# UNIVERSITY OF PADOVA

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**Final Dissertation**

**Transdiagnostic Approach to Generalised Anxiety Disorder and Major Depressive Disorder**

***Supervisor***
**Professor Caterina Novara**

***Candidate*: Albina Jaxiyeva**
***Student ID number*: 2041309**

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# Table of Contents

# 0. Abstract

This dissertation explores the transdiagnostic approach to treating anxiety disorders, particularly generalised anxiety disorder (GAD), and unipolar depressive disorders, notably major depressive disorder (MDD). The comorbidity of these conditions is considerably high, which complicates treatment and is associated with more severe symptoms, lower quality of life and other complications.

This review investigates two major approaches: the Unified Protocol and the Wellbeing Course. These methods offer comprehensive treatment for individuals with comorbid anxiety and depressive disorders by addressing the transdiagnostic features that occur in these disorders.

The review examines the efficacy and benefits of these approaches compared to traditional diagnosis-specific treatments, highlighting the potential for transdiagnostic therapies to improve outcomes for individuals struggling with comorbid disorders.

# 1. Introduction

## 1.1 Anxiety disorders and GAD

The Diagnostic and Systematic Manual of Mental disorders (DSM-5), 5th edition (2022) defines anxiety disorders as disorders characterised by excessive fear and anxiety, often accompanied by associated behavioural disturbances. Fear represents the emotional reaction to an imminent threat, whether real or perceived, while anxiety entails the anticipation of potential future threats.

This dissertation will mainly explore Generalised Anxiety Disorder (GAD), a prominent type among anxiety disorders. The primary characteristics of Generalised Anxiety Disorder are persistent and excessive anxiety and worry across multiple various domains, such as work and academic performance, future, and or interpersonal relations, which the person struggles to manage. Moreover, the individual encounters at least 3 of 6 physical symptoms, that are restlessness; fatigue; trouble focusing; irritability; muscle tension; and disrupted sleep patterns. These symptoms have to be present more days than not for at least 6 months (APA, 2022).

GAD demonstrates a heritability of around 30% and has genetic association with a cluster of internalising disorders, including panic disorder, social anxiety, agoraphobia and particularly MDD (Gottschalk & Domschke, 2017). Studies have identified a shared genetic factor between neuroticism and generalised anxiety disorder (GAD), along with distinct genetic and environmental factors specific to GAD.  (Mackintosh et al, 2006; Hettema et al, 2006).

Moreover, GAD entails significant psychosocial impairments across various aspects of life, such as work, social interactions, and domestic responsibilities (Naragon-Gainey et al, 2014). In addition, GAD has been associated with heart problems including coronary heart disease, coronary artery disease and atherosclerosis (Roest et al, 2010; Celano et al, 2016). Heart rate variability also seems significantly lower in anxiety patients compared to healthy individuals (Cheng et al, 2022).

Furthermore, GAD seems to have an impact on cognitive functions. In one study, individuals diagnosed with GAD demonstrated reduced cognitive flexibility, as evidenced by slower performance on the trail-making test, along with heightened sensitivity to negative cues,

particularly in identifying emotions like disgust and anger at a quicker pace (Baussay et al, 2024).

## 1.2 Unipolar depressive disorders and MDD

Unipolar depressive disorders, as defined by DSM-5 (2022), are characterised by the presence of depressed, empty, or irritated mood, along with somatic and cognitive changes that considerably impair an individual's ability to function. The classic condition of this disorder group is major depressive disorder (MDD). It is marked by discrete episodes of clear differences in affect, cognition and neurovegetative functions and interepisode remissions, that last at least 2 weeks, often lasting considerably longer. Oftentimes, the disorder is recurrent (APA, 2022).

MDD is quite prevalent among the global population with around 300 million suffering from it (WHO, 2017; WHO, 2023). It is one of the leading causes of disability accounting for 5.6% of all years lost due to disability (YLDs) worldwide moving up from fifth to the second position as the primary cause of YLDs, even after adjusting for the impact of COVID-19 (COVID-19 Mental Disorders Collaborators, 2021).

There is notable cognitive impairment in patients with MDD in various areas. For example, the study by Zaremba et al (2019) demonstrated that individuals diagnosed with MDD exhibited significant impairment in processing speed, working memory and spatial working memory compared to healthy controls. Moreover, the severity of memory deficits was associated with the frequency of the previous depressive episodes and the overall length of the episode, indicating the long-lasting cognitive effects with recurrent depressive episodes (Gorwood, 2008). This claim is supported by a more recent study by Liu et al (2021), in which participants underwent a neurocognitive assessment battery covering executive function, memory, processing speed, and attention. This study demonstrated that both first-episode and recurrent MDD groups exhibited significantly poorer results in all of the

domains. However, compared to the first-episode group, recurrent MDD group had a more pronounced cognitive impairment, with some of the components not improving even after remission (Liu et al, 2021).

Additionally to the issues that MDD patients have already to deal with, it could be a substantial economic burden to those suffering from MDD. According to Greenberg (2023), the total costs linked to MDD amounted to 333.7 billion USD in 2019, which is equivalent to 382.4 billion USD in 2023. Moreover, around two thirds of the costs were due to indirect causes, such as work-related presenteeism (13%), absenteeism (11.5%), unemployment (9.1%), all-cause mortality (2.9%) and disability (1.4%) and work-related costs of adults without MDD living in the same household with an adult with MDD (24%). There was a similar study conducted in Spain and when extrapolated to the total spanish population, it showed that MDD had a substantial annual societal cost of 6,415 million euro, with 161 euro per capita.

## 1.3 Comorbidity of GAD and MDD

Both MDD and GAD are disorders that are highly comorbid with other disorders. According to epidemiological research, 59% of patients with GAD also fit the criteria for MDD (Carter et al, 2001). Another cohort study found that 76% of individuals with GAD had a current comorbid MDD, and 86% had a lifetime comorbid MDD (Lamers et al, 2011). Another study states that of the MDD patient population with comorbid anxiety, GAD is the most common among them (Dold et al, 2017).

One reason for such comorbidity could be the connectivity of their symptoms. The symptoms often co-occur (Cramer et al, 2010). A high density was seen in the network structure between somatic symptoms in MDD and GAD, meaning that most symptoms were either directly or indirectly related to one another (Bekhuis et al, 2016).

Another reason could be similar risk factors. For example, Barlow et al (2018) suggested that there are three core vulnerabilities in developing anxiety and depressive disorders: negative affect, negative association with emotional experiences, and avoidance of negative emotions. Negative affect is defined as a temperamental predisposition to experience negative emotions intensely and frequently. Moreover, longitudinal study by Prince et al (2021) demonstrated that baseline neuroticism was a risk factor for GAD and MDD.

There is also evidence of similar genetic risks for both GAD and MDD. According to Kendler et al (2003) internalising disorders, which includes MDD and GAD, are a part of the same genetic liability. Another twin study supported this statement as it found high genetic correlation between the 2 disorders.

Comorbidity of GAD and MDD could worsen the symptoms for the individuals. Evidence suggests that compared to patients with MDD alone, MDD patients with GAD experienced worse depressive symptoms, decreased sleep quality, and lower physical and psychological quality of life. Even when adjusting for potential confounders, patients with comorbid MDD and GAD had poorer quality of life (Zhou et al, 2017). Moreover, comorbid GAD in patients with MDD was linked to a decreased chance of remission (Kelly & Mezuk, 2017).

In comparison to controls and MDD-only groups, the group with comorbid GAD and MDD had the largest reductions in heart rate variability (Kemp et al, 2012). Moreover, MDD with comorbid GAD is associated with comorbid asthma (Dold et al, 2017).

