The buffering effect of Ramadan fasting on emotions intensity: a pilot study

L'effet tampon du jeûne du Ramadan sur l'intensité des émotions: une étude pilote

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RÉSUMÉ

La présente étude a tenté d'examiner la manière dont le jeûne du Ramadan pouvait influencer les émotions positives et négatives des musulmans en bonne santé. Quatre-vingt et onze jeûneurs musulmans (48 femmes, âge=28.6±6.2 ans) ont pris part de manière volontaire à une enquête en ligne une fois par semaine pendant huit semaines : avant (2 semaines), pendant (4 semaines) et après (2 semaines) le mois de Ramadan 2013 à une tranche horaire spécifique qui correspondait au milieu de la journée selon le pays dans lequel les participants vivaient. Les résultats ont montré que, comparativement à la période hors Ramadan, la période du Ramadan était associée à des niveaux plus bas d'affect positif (5.38±1.06 vs. 5.87±1.22, p=0.000), d'affect négatif (2.78±1.31 vs. 2.95±1.35, p=0.057), et de dépression (2.36±1.31 vs. 2.64±1.46, p=0.004). Cependant, l'anxiété (4.06±2.00 vs. 4.09±1.79, p=0.843) et le bien-être (6.23±1.36 vs. 6.25±1.47, p=0.804) n'ont pas été influencés par le jeûne du Ramadan. Cette étude suggère que le jeûne du Ramadan jouerait un rôle de tampon de l'intensité des émotions.

Mots-clés

jeûne ; spiritualité ; Islam ; stabilité émotionnelle ; santé psychologique

SUMMARY

The present study attempted to examine how Ramadan fasting could influence positive and negative feelings in healthy Muslims. Ninety-one Muslim fasters (48 women; mean age, 28.6±6.2 years) voluntarily completed an on-line inquiry one time a week during eight weeks: before (2 weeks), during (4 weeks), and after (2 weeks) the month of Ramadan 2013 at a specific time-slot that corresponded to the middle of the day, depending on the country in which the participants lived. Results showed that, relative to the period of outside Ramadan, the period of Ramadan fasting was associated with lower levels of positive affect (5.38±1.06 vs. 5.87±1.22, p=0.000), negative affect (2.78±1.31 vs. 2.95±1.35, p=0.057), and depression (2.36±1.31 vs. 2.64±1.46, p=0.004). However, anxiety (4.06±2.00 vs. 4.09±1.79, p=0.843) and wellbeing (6.23±1.36 vs. 6.25±1.47, p=0.804) were not influenced by Ramadan fasting. This study suggests that Ramadan fasting would act as a buffer against the intensity of emotions.

Key-words

Fasting; spirituality; Islam; emotional stability; psychological health

INTRODUCTION

Clinical observations have found that fasting can result in mental health improvements, elated mood, euphoria, and increased perceived feeling of wellbeing. Different neurobiological mechanisms, including changes in the concentrations of neurotransmitters, quality of sleep, and synthesis and release of neurotrophic factors, have been proposed to explain such findings [1].

However, there exist different kinds of fasting protocols and regimens, depending on the type of nutrient(s) excluded and the period of the dietary manipulation, in terms of how much the diet chosen is drastic. Therefore, it is reasonable to expect a different impact on mood, based on the type of fasting. For example, acute fasting (such as 2-day zero-calorie dietary protocol) did not affect mood in a sample of eleven overweight women aged 20-30 years [2]. On the other hand, a similar protocol (72-hour fasting regimen) improved mood in fifteen healthy females [3]. Such contrasting results warrant further research, in order to better elucidate the human adaptive response to fasting, its mechanisms and determinants.

Among the different types of fasting, Ramadan represents one of the most celebrated religious traditions in the world. As one of the "five pillars" of Islam, it corresponds to the ninth month of the Islamic lunar calendar during which Muslims fast during daylight hours, although they are permitted to eat and drink at night. The Ramadan fasting is, indeed, a time-restricted, intermittent, circadian fasting, following the biological clock and circadian rhythms [4].

The Holy Quran mentioned that fasting might promote health, and previous research has reported that fasting reduced the levels of physical symptoms, anxiety, and depression (see for example, [5]). However, some contrasting findings have been reported in the existing scholarly literature. For instance, Roky et al. [6] reported decreased mood during the Ramadan fasting, whereas Bayani et al. [7] found increased positive feelings among Muslim graduate students as well as Mousavi et al. [8] among the general population. On the contrary, Nugraha et al. [9] described that mood was not influenced by the Ramadan fasting, when comparing a fasting and a non-fasting group. Moreover, to the best of the authors' knowledge, no study has examined the effects of Ramadan fasting on both positive and negative feelings. Therefore, given also the inconclusive findings in the literature [10], the goal of the present study was to examine how the Ramadan fasting, considered as a spiritual practice, could influence positive and negative health-related feelings, such as depression, anxiety, negative and positive affects, and wellbeing. In the present article, the authors proposed and tested the view that spiritual practice can increase positive feelings and decrease negative ones, given the supposed healthy nature of Ramadan fasting. As such, the present study aimed at pursuing the examination of the link between fasting during the month of Ramadan and health-related feelings by using a longitudinal approach.

METHODS

Participants

Ninety-one Francophone subjects, solicited through Islamic schools, social networks, cultural associations, mosques, conferences, and universities, accepted to participate in the study (48 women and 43 men; mean age, 28.6 ± 6.2 years; mean education (i.e., assessed through this item: "How many years did you succeed-in since starting the primary school?"), 15.8 ± 5.2 years). They came from Muslim-majority countries (e.g., Morocco, Qatar, Tunisia; n = 16 women and 22 men) and non-Muslim majority countries (e.g., France, Netherlands; n = 32 women and 21 men). They all reported to be Sunni – i.e., the Islamic affiliation that is the most widespread around the world and that has the particularity to refer to Prophet Muhammad's rituals and recommendations, called "sunnah", reported in the narrations.

To avoid any influences of chronic disease on daily participants' feelings, the present study was focused only on healthy Muslims. Moreover, during the period of recruitment, it was instructed to the subjects that they could withdraw from the study without having to give any reason.

Study Design

This study was conducted in 2013, in line with the Declaration of Helsinki and the guidelines of the Institutional Review Board of the Qatar University. Its design consisted in answering questions each Sunday (i.e., 30th june, 7th july, 14th july, 21th july, 28th july, 4th august, 11th august, and 18th august) or Monday every week during eight weeks (i.e., two weeks before Ramadan, four weeks during Ramadan, and two weeks after Ramadan). Specifically, the participants were invited to report regularly their affects before, during, and after the holy month of Ramadan through answering the questions on a form that was accessible *via* a specific

address within a 3-hour time slot that corresponded to the middle of the day (e.g., 12:00 am to 03:00 pm in France), depending on the country in which the participants lived. In other words, this 3-hour time slot was granted based on the different time zones of the participants. Before starting the survey, the adequate time slot for each participant was determined according to her/his country.

Procedure

During the recruitment period, which started several weeks before the beginning of the survey, people were invited to read an on-line form including instructions about the study. They were ensured that their contribution would remain anonymous and confidential. When they gave their informed consent, they answered questions about demography and had to enter a pseudonym they had to keep during the entire study. Afterwards, the volunteers were thanked for their participation. During the survey period, all participants received an email every Saturday to remind them to complete the on-line survey on Sunday. The email included a specific link that was *active only within the specific time-slot* of the survey. Once the participants could access the form, they were asked to report their pseudonym and were invited to answer questions.

Measures

A set of items was systematically administered once a week during eight weeks. The 5-item positive affect scale (e.g., "I feel inspired") (Cronbach's α=0.78), which measures the tendency of experiencing good feelings, and the 5-item negative affect scale (e.g., "I feel hostile") (α=0.84), which assesses the tendency of negatively reacting to stressors, of the International Positive and Negative Affect Schedule–Short Form (I-PANAS-SF), originally developed by Thompson, in 2007 [11], were used to measure positive (namely, feeling active, attentive, determined, inspired, or alert) and negative (that is to say, feeling afraid, upset, nervous, hostile, or ashamed) affects.

The 4-item Center for Epidemiological Studies–Depression–Visual Analogical Scale [12] (e.g., "I have crying spells or feel like it"; α = 0.72) was used to measure depression.

A single item of the State–Trait Anxiety Inventory [13] ("I am worried") was also employed to measure anxiety state. The items of depression and anxiety were scored from 1 ("*not at all*") to 9 ("*very much so*").

The "optional" item of the Personal Wellbeing Index–Adult [14] was used to measure subjective wellbeing ("Thinking about your own life and personal circumstances, how satisfied are you with your life as a whole?"). This item was scored from 1 ("*completely dissatisfied*") to 9 ("*completely satisfied*").

Statistical analysis

Normality of data distribution was checked with the D'Agostino-Pearson omnibus test. Continuous parameters were computed as mean ± standard deviation (SD). In order to examine whether and how the Ramadan fasting may affect positive and negative health-related affects, multivariate and univariate analyses of variances with two repeated measures (Ramadan Period: Inside vs. Outside) were conducted on those variables. Figures with p-value less than 0.05 were considered statistically significant. All statistical analyses were carried out with the commercial software "Statistical Package for Social Sciences" (SPSS version 24.0 for Windows, IBM, Armonk, NY, USA).

RESULTS

Because this study was focused on healthy Muslims, eight people were excluded from the analyses because they reported having a chronic mental (n=2) or physical (n=6) pathology. As a result, the final sample thus included 83 participants (44 women, age mean = 28.5 ± 6.4 years; education mean =15.7±5.1 years) who lived in Muslim-majority countries (i.e., Morocco, Qatar, and Tunisia; n = 15 women and 20 men) and non-Muslim majority countries (i.e., France; n = 30 women and 18 men).

The multivariate analyses revealed a significant effect of Ramadan Period, $F(5, 78) = 10.55$, $p < 0.001$, $h_p^2 = 0.11$. More in details, the analyses revealed a significant effect of Ramadan Period for depression, $F(1, 82) = 8.808$, $p = 0.004$, $h_p^2 = 0.10$, positive affect, $F(1, 82) = 18.728$, $p < 0.001$, $h_p^2 = 0.19$, negative affect, $F(1, 82) = 3.728$, $p = 0.057$ (marginal effect), $h_p^2 = 0.04$, but not for anxiety, $F(1, 82) = 0.04$, $p = 0.843$, $h_p^2 = 0.00$, and wellbeing, $F(1, 82) = 0.06$, $p = 0.804$, $h_p^2 = 0.00$. The levels of positive affect, negative affect, and depression were *lower* during the month of Ramadan than outside the period of Ramadan. The means and standard deviations of each variable are presented in Table 1.

Table 1. Means and standard deviations (SD) of all variables of interest according to the Ramadan periods (outside vs. inside), with the findings of the multivariate analyses of variances with two repeated measures.

	Outside Ramadan	Inside Ramadan	
	Mean (SD)	Mean (SD)	*p*-value
Wellbeing	6.25 (1.47)	6.23 (1.36)	0.804
Positive affect	5.87 (1.22)	5.38 (1.06)	0.000
Negative affect	2.95 (1.35)	2.78 (1.31)	0.057
Depression	2.64 (1.46)	2.36 (1.31)	0.004
Anxiety	4.09 (1.79)	4.06 (2.00)	0.843

DISCUSSION

The aim of this study was to test *how* fasting during Ramadan could influence positive *and* negative feelings in a sample of healthy Muslims. First, the study did not report any change in anxiety and subjective wellbeing. Second, and against authors' prediction, this study revealed that the Ramadan fasting reduced the levels of self-reported positive *and* negative feelings (positive affect, negative affect, and depression), indicating that Ramadan fasting would not influence the *valence* of affects, but rather their *intensity*. This result seems to suggest that the Ramadan fasting, which combines spirituality and fasting behavior, would incite people to look inside oneself and think about one's own thoughts, feelings and behaviors. In other words, the Ramadan fasting would foster introspection, which refers to self-attentiveness motivated by curiosity [15], thereby leading to act as a buffer against emotional intensity. Finally, this study suggests that the Ramadan fasting would reduce people's sensitivity to their physical and social environment, thus leading to increase their emotional stability.

However, further studies should explore the process underlying such a buffering effect: was it due to spirituality, fasting or both (interaction between spirituality and fasting)? The Ramadan fasting is, indeed, characterized by intense and spiritually vibrant moments, in which believers experience their nearness to God. As such, the Ramadan fasting should be compared with a "spiritually neutral" fasting to verify if it is the religiosity to impact on positive and negative emotions, modulating and tuning their intensity. In this case, the buffering effect would represent the specificity of the Ramadan fasting (and, eventually, of other spiritually fasting protocols characterized by a strong spiritual connotation).

Despite the novelty of the investigation, the present study is not immune from limitations. The major shortcoming is given by the sample size and the sampling approach (a relatively small, convenience sample). Moreover, given the pilot, exploratory nature of the study, *a priori* sample size estimation and power analyses were not carried out. Further studies should address the crucial role of the impact of spirituality, fasting and their interaction, also utilizing larger and more representative (for instance, randomly chosen) sample sizes.

CONCLUSION

The precise effect of fasting on mood is controversial. The scholarly literature reports conflicting results, with an overall low and scarce level of scientific evidence. In the present investigation, it was found that a particular type of fasting – time-restricted, intermittent, circadian, and spiritually characterized – may exert a buffering effect on emotions and feelings intensity. In the meantime, it seems that healthy Muslims can use fasting as a way to stabilize their emotions and thus take care of their mental health, in addition to other positive effects of intermittent fasting.

Acknowledgments: The authors are grateful to the volunteers who kindly gave their valuable time for participating in the survey. No fund was received to support this research work.

Conflicts of Interest: The authors declare no conflict of interest.

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