the nuanced associations between specific symptoms and aspects of adaptive coping strategies.

5. Conclusions

Future research should investigate the research validity and clinical utility of merging the moderately severe and severe depressive symptoms categories into one. The present results suggest that combining these severity categories would not make a significant difference based on levels of PF. Nevertheless, further research is necessary to substantiate this assertion.

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