

Volume 13, n 1, 2025

Clinical Psychology

A narrative review of the current literature into the impacts of fasting on levels of impulsivity and psychological stress

Emily Batt^{1*}, Aman Asif-Malik²

Abstract

The impacts of dietary fasting on humans remains relatively under researched despite a biological basis for its function in human life. This narrative mini-review aims to summarise the current, limited, research and make future recommendations. Studies were identified using the databases, Psych Info and Web of Science, and search engine Google Scholar; those concerned with eating disorders or disordered eating were excluded. The paper demonstrates how there is largely now more evidence to suggest that dietary fasting would have beneficial outcomes in humans, whilst highlighting various methodological flaws in this area of research. We summarise the assumptions that have been made from animal models and insufficiently replicated with human subjects and identify where further contradictory findings have been reported in areas such as psychological wellbeing due to the heterogeneity of the methodologies used. We conclude that more stringent controls and mixed methodology longitudinal studies are required, looking at both neurophysiological and psychosocial factors simultaneously over time.

¹ Berkshire Healthcare NHS Foundation Trust, Reading, United Kingdom

² University of Northampton, Faculty of Health, Education & Society, Northampton, United Kingdom

E-mail corresponding author: emilybatt3112@gmail.com



Keywords:

Intermittent Fasting, Dietary Restriction, Impulsivity, Psychological Stress, Ritualisation.

Received: 13 October 2024

Accepted: 24 March 2025

Published: 30 April 2025

Citation: Batt, E., & Asif-Malik, A. (2025). A narrative review of the current literature into the impacts of fasting on levels of impulsivity and psychological stress. *Mediterranean Journal of Clinical Psychology* 13(1).

<https://doi.org/10.13129/2282-1619/mjcp-4408>

1. Introduction

Dietary restrictions can be described as ritualised forms of eating behaviours, with the most common forms being intermittent fasting, religious fasting and calorie restriction (Hoddy et al., 2020). Whilst there have been recent increases in the popularity of fasting following the introduction of programmes such as the “5:2 diet” (Johnstone, 2015) or “Fast 800” (Lean et al., 2019), fasting has been adhered to for centuries and is a natural process that humans have evolved to withstand without adverse effects (Mattson, 2019). For this reason, it might be expected that fasting would not have adverse effects on humans cognitive, behavioural or

emotional functioning. However, different forms of dietary restrictions, and the factors mediating their effects on such responses, remain largely inconsistent and under researched. This paper therefore sets forth to explore the current state of the research and suggest future directions for further investigation.

2. Methodology

To achieve our aims of summarising the current literature and making recommendations for future directions, we conducted a narrative mini-review. This method is commonly used when there is insufficient literature in a particular topic area (Ferrari, 2015). Studies were identified using the Psych Info and Web of Science databases, in addition to Google Scholar. Table 1 displays the search terms that were combined using the Boolean operators “or”, “and”. For the purpose of this review, studies concerned with eating disorders or disordered eating were excluded due to the chronic stress and cognitive mechanisms that underpin them (e.g., Hardaway et al., 2015).

Table 1. Terms Combined in the Literature Searches

Variations of Fasting		Outcomes
Dietary Fasting	A	Stress
OR	N	OR
Fasting	D	Psychological Stress
OR		OR
Dietary Restriction		Psychological Effects
OR		OR
Religious Fasting		Mood
OR		OR
Ramadan		Impulsivity
OR		OR
Intermittent Fasting		Impulse Control

3. Critical Discussion

3.1 Evolutionary Basis for Human Dietary Restriction

To understand the mechanisms that may underpin human responses to periods of dietary restriction, it is helpful to consider an evolutionary perspective. Humans are designed to maintain sharp cognitive functioning during long periods without food (Mattson, 2019, 2023). Cognitive functions such as spatial navigation, attention, planning and decision making would have been necessary during hunting and foraging in times of food uncertainty. However, in the modern environment, where food is available on-demand and in abundance, this period of fast requires a more intentional adherence. In doing so, it is suggested that the same neural pathways that supported cognition in these periods of food uncertainty could be reactivated and thus, could induce beneficial effects on cognitive functioning (Mattson, 2023). Furthermore, it is

suggested that such dietary restrictions could also protect from disease and promote longevity of life, likely due to counteracting the adverse effects of overabundant food consumption (Mattson, 2005). This presents a biological basis for the potential beneficial effects that dietary restrictions could have on human health and cognition over time, which is further supported by Toncheva et al., (2021) identifying a potential change in the frequency of genes linked with neurodegeneration (i.e., LRRK2, linked with Parkinson's; TREM2, linked with Alzheimer's) over time and geography in their examination of paleogenomic data and the superior lifespan of hunter-gathers when compared with early farmers and the gradual wave of agriculture (Milner, 2019). Prolonged periods without food are natural for humans to undertake and therefore also should not be expected to have adverse effects, as long as appropriate nutrition is still sought.

