

Enhancing Theory of Mind in Adults with ADHD: A Comparative Study of Metacognitive and Transdiagnostic Therapies

Maryam. Sadeghi Fard¹, Hossein. Ebrahimimoghaddam^{1*}, Shahram. Ne'matzadeh¹

¹ Department of Psychology, Ro.C., Islamic Azad University, Roudehen, Iran

* Corresponding author email address: hem_psy@yahoo.com

Article Info

Article type:

Original Research

How to cite this article:

Sadeghi Fard, M., Ebrahimimoghaddam, H., & Ne'matzadeh, S. (2026). Enhancing Theory of Mind in Adults with ADHD: A Comparative Study of Metacognitive and Transdiagnostic Therapies. *International Journal of Education and Cognitive Sciences*, 7(6), 1-8.
<https://doi.org/10.61838/kman.ijecs.290>



© 2026 the authors. Published by Iranian Association for Intelligence and Talent Studies, Tehran, Iran. This is an open access article under the terms of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License.

ABSTRACT

Purpose: This study aimed to assess the effectiveness of Metacognitive and Transdiagnostic Therapies in Theory of Mind in Adults with ADHD.

Methodology: This study employed a semi-experimental design with a pre-test and post-test control group structure aimed at assessing the effects of two interventions on adults with ADHD symptoms. The population included all adults with diagnosed ADHD symptoms in 2024, referred from psychology and psychiatric centers in Damavand city. Purposive sampling was used to select participants. A sample of 45 patients was selected and randomly divided into intervention (MCT, $n = 15$), (MDT, $n = 15$), and control ($n = 15$) groups. The experimental groups underwent eight (MCT) sessions and ten (MDT) sessions (90-minute sessions per week), and the control group did not receive any intervention. The research instruments included the S-ADHD (Connors et al., 1999) and Mind Reading" test (Baron-Cohen et al., 2001). Univariate and multivariate analyses of covariance (ANCOVA) and Bonferroni post hoc tests were conducted using SPSS-27.

Findings: results indicate a significant difference between the control group and both the metacognitive and meta-diagnostic therapy groups in improving the theory of mind ($P < 0.001$). This suggests that both therapies effectively increased theory of mind compared to no treatment. Additionally, there was a significant difference between the two treatment groups themselves ($P < 0.05$), with the meta-diagnostic therapy group demonstrating a greater effect—reflected by a mean difference of 4.45—on the theory of mind of adults with ADHD symptoms.

Conclusion: Overall, the findings indicate that both metacognitive and transdiagnostic (meta-diagnostic) therapies significantly improve the theory of mind in adults with ADHD symptoms. However, transdiagnostic therapy was found to be more effective than metacognitive therapy. The improvements resulting from both approaches enable participants to develop a deeper and more accurate understanding of mental states, which enhances their ability to regulate social interactions and manage emotions effectively.

Keywords: Theory of Mind, Adults, ADHD, Metacognitive, Transdiagnostic Therapies

1. Introduction

Attention deficit hyperactivity disorder (ADHD) is a developmental neurological disorder characterized by symptoms of inattention, hyperactivity, and impulsivity. It can cause significant impairments and complications in various aspects of life. Globally, ADHD affects about 2.7% of children. However, prevalence rates in children and adolescents vary from 0.1% to 2.1%, mainly due to differences in diagnostic criteria. Notably, about half to two-thirds of children with ADHD continue to experience symptoms into adulthood (Braams et al., 2025; Goueta et al., 2025; Tonarely-Busto et al., 2023; Vijayapriya & Tamarana, 2023). In adult populations, the estimated prevalence is around 2.58%, with inattention being the most prominent symptom (Vijayapriya & Tamarana, 2023). ADHD has many negative consequences, especially for adults, where it often co-occurs with psychiatric conditions such as depression (Cassello-Robbins et al., 2020; Craske & Barlow, 2022), bipolar disorder (Bowie et al., 2020), substance abuse, and suicide attempts (Vijayapriya & Tamarana, 2023). It is also associated with a higher risk of personality disorders and significant impairments in academic, health, occupational, and social functioning. Among these, social impairment is particularly vulnerable (Hasking & Claes, 2020). Social cognition, which includes various mental processes involved in understanding others, is often affected in ADHD. These impairments are also observed in other neurological and psychiatric conditions such as dementia (Díaz-García et al., 2021), bipolar disorder, depression, autism, schizophrenia spectrum disorders, and personality disorders (Tonarely-Busto et al., 2023). In adults with ADHD, the key areas of social cognition impacted are emotion recognition, emotional processing, and theory of mind (Alavi et al., 2012; Azad et al., 2012).

Theory of mind (ToM) is the ability to attribute beliefs, intentions, perspectives, and perceptions to oneself and others, understanding that others have different mental states. The prefrontal cortex primarily influences ToM, and impairments in this region can lead to deficits in social understanding (Bozkurt, 2024; Locati et al., 2025). Neuroimaging studies have revealed abnormalities in the cerebellum and prefrontal cortex in ADHD, which may contribute to difficulties with social cognition and ToM (Sevincok et al., 2021). Research suggests that ADHD may be linked to deficits in ToM and social cognition (Sevincok et al., 2021). These deficits are also common in other conditions like autism, schizophrenia, and dementia, and

they can significantly impact daily social life (Sevincok et al., 2021; Shadabafi et al., 2021). Individuals with these impairments often underestimate their attention deficits and overestimate their cognitive abilities, highlighting the need to identify factors that can improve metacognitive skills in adults with ADHD. Enhancing metacognition—the awareness and regulation of one's thinking—could be vital in designing effective therapeutic approaches (Koelkebeck et al., 2017).

Metacognition involves beliefs about thoughts, such as ideas of uncontrollability and danger, cognitive self-doubt, and the need to control thoughts. These are common in mental disorders and are also present in adults with ADHD (Babaei et al., 2024). Metacognitive therapy (MCT) focuses on modifying these beliefs to help stabilize attention, reduce anxiety, and diminish rumination. It is based on the self-regulatory executive function model, which suggests that psychopathology arises from a persistent thinking style called the cognitive attention syndrome (Pillow et al., 2017).

Evidence indicates that metacognitive therapy can improve social cognition in conditions like schizophrenia and psychosis, enhancing emotion processing and ToM, and reducing related deficits (Cassello-Robbins et al., 2020; Yan et al., 2022). It has also been effective in reducing alexithymia—the difficulty in identifying and describing emotions (Kishon et al., 2020). Another promising therapeutic approach is transdiagnostic therapy, which is a cognitive-behavioral and emotion-focused treatment applicable across different emotional disorders (Pillow et al., 2017; Roncone et al., 2004). This approach emphasizes the adaptive function of emotions and aims to identify and correct maladaptive emotional regulation strategies, promoting healthy emotional processing and reducing unwanted emotional responses (Barlow et al., 2010; Barlow et al., 2017).

In general, individuals with ADHD are more likely to experience higher levels of worry and rumination, partly due to negative beliefs about uncontrollable thoughts (Azad et al., 2012). To lessen the negative effects and suffering experienced by adults with ADHD, it is important to specifically target their social and emotional cognitive skills through tailored treatment approaches. The primary aim of metacognitive therapy is to help patients interact differently with their thoughts and develop flexible metacognitive awareness. This approach provides strategies to break the cycle of worry and teaches patients to regulate their thinking and behavior when facing feelings of threat or vulnerability, promoting flexible emotional processing (Roncone et al.,

2004). While rooted in cognitive-behavioral therapy, metacognitive therapy uniquely emphasizes how individuals with emotional disorders experience and respond to their emotions (Barlow et al., 2010; Barlow et al., 2017).

On the other hand, transdiagnostic therapy aims to equip patients with skills to effectively manage negative emotions in general (Alavi et al., 2012). This approach focuses on broader emotional regulation, regardless of specific diagnoses. Although previous research has shown that both metacognitive and transdiagnostic therapies can be effective for various mental health conditions, few studies have examined their suitability for treating ADHD. Although they share some similarities, these treatments differ fundamentally in their focus and techniques. For example, metacognitive therapy specifically addresses and challenges metacognitive beliefs, whereas transdiagnostic therapy does not. This study is the first to compare these two treatments as group interventions—metacognitive and meta-diagnostic therapy—to assess their feasibility and acceptability in adults with ADHD. Considering the lack of research on this topic within the ADHD population, and given the proven effectiveness of both approaches in addressing emotional and cognitive difficulties, this study aims to compare the impact of metacognitive therapy and meta-diagnostic therapy on improving the theory of mind in adults with ADHD symptoms.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a semi-experimental design with a pre-test and post-test control group structure aimed at assessing the effects of two interventions on adults with ADHD symptoms.

The population included all adults with diagnosed ADHD symptoms in 2024, referred from psychology and psychiatric centers in Damavand city. Purposive sampling was used to select participants based on referrals to these centers. Using G*Power software, with an alpha of 0.05, power of 0.80, and effect size of 0.50, the estimated sample size was 15 per group. To account for an expected 17% dropout rate, 51 participants were initially recruited, with 17 assigned to each of the three groups.

Inclusion criteria:

- Diagnosed with ADHD
- No physical or mental health conditions that could interfere with treatment
- Not participating in other concurrent interventions

- Literate (reading and writing skills)
- Willing to participate (informed consent obtained after explaining the study)
- Able to cooperate with the treatment sessions

Exclusion criteria:

- Withdrawal of consent or cooperation at any point
- Missing more than two sessions

Participants were first assessed via pre-test (T1). Then, they were randomly assigned to three groups:

1. Metacognitive therapy group (17 participants)
2. Metadiagnostic therapy group (17 participants)

Control group (17 participants)

The experimental groups received respective interventions at the psychology and psychiatry centers of Damavand city: The metacognitive group attended eight sessions of 60 minutes each. The meta-diagnostic group attended 10 sessions of 75 minutes each.

Sessions included homework assignments, and techniques were reviewed at the start of subsequent sessions. The control group did not receive any intervention during this period.

After completing the training sessions, all groups were assessed with a post-test (T2). However, due to some participant withdrawal, data from 48 participants were analyzed: 15 in the control group, 17 in the metacognitive group, and 16 in the meta-diagnostic group.

2.2. Measures

Connors Self-Report Diagnostic Questionnaire for ADHD (S-ADHD): The Connors Self-Report Diagnostic Questionnaire (S-ADHD), developed by Connors et al. (1999), is a validated self-report tool designed to measure ADHD symptoms in adults. It includes subscales for inattention, hyperactivity-impulsivity, and a General ADHD Index. Each item is rated on a 4-point Likert scale ranging from 0 (never or not at all) to 3 (very much or always). The instrument has shown strong internal consistency with Cronbach's alpha values ranging between 0.80 and 0.90. Factor analyses support a stable three-factor structure, confirming its construct validity. A T-score of 60 or above suggests clinically significant ADHD symptoms. The Persian version of the S-ADHD has also been validated, showing a diagnostic validity of 0.58 and strong convergence with the Depression, Anxiety, and Stress Scale short form. In the current study, the reliability of the questionnaire was confirmed through Cronbach's alpha.

Mind Reading Test through Eye Images (RMET): The Revised Mind Reading Test (RMET), developed by Baron-Cohen et al. (2001), evaluates theory of mind ability by measuring a person's capacity to interpret mental states from eye-region facial expressions. It includes 36 photographs (both male and female) each paired with four mental state descriptors—one accurate and three distractors with similar emotional tone. Respondents select the term that best matches the expression shown. Scores range from 0 to 36, with lower than 22 indicating poor mind-reading ability, 22–30 reflecting average ability, and scores above 30 indicating strong ability. The Persian version has demonstrated acceptable psychometric properties, with a Kuder-Richardson coefficient of 0.69 and a Cronbach's alpha reliability of 0.59 in this study. Prior research supports the RMET's utility for both clinical and non-clinical populations, and in this study, it showed internal consistency reliability of 0.74.

2.3. Interventions

Wells Metacognitive Therapy Protocol (2011): This eight-session protocol begins by introducing core concepts of adult ADHD and its effects on daily functioning, while establishing group norms and emphasizing the importance of active participation. In the second session, participants reflect on recent emotional experiences, and therapists assess metacognitive patterns by identifying thoughts that trigger worry and rumination, highlighting the cognitive-attentional syndrome and its relation to ADHD symptoms. Session three introduces the conceptual framework of metacognitive therapy using diagrams and case illustrations. The fourth session helps participants critically evaluate self-regulatory strategies, such as worry control, using Socratic questioning and thought suppression experiments, revealing how rumination exacerbates symptoms. Session five challenges beliefs about the uncontrollability of thoughts, introducing detached mindfulness as a healthier alternative. In session six, attention training is taught to promote cognitive flexibility, and participants examine the adaptive role of stress versus anxiety, as well as how self-induced arousal contributes to hyperactivity. The seventh session uses re-attribution and cognitive dissonance to weaken beliefs about the utility of worry and rumination. The final session focuses on creating a personalized cognitive plan, evaluating pre- and post-treatment changes, and establishing strategies for long-term relapse prevention.

Transdiagnostic Intervention Protocol (Barlow et al., 2011): This ten-session transdiagnostic protocol begins with motivational interviewing to enhance participant engagement and collaboratively set treatment goals. In the second session, psychoeducation is provided to help individuals identify and monitor emotional responses using the three-component model (physiological, cognitive, and behavioral). Session three introduces emotional awareness training, with an emphasis on mindfulness techniques to enhance observation of emotional processes. The fourth session targets cognitive distortions, teaching participants to identify and reappraise maladaptive thoughts and build cognitive flexibility. In session five, the focus shifts to emotion avoidance patterns, exploring their counterproductive effects on emotional regulation. Session six addresses emotion-driven behaviors, helping participants recognize these patterns and replace them with adaptive behavioral responses. The seventh session increases tolerance for physical sensations associated with emotion, using visceral exposure to build resilience. Sessions eight and nine involve deeper emotional confrontation through exposure exercises, aimed at dismantling avoidance hierarchies and promoting emotional acceptance. The final session centers on relapse prevention by reviewing key insights, reinforcing progress, and planning for long-term maintenance of emotional regulation and coping strategies.

2.4. Data Analysis

Data analysis involved descriptive and inferential statistics, with all necessary assumptions met. Univariate and multivariate analyses of covariance (ANCOVA) and Bonferroni post hoc tests were conducted using SPSS-27. To compare the effectiveness of metacognitive and meta-diagnostic therapies on the theory of mind in adults with ADHD symptoms, one-way ANCOVA and Bonferroni post hoc tests were applied. The non-significant interaction between the group and pre-test ($P = 0.391$) indicated homogeneity of regression slopes. Levene's test was also non-significant, confirming the homogeneity of variances across groups.

3. Findings and Results

Forty-eight participants (aged 20-50 years) were divided into three groups: a metacognitive therapy group ($n = 16$, mean age = 33.06 ± 9.18 years), a meta-diagnostic therapy group ($n = 17$, mean age = 32.94 ± 7.86 years), and a control group ($n = 15$, mean age = 31.33 ± 8.13 years). Chi-square

tests revealed no significant differences between the groups regarding age, gender, education, or financial status ($P > 0.05$), confirming demographic comparability.

Table 1

Mean and standard deviation of theory of mind in experimental and control groups

Variable	Groups	Status	Mean±SD	Shapiro-Wilk	P
theory of mind	control	Pre-test	14.47±3.11	0.86	0.053
		Post-test	15.07±3.84	0.94	0.387
	metacognitive therapy	Pre-test	16.13±1.36	0.91	0.129
		Post-test	20.12±1.82	0.88	0.067
	metacognitive therapy	Pre-test	15.59±1.94	0.91	0.099
		Post-test	23.59±3.64	0.92	0.152

Table 1 displays the mean and standard deviation of the theory of mind scores for both the experimental and control groups at the pre-test and post-test stages. Additionally, the Shapiro-Wilk test results for both groups during the pre-test

and post-test phases are not significant, indicating that the distribution of the theory of mind variable is normal ($P > 0.05$).

Table 2

Results of analysis of covariance for comparing metacognitive therapy and Meta diagnostic therapy in improving theory of mind

Source of changes	SS	df	MS	F	P	Eta
Pretest	184.50	1	184.50	32.92	< 0.001	0.428
Group	550.94	2	275.47	49.15	< 0.01	0.691
Error	246.60	44	5.61			
Total	20830	48				

Table 2 presents the results of the analysis of covariance (ANCOVA) comparing theory of mind scores in the metacognitive and meta-diagnostic therapy groups during the post-test phase. The F value is 15.49, with a significance level of less than 0.01 ($P < 0.01$). Therefore, the null hypothesis is rejected, and the research hypothesis is

supported, indicating a significant difference in the effectiveness of the two therapies in improving the theory of mind among adults with ADHD. The specific difference between the two treatments was further examined using the Bonferroni test.

Table 3

Results of the Bonferroni test to determine the difference between metacognitive therapy and Meta diagnostic therapy in improving theory of mind

Variable	Groups		Mean Difference	Standard Deviation	P
theory of mind	control	metacognitive therapy	*3.99	0.89	0.001
		meta-diagnostic therapy	- *8.44	0.86	0.001
	meta-diagnostic therapy	metacognitive therapy	- *4.45	0.83	0.001

As shown in Table 3, the Bonferroni test results indicate a significant difference between the control group and both the metacognitive and meta-diagnostic therapy groups in improving the theory of mind ($P < 0.001$). This suggests that both therapies effectively increased theory of mind

compared to no treatment. Additionally, there was a significant difference between the two treatment groups themselves ($P < 0.05$), with the meta-diagnostic therapy group demonstrating a greater effect—reflected by a mean

difference of 4.45—on the theory of mind of adults with ADHD symptoms.

4. Discussion and Conclusion

This study aimed to compare the effectiveness of metacognitive therapy and transdiagnostic therapy in improving the theory of mind among adults with ADHD symptoms. The results confirmed the hypothesis: both therapies significantly improved the theory of mind, with transdiagnostic therapy showing a greater effect than metacognitive therapy. To the best of our knowledge, no prior studies have directly compared these two approaches in this context.

While existing research has examined these therapies separately, evidence supports that metacognitive therapy influences the theory of mind in adults with ADHD (Doughty, 2013; Motamed Yeganeh et al., 2020). Similarly, studies on transdiagnostic therapy have reported its positive impact on the theory of mind in this population (Kent et al., 2023; Mikami et al., 2019).

Only 1,401 studies have been conducted on the effect of metacognition on personal epistemology, with a focus on the mediating role of the theory of mind. One such study involved 303 elementary school students in grades 3 to 6 from Khorramabad city, selected through a staged cluster sampling method. The results demonstrated that the direct effect of metacognition on both theory of mind and personal epistemology was significant. These constructs are theoretically interconnected, as metacognition, theory of mind, and personal epistemology share overlapping principles.

Metacognitive therapy primarily targets metacognitions—beliefs about thoughts that maintain repetitive negative thinking—using techniques like mindfulness and behavioral strategies (Wells, 1994). It focuses on changing beliefs about the uncontrollability and danger of thoughts rather than the thoughts themselves. In contrast, transdiagnostic therapy addresses broader emotional and cognitive processes. It aims to increase emotional awareness, enhance cognitive flexibility, and reduce emotional avoidance—core features involved in many emotional disorders (Dalglish et al., 2020). Given that ADHD involves emotional instability, difficulties understanding others' emotions, and distorted beliefs, transdiagnostic therapy's focus on emotion regulation can facilitate improvements in cognitive abilities like theory of mind (Vijayapriya & Tamarana, 2023). By managing

emotions more effectively, individuals can better interpret social cues and react appropriately, thus improving social functioning.

The meta-diagnostic approach emphasizes awareness of both emotions and responses to emotions, encompassing all emotions—positive and negative—since negative emotions can sometimes stem from positive ones. In other words, meta-diagnostic therapy focuses on fostering full awareness of emotions and learning appropriate responses in different and meaningful situations. Clients are guided to discover a three-part model of thinking, feeling, and behaving, which helps them better understand their emotions, experience them more fully, and respond appropriately rather than avoiding or suppressing feelings (Tonarely-Busto et al., 2023; Vijayapriya & Tamarana, 2023). Consequently, a fundamental skill in transdiagnostic therapy is mindful awareness of current emotions without personal judgment. Mastery of this skill is essential before other therapeutic concepts can be effectively applied. Additionally, this approach emphasizes the functional and adaptable nature of emotions, facilitating greater emotional tolerance. As a result, individuals undergoing transdiagnostic training tend to develop a stronger sense of coherence and increased cognitive awareness (Breitborde et al., 2017). The Integrated Protocol for Transdiagnostic Treatment of Affective Disorders is a psychological intervention targeting transdiagnostic mechanisms, grounded in robust theoretical foundations (Barlow et al., 2010; Barlow et al., 2017). It integrates cognitive-behavioral therapy protocols supported by empirical evidence, functioning as a form of emotion-focused cognitive-behavioral therapy. This treatment has proven effective in managing various disorders, including generalized anxiety disorder, panic disorder, obsessive-compulsive disorder, social anxiety, depression, and alcohol use disorder (Tonarely-Busto et al., 2023).

This study had several limitations that should be acknowledged. First, the exclusive use of self-report questionnaires introduces the risk of social desirability bias, potentially distorting participants' responses. Second, the sample consisted solely of adults with ADHD symptoms who were attending psychological centers in Damavand, which limits the generalizability of the findings to other populations, including individuals from different age groups, genders, socioeconomic backgrounds, or geographic regions. Additionally, the cross-sectional design prevents the establishment of causal relationships between the studied variables. Finally, important confounding variables such as personality traits, physiological indicators, parental mental

health history, and socioeconomic status were not controlled for, which may have influenced the observed outcomes.

Future studies should employ a more comprehensive assessment approach by including clinical interviews, behavioral observations, and reports from significant others to reduce response bias and increase diagnostic accuracy. Expanding the sample to include participants from various regions, age groups, and those with comorbid psychological or developmental conditions would improve the generalizability and comparability of findings. Longitudinal research designs are also recommended to evaluate the long-term effectiveness of metacognitive and transdiagnostic interventions on theory of mind and ADHD-related symptoms. Moreover, future investigations should explore the role of additional variables such as personality traits, cultural background, socioeconomic status, and broader psychosocial influences to provide a more nuanced understanding of treatment outcomes.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We hereby thank all individuals for participating and cooperating us in this study.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance

of the research before the start of the interview and participated in the research with informed consent (Ethics Codes: IR.IAU.R.REC.1404.009).

References

- Alavi, Z., Ghasemzadeh, S., Lavasani, M., & Vakili, S. (2012). The effectiveness of an integrated metadiagnostic therapy protocol on the social skills of anxious students and the self-efficacy of their mothers. *Quarterly Journal of Applied Psychological Research*, 13(3), 241-225. https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://japr.ut.ac.ir/article_90115.html&ved=2ahUKEwi5gsae_oyOAxXJVfEDHcOtOiEQFnoECBYQAQ&usg=AOvVaw2CArLw8ZpEWpnyyf7Ai_Tx
- Azad, M., Bagherzadeh Golmakani, Z., Mansouri, A., & Dostkam, M. (2012). The effectiveness of metacognitive therapy on body image concerns, anxiety and depression in psoriasis patients. *Health Psychology*, 10(40), 151-164. https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://hpj.journals.pnu.ac.ir/article_8569.html&ved=2ahUKEwjexN70_YyOAxUIVPEDHWF5MMsQFnoECBYQAQ&usg=AOvVaw1ykaKlogF6SoaxAoFOurGr
- Babaei, F., Abdollahi, M., Amini Gilvani, M., & Masoomifard, M. (2024). The Mediating Role of Theory of Mind in the Relationship Between Executive Functions and Marital Burnout Using Structural Equation Modeling and Artificial Neural Networks (SEM-ANN). *International Journal of Education and Cognitive Sciences*, 5(4), 62-73. <https://doi.org/10.61838/kman.ijecs.5.4.7>
- Barlow, D. H., Ellard, K. K., & Fairholme, C. P. (2010). *Unified protocol for transdiagnostic treatment of emotional disorders: Workbook*. Oxford University Press. <https://doi.org/10.1093/med:psych/9780199772674.001.0001>
- Barlow, D. H., Farchione, T. J., Bullis, J. R., Gallagher, M. W., Murray-Latin, H., Sauer-Zavala, S., & Cassiello-Robbins, C. (2017). The unified protocol for transdiagnostic treatment of emotional disorders compared with diagnosis-specific protocols for anxiety disorders: A randomized clinical trial. *JAMA Psychiatry*, 74(9), 875-884. <https://doi.org/10.1001/jamapsychiatry.2017.2164>
- Bowie, C. R., Bell, M. D., Fiszdon, J. M., Johannesen, J. K., Lindenmayer, J. P., McGurk, S. R., Twamley, E. W., Saperstein, A. M., Ueland, T., Wykes, T., & Medalia, A. A. (2020). Cognitive remediation for schizophrenia: An expert working group white paper on core techniques. *Schizophrenia Research*, 215, 49-53. <https://doi.org/10.1016/j.schres.2019.10.047>
- Bozkurt, A. (2024). The Relationship Between Giftedness and Sex and Children's Theory of Mind Skills and Social Behavior. *Children*, 11(2), 253. <https://doi.org/10.3390/children11020253>
- Braams, B. R., Rijn, R. v., Leijser, T., & Dekkers, T. J. (2025). The Upside of ADHD-related Risk-Taking: Adolescents With ADHD Report a Higher Likelihood of Engaging in Prosocial Risk-Taking Behavior Than Typically Developing Adolescents. *Journal of Attention Disorders*. <https://doi.org/10.1177/10870547251321882>
- Breitborde, N. J., Woolverton, C., Dawson, S. C., Bismark, A., Bell, E. K., Bathgate, C. J., & Norman, K. (2017). Meta-cognitive skills training enhances computerized cognitive remediation outcomes among individuals with first-episode psychosis. *Early Intervention in Psychiatry*, 11(3), 244-249. <https://doi.org/10.1111/eip.12289>

- Cassielo-Robbins, C., Sauer-Zavala, S., Brody, L. R., & Barlow, D. H. (2020). Exploring the effects of the mindfulness and countering emotional behaviors modules from the Unified Protocol on dysregulated anger in the context of emotional disorders. *Behavior therapy*, 51(6), 933-945. <https://doi.org/10.1016/j.beth.2019.12.007>
- Craske, M. G., & Barlow, D. H. (2022). *Mastery of your anxiety and panic: Therapist guide*. Oxford University Press. <https://doi.org/10.1093/med-psych/9780197584057.001.0001>
- Dalglish, T., Black, M., Johnston, D., & Bevan, A. (2020). Transdiagnostic approaches to mental health problems: current status and future directions. *Journal of consulting and clinical psychology*, 88(3), 179-195. <https://doi.org/10.1037/ccp0000482>
- Díaz-García, A., González-Robles, A., García-Palacios, A., Fernández-Álvarez, J., Castilla, D., Bretón, J. M., & Botella, C. (2021). Negative and positive affect regulation in a transdiagnostic internet-based protocol for emotional disorders: randomized controlled trial. *Journal of medical Internet research*, 23(2), e21335. <https://doi.org/10.2196/21335>
- Doughty, B. (2013). *Exploring the relationships between Trichotillomania, Cognitive Emotional Regulation, Metacognitions, Depression, Anxiety and Deficits in Attentional control degree=BSc (Hons) in Psychology* [Roehampton University].
- Goueta, N., Gershly, N., & Pollak, Y. (2025). Reciprocal Relations Between ADHD and Risky Behavior in Adolescence: A Between and Within-person Longitudinal Analysis. *Journal of Child Psychology and Psychiatry*. <https://doi.org/10.1111/jcpp.14128>
- Hasking, P., & Claes, L. (2020). Transdiagnostic mechanisms involved in nonsuicidal self-injury, risky drinking and disordered eating: Impulsivity, emotion regulation and alexithymia. *Journal of American College Health*, 68(6), 603-609. <https://doi.org/10.1080/07448481.2019.1583661>
- Kent, L., Nelson, B., & Northoff, G. (2023). Can disorders of subjective time inform the differential diagnosis of psychiatric disorders? A transdiagnostic taxonomy of time. *Early Intervention in Psychiatry*, 17(3), 231-243. <https://doi.org/10.1111/eip.13333>
- Kishon, R., Geronazzo-Alman, L., Westphal, M., Chen, Y., Green, D., Sarda, A., & Hollon, S. D. (2020). Psychological Mindedness and Alexithymia Predict Symptom Reduction in Cognitive Behavior Therapy for Major Depressive Disorder. *International Journal of Cognitive Therapy*, 13(4), 287-302. <https://doi.org/10.1007/s41811-019-00062-6>
- Koelkebeck, K., Liedtke, C., Kohl, W., Alferink, J., & Kret, M. E. (2017). Attachment style moderates theory of mind abilities in depression. *Journal of affective disorders*, 213, 156-160. <https://doi.org/10.1016/j.jad.2017.02.021>
- Locati, F., Federica, C., Karin, E., Nick, M., & Laura, P. (2025). Mentalization, theory of mind and socioemotional development in middle childhood: Mentalization, TOM and socioemotional skills. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*. <https://doi.org/10.1007/s12144-025-07475-x>
