

**The Moderating Effect of Neuroticism on the Relationship between Negative Work  
Events and Employee Fatigue**

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### **Abstract**

Experiencing negative work events is not unavoidable, highlighting the importance of investigating how such events affect employees. Thus, this study focuses on examining the effects such events have by investigating if negative work events predict fatigue and if neuroticism moderates this relationship. Based on the conservation of resources theory and previous literature, it was first hypothesized that negative work events are positively linked to fatigue and secondly, that high neuroticism strengthens this relationship. Only support for the first hypothesis was found. The sample consisted of  $N = 96$  employees. Participants partook in a baseline study measuring neuroticism and demographic variables, followed by a two-week daily survey about the experience of negative work events and fatigue on each workday. A significantly positive predictive link between negative work events and fatigue was found. No significant interaction effect was observed between negative work events and neuroticism. Hence, there is evidence in favor of negative work events significantly predicting experienced fatigue, and no evidence that this relationship is directly strengthened by neuroticism. Overall, finding ways to reduce the number of negative work events experienced can contribute to reducing fatigue. Further, the strengths and limitations of the present study were discussed.

*Keywords:* negative work events, fatigue, neuroticism, conservation of resources theory

## **The Moderating Effect of Neuroticism on the Relationship between Negative Work Events and Employee Fatigue**

Imagine the following scenario: it is a day like every other, as usual, you go to work and experience a lot of different events, both positive and negative. During this day of work, everything seems to go smoothly, until later that day when you make a rather large mistake during the organization of a new project. At the end of this work day, you experience tiredness and mental exhaustion. Now the question arises if and how such negative work events influence your subsequent behavior and mental state. Furthermore, does your personality influence the way individuals react to negative work events in terms of their well-being? Answering these questions could lead to restructuring the workplace in a way such that individuals would experience as little fatigue from negative work events as possible. Additionally, measures could be implemented to help individuals who are especially likely to experience fatigue from such negative work events.

This illustrative example highlights the centrality of daily events, particularly negative work events, to the life of individuals and the domain of industrial and organizational psychology. The importance of such events started to be recognized after Weiss and Cropanzano (1996) published their affective events theory. Since then (and especially recently) there is an ever-increasing body of research regarding such affective work events (Liu et al. 2023; Schmitt & Scheibe, 2022). The majority of studies today focus on both positive and negative events and their direct effects on the behavior and feelings individuals experience after experiencing such work events with little attention to moderators of this relationship (e.g., Furnham et al., 1996; Stride, 2013). This study will take a different approach by not only examining if and how negative work events are related to fatigue but also if and how this relationship is moderated by neuroticism. Neuroticism is the personality trait that illustrates the “[...] differences in the tendency to experience negative affect [...]”

(Wrzus et al., 2021, p.692) to which fatigue can be counted. This illustration demonstrates the relevance of this personality trait as a moderator in the current study. Moreover, considering neuroticism as a moderator addresses a current research gap, by investigating how this specific personality trait impacts how strong the impact is that negative work events have on the individuals experiencing them.

### **Negative Work Events and Fatigue**

Work events can be defined as “things [that] happen to people in work settings” (Weiss & Cropanzano, 1996, p.11) and “a change in circumstances, a change in what one is currently experiencing” (Weiss & Cropanzano, 1996, p.31). Based on this definition, work events can be either positive or negative, yet the present study will focus on negative work events only. Furthermore, experiencing such work events is unavoidable and they happen to anyone from time to time. Thus, it is of paramount importance to give such experiences significant attention because they can influence peoples’ lives without them being able to exert control over whether or not they experience such events.

In this study, work-related fatigue is defined as “an experience of mental, emotional, and physical tiredness at the end of the work day” (Scheibe & Moghimi, 2021, p. 36). The importance of studying fatigue is further emphasized by the findings of Ferreira and colleagues (2019) who found that fatigue predicts decreases in productivity. Additionally, it was shown that (especially emotional) fatigue is a significant predictor of the risk of developing burnout (Karlafti et al., 2022). Both of these outcomes can have significant negative consequences for both the employee and the organization they work for. Hence, figuring out if negative work events function as predictors of work-related fatigue and which factors strengthen the effect on individuals is an essential step in order to provide individuals with the support they need to reduce the strain of negative work events. Finding ways to decrease the negative effect of negative work events on employees would not only buffer

against a decrease in productivity and thus boost overall productivity, but it could also result in organizations having the ability to know, based on personality traits, who is more likely to suffer from negative work events. This allows them to react quickly when it comes to susceptible individuals to prevent excessive fatigue and help prevent burnout.

This study is based on the conservation of resources theory (COR; Hobfoll, 1989) and previous literature. The COR theory describes how individuals are driven to keep the resources they have and to obtain new resources. These resources include conditions, states, objects, and the energy that individuals possess and rate highly. Moreover, it elucidates how people react to resource loss and gain because resources are finite, ultimately impacting one's behavior.

According to the principles of the COR theory, negative events are limiting the availability of resources and they are hampering opportunities which can result in resource gain (Hobfoll, 1989). COR theory implies that negative work events can lead to experienced resource loss, as also argued by Schmitt and Weigelt (2023). They also stated that negative work events can consume regulatory resources. Moreover, people try to preserve these resources by exerting additional energy to preserve them, which is in line with the resource investment principle (Hobfoll et al., 2018). Taking this into consideration, these impacts result in one getting protective towards one's resources and to prevent these losses one needs to invest more resources, which in this case refers to investing more energy. This investment of further resources can cause a problem because the resources of each individual are finite. Hence, this greater investment of resources (i.e. energy) can be linked to individuals investing more resources than normal, leading to the experience of fatigue (Hobfoll et al., 2018).