3.2 Impacts on Physiological Responses and Stress

Research examining the effects of such dietary restriction has shown positive findings but with a strong focus on matters of physiological health. The potential for dietary restrictions to promote longevity of life and reduce the risk of disease has been demonstrated by experimental research conducted by Wei et al. (2017). One hundred healthy human subjects adhered to five consecutive days of a fasting-mimicking diet (FMD), once a month for three months. The results showed reduced levels of biological markers for ageing (i.e., CRP, systolic/diastolic blood pressure, serum lipids) and age-related diseases (i.e., IGF-1, glucose) from baseline; improvements were maintained by the three-month follow-up and were most pronounced for those at risk of metabolic and age-related diseases. Further to this an umbrella review of reviews into intermittent fasting randomised controlled trials (RCTs), conducted by Sun et al., (2024) also highlighted decreased waist circumference, fat mass, lipoprotein cholesterol (LDL-C), triacylglycerols (TG), total cholesterol (TC), fasting insulin, and systolic blood pressure (SBP); increased high-density lipoprotein cholesterol (HDL-C) and fat free mass (FFM). Such reductions may also be indicative of reduced physiological stress (i.e., Berra & Miller, 2018; Chida & Steptoe, 2010; Paniagua & de la Ingesia, 2020).

Whilst research into some of the effects of fasting on humans remains infrequent, these findings are supplemented by a wealth of animal models. Reviews of such literature have proposed the potential for fasting to ameliorate the pathophysiology associated with cancer (Brandhorst & Longo, 2016), multiple sclerosis (Jahromi et al., 2014), Parkinson's disease, Huntington's and Alzheimer's (Martin et al., 2006). A particular point of interest has been the potential protective effects of fasting and other restrictions on neurocognition, promoting neurogenesis and reduced physiological stress (i.e., Lee et al., 2002), which is associated with the aforementioned diseases

and neuronal atrophy. Thus, dietary restriction has been demonstrated to have beneficial impacts on the brain and biochemical levels. This could have further implications for behaviour in humans such as those demonstrated by Halagappa et al. (2007), whereby genetically modified rats showed improved age-related learning and memory deficits after a seven to fourteen-month period of either 40% calorie restriction or alternate day twenty-four-hour intermittent fasting. However, this body of research is limited in its applications due to the reductionist focus on physiological mechanisms only providing a baseline understanding of the impacts of dietary restriction, not considering psychosocial factors such as stress, and the overgeneralisation of animal models.

3.3 General Psychological and Behavioural Impacts

By comparison, the volume of the research into the effects of fasting on psychological and behavioural responses is significantly smaller than that concerned with measuring the physiological impacts, especially in human participants. Amongst these studies the findings are also often contradictory and inconclusive. In a systematic review of studies comparing fasts from thirty days to eight weeks with controls, Gudden et al. (2021) concluded that there was no conclusive evidence for short-term effects, with some studies reporting mental health relapses and others self-report improvement of mood. Similarly, Appleton and Baker (2015) found that on day one and two of fasting, perceived distraction was associated with increased lower moods and perceived work performance on fasting days rather than hunger. However, they also found that these impacts were perceived to have a less negative impact on the second day compared with the first, despite conditions remaining the same. This might suggest the impacts of initial physiological shock or a habituation effect overtime, however, longitudinal research would be required to understand this.

Further to this, dietary restrictions have also been associated with positive effects on mood. A meta-analysis conducted by Berthelot et al., (2021), suggested a positive effect of fasting (including Ramadan, Intermittent with Calorie Restriction, Intermittent without Calorie Restriction) on anxiety and depression symptoms, however, this was only measured using self-report measures across the eleven studies reviewed, despite the unreliability of such measurements in isolation. Further to this, another literature review conducted by Fond et al., (2013) attempts to combine findings from neuroscientific research with studies using clinical observation and self-report measures and also suggests improvements in anxiety and depression symptoms, as well as overall mood, for which biochemical changes are suggested to mediate. Fond et al., (2013) reports on mixed animal and human research documenting increased levels of critical neurotransmitters, dopamine and serotonin, as well as endorphins in rodents and

reduced plasmic cortisol in humans. Such changes were generally identified after short periods of restriction (i.e., two to seven days), with some positive effects on mood sustained for as long as three months. These increases were associated with not only mood improvement but also reports of alertness and a sense of tranquillity. Whilst these findings favour support for more immediate effects on mood, research conducted by Hussin et al. (2013) also demonstrated reduced self-report tension, anger, confusion and total mood disturbance after three months of calorie restriction observed by thirty-two ageing men. Thus, there is the suggestion of potential longer-term positive implications of following dietary restrictions on moods and associated disorders, along with biochemical changes that could have a further impact on other aspects of cognition and behaviour in humans. However, this review also again highlights the overgeneralisations of animal models and the heterogeneity of dietary restrictions and fasts that are directly compared due to limited research; with three hundred calories per day being referred to as an eight day fast in one study (Michalsen et al., 2009; cited in Fond et al., 2013) and calorie restriction being used interchangeably with fasting in another (Lepage et al., 2008; cited in Fond et al., 2013). This remains to be an issue within this body of research and requires clear definitions rather than intermittent fasting interchangeably with time restricted feeding.

3.4 Impulsivity

Impulsivity is a key cognitive and behavioural trait implicated in many psychological disorders such as addiction, ADHD, psychosis, eating disorders and mood disorders (Moeller et al., 2001). It can be defined by action without forethought that may be inappropriate or lead to negative consequences (Moeller et al., 2001; Daruna & Barnes, 1993; cited in Howard et al., 2020) and is also associated with negative health behaviours (i.e., smoking, alcohol consumption, poor eating habits). Investigations concerning impulsivity have looked at the effects of acute starvation (Fessler, 2003) and being in a fasted (four hour) metabolic state (Symmonds et al., 2010); the results showed increased impulsive behaviour and risk-taking, respectively. This negative pattern of findings has also been partially identified regarding impulsivity and fasting; Howard et al. (2020) found selective influences of acute (twenty-hour) fasting on impulsivity traits. Those in a fasted state demonstrated greater response impulsivity (i.e., failure to inhibit response), yet also reduced reflection impulsivity (i.e., reluctance to think ahead and gather information before making a decision); no significant effects were demonstrated for risky decision making or delay gratification. To date, Howard et al. (2020) one of very few studies into the relationship between these variables and the findings were largely inconclusive. Similarly, Schueler et al., (2023) found a self-reported lack of perseverance and increased disordered eating behaviours, which were suggested to show increased impulsivity. The negative conclusions drawn by these studies could, however, be a result of the focus on acute periods of dietary restriction rather than long-term

forms and such methodologies continue to give little insight into the long-term impacts of dietary restriction and of the effect of prolonged adherence to behavioural change, of which could potentially have valuable implications for future therapeutic interventions. In contrast Rad (2023) found lower risk-taking across eighty-six fasters when compared with ninety-seven non-fasters in a delay discounting task. Participants were unaware of the aims of the study and were employees of a middle eastern company during Ramadan, which could possibly lead to questions of the validity of the task since gambling is considered as haram or forbidden in Islam. These findings further confirm the need for further experimental research into the behavioural responses, not only in the early days of fasting but also across a longer time frame, with the average time taken to create lasting behavioural change estimated at about sixty-six days (Lally et al., 2010).

3.5 Dietary Restriction as a Ritual

It is possible that prolonged adherence to dietary restrictions, such as fasts, may become more of a ritual or habitual behaviour and therefore could have differential, more positive, effects on cognition and behaviour than acute forms. For example, Ma et al., (2021) found that participants that were experienced in fasting ($n = 6$) reported less negative psychological responses (e.g., greater feelings of hunger, more negative moods, greater psychological stress, less vitality) than “newbies” ($n = 7$) during a supervised ten-day fast and four-day calorie restriction. There were, however, no between group differences in physiological responses. A potential explanation for this difference could be that, like with many positive behavioural changes, repetition or practice leads to habituation. These kinds of ritualised behaviours are suggested to demand fewer resources than that of the effortful control demanded in acute behavioural change (Fujita, 2011). Research has also demonstrated that rituals can enhance subjective feelings of self-control which can then positively mediate navigation of behaviour in the event of internal conflicts (Tian et al., 2018; also see Hofmann et al., 2014). Therefore, it should be expected that prolonged periods of dietary restriction should have a positive impact on impulsivity due to better mediation of behaviour in response to internal conflicts, as a result in improved feelings of self-control, and less requirement of effortful control resources. This is also supported by the aforementioned potential benefits of fasting on cognition (i.e., Halagappa et al., 2007), mood and neurotransmitter levels (i.e., Fond et al., 2013; Hussin et al., 2013). Combined, these might be expected to predict improvements in impulsivity levels due to sharper cognition, increased tranquillity, reduced anger and more subjective self-control. Such behavioural, cognitive and biological changes would likely require time and therefore should only be expected from long-term adherence to dietary restriction.

This could potentially show a role, or utility, of cognitive reframing; which may also explain variations in results between participants. For example, a previous study showed that increased self-regulation through mindfulness practice may assist people in adhering to weight management (Spadaro et al., 2018), indicating the critical role of psychological meditations or practicing of cognitive control through such periods. Additionally, people whom regularly engaged in fasting may develop their own coping strategies; for example, athletes may create own training schedules to avoid adverse effects during Ramadan fasting, which may lead to reduced potential negative feelings (Roy et al., 2011). Hence, in future research, open-ended questions that measure psychological coping strategies can provide more information about how individuals adjust to a fasting regime. Further to this, it is well documented under the cognitive behavioural model that how we think about things has a tri-directional impact on how we feel and act (Beck, 2021). Therefore, it could be suggested that a period of fast being viewed as routine or ritual, rather than a chore or insurmountable challenge, may lead to a reduced response of physiological stress and behavioural impulsivity.

