

Article

State Neuroticism at Home and in Fiji: The Positive Effects of Having a Holiday to Reset Mind and Brain

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Abstract: Neuroticism, i.e., the disposition to experiencing feelings of emotional distress, including anxiety, depression, and anger, is often considered a relatively stable and fundamental personality characteristic (trait neuroticism). However, the level of neuroticism can also vary within individuals (state neuroticism), depending on external factors such as life events and work stress. The aim of the current study was to examine to what extent having a holiday can reduce state neuroticism. A survey was conducted among $n = 213$ young adults who were on holiday in Fiji (mean \pm SD age of 24.5 ± 4.3 , 46.9% women). In addition to demographics, they completed the neuroticism scale of the Eysenck Personality Questionnaire—revised Short Scale (EPQ-RSS). Compared to at home, a significant reduction ($p < 0.001$) in neuroticism was reported when they were on holiday (mean \pm SD of 4.5 ± 3.0 versus 2.1 ± 2.3 , respectively). The effect was seen in both men and women. Women had significantly higher neuroticism ratings than men, both at home (mean \pm SD of 5.4 ± 2.9 versus 3.6 ± 2.9 , respectively, $p < 0.001$) and on holiday (mean \pm SD of 2.5 ± 2.4 versus 1.6 ± 2.0 , respectively, $p < 0.001$). No significant differences were seen between individuals with a job at home or students. The correlation between neuroticism at home and the difference rating in neuroticism ('at home'—'in Fiji' assessment) was highly significant ($r = 0.68$, $p < 0.001$). In conclusion, having a holiday was associated with significantly reduced levels of neuroticism. Those with the highest levels of neuroticism at home benefited the most from having a holiday.

Keywords: holiday; work; neuroticism; negative affect; Fiji



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1. Introduction

Work stress can have a significant negative impact on mental wellbeing, and without adequate coping strategies, it can give rise to increased negative emotions such as anxiety, depression, stress, guilt, and anger [1,2]. Different terminology has been used to describe these mood changes, including psychological distress and negative affect. Neuroticism can be defined as the vulnerability or disposition to experiencing feelings of emotional distress and is often viewed as a relative stable personality characteristic (trait neuroticism) [3]. Some individuals have a higher baseline level of negative emotions compared to others. However, the level of neuroticism can also vary within individuals, depending on external factors such as experiencing significant life-events or periods of increased stress, or momentary job demands, in particular when these are viewed as unpredictable and uncontrollable [3–5]. Thus, there is variability around their baseline level of neuroticism (trait neuroticism) [3], which has been referred to as state neuroticism [4,5].

Neuroticism has a huge negative impact on public health [6]. Studies have shown that neuroticism is an important predictor of occupational stress [7–11]. The economic costs of neuroticism have been estimated at twice that of the common mental disorders combined [12]. In the context of job performance, high levels of neuroticism have been associated with being unemployed [13,14], decreases in economic status [15,16], job change or

promotion [17], not being financial independent [17], and low occupational satisfaction [17]. It is therefore important to investigate ways to reduce neuroticism in order to prevent or reduce undesirable work stress.

Having a holiday may be an effective way to reset mind and brain. A holiday often comprises a change of environment, and a time of leisure without work commitments, during one relaxes and can engage in other interests than work [18]. As such, a holiday can reduce work-related negative affect and stress.

Research on positive health effects of having a holiday is limited. A 2009 meta-analysis included only seven relevant studies [19]. For example, in a longitudinal study, Strauss-Blasche et al. [20] assessed participants' wellbeing before and 3 days after a 10-day holiday. They found that having a holiday significantly improved sleep quality, positive mood, and life satisfaction, and significantly reduced negative mood and physical complaints. The meta-analysis by de Bloom et al. concluded that having a holiday has positive effects on health and well-being, including a significant reduction in exhaustion and health complaints, and an improvement in life satisfaction [19]. More recent studies confirmed these findings [21–23]. Taken together, it has been shown that having a holiday significantly improves mood and reduces stress. However, none of these studies assessed the impact of having a holiday on neuroticism.

Recently, we reported on the positive health effects of having a holiday or work in Fiji [24]. The study, conducted among 333 young adults, revealed that having a holiday in Fiji was associated with a 62.5% reduction in stress compared to pre-vacation at home ratings, and a significant improvement of perceived immune fitness. The aim of the current analysis was to further examine this sample, by evaluating to what extent these positive effects of having a holiday may contribute to reducing state neuroticism. Based on the available literature on positive mood effects and stress reduction associated with having a vacation [24], it is hypothesized that having a holiday in Fiji significantly reduces state neuroticism. Furthermore, it is hypothesized that those with higher levels of neuroticism benefit the most from going on holiday.

2. Materials and Methods

A survey was conducted among international travelers, 18 to 35 years old, who were in Fiji for a holiday [24]. The survey was conducted in August 2018. Potential participants were invited to complete the survey at Wailoaloa beach, a popular tourist venue, close to Nadi and the International airport. International travelers of both sexes, with sufficient understanding of the English language to complete the survey were included. Native Fijians and permanent residents of Fiji were excluded from participation. In addition, individuals that came to Fiji for work could complete the survey, but were excluded from the current analysis. The survey was completed on location in the presence of the investigator. The Ethics Committee of the Faculty of Social and Behavioral Sciences of Utrecht University approved the study (approval code FETC17-061, approval date: 8 June 2017), and all participants provided informed consent.

Demographic data, including sex, age, and country of origin was collected. It was recorded how many days participants had traveled until the day of survey completion, and how many days of their travel they had been in Fiji.

Neuroticism was assessed with the neuroticism scale of the Eysenck Personality Questionnaire—revised Short Scale (EPQ-RSS) [25,26]. The neuroticism scale consists of 12 items that can be answered with 'yes' or 'no', which, respectively, correspond to values of 1 and 0. The sum rating of items ranges from 0 to 12 with higher ratings imply higher levels of neuroticism. The assessment of neuroticism was conducted retrospectively for being at home (before traveling), and a momentary assessment was made for being on holiday in Fiji.

Statistical analyses were conducted with SPSS (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 28.0. Armonk, NY, USA: IBM Corp.). As the neuroticism data were not normally distributed, nonparametric tests were used to an-

alyze the data. Comparisons between the groups (men versus women, job versus student) were conducted with the Independent-Samples Mann–Whitney U Test. Differences were considered significant if $p < 0.05$ (two-sided). Data expressed as percentages were compared with the “N-1” Chi-squared test (Med-Calc Software Ltd., Version 20.106, available at https://www.medcalc.org/calc/comparison_of_proportions.php; accessed on 23 July 2022). Differences between groups were considered statistically significant if $p < 0.05$. Within subject comparisons (at home versus in Fiji) were conducted with the Related-Samples Wilcoxon Signed Rank Test. Differences were considered significant if $p < 0.05$ (two-sided). Spearman’s correlations between neuroticism at home and the change rating in neuroticism (‘at home’—‘in Fiji’ assessment). Correlations were considered significant if $p < 0.05$ (two-sided).

3. Results

$n = 333$ individuals started the survey. $n = 213$ of them were on holiday in Fiji and their data was included in the analysis. The demographics of the sample are summarized in Table 1. The majority of them originated from Europe (64.3%), Australia or New Zealand (20.2%), or North America (10.8%). No significant sex differences were found for the assessed demographics.

Table 1. Demographics and study outcomes.

	Overall	Men	Women	<i>p</i> -Value
<i>n</i> (%)	213	100 (47%)	113 (53%)	0.383
Age (year)	24.5 (4.3)	25.0 (4.7)	24.1 (3.8)	0.164
Job/Student	145 / 68	71 / 29	74 / 39	0.462
Neuroticism at home	4.5 (3.0)	3.6 (2.9)	5.4 (2.9)	<0.001 *
Neuroticism in Fiji	2.1 (2.3)	1.6 (2.0)	2.5 (2.4)	0.004 *

Mean and standard deviation (SD, between brackets) are shown. Significant differences between men and women ($p < 0.05$) are indicated by *.