Moreover, this investment of additional resources to preserve one's current resources can be combined with the primacy of loss principle of the COR theory. According to the primacy of loss principle, the consequences experienced from resource loss are much greater

than the impact a resource gain of equal proportion would have on the individual (Hobfoll et al., 2018). Therefore, it can be inferred that even a small number of experienced negative work events, which result in the loss of resources, can have an immense impact on individuals, as was found by Weiss and Cropanzano (1996). All these combined aspects lead to the first prediction of this study.

**Hypothesis 1.** Experiencing negative work events is positively linked with experiencing fatigue.

### **Neuroticism as a Moderator**

Additionally, this study will investigate whether there is a variable that moderates the relationship between negative work events and fatigue. As shown by a multitude of previous studies, neuroticism can be positively linked to fatigue on its own (Bosmans et al., 2019; Calderwood & Ackerman, 2011; Hochwälders, 2009; Roloff et al., 2022; Sørengaard et al., 2019). This link is unidirectional, indicating that fatigue does not predict neuroticism, whereas neuroticism does predict fatigue (Sørengaard et al., 2019). Building on this well-established main effect, the role of neuroticism as a possible moderator is investigated in this study.

Besides, previous research has shown that individuals high in neuroticism seem to be more susceptible to negative events (Hobfoll, 1989; Weiss & Cropanzano, 1996). On this basis, it can be argued that it is especially important to investigate if and how neuroticism moderates the link between negative work events and fatigue. Because these individuals high in neuroticism tend to experience more negative events, which again underlines the importance of studying neuroticism as a moderator in this construct.

According to the first corollary of the COR theory as stated by Hobfoll and colleagues (2018), individuals who have a larger amount of resources at their disposal are impacted less by resource loss and, thus, negative work events. Consequently, individuals who have fewer resources at their disposal are inherently more likely to be strongly impacted by such negative

work events. Furthermore, as per Wright and Cropanzano (1998), it can be argued that based on the perspective of the COR theory, experiencing (emotional) fatigue has a high likelihood when one experiences the feeling of not having the resources needed to deal with something. Thus, this paper argues that the link between negative work events and fatigue is moderated by personality traits. Conforming to Funder (2001), personality traits such as neuroticism are relatively stable over time. Moreover, personality traits have an impact on how one deals with certain situations as well as how effectively one is able to allocate one's resources in order not to deplete them (Halbesleben et al., 2014). This underscores the importance of neuroticism in the context of the relationship between negative work events and fatigue as it shows that levels of neuroticism influence how efficiently one manages their resources. Hence, high levels of neuroticism are associated with a less efficient allocation of resources which, in turn, contributes to strengthening the impact negative work events have on the experience of fatigue due to a faster depletion of resources.

In addition, it was demonstrated that high levels of neuroticism are linked to individuals engaging in less than-optimal coping behavior compared to individuals with low to normal levels of neuroticism (Calderwood & Ackerman, 2011; Hampson, 2012; Suls & Martin, 2005) and that individuals high in neuroticism need a longer recovery time after experiencing negative events (Weiss & Cropanzano, 1996). Accordingly, neuroticism increases the association between negative work events and fatigue due to these individuals being less able and requiring longer recovery from such negative work events. Consequently, fatigue develops more quickly for individuals high in neuroticism. Additionally, it was shown that high neuroticism is negatively associated with personal accomplishment (Roloff et al., 2022), that individuals high in neuroticism seem to be more sensitive to losses (Calderwood & Ackerman, 2011), and that these individuals are more likely to assess work events as more negative (Suls & Martin, 2005). This implies that individuals high in neuroticism are more



likely to experience negative work events, evaluate them more negatively, and thus, experience stronger adverse reactions. Therefore, they are also more susceptible to experiencing fatigue as a consequence of negative work events. These findings highlight the importance of investigating how the level of neuroticism affects the outcome of negative work events, to be able to react and provide help to people who otherwise suffer from strong negative consequences from such negative work events.

Based on the evidence and theoretical background presented, the second prediction of this study is that the positive relationship between negative work events and fatigue is strengthened by high levels of neuroticism. The conceptual model is presented in Figure 1.

**Hypothesis 2.** High neuroticism strengthens the positive relationship between negative work events and fatigue.

## Method

### Participants

To test our hypotheses, we conducted a daily diary study that consisted of a baseline survey and daily surveys on each workday over a time period of two weeks. The sample consisted of  $N = 141$  adults, who work at least 20 hours per week. These participants were recruited through convenience sampling, which included personal contacts of the study conductors and was based on their social networks and social media. This sample was further extended by snowball sampling to friends and co-workers of invited participants. Of all 141 participants who completed the baseline survey, 131 were invited to the daily surveys<sup>1</sup>. Ninety-eight of these participants finished at least two days of the daily survey, totaling 553 daily observations. Two further participants were removed from the sample due to only participating in the daily survey part and not in the baseline survey, resulting in a final sample

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<sup>1</sup> Nine failed the attention checks and one person provided an invalid email address.

of  $N = 96$  participants, which translates to a completion rate of 68.1%. All 96 participants included in the analysis were at least 18 years old.

The study participants had a mean age of  $M = 35.76$  years<sup>2</sup> ( $SD = 13.31$ ), 62.5% were female and 36.46% were male<sup>3</sup>. 63.5% of all participants had a university or doctