PREDICTING ROLE OF EMOTIVE AND BEHAVIOR PROBLEMS ON COGNITIVE FUNCTIONING AMONG WOMEN BURN VICTIMS

Iram Naz¹*, Sameera Shafiq², Shumaila Ilyas³

¹Assistant Professor, University of Gujrat, Punjab, Pakistan.
Email: iram.naz@uog.edu.pk , ORCID: https://orcid.org/0000-0003-4116-7619
²Lecturer, Department of Psychology, University of Gujrat, Punjab, Pakistan.
Email: sameera.shafiq@uog.edu.pk
³M.Phil Student, Department of Psychology, University of Gujrat, Punjab, Pakistan.
Email: zumurd321@gmail.com

ABSTRACT

Burn damages directly lead to hinder the physical body but there is also substantial impact occur on the psychological and cognitive functioning. The present study expected to examine the predictive power of emotive (depression, anxiety), and behavior issues (conduct problems) on the cognitive functioning among women burn victims. A cross sectional research design was used. The data were collected from women burn victims by using standardized measures Psychological Adjustment Scale for Adults that assess the depression, anxiety, conduct problems whereas the MoCA scale was used to measure the cognitive performance. The findings revealed that overall depression, anxiety and conduct problems predict the cognitive functioning $F(3, 196) = 21.50$, $p < .001$. Further, 24.8% of the explained variance in cognitive functioning was due to anxiety, depression, and conduct problems ($R^2 = .248$). Whereas if explore the variables individually, only anxiety was the predictor of cognitive functioning. It entails that anxiety significantly associated with poorer cognitive functioning among the variables studied. These results highlight the prominence of addressing psychological well-being in recovery programs to intact cognitive functioning and improve the lives of women burn survivors.

INTRODUCTION

Emotive Variables

Problems with emotions can be classified as states or disorders that lead to considerable distress and limitations in everyday functioning. Within this study, this variable is operationalized by using depression and anxiety as indicators (American Psychological Association, 2020).

- **Depression:** Depression is identified as a mental disorder that presents as persistent low mood and a lack of interest or enjoyment in daily life. Other typical symptoms of depression may include tiredness, change in sleeping/eating habits, difficulty concentrating, feelings of guilt or worthlessness, and in some severe cases, thoughts of self-harm (Centers for Disease Control and Prevention, 2022).

- **Anxiety:** Anxiety involves frequent, recurring, and persistent worrying and fear that arise in daily life, often without an accurate representation of the situation, and is often difficult to manage (Mayo Clinic, 2025).

Cognitive Functioning

Cognitive functioning is the execution of mental processes involving the acquisition, processing, storage, retrieval, and the use of information (APA Dictionary of Psychology, 2018). It can be considered as a broad category that includes will and applies to several specific mental abilities, which can be generally categorized as follows:

- Perception (the interpretation of sensory input)
- Attention (the ability to focus on relevant input)
- Memory (the ability to encode, store, and recall information)
- Reasoning and Judgement
- Executive Functions (behavior that requires planning, organization, and self-regulation)

Both emotive problems (depression and anxiety) and behavior problems (conduct problems) individually and negatively predict women's burn victim cognitive functioning.

Thus, it can be concluded, the greater the levels of depression, anxiety or externalizing problems, the lower the cognitive performance is expected to be, complicating recovery and rehabilitation process to a higher level, due to this concerning situation (Dalal et al., 2010; Dhakal & Bobrin, 2023).

Broader Maladaptive Behavior: General research concerning post-trauma and psychological distress shows that maladaptive behavior and dysfunctional coping strategies are commonly due to trauma and are associated difficulties with physiological, affective, behavioral, and cognitive functioning (Paulus et al., 2021). In particular, avoidance behaviors, which can manifest as social withdrawal or substance use, are seen in post-burn trauma, commonly affecting psychosocial functionality and hampering recovery, which likely involves cognitive functioning (Chokshi et al., 2022).

Early-Life Stress and Executive Function: Research in general developmental psychology has linked toxic stress (exposure to trauma for prolonged periods of time) to some sort of impairment in brain function, with possible implications of utilizing executive function such as exerting control over an emotion or impulse (APA, 2018). Conduct problems are often explained by, or associated with, executive function type impairment. Although this is a broad statement and idea, it hints at either a pre-existing or post-trauma vulnerability by experiencing the burn injury.

Cognitive-Communication Impairments: Burn injuries can yield cognitive-communication impairments, and deficits in behavioral self-regulation (Hendricks et al., 2017). This suggest cognitive and behavioral functions could be highly intertwined and have a functional cap on bandwidth during the burn recovery process.

In conclusion, emotional difficulties such as depression and anxiety are already known to relate to cognitive deficits in wider mental

health contexts and this link likely exists in female burn victims, likely through trauma-related constructs such as PTSD and rumination. It is a gap in the literature to predict conduct problems to cognitive function in this population specifically, although the link of maladaptive behaviors to cognitive and emotional regulation post-trauma is well-established.

The Effects of Problems with Emotions on Cognition

Problems with emotions, particularly depression and anxiety, have been shown to have a negative predictive effect on cognitive functioning (Suddell et al., 2023). Depression and anxiety engage cognitive distortions, or false or inaccurate thinking styles, that prolong negative emotion and reduce mental processes (Rutter et al., 2025).

General Psychological Distress: A wealth of research from the general public demonstrates that both depression and anxiety show strong relationships with a variety of cognitive processes (Domaradzka & Fajkowska, 2018). To illustrate, Major Depressive Disorder (MDD) exhibits a notable cognitive impairment in multiple domains even in younger adults, where reduced attention and focus are considered hallmark symptoms of this disorder (Chakrabarty et al., 2016).

Mechanisms of Cognitive Impairment: Overall, the cognitive deficits characteristic of emotional disorders such as MDD may be related to certain factors:

Neurobiological: dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis and alterations in monoamine modulation (e.g., norepinephrine, dopamine, serotonin) (Chakrabarty et al., 2016).

Cognitive Schemas: These cognitive deficits may also be impacted by mental schemas such as negative affective bias, or during "hot" cognitive dysfunction, self-abasing ruminations that may also affect memory (Chakrabarty et al., 2016).

Burn-Specific Findings:

While anxiety and depression may be general constructs present in burn survivors, direct studies have produced mixed results for the associations with cognitive function in women. For instance, a cross-section sample with adult female burn survivors found that treatment dissatisfaction was significantly related to increasing psychological adjustment difficulties and severer PTSD symptoms, but did not significantly relate to general functioning (Naz et al., 2025). However, PTSD, while often considered as a psychological construct, most frequently co-occurs alongside, depression, and several symptoms are similar, even identical, yet are still distinct conditions (Su, 2018). For women who have survived burn injury, the heightened psychological trauma, ongoing pain, and adjustment challenges after injury are likely to magnify these emotional experiences. An individual's emotional burden can also tax their cognitive skills and experience a decrease in cognitive functioning, such as problems in attention, memory, and concentration (Ali et al., 2022). For instance, a patient who is highly anxious may have compromised attentional capacity, which misaligns processing new information or following rehabilitation recommendations.

Behavior Variable (Conduct Problems)

Behavior frequency denotes a situation of difficult, rule-breaking, or antisocial behavior that significantly deviates from age-appropriate norms and expectations. In this study, the variable is qualified as conduct problems and refers to a persistent and repetitive pattern of behavior in which the basic rights of others or major age-appropriate societal rules are violated (Mohan et al., 2023).

Conduct Problems (Conduct Disorder - CD):

A pattern of behavior that suggests disregard for others, difficulty with rules, aggression toward people or animals, destruction of property, or deceit or theft. A diagnosis of

Conduct Disorder often occurs during childhood; however, these behaviors, or underlying deficits, may stay with them and be prevalent within an experience of extreme trauma and adjustment issues (Bernhard et al., 2018).

Cognitive Functioning and Conduct Problems

The predictive nature of conduct problems on cognitive functioning is possibly moderated by underlying mechanisms, including Executive Functioning (EF) deficits (Bernhard et al., 2018).

Conduct problems are often associated with EF deficits, which include cognitive abilities such as planning, working memory, inhibitory control, and cognitive flexibility (American Psychological Association, 2020). Children and youth with conduct problems may be unable to use these higher cognitive skills to control their impulsivity and anticipate the negative consequences of their behavior (Li et al., 2024).