3.6 What about Psychological Stress?

Stress has been implicated in many psychological disorders like depression (i.e., Yang et al., 2015) in addition to its association with neurodegenerative cognitive decline such as Alzheimer's disease (Justice, 2018). The critical importance of stress has long been emphasised by scientists such as Sapolsky (1998) due to the chronic nature of stress in modern society, when compared to the early days of humanity where the majority would have adopted a hunter-gatherer lifestyle, and the ill-adaptiveness of our stress response systems (i.e., the HPA-axis) to this. In a review conducted by Wang and Wu (2022), suggest that despite an influx of harmful stress hormones, glucocorticoids and catecholamines, within the first seven days of fasting, there may also be activation of a cellular stress-resistance mechanism such as through increased brain-derived neurotrophic factors (BDNFs) which in turn signal increased production of serotonin. Further to this, research conducted by Willette et al., (2012) provides an animal model of the positive impact that calorie restriction and intermittent fasting can have on psychological stress reactivity, as well as protection from cognitive decline (also see Halagappa et al., 2007; Masoro, 1993). Such effects are yet to be sufficiently measured in humans, with the majority of research focusing on physiological stress and fasting (i.e. de Cabo & Mattson, 2019; Halagappa et al., 2007) or self-report psychological measures. One study conducted by Nasiri (2021) measured self-report resilience and hardiness and found significant improvements in 300 students following Ramadan fasting. However, the research was conducted with Muslim students in Iran and therefore it would not be possible to isolate the effects of following the dietary fast alone. Whilst it could be suggested that acute forms of dietary restriction or starvation may induce

increased physiological stress (Fond et al., 2013), prolonged adherence could aid a more adaptive stress response. Such could explain Ma et al.'s (2021) findings of experienced fasters reporting fewer negative effects. This is supported by the research into the effects of fasting on neurodegeneration due to the critical implication of stress system dysregulation in the neuronal atrophy associated with diseases such as Alzheimer's.

3.7 The Potential Interplay of Ritualised Behaviours on Perceived Stress

The suggested effects of ritualised behaviours on effortful demand, feeling of self-control and mediation of behavioural conflict (Fujita, 2011; Tian et al., 2018;), may suggest that prolonged periods of dietary restriction may reduce perceived stress due to individuals feeling more in control of their behaviours without draining energy resources. Prolonged adherence may also increase feelings of tranquillity (Fond et al., 2013) and lessen tension (Hussin et al., 2013), whilst enabling gradual adaption to such a great intentional change, one that is relatively unnatural in modern society and may require considerable conscious effort at the beginning (Mattson, 2005). These findings, further suggest that a positive relationship would be expected between stress and impulsivity; this is a notion that has been frequently reported in the literature with higher stress strongly correlating with higher impulsivity scores on the Barrett Impulsivity Scale (BIS; Moustafa et al., 2017; Park et al., 2020). However, this relationship has not been assessed in long-term dietary restrictors. Moustafa et al., (2017) demonstrated that the strength of the relationship was moderated by age, whilst Park et al. (2020) showed sleep disturbance to moderate the strength of the correlation between stress and impulsivity. This therefore indicates that length of dietary restriction could also moderate the relationship between these two variables and should therefore also be investigated.

3.8 Group identity and Community

Another potential mediating variable to explore in future research could be the impact of the sense of group identity or community felt by individuals choosing to adopt fasting practices, whether that be for religious reasons (i.e., Ramadan, Lent?), or another purpose such as weight management or challenge. Zhou (2022) has demonstrated that group status composition had an impact on others motivation to participate in fasting due to factors such as social norms and the relationship between how we view our status in a group effecting how we view our status individually. As demonstrated by Figure 1, Schiefer and Van der Noll (2017) demonstrate crucial components for social cohesion, of which many could be linked to those observing religious fasts like Ramadan, e.g., shared values, belonging, tolerance and common good (Shalihin & Sholihin, 2022).

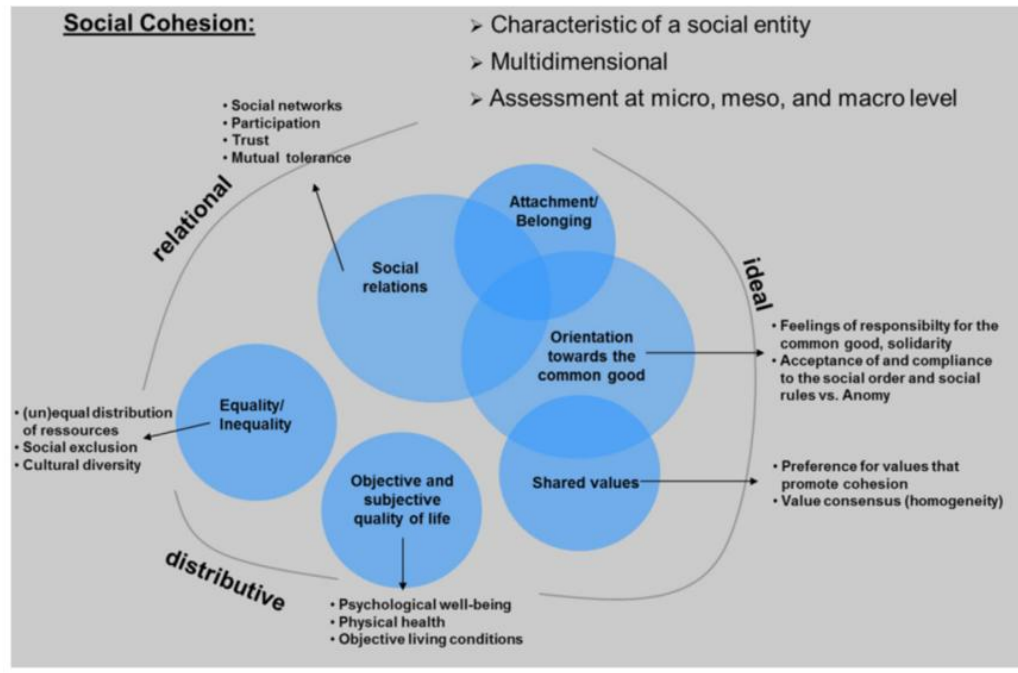


Figure 1. Model of Social Cohesion (Schiefer & Van der Noll, 2017)

This may be an important measure to consider when conducting future research into the psychological impacts of fasting, as a potential confounding variable, or considering any form of intervention that may utilise fasting as a way of cognitive behaviour training, as a potential mediating factor.

4. Concluding Comments

To conclude, this exploratory discussion provides an overview of the current body of research into the impacts of fasting on physiological health, cognition, psychological wellbeing, impulsivity and stress. In doing so, it is evident that there remains to be limited, well controlled, sufficiently powered research into this area. Of the studies reviewed there are also considerable contradicting findings leading to inconclusive results, which is likely impacted by the heterogeneity of the research methods used. There is, however, some suggestion that the impact of fasting may vary, with positive effects being more likely after sustained adherence. This potentially highlights the effect of habituation through practice or ritualisation, as opposed to experiencing shock to something novel, as well as the potential influence of how we think or feel about the practice itself. With such process it is also important to recognise the exercise of cognitive control, which is where there could be potential for learning self-control that could be applied to other areas of life or lead to reduced behavioural impulsivity or relativity, such as with other mindful practices. This calls for more stringent controls in experimental research conditions, monitoring approximate dietary intake, controlling for other confounds such as drug and alcohol use, history of an eating disorder, past observation of fasting etc. Future research

may also look to measure both physiological responses, behavioural responses and self-reported impacts to consider the interaction effects that may mediate these differences.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any potential conflict of interest.

Authors' Contribution

E.B (first author) wrote the review paper and A.A-M (last author) contributed to its conception and general supervision.

Acknowledgments

The University of Reading, for which both authors were previously affiliated with.

References

1. Appleton, K. M., & Baker, S. (2015). Distraction, not hunger, is associated with lower mood and lower perceived work performance on fast compared to non-fast days during intermittent fasting. *Journal of health psychology, 20*(6), 702-711. <https://doi.org/10.1177/1359105315573430>
2. Altman, S. E., & Shankman, S. A. (2009). What is the association between obsessive-compulsive disorder and eating disorders?. *Clinical psychology review, 29*(7), 638–646. <https://doi.org/10.1016/j.cpr.2009.08.001>
3. Beck, J. S. (2021). *Cognitive behavior therapy: Basics and beyond* (3rd ed.). Guilford Press.
4. Ben Ammar, H., Ben Massoued, R., Ben Hamadi, A., Khelifa, E., Hakiri, A., & El Hechmi, Z. (2022). Hospitalizations in psychiatry during the month of Ramadan: a study at the Tunisian mental health hospital. *International Journal of Social Psychiatry, 68*(2), 341-345. <https://doi.org/10.1177/0020764020988888>
5. Berra, K., & Miller, E. (2018). The role of lifestyle changes in the management of hyperlipidemia. *American Journal of Lifestyle Medicine, 12*(4), 307-315. <https://doi.org/10.1177/1559827617714562>
6. Berthelot, E., Etchecopar-Etchart, D., Thellier, D., Lancon, C., Boyer, L., & Fond, G. (2021). Fasting interventions for stress, anxiety and depressive symptoms: a systematic review and meta-analysis. *Nutrients, 13*(11), 3947. <https://doi.org/10.3390/nu13113947>
7. Brandhorst, S., & Longo, V. D. (2016). Fasting and Caloric Restriction in Cancer Prevention and Treatment. *Recent results in cancer research. Fortschritte der Krebsforschung. Progres dans les recherches sur le cancer, 207*, 241–266. https://doi.org/10.1007/978-3-319-42118-6_12
8. Boisseau, C. L., Thompson-Brenner, H., Caldwell-Harris, C., Pratt, E., Farchione, T., & Barlow, D. H. (2012). Behavioral and cognitive impulsivity in obsessive–compulsive disorder and eating disorders. *Psychiatry research, 200*(2-3), 1062-1066. <https://doi.org/10.1016/j.psychres.2012.06.010>
9. Boisseau, C. L., Thompson-Brenner, H., Eddy, K. T., & Satir, D. A. (2009). Impulsivity and personality variables in adolescents with eating disorders. *The Journal of nervous and mental disease, 197*(4), 251–259. <https://doi.org/10.1097/NMD.0b013e31819d96c0>
10. Chida, Y., & Steptoe, A. (2010). The association of anger and hostility with future blood pressure: A meta-analytic review. *Psychosomatic Medicine, 72*(2), 166-171. <https://doi.org/10.1097/PSY.0b013e3181c0d79f>
11. Daruna, J. H., & Barnes, P. A. (1993). A neurodevelopmental view of impulsivity. In W. G. McCown, J. L. Johnson, & M. B. Shure (Eds.), *The impulsive client: Theory, research, and treatment* (pp. 23–37). American Psychological Association. <https://doi.org/10.1037/10500-002>
12. de Cabo, R., & Mattson, M. P. (2019). Effects of intermittent fasting on health, aging, and disease. *New England Journal of Medicine, 381*(26), 2541-2551. <https://doi.org/10.1056/NEJMr1905136>
13. Fessler, D. M. (2003). The implications of starvation induced psychological changes for the ethical treatment of hunger strikers. *Journal of medical ethics, 29*(4), 243-247. <https://doi.org/10.1136/jme.29.4.243>
14. Ferrari, R. (2015) Writing narrative style literature reviews. *Medical Writing, 24*(4), 230-235. <https://doi.org/10.1179/2047480615Z.000000000329>
15. Fond, G., Macgregor, A., Leboyer, M., & Michalsen, A. (2013). Fasting in mood disorders: neurobiology and effectiveness. A review of the literature. *Psychiatry research, 209*(3), 253–258. <https://doi.org/10.1016/j.psychres.2012.12.018>