- Mikami, A. Y., Miller, M., & Lerner, M. D. (2019). Social functioning in youth with attention-deficit/hyperactivity disorder and autism spectrum disorder: transdiagnostic commonalities and differences. *Clinical psychology review*, 68, 54-70. <https://doi.org/10.1016/j.cpr.2018.12.005>
- Motamed Yeganeh, N., Afrooz, G., Shokoohi Yekta, M., Arjmandnia, A. A., & Weber, R. (2020). The Effectiveness of Parent based Metacognitive Executive Functions Training on Behavioral Symptoms and Cognitive Functions of Children with Attention Deficit Hyperactivity Disorder (ADHD) [Applicable]. *Quarterly Journal of Child Mental Health*, 7(3), 142-154. <https://doi.org/10.52547/jcmh.7.3.12>
- Pillow, D. R., Hale Jr, W. J., Crabtree, M. A., & Hinojosa, T. L. (2017). Exploring the relations between self-monitoring, authenticity, and well-being. *Personality and individual differences*, 116, 393-398. <https://doi.org/10.1016/j.paid.2017.04.060>
- Roncone, R., Mazza, M., Frangou, I., De Risio, A., Ussorio, D., Tozzini, C., & Casacchia, M. (2004). Rehabilitation of theory of mind deficit in schizophrenia: a pilot study of metacognitive strategies in group treatment. *Neuropsychological Rehabilitation*, 14(4), 421-435. <https://doi.org/10.1080/09602010343000291>
- Sevincok, D., Avcil, S., & Ozbek, M. M. (2021). The relationship between theory of mind and sluggish cognitive tempo in school-age children with attention deficit and hyperactivity disorder. *Clinical Child Psychology and Psychiatry*, 26(4), 1137-1152. <https://doi.org/10.1177/13591045211030665>
- Shadabafi, M., Mohammadi, N., & Abdollahim Pour, R. (2021). Comparing Theory of Mind in Children with Attention Deficit/Hyperactivity Disorder and Children with Cognitive Slowness. *Journal of Developmental Psychology: Iranian Psychologists*, 17(67), 323-313. <https://www.sid.ir/paper/1073616/en>
- Tonarely-Busto, N. A., Phillips, D. A., Saez-Clarke, E., Karlovich, A., Kudryk, K., Lewin, A. B., & Ehrenreich-May, J. (2023). Applying the unified protocol for transdiagnostic treatment of emotional disorders in children and adolescents to misophonia: a case example. *Evidence-Based Practice in Child and Adolescent Mental Health*, 8(1), 133-147. <https://doi.org/10.1080/23794925.2022.2025631>
- Vijayapriya, C. V., & Tamarana, R. (2023). Effectiveness of dialectical behavior therapy as a transdiagnostic treatment for improving cognitive functions: a systematic review. *Research in Psychotherapy: Psychopathology, Process, and Outcome*, 26(2), 662. <https://doi.org/10.4081/ripppo.2023.662>
- Wells, A. (1994). A multi-dimensional measure of worry: Development and preliminary validation of the Anxious Thoughts Inventory. *Anxiety, Stress, and Coping*, 6(4), 289-299. <https://doi.org/10.1080/10615809408248803>
- Yan, K., Yusufi, M. H., & Nazari, N. (2022). Application of unified protocol as a transdiagnostic treatment for emotional disorders during COVID-19: an internet-delivered randomized controlled trial. *World Journal of Clinical Cases*, 10(24), 8599. <https://doi.org/10.12998/wjcc.v10.i24.8599>