Influence on Burn Survivors:

If a burn survivor has preexisting conduct problems or if the burn has caused trauma-related conduct problems, the EF deficits would pose major challenges regarding their ability to problem-solve, think ahead, and make decisions about treatment into the future, which will be required for a difficult recovery process. Deficits in inhibitory control (an EF function) may be reflected in maladaptive behaviors that further complicate or impede rehabilitation (Hudson et al., 2017).

Objective

The main objective of the study was to inspect the predicting role of emotional and behavioral problems in relation to cognitive functioning among women burn victims.

Rational of the study

The purpose of this study stems from the need to address the significant gap in understanding the long-term interacting impacts of psychological distress and physical trauma on recovery and daily functioning specifically with women burn victims. Burn injuries often are classified as a significant physical trauma, having impacts well beyond the physical wound, and frequently involve long-term psychological distress, such as anxiety and depression, and potential subsequent behavioral problems (conduct problems); all of which exacerbate the rehabilitation process and detract from survivors' quality of life. Cognitive functioning, which usually refers to things such as attention, memory, and executive function, is critical to successful daily living, work functioning, and social reintegration. The connection from trauma to psychological distress and cognition is typically covered in the literature, however, research has not focused specifically on the women burn victims in the post-acute stage (6 months to 2 years post-injury). Providing relevant data on women burn victims who are among a particularly vulnerable population is the reason for this study. The ultimate purpose is to generate evidence to inform clinical practice. In examining the predicting role of emotive (depression and anxiety) and behavior (conduct problems) issues, this study will identify which specific psychological problem needs to be given priority in post burn psychological protocols and rehabilitation to maintain or improve the cognitive functioning of women burn victims.

METHOD

The main objective was to identify emotive (depression and anxiety) and behavior problems (conduct problems) as the predictor of cognitive functioning among women burn victims.

Design

A cross-sectional research was use for data collection so that inferences can be drawn about the targeted population at once. It have been defined as snapshots of our populations about which the data was gathered (Lavrakas, 2012). In the current research a cross-sectional research design was used.

Participants

A sample of 200 women burn victims were carefully selected that meet the inclusion criteria. Research participants were women aged above 19 years and had incidental burn injuries. The duration of burn must be after 6 months to before 2 years of accident. In exclusion criteria excluded children and adolescent age group. Moreover, women with intentional burn injury was also excluded.

Sampling technique

Date was collected using purposive sampling technique that is a non-probability sampling type. The criteria for section of respondent's was their age, gender, and the unintentional burn injury were among the predetermined inclusion criteria that purposefully served as a guide for the selection procedure. The data was gathered from community, hospitals and NGOs of Lahore, Islamabad and Gujrat.

Measures

The following instruments were used to collect data from respondents. A sociodemographic data collection form was prepared that collect data on age, education, marital status, family structure, employment status, type of residence, burn type, burn severity, affected body part, first aid, time since burn, length of hospital stay, health issues, satisfaction with treatment, and the person who brought the patient to the hospital were asked. The emotive (depression, anxiety) and behavior issues (conduct issues) of women burn victims were assessed by using Adjustment Problem Scale for Adults (Naz et al., 2018). The scale have 3 subscales of depression, anxiety and conduct issues with 48 items. The response options range from 1 to 3 at 3-point Likert scale. The smallest and largest scores range was 48-144. The scale had higher confirmed reliability and validity (Naz et al., 2022). The Montreal Cognitive Assessment (MoCA) (Habib, Evans & Raiz, 2010) was used to assess the cognitive functioning of women burn victims. The scale was available in Urdu. It measures a wide range of cognitive abilities and was filled in around ten minutes. If a respondent score 26 or above it indicate higher cognitive ability. It was most suitable for measuring mild cognitive impairment. MoCA has established an outstanding sensitivity value of 87%. Its alpha and test-retest reliability was α =.884 and .966respectively, indicated good results (Nasreddine et al., 2005). Additionally, it exhibits strong correlations with MMSE and intellect (Tu et al., 2013).

Procedure

The study use purposive sampling to collect data from women age 19 above and had unintentionally burn injury. The duration of burn injury was in between 6 months to 2 years. The sample was collected from community, NGOs and burn centers of Lahore, Gujrat, Islamabad, and Rawalpindi. With the scale booklet, written consent, and permission letter researcher approached authorities and collected data. The researcher ensured signed consent and guaranteed the anonymity, confidential and privacy in the survey. Respondent were ask to tick the most appropriate response after carefully reviewing the items. All of the scales used in this study were permitted by the authors through email.