Neuroticism ratings of individuals when they were in Fiji were significantly lower compared to when they were at home ($p < 0.001$). Both men and women showed a significant reduction in neuroticism when in Fiji when compared to when at home ($p < 0.001$). Both at home ($p < 0.00$) and in Fiji ($p = 0.004$), women had significantly higher neuroticism ratings than men. The mean (SD) neuroticism at home ratings for those with a job were 4.4 (2.9) and for students they were 4.9 (3.2). The ratings did not significantly differ from each other ($p = 0.249$). For both groups a significant reduction in neuroticism ratings was seen when in Fiji ($p < 0.001$). However, the mean (SD) neuroticism in Fiji ratings of those with a job of 1.9 (2.4) was significantly lower ($p = 0.039$) compared to the mean (SD) neuroticism in Fiji rating of students of 2.4 (2.0), showing that those with a job benefited significantly more from having a holiday than students.

Figure 1 shows the Spearman’s correlation between neuroticism at home and the change rating in neuroticism (‘at home’—‘in Fiji’ assessment). It is evident from the highly significant correlation ($r = 0.68$, $p < 0.001$) that individuals with the highest ‘at home’ ratings on neuroticism benefited the most from having a holiday in Fiji. The correlation was significant for both men ($r = 0.73$, $p < 0.001$) and women ($r = 0.62$, $p < 0.001$). The magnitude of the correlation did not significantly differ between men and women ($p = 0.09$). A significant correlation was also found for both individuals with a job at home ($r = 0.64$, $p < 0.001$) and those who are students at home ($r = 0.77$, $p < 0.001$). No significant differences in the magnitude of correlations were found regarding job/student status ($p = 0.06$).

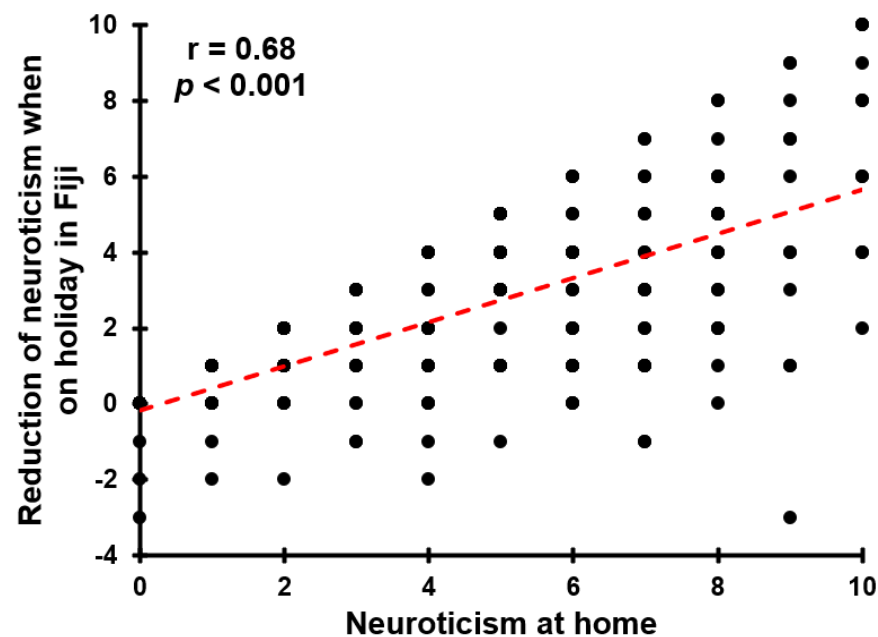


Figure 1. The impact of having a holiday on neuroticism. The Spearman's correlation (red striped line) between neuroticism at home and the reduction in neuroticism when on holiday in Fiji ('at home'—'in Fiji') is shown.

On average, participants had spent 79 days traveling of which the last 19 days were spent in Fiji. No significant correlations were found between the reduction in neuroticism ratings and days traveling ($r = 0.026$, $p = 0.704$) or the number of days on holiday in Fiji ($r = -0.096$, $p = 0.165$).