16. Fujita, K. (2011). On Conceptualizing Self-Control as More Than the Effortful Inhibition of Impulses. *Personality and Social Psychology Review*, 15(4), 352–366. <https://doi.org/10.1177/1088868311411165>
17. Gudden, J., Arias Vasquez, A., & Bloemendaal, M. (2021). The effects of intermittent fasting on brain and cognitive function. *Nutrients*, 13(9), 3166. <https://doi.org/10.3390/nu13093166>
18. Halagappa, V. K. M., Guo, Z., Pearson, M., Matsuoka, Y., Cutler, R. G., LaFerla, F. M., & Mattson, M. P. (2007). Intermittent fasting and caloric restriction ameliorate age-related behavioral deficits in the triple-transgenic mouse model of Alzheimer's disease. *Neurobiology of disease*, 26(1), 212-220. <https://doi.org/10.1016/j.nbd.2006.12.019>
19. Hardaway, J. A., Crowley, N. A., Bulik, C. M., & Kash, T. L. (2015). Integrated circuits and molecular components for stress and feeding: implications for eating disorders. *Genes, brain, and behavior*, 14(1), 85–97. <https://doi.org/10.1111/gbb.12185>
20. Hoddy, K. K., Marlatt, K. L., Çetinkaya, H., & Ravussin, E. (2020). Intermittent Fasting and Metabolic Health: From Religious Fast to Time-Restricted Feeding. *Obesity*, 28, S29-S37. <https://doi.org/10.1002/oby.22829>
21. Hofmann, W., Adriaanse, M., Vohs, K. D., & Baumeister, R. F. (2014). Dieting and the self-control of eating in everyday environments: An experience sampling study. *British journal of health psychology*, 19(3), 523-539. <https://doi.org/10.1111/bjhp.12053>
22. Howard, M., Roiser, J. P., Gilbert, S. J., Burgess, P. W., Dayan, P., & Serpell, L. (2020). Can short-term fasting influence impulsivity in healthy individuals? *Frontiers in Psychology*, 11, 1644. <https://doi.org/10.3389/fpsyg.2020.01644>
23. Hussin, N. M., Shahar, S., Teng, N. I. M. F., Ngah, W. Z. W., & Das, S. K. (2013). Efficacy of fasting and calorie restriction (FCR) on mood and depression among ageing men. *The journal of nutrition, health & aging*, 17(8), 674-680. <https://doi.org/10.1007/s12603-013-0344-9>
24. Jahromi, S. R., Sahraian, M. A., Ashtari, F., Ayromlou, H., Etemadifar, M., Ghaffarpour, M., ... & Ziaie, S. (2014). Islamic fasting and multiple sclerosis. *BMC neurology*, 14(1), 1-8. <https://doi.org/10.1186/1471-2377-14-56>
25. Johnstone A. (2015). Fasting for weight loss: an effective strategy or latest dieting trend?. *International journal of obesity (2005)*, 39(5), 727–733. <https://doi.org/10.1038/ijo.2014.214>
26. Justice N. J. (2018). The relationship between stress and Alzheimer's disease. *Neurobiology of stress*, 8, 127–133. <https://doi.org/10.1016/j.ynstr.2018.04.002>
27. Lally, P., van Jaarsveld, C. H. M., Potts, H. W. W., & Wardle, J. (2010). How are habits formed: Modelling habit formation in the real world. *European Journal of Social Psychology*, 40(6), 998-1009. <https://doi.org/10.1002/ejsp.674>
28. Lean, M. E., Leslie, W. S., Barnes, A. C., Brosnahan, N., Thom, G., McCombie, L., ... & Taylor, R. (2019). Durability of a primary care-led weight-management intervention for remission of type 2 diabetes: 2-year results of the DiRECT open-label, cluster-randomised trial. *The lancet Diabetes & endocrinology*, 7(5), 344-355. [https://doi.org/10.1016/S2213-8587\(19\)30068-3](https://doi.org/10.1016/S2213-8587(19)30068-3)

29. Lee, J., Duan, W., & Mattson, M. P. (2002). Evidence that brain-derived neurotrophic factor is required for basal neurogenesis and mediates, in part, the enhancement of neurogenesis by dietary restriction in the hippocampus of adult mice. *Journal of neurochemistry*, 82(6), 1367-1375.
<https://doi.org/10.1046/j.1471-4159.2002.01085.x>
30. LePage, M. L., Crowther, J. H., Harrington, E. F., & Engler, P. (2008). Psychological correlates of fasting and vigorous exercise as compensatory strategies in undergraduate women. *Eating behaviors*, 9(4), 423-429.
<https://doi.org/10.1016/j.eatbeh.2008.06.002>
31. Ma, Q., Yang, C., Wu, R., Wu, M., Liu, W., Dai, Z., & Li, Y. (2021). How experiences affect psychological responses during supervised fasting: a preliminary study. *Frontiers in psychology*, 12, 651760.
<https://doi.org/10.3389/fpsyg.2021.651760>
32. Masoro, E. J. (1993). Dietary restriction and aging. *Journal of the American Geriatrics Society*, 41(9), 994-999.
<https://doi.org/10.1111/j.1532-5415.1993.tb06767.x>
33. Martin, B., Mattson, M. P., & Maudsley, S. (2006). Caloric restriction and intermittent fasting: two potential diets for successful brain aging. *Ageing research reviews*, 5(3), 332-353.
<https://doi.org/10.1016/j.arr.2006.04.002>
34. Mattson, M. P. (2023). *The intermittent fasting revolution: The science of optimizing health and enhancing performance*. MIT Press.
35. Mattson M. P. (2019). An Evolutionary Perspective on Why Food Overconsumption Impairs Cognition. *Trends in cognitive sciences*, 23(3), 200-212. <https://doi.org/10.1016/j.tics.2019.01.003>
36. Mattson, M. P. (2005). Energy intake, meal frequency, and health: a neurobiological perspective. *Annual Review of Nutrition*, 25, 237-260. <https://doi.org/10.1146/annurev.nutr.25.050304.092526>
37. Michalsen, A., Frey, U. H., Merse, S., Siffert, W., & Dobos, G. J. (2009). Hunger and mood during extended fasting are dependent on the GNB3 C825T polymorphism. *Annals of Nutrition and Metabolism*, 54(3), 184-188.
<https://doi.org/10.1159/000217815>
38. Milner G. R. (2019). Early agriculture's toll on human health. *Proceedings of the National Academy of Sciences of the United States of America*, 116(28), 13721-13723. <https://doi.org/10.1073/pnas.1908960116>
39. Monteleone, A. M., Treasure, J., Kan, C., & Cardi, V. (2018). Reactivity to interpersonal stress in patients with eating disorders: A systematic review and meta-analysis of studies using an experimental paradigm. *Neuroscience & Biobehavioral Reviews*, 87, 133-150. <https://doi.org/10.1016/j.neubiorev.2018.02.002>
40. Moeller, F.G., Barratt, E.S., Dougherty, D.M., Schmitz, J.M. & Swann, A.C. (2001). Psychiatric aspects of impulsivity. *American Journal of Psychiatry*, 158, 1.783-1.793. <https://doi.org/10.1176/appi.ajp.158.11.1783>
41. Moustafa, A. A., Tindle, R., Frydecka, D., & Misiak, B. (2017). Impulsivity and its relationship with anxiety, depression and stress. *Comprehensive psychiatry*, 74, 173-179.
<https://doi.org/10.1016/j.comppsy.2017.01.013>
42. Nasiri, M. (2021). Effects of Ramadan Fasting on the Resilience and Psychological Hardiness of Students. *Journal of Nutrition, Fasting and Health*, 9(3), 207-211.
<https://doi.org/10.22038/jnfh.2020.51865.1296>

43. Paniagua, J. A., & de la Iglesia, M. (2020). Stress and insulin resistance: A systematic review. *Endocrinology*, 161(5), 1-11. <https://doi.org/10.1210/en.2020-01165>
44. Park, S. Y., Kim, J. H., & Lee, H. (2020). Impulsivity and sleep: A review of the literature and a meta-analysis. *Sleep Medicine Reviews*, 50, 101232. <https://doi.org/10.1016/j.smrv.2019.101232>
45. Rachlin, H. (2000). *The science of self-control*. Harvard University Press.
46. Rad, M. S. (2023). From self-deprivation to cooperation: How Ramadan fasting influences risk-aversion and decisions in resource dilemmas. *Current Research in Ecological and Social Psychology*, 5, 100152. <https://doi.org/10.1016/j.cresp.2023.100152>
47. Rogers P. J. (1999). Eating habits and appetite control: a psychobiological perspective. *The Proceedings of the Nutrition Society*, 58(1), 59–67. <https://doi.org/10.1079/pns19990009>
48. Roy, J., Hwa, O. C., Singh, R., Aziz, A. R., & Jin, C. W. (2011). Self-generated coping strategies among Muslim athletes during Ramadan fasting. *Journal of Sports Science & Medicine*, 10(1), 137.
49. Sapolsky, R. M. (1998) *Why zebras don't get ulcers: an updated guide to stress, stress-related diseases, and coping*. New York: W.H. Freeman and Co.
50. Schiefer, D., & Van der Noll, J. (2017). The essentials of social cohesion: A literature review. *Social Indicators Research*, 132, 579-603. <https://doi.org/10.1007/s11205-016-1314-5>
51. Schueler, J., Philip, S. R., Vitus, D., Engler, S., & Fields, S. A. (2023). Group differences in binge eating, impulsivity, and intuitive and mindful eating among intermittent fasters and non-fasters. *Appetite*, 182, 106416. <https://doi.org/10.1016/j.appet.2022.106416>
52. Shalihin, N., & Sholihin, M. (2022). Ramadan: the month of fasting for muslim and social cohesion—mapping the unexplored effect. *Heliyon*, 8(10). <https://doi.org/10.1016/j.heliyon.2022.e10977>
53. Spadaro, K. C., Davis, K. K., Sereika, S. M., Gibbs, B. B., Jakicic, J. M., & Cohen, S. M. (2018). Effect of mindfulness meditation on short-term weight loss and eating behaviors in overweight and obese adults: A randomized controlled trial. *Journal of Complementary and Integrative Medicine*, 15(2). <https://doi.org/10.1515/jcim-2016-0048>
54. Sun, M. L., Yao, W., Wang, X. Y., Gao, S., Varady, K. A., Forslund, S. K., Zhang, M., Shi, Z-Y., Cao F., Zou, B-J., Sun, M-H, Liu, K-X, Bao, Q., Xu, J., Qin, X., Xiao, Q., Wu, L., Zhao, Y-H., Zang, D-Y., Wu, Q-J., & Gong, T. T. (2024). Intermittent fasting and health outcomes: an umbrella review of systematic reviews and meta-analyses of randomised controlled trials. *EClinicalMedicine*, 70. <https://doi.org/10.1016/j.eclinm.2024.102519>
55. Symmonds, M., Emmanuel, J. J., Drew, M. E., Batterham, R. L., & Dolan, R. J. (2010). Metabolic state alters economic decision making under risk in humans. *PLoS one*, 5(6), e11090. <https://doi.org/10.1371/journal.pone.0011090>
56. Tian, A. D., Schroeder, J., Häubl, G., Risen, J. L., Norton, M. I., & Gino, F. (2018). Enacting rituals to improve self-control. *Journal of personality and social psychology*, 114(6), 851–876. <https://doi.org/10.1037/pspa0000113>

57. Toncheva, D., Karachanak-Yankova, S., Marinova, M., Borovska, P., & Serbezov, D. (2021). Susceptibility to Neurodegenerative Disorders: Insights from Paleogenomic Data. *Human Biology*, 93(4), 289-297. <https://doi.org/10.1353/hub.2021.a917652>
58. Wang, Y., & Wu, R. (2022). The effect of fasting on human metabolism and psychological health. *Disease markers*, 2022(1), 5653739. <https://doi.org/10.1155/2022/5653739>
59. Wei, M., Brandhorst, S., Shelehchi, M., Mirzaei, H., Cheng, C. W., Budniak, J., ... & Longo, V. D. (2017). Fasting-mimicking diet and markers/risk factors for aging, diabetes, cancer, and cardiovascular disease. *Science translational medicine*, 9(377). <https://doi.org/10.1126/scitranslmed.aai8700>
60. Willette, A. A., Coe, C. L., Colman, R. J., Bendlin, B. B., Kastman, E. K., Field, A. S., Alexander, A. L., Allison, D. B., Weindruch, R. H., & Johnson, S. C. (2012). Calorie restriction reduces psychological stress reactivity and its association with brain volume and microstructure in aged rhesus monkeys. *Psychoneuroendocrinology*, 37(7), 903-916. <https://doi.org/10.1016/j.psyneuen.2011.10.006>.
61. Yang, L., Zhao, Y., Wang, Y., Liu, L., Zhang, X., Li, B., & Cui, R. (2015). The effects of psychological stress on depression. *Current neuropharmacology*, 13(4), 494-504. <https://doi.org/10.2174/1570159X1304150831150507>
62. Zhou, B., Gong, N., He, Q., Huang, X., Zhu, J., Zhang, L., ... & Qin, C. (2023). Clustering of lifestyle behaviours and analysis of their associations with MAFLD: a cross-sectional study of 196,515 individuals in China. *BMC Public Health*, 23(1), 2303. <https://doi.org/10.1186/s12889-023-17177-3>



©2025 by the Author(s); licensee Mediterranean Journal of Clinical Psychology, Messina, Italy. This article is an open access article, licensed under a Creative Commons Attribution 4.0 Unported License. Mediterranean Journal of Clinical Psychology, Vol. 13, No. 1 (2025). International License (<https://creativecommons.org/licenses/by/4.0/>). DOI: 10.13129/2282-1619/mjcp-4408