Data Analysis

Descriptive statistics and multiple regression analysis were used to assess the statistical data by using SPSS (v-24).

RESULTS

The majority of the women with unintentional burn injury had a B.A degree and were doing any job. Majority of the women belong to 19 to 35 age group. Most of the women had unintentional burn injury and were married with 1-3 children. The majority lives in urban setting and had 3-5 sibling. The majority women burn victims' family income was 15,000–35,000. Majority had 1-3 body parts affected with burn and was burnt with scald/hot fluid. Mostly victims were satisfied with treatment and had 2-3 health problems. Most had short hospital stay and reached hospital with parents.

Table 1 Multiple Regression Analysis Predicting Cognitive Functioning

Predictor	B	SE B	β	t	p
Constant	31.87	2.19	—	14.58	.000
Anxiety	-0.25	0.08	-0.34	-3.23	.001
Depression	-0.07	0.09	-0.07	-0.75	.453
Conduct Problems	-0.16	0.10	-0.13	-1.68	.094

Note. R = .498, R² = .248, Adjusted R² = .236, F (3, 196) = 21.50, p < .001.
Dependent Variable: Cognitive Functioning.

Multiple regression analysis was used to explore whether emotive (anxiety, depression), and behavior problem (conduct problems) significantly predicted cognitive functioning. The results shown that anxiety, depression, and conduct problems was the significant predictor of cognitive functioning F(3, 196) = 21.50, p < .001. Further, 24.8% of the explained variance in cognitive functioning was due to anxiety, depression, and conduct problems (R² = .248). Among the predictive variables, anxiety problems were the significant predictor of cognitive functioning (β = -0.34, p = .001) and it also shows that higher anxiety was associated with lower cognitive functioning. Where depression (β = -0.07, p = .453), and conduct problems (β = -0.13, p = .094) was not the significant predictor of cognitive functioning. Overall, the findings suggest that anxiety was the significant predictor of cognitive functioning while depression, and conduct problems were not the significant predictors of cognitive functioning among women burn victims.

DISCUSSION

The primary aim of this research was to explore how emotional and behavioral issues predicted cognitive functioning in women who received burns. The results of the multiple regression analysis showed a significant, though specific, relationship of these variables. The analysis showed that the combination of anxiety, depression and conduct problems significantly predicted cognitive functioning, F(3, 196) = 21.50, p < .001). This model accounted for 24.8% of the variance of cognitive functioning. This overall finding provided further evidence of the underlying point that adjustment problems related to psychological issues, via the Adjustment Problem Scale for Adults (APSA; Naz et al., 2018), significantly limited cognitive functioning in these women recovery after burn injuries. While assessing the between variable contributions predictors were evident. The only significant individual predictor of cognitive functioning (measured using the Montreal Cognitive Assessment [MoCA]; Habib et al., 2010) was anxiety (beta = -0.34, p = .001). The negative beta means as anxiety increases cognitive functioning scores decrease. Most likely, the most salient finding is this negative association. Theoretically, this finding makes sense because increased anxiety, especially for survivors of trauma, often results in hypervigilance and preoccupation; states that use critical attentional and working memory capacity which interfere with the cognitive processes implicated in measures like the MoCA (Nasreddine et al., 2005). The large negative correlation suggests that psychological care focused on post-burn anxiety may also have a protective effect on cognitive health. Depression was not

statistically significant in predicting cognitive functioning (beta = -0.07, p = .453) (Van der Sluys et al., 2020). There are numerous studies discussing depression and cognitive deficits in a more broad context, but the predictive power of depression in this model, in the context of highly significant anxiety, was minimal. This may indicate that the cognitive burden of post-trauma anxiety may mitigate or overspread the depressive influence in those with injury impact (Suddell et al., 2023). Conduct problems were not statistically significant in predicting cognitive functioning (beta = -0.13, p = .094). The predictive load of conduct problems, which are the externalizing behaviors, were not significant enough. This suggests that the internalized emotional distress (anxiety), is a more applicable psychological mechanism predisposing cognitive function post-burn, than behavioral dysregulation.