4. Discussion

To the best of our knowledge, this is the first study reporting on the impact of having a holiday on state neuroticism. The analysis revealed that for both young working adults and students having a holiday in Fiji was associated with a 53.3% reduction in neuroticism. This highly significant effect is in line with results from previous studies showing that having a holiday was associated with significantly reduced stress, improved mood, and a better perceived immune fitness [19–24].

The current study did not include a follow-up assessment on neuroticism levels after returning home from holiday. It can be debated to what extent the observed reduction in neuroticism lasts once one returns home. Few studies looked into this, and the results are inconclusive. The meta-analysis by Bloom et al. [19] concluded that research suggested that the positive effects last for 2 to 4 weeks. In a subsequent study, Bloom et al. [27] examined the impact of longer lasting holidays (23 days on average) on health and wellbeing. The authors reported that holiday experiences, in particular those causing pleasure and relaxation were especially important for the persistence of the positive holiday effects after returning home. However, within a week after resuming work, health and wellbeing levels returned to pre-vacation levels. In contrast, Gump et al. [23] reported that lower negative affect, less stress, less aggression, less isolation, less work effort and less work over commitment lasted for weeks after returning from holiday. Taken together, it has been consistently shown that having a holiday has beneficial effects on health and wellbeing. However, more research is needed to determine how long these positive effects last after returning home and back to work.

In the current study, women had significantly higher neuroticism ratings than men. This was evident both before and during the holiday. These effects are in line with literature on neuroticism [28]. However, no significant differences between the sexes were seen in the relative improvement in neuroticism (neuroticism at home—neuroticism on

holiday). Research into possible sex differences in holiday effects is important, given that women usually report higher levels of (job-)stress, depression and neuroticism compared to men [10,11]. The effects of having a holiday may therefore also differ between the sexes. For example, a study conducted in a nationally representative US sample of middle-aged working men and women, revealed that for every ten days of paid holiday per year, in women the chances of developing depression reduced by 29% [11]. The finding has high relevance, as the annual costs saving of these prevented new depression cases was estimated to be USD 2.94 billion [11]. However, the association between paid vacation days and depression was not significant in men. The latter illustrates the importance of investigating possible sex differences in future research on holiday effects.

Some limitations should be taken into account when interpreting the presented results, and when designing future studies. Firstly, the study was conducted among relatively young participants. The age range of 18 to 30 years old was chosen because another aim of the study was to investigate alcohol consumption while on holiday. The results of these analyses are discussed elsewhere [29,30]. Young adults may differ in mental resilience and coping strategies from older adults [31,32], and this may impact the study outcome. It is therefore unsure to what extent these can be extrapolated to older adults. Future studies should therefore also include older aged participants. Secondly, the pre-holiday data was collected retrospectively. As such, recall bias may have influenced the results. Future studies should preferably have a longitudinal design. Thirdly, no post-holiday assessments were made. The latter was logistically not feasible, as it was unknown how long the individual traveler's holiday would last. Additionally, the survey was anonymous, so there were no possibilities to conduct follow-up afterwards. Fourthly, the study did not include a control group. Therefore, the current results could not be compared to a group of people that did not have a holiday. Finally, the study sample comprised young adults that were on an extensive holiday (on average 79 days, of which the last 19 days were spent in Fiji). This period of time is not representative of a common 1- to 2-week holiday to a single destination. Therefore, the study should be replicated in a sample that has a holiday of shorter duration to evaluate to what extent the reduction in neuroticism is also evident when having a short vacation.

Notwithstanding the limitations described above, the current analysis revealed that having a holiday was associated with a significant reduction in neuroticism in young adults. Those who reported the highest neuroticism levels at home benefited most from having a holiday.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data are available from the corresponding author upon reasonable request.

Conflicts of Interest: Over the past three years, J.C.V. has acted as a consultant for KNMP, Mentis, Red Bull, Sen-Jam Pharmaceutical, and Toast! The other authors have no potential conflict of interest to disclose.

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