The pharmacological treatment for the comorbid GAD and MDD could pose several challenges. For example, patients with comorbid anxiety and major depression experience more side effects on citalopram and other antidepressants compared to those patients without anxious features (Fava et al, 2008).

# 2. Transdiagnostic Approach

Traditional treatment options, such as cognitive behavioural treatment (CBT), are usually applied and studied using methods specific to each disorder, so there are distinct models to explain how symptoms within each condition begin and persist. For example, Beck's psychopathology theory states that every psychological disorder has a unique cognitive profile, which may be seen in the processing bias and the patterns of negative thoughts (Clark, 1999). However, there are many individuals that suffer from several mental illnesses at a time, which could benefit from a more holistic approach. That is where the transdiagnostic treatment comes into play. This approach to treatment was proposed as an alternative method to disorder-specific, to assist individuals with several diagnoses by focusing on the underlying processes shared by those disorders (Mansel et al, 2009).

## 2.1 Types of transdiagnostic approach

In this dissertation, two prominent transdiagnostic approach treatments will be explored: Unified Protocol and Wellbeing Course. They are renowned for their widespread use, especially in the last years, and extensive research aiming to elucidate their effectiveness and potential implications for clinical practice.

### 2.1.1 Unified Protocol

One of the most famous transdiagnostic approaches to emotional disorders is the Unified Protocol (UP) for the Transdiagnostic Treatment of Emotional disorders by Barlow et al (2018). It was developed in response to emerging evidence of high comorbidity and similarity between anxiety disorders and unipolar depressive disorders. Barlow et al (2018) claims that this protocol works with all anxiety and unipolar depressive disorders, and possibly other disorders with notable emotional components. This approach deals with neuroticism by focusing on the avoidance and negative reactions to emotions. Although these reactions

might offer temporary relief, they often lead to more negative emotions in the future and sustain symptoms of disorder. The methods used in this treatment draw heavily from established psychological treatments, emphasising practices such as cultivating mindful awareness, reassessing automatic cognitive appraisals, altering behaviours linked to disordered emotions, and employing exposure techniques.

The program is divided into 8 modules and focuses on attainment of 5 core skills. These skills are helpful in understanding and addressing the underlying processes contributing to emotional disorders.

The first module aims to boost the patient's readiness and motivation for behaviour change by fostering self-efficacy, encouraging the weighing of pros and cons, and guiding the articulation of concrete treatment goals and steps to achieve them.

The second module educates patients on the characteristics and the role of their emotional responses, such as anxiety, anger, sadness, guilt, fear, and positive emotions, helping them understand the adaptive and informative role emotions play in guiding behaviour; patients also learn to monitor and track their emotional responses to identify patterns and potential triggers.

The third module teaches the first core skill of UP, which is called Mindful Emotion Awareness: this is non judgemental and present-focused attention to emotional experiences. During this practice the patients are asked to observe the interaction between thought, feeling and behaviour during an emotional experience

The fourth module teaches patients to identify their automatic thoughts and how they influence emotional reactions. The most common ones in emotional disorders are thinking

traps, such as “jumping to conclusions” and “thinking the worst”. In this module patients are encouraged to use flexible thinking and reappraisal strategies.

The fifth module delves into the behavioural aspect of the emotions, specifically it aims to understand the patterns used to avoid negative emotions. Namely, dampening the experience, safety signals, overt subtle behavioural, and cognitive avoidance. Alternative actions to approach emotions instead of avoiding them are introduced by the therapist.

The sixth module explores the role of physical sensations as a component of emotional experience. This is done by eliciting physical sensations similar to those usually associated with strong emotions with a series of interoceptive exposure exercises. This helps patients in tolerating the sensations and thus lessens the effect of strong physical symptoms on emotion aversion and avoidance.

The seventh module requires a longer time period (at least 2 sessions, compared to 1-2 maximum in other modules) and involves exposing the patients to external and internal emotional triggers to further increase tolerance towards emotions. An Emotion Exposure Hierarchy is created to provide consistent exposure for the rest of the treatment.

The eighth and last module concludes the treatment by evaluating patients’ progress and encouraging maintenance of treatment gains.

These modules and skills utilise a transdiagnostic approach to the relationship between thoughts, feelings and behaviours across different emotional disorders by increasing cognitive flexibility and helping patients tolerate uncomfortable physical sensations.

This protocol was first applied by Ellard et al (2010) and consisted of a maximum of 15 60-minute individual treatment sessions. The results provide initial support for the UP in treating disorders such as GAD, SAD, PDA, OCD, PTSD, and depression, as it demonstrated

reductions in principal and co-occurring disorders. Although reductions in clinical severity were noticeable, only over half of participants achieved responder status and average diagnosis remained at a clinical level post-treatment. In the second study, after some revisions, the results were significantly better with 73% of participants achieving responder status and 60% reaching high end-state functioning. Six-month follow-up revealed lasting benefits since 85% of participants reached responder status (Ellard et al, 2010). However, this study contained a small sample size and did not include a control group.

A study by Barlow et al (2017) conducted a randomised control trial and compared it to single-diagnosis specific treatment and found that results from UP patients were comparable to single-diagnosis specific treatment. Moreover, the results showed that patients benefited more from either of the two than to the waitlist control group. In addition, the UP group had significantly lower dropout rates compared to the single-diagnosis specific group, possibly due to its strategies for improving patient motivation (Barlow et al, 2017).

### 2.1.2 Wellbeing Course

Another known transdiagnostic approach used to treat patients with emotional disorders is the Wellbeing Course (WC) by Titov et al (2011). This course is a clinician-assisted transdiagnostic internet-based CBT treatment program for depression and anxiety disorders. This treatment includes eight online lessons, a summary and/or a homework assignment for each lesson, an online discussion forum for each lesson, moderated by the therapist, regular automatic reminder and notification emails, and instant messaging to allow secure email-type messages with a clinician. Moreover, participants received written materials about assertiveness skills, health anxiety, strategies for improving sleep, and answers to frequently asked

questions regarding the use of skills covered in the lessons and summaries. Stories from the Frontline, which is an extensive collection of forum posts written by participants in previous iCBT programs, addressing themes from each of the eight lessons, were also provided to the participants.

First lesson covers the prevalence, symptoms, and treatment of depression and anxiety, including the information on interaction of symptoms with the secondary materials being vignettes explaining the effect of symptoms and normalisation of struggles during recovery.

Second lesson introduces the fundamentals of cognitive therapy, including strategies for monitoring and challenging thoughts.

Third lesson contains instructions on managing physical symptoms, such as de-arousal strategies and scheduling activities.

Fourth lesson focuses on behavioural activation and provides guidelines and educational content on the topic, while also providing techniques for improving assertive communication

Fifth lesson focuses on practising graded exposure and the forum discussion was on draft hierarchy and results of first attempts at exposure

Sixth lesson offers information and advice on how to challenge dysfunctional beliefs, such as positive, negative and core beliefs, with secondary material being guidelines and information on acting “as if”

Seventh lesson provides strategies for dealing with typical roadblocks for treatment and structured problem solving.

Eighth lesson concludes the treatment with relapse prevention information and creation of plans to prevent them.

The participants were advised to complete 1 Lesson per week, with the assigned homework and to post the answers to the questions on the forum and share their own experiences related to that lesson. In addition, in every interaction the therapist was instructed to include five

components, which were reinforcement of progress, summary of key skills covered in the lesson for that week and motivating participants to complete the homework assignment, normalising possible struggles with treatment, encouragement to stick with the program, and answering questions and giving feedback to participants about the application of the skills. The results of the treatment were as follows: 43-51% of participants in the Treatment group were classified as in remission at post-treatment, compared to 16-19% of the control group. Moreover, 46-51% of participants in the treatment group were classified as recovered compared to 14-22% of the control group. Due to usage of online lessons and other resources to teach many of the skills and provided the information typically taught by the therapist, in this approach the therapist only needed to individualise the program materials for every participant to apply, practice and consolidate the main skills. Therefore, the average total therapist time was under 90 minutes per participant.

Titov et al (2011) also describes the advantages of this protocol compared to diagnosis specific CBT. Firstly, because of the nature of this method, it being transdiagnostic, participants were curious to learn about symptoms and skills which were not first suggested by their principal condition. For instance, participants with the diagnosis of depression stated how beneficial the information on symptoms and management of their subclinical symptoms, of panic and social phobia. This might have affected their motivation to continue and their overall outcomes. Secondly, the transdiagnostic materials implied that participants with co-occurring anxiety and depression could discover techniques targeting the core symptoms that are pertinent to multiple disorders.

First study to measure the effectiveness of this program conducted a randomised controlled trial. The results showed significant improvement in the participants exhibiting reduced scores on measures of anxiety, depression and general distress. Three months after the

programme ended, follow-up data showed that 62% of the treatment group no longer satisfied the diagnostic criteria for their primary condition and 54% had no assessed problems at all. Notably, 81% of the treatment group finished all 8 classes during the 10-week programme and an average of 7.35 lessons completed, the study demonstrated an exceptional adherence rate (Titov et al, 2011).

One study reported significant increases in the enrolment rate for the online CBT program, with more than 500% increase in monthly registration and commencement during the COVID-19 pandemic, compared to pre-pandemic. This could be explained by the increased anxiety and stress in the community, due to the pandemic; disruptions in the in-person mental health facilities; and the media's attention and increased community awareness and promotion of mental health. Moreover, there was a significant and large effect size in symptom severity and psychological distress in participants with depression and anxiety (Mahoney et al, 2021).

## 2.3 Diagnosis-specific vs Transdiagnostic CBT

Transdiagnostic treatment approach yields significant results and, thus, could be a promising treatment type for those struggling with comorbid anxiety and depression disorders. Nevertheless, it is crucial to evaluate if this treatment approach is comparable to traditional CBT, as its effectiveness determines whether it could be considered as a substitute or a viable alternative to other treatments.

In a study conducted in Spain measuring the effectiveness of UP compared to treatment as usual (TAU) for depression and anxiety disorders, it was found that UP had significant results. More specifically, UP condition showed larger improvements in depression, anxiety, and quality of life compared to TAU and greater reductions in neuroticism and negative affect (Osma et al, 2022).

In addition, study by Titov et al (2015) compared transdiagnostic and disorder specific approaches, focusing on MDD and comorbid anxiety disorders. The sample for this study was 290 MDD patients with comorbid anxiety disorders, including GAD, panic disorder and social anxiety disorder. It was found that both treatments significantly reduced symptoms of MDD and comorbid anxiety disorders. Moreover, the gains of these treatments persisted at 24-month follow-up check-in. The results did not differ between the treatments, meaning both are comparable and effective. Interestingly, there were no consistent differences in clinician-guided and self-guided approaches either. This implies that clinicians could achieve significant results without requiring extensive time investments with individual patients.

Another later study by Newby et al (2017) also compared the effectiveness, adherence and patient characteristics of disorder-specific and transdiagnostic internet delivered CBT (iCBT) programs. The sample consisted of 2109 patients in total with 3 groups consisting of transdiagnostic (1005 patients), GAD (738) and MDD (366). Compared to the other 2 groups, patients in the transdiagnostic program had greater baseline psychological distress levels and higher comorbidity rates. Interestingly and contrary to previous findings (Barlow, Titov) transdiagnostic program patients had a lower rate of adherence. However, the authors attribute it to the distress levels mentioned above and age across the course group, rather than the type of iCBT course being completed. Overall, between baseline and post-treatment, scores on all outcome measures of depression, anxiety, psychological distress and functional impairment decreased considerably across all three iCBT programs. Significant improvements in anxiety and depression were shown by more than half of the patients, meaning both programs are comparable in treatment of those symptoms.

# 3. Discussion

This dissertation explored the intricate relationship between GAD and MDD, both individually and in their frequent comorbidity. GAD, characterised by persistent and excessive worry along with numerous physical symptoms, has significant psychosocial and health impacts (APA, 2022; Naragon-Gainey et al, 2014; Roest et al, 2010; Celano et al, 2016; Cheng et al, 2022). Similarly, MDD, marked by prolonged episodes of depressed mood and cognitive impairments, is a leading cause of disability worldwide (APA, 2022; WHO, 2017; WHO, 2023; COVID-19 Mental Disorders Collaborators, 2021). The comorbidity between GAD and MDD is notably high (Carter et al, 2001; Lamers et al, 2011; Dold et al, 2017), with shared genetic (Kendler et al, 2003), environmental (Barlow et al, 2018; Prince et al, 2021), and symptom connectivity (Cramer et al, 2010; Bekhuis et al, 2016) factors contributing to this overlap. This comorbidity exacerbates the severity of symptoms (Kemp et al, 2012), reduces quality of life (Zhou et al, 2017), and complicates treatment (Fava et al, 2008), as individuals with both disorders experience greater impairments and lower remission rates (Kelly & Mezuk, 2017).

The dissertation also examined the efficacy of transdiagnostic treatments, specifically the UP and the WC and compared them to traditional diagnosis-specific Cognitive Behavioral Therapy (CBT). The UP, a structured program addressing the emotional components across various disorders, showed promising results in reducing symptoms and improving patient outcomes, even in comorbid conditions (Barlow et al, 2018). Similarly, the WC, an internet-based CBT program, demonstrated significant effectiveness in treating anxiety and depression, with high adherence and positive outcomes (Titov et al, 2011).

The comparative analysis of transdiagnostic and disorder-specific approaches revealed that both methods are effective in reducing symptoms of GAD and MDD (Ellard et al, 2010;

Barlow et al, 2017). However, the transdiagnostic approach offers additional benefits, such as addressing a broader range of symptoms and improving patient motivation through its comprehensive and flexible structure (Titov et al, 2015; Osma et al, 2022). Despite some challenges, such as higher distress levels in patients undergoing transdiagnostic treatments, the overall findings suggest that transdiagnostic CBT can be a viable and effective alternative to traditional, disorder-specific treatments, particularly for individuals with comorbid anxiety and depression disorders (Newby et al, 2017).

Moreover, the transdiagnostic approach shows to be more cost effective compared to single-diagnosis treatment. In the study by Peris-Baquero et al (2022), the UP and TAU were compared in terms of the amount of sessions, treatment effectiveness, need for medication and cost effectiveness. Both treatment conditions majorly reduced symptoms of depression and anxiety and improved quality of life, with no significant differences between them; however, the UP condition demonstrated larger effect sizes, indicating more substantial improvements. It was found that patients using UP had on average much more sessions than TAU condition, with less need for psychotropic medication. In addition, the cost for UP started off as higher, but ended up being lower than the TAU condition, suggesting that UP is both very effective and less expensive overall.

Despite the promising results from transdiagnostic treatments such as the UP and the WC, there is a noticeable gap in the literature regarding the comparison of offline versions of the UP and diagnosis-specific CBT, especially for those suffering with comorbid GAD and MDD, or any comorbid depressive and anxiety disorders. In the sections above the studies discussed only the comparison of results and efficacy of iCBT to CBT, but not the UP.

This gap is crucial because face-to-face therapy settings are very different from online-delivered ones. For example, in offline therapy therapeutic alliance, which is a

collaborative relationship between patient and therapist in a common goal to overcome the patient's issue (Bordin, 1979), is weaker, because of the loss of nonverbal cues (Roesler, 2017). It is important, since therapeutic alliance has been found to have a positive outcome on the treatment outcomes (Fluckiger, 2018). Another example is the difference in communication difficulties encountered in online therapy that are not as present offline. Garcia (2022) study shows that interactions offline are less spontaneous and have decreased interactive flow. Moreover, for patients being able to see their own face is found to be disruptive to the fluidity of patient-therapist coordination and induce negative affect in some (Garcia, 2022).

The UP and WC have garnered significant attention in recent years, with a notable increase in the number of studies published on their efficacy. It could be seen in Figure 1, showing the increasing number of studies over the last 5 year period. This surge in research is reflected in the growing body of literature that employs rigorous experimental designs, such as randomized controlled trials (RCTs), case studies, and other methods to test the effectiveness of these transdiagnostic treatments. The cumulative evidence from these studies provides strong support for the UP and WC as viable alternatives to traditional diagnosis-specific ognitive Behavioral Therapy (CBT) for treating comorbid anxiety and depression disorders.

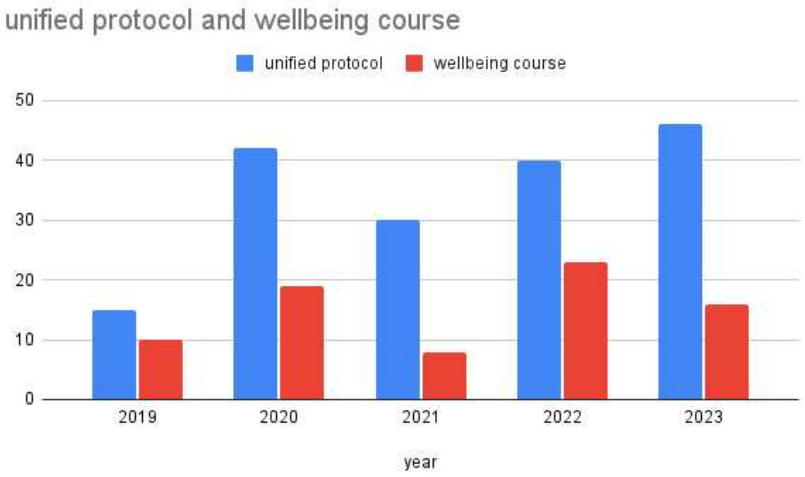


Figure 1: The number of experimental studies published each year in the last 5 years, explicitly using the Unified Protocol or Wellbeing Course. Extracted by systematically searching on Google Scholar and Pubmed.

## 4. Conclusion

In conclusion, this dissertation explores the relationship between GAD and MDD, both on their own and when comorbid. A thorough analysis of the literature reveals that the co-occurrence of these conditions exacerbates symptom intensity and makes treatment more difficult, underscoring the urgent need for efficient therapeutic approaches. The Unified Protocol and the Wellbeing Course are two examples of transdiagnostic therapies that show promise in replacing conventional, disorder-specific cognitive behavioural therapy (CBT). These treatments show considerable effectiveness in symptom reduction and improving patient outcomes because they focus on common underlying processes that underlie a variety of emotional illnesses. Comparative studies also indicate that transdiagnostic therapies are as successful as disorder-specific ones, with the added advantages of treating a wider spectrum of symptoms and increasing patient motivation.

Notwithstanding the encouraging results, there is still a crucial gap in the research concerning the comparative analysis of diagnosis-specific CBT and the Unified Protocol, especially for

patients coping with co-occurring GAD and MDD. To more clearly determine the viability and effectiveness of transdiagnostic treatments in in-person therapeutic settings, more study in this area is necessary. In general, the data presented in this dissertation emphasises how important it is to treat comorbid anxiety and depressive illnesses using a transdiagnostic approach. Transdiagnostic treatments present a promising way to improve outcomes and lessen the toll that these crippling disorders have on both individuals and society as a whole by addressing similar underlying mechanisms.

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