In summary, the finding determined that anxiety is a notable negative predictor of cognitive functioning in women burn victims, while depression and conduct problems were not (Jarrett et al., 2014). This supports the need for interventions and routine cognitive screening with tools that have high sensitivity (like the MoCA) (Nasreddine et al., 2005; Fisekovic et al., 2012), and highlights the clinical need to pursue aggressive treatment of anxiety in treatment and rehabilitation protocols for these patients.

Conclusion

It was concluded that anxiety predict cognitive functioning whereas depression, and conduct problems were not the significant predictor of cognitive functioning among women burn victims.

Reference

1.   Ali, M. B., & Ali, M. B. (2022). Psychological and Physiological Complications of Post-Burn Patients in Pakistan: A narrative review. *Sultan Qaboos University medical journal*, *22*(1), 8–13. https://doi.org/10.18295/squmj.8.2021.118

2.   American Psychological Association. (2018). Child and adolescent mental and behavioral health resolution. https://www.apa.org/about/policy/child-adolescent-mental-behavioral-health

3.   American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). https://doi.org/10.1037/0000165-000

4.   APA Dictionary of Psychology. (2018). Cognitive functioning. Retrieved from https://dictionary.apa.org/cognitive-functioning

5.   Bernhard, A., Martinelli, A., Ackermann, K., Saure, D., & Freitag, C. M. (2018). Association of trauma, Posttraumatic Stress Disorder and Conduct Disorder: A systematic review and meta-analysis. *Neuroscience and biobehavioral reviews*, *91*, 153–169. https://doi.org/10.1016/j.neubiorev.2016.12.019

6.   Centers for Disease Control and Prevention. (2022). Mental health conditions: Depression and anxiety. Retrieved from https://www.cdc.gov/tobacco/campaign/tips/diseases/depression-anxiety.html

7.   Chakrabarty, T., Hadjipavlou, G., & Lam, R. W. (2016). Cognitive Dysfunction in Major Depressive Disorder: Assessment, Impact, and Management. *Focus (American Psychiatric Publishing)*, *14*(2), 194–206. https://doi.org/10.1176/appi.focus.20150043

8.   Chokshi, S. N., Powell, C. M., Gavrilova, Y., Wolf, S. E., & Ozhathil, D. K. (2022). A Narrative Review of the History of Burn-Related Depression and Stress Reactions. *Medicina (Kaunas, Lithuania)*, *58*(10), 1395. https://doi.org/10.3390/medicina58101395

9.   Dalal, P. K., Saha, R., & Agarwal, M. (2010). Psychiatric aspects of burn. *Indian journal of plastic surgery : official publication of the Association of Plastic Surgeons of India*, *43*(Suppl), S136–S142. https://doi.org/10.4103/0970-0358.70731

10. Dhakal, A., & Bobrin, B. D. (2023). Cognitive Deficits. In *StatPearls*. StatPearls Publishing.

11. Domaradzka, E., & Fajkowska, M. (2018). Cognitive emotion regulation strategies in anxiety and depression understood as types of personality. *Frontiers in Psychology, 9,* Article 856. https://doi.org/10.3389/fpsyg.2018.00856

12. Fisekovic, S., Memic, A., & Pasalic, A. (2012). Correlation between moca and mmse for the assessment of cognition in schizophrenia. *Acta informatica medica : AIM : journal of the Society for Medical Informatics of Bosnia & Herzegovina : casopis Drustva za medicinsku informatiku BiH, 20*(3), 186–189. https://doi.org/10.5455/aim.2012.20.186-189

13. Habib, F., Evans, J.J., & Raiz, M.N. (2010). Montreal Cognitive Assessment- Test Urdu. Retrieved from http://www.mocatest.org/wp-content/uploads/2015/03/MoCA-Test-Urdu.pdf

14. Hendricks, C. T., Camara, K., Violick Boole, K., Napoli, M. F., Goldstein, R., Ryan, C. M., & Schneider, J. C. (2017). Burn Injuries and Their Impact on Cognitive-Communication Skills in the Inpatient Rehabilitation Setting. *Journal of burn care & research : official publication of the American Burn Association, 38*(1), e359–e369. https://doi.org/10.1097/BCR.0000000000000388

15. Hudson, A., Al Youha, S., Samargandi, O. A., & Paletz, J. (2017). Pre-existing psychiatric disorder in the burn patient is associated with worse outcomes. *Burns : journal of the International Society for Burn Injuries, 43*(5), 973–982. https://doi.org/10.1016/j.burns.2017.01.022

16. Jarrett, M., Siddiqui, S., Lochman, J., & Qu, L. (2014). Internalizing problems as a predictor of change in externalizing problems in at-risk youth. *Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53, 43*(1), 27–35. https://doi.org/10.1080/15374416.2013.764823

17. Lavrakas, P. J. (2012). Encyclopedia of Survey Research Methods. Retrieved from http://srmo.sagepub.com/view/encyclopedia-of-survey-researchmethods/n120.xml

18. Li, X., Kou, H., Bi, T., & Peng, Z. (2024). Deficits in emotional cognition among individuals with conduct disorder: theoretical perspectives. *Frontiers in psychiatry, 15,* 1507695. https://doi.org/10.3389/fpsyt.2024.1507695

19. Mayo Clinic. (2025). Anxiety disorders - Symptoms and causes. Retrieved from https://www.mayoclinic.org/diseases-conditions/anxiety/symptoms-causes/syc-20350961

20. Mohan, L., Yilanli, M., & Ray, S. (2023). Conduct Disorder. In *StatPearls*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK470238/

21. Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., Cummings, J. L., & Chertkow, H. (2005). The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society, 53*(4), 695–699. https://doi.org/10.1111/j.1532-5415.2005.53221.x

22. Nasreddine, Z.S., Phillips, N.A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., … Chertkow, H. (2005). The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. Journal of the American Geriatrics Society, 53(4), 695-699.

23. Naz, I., Abbas, A., & Ilyas, S. (2025). Impact of Treatment Satisfaction on Post-Traumatic Symptoms, Cognitive Functioning

and Psychological Adjustment in Women Burn Survivors. *Social Science Review Archives*, *3*(4), 713–721. https://doi.org/10.70670/sra.v3i4.1162

24. Naz, I., Bano, Z., & Anjum, R. (2022). Construct and criterion validity of adjustment scale for adults using the correlation and Receiver-Operating Characteristics Analysis. *Rawal Medical Journal*, *47*(1), 89-89.

25. Naz, I., Bano, Z., & Leghari, N. U. (2018). Construction of scales on depression, anxiety and conduct disturbance of adjustment for adults: Developing a reliable measure. Isra Journal of Medical Sciences, 10(5), 310-314.

26. Paulus, F. W., Ohmann, S., Möhler, E., Plener, P., & Popow, C. (2021). Emotional dysregulation in children and adolescents with psychiatric disorders. A narrative review. *Frontiers in Psychiatry*, *12*, 628252. https://doi.org/10.3389/fpsyt.2021.628252

27. Rutter, L. A., Edinger, A., Lorenzo-Luaces, L., Thij, M. T., Valdez, D., & Bollen, J. (2025). Anxiety and Depression are Associated with More Distorted Thinking on Social Media: A Longitudinal Multi-Method Study. *Cognitive therapy and research*, *49*(4), 712–720. https://doi.org/10.1007/s10608-025-10580-7

28. Su Y. J. (2018). Prevalence and predictors of posttraumatic stress disorder and depressive symptoms among burn survivors two years after the 2015 Formosa Fun Coast Water Park explosion in Taiwan. *European journal of psychotraumatology*, *9*(1), 1512263. https://doi.org/10.1080/20008198.2018.1512263

29. Suddell, S., Mahedy, L., Skirrow, C., Penton-Voak, I. S., Munafò, M. R., & Wootton, R. E. (2023). Cognitive functioning in anxiety and depression: results from the ALSPAC cohort. *Royal Society open science*, *10*(8), 221161. https://doi.org/10.1098/rsos.221161

30. Tu, Q., Jin, H., Ding, B., Yang, X., Lei, Z., Bai, S., ... Tang, X. (2013). Reliability, Validity, and Optimal Cutoff Score of the Montreal Cognitive Assessment (Changsha Version) in Ischemic Cerebrovascular Disease Patients of Hunan Province, China. Dementia and Geriatric Cognitive Disorders EXTRA, 3(1), 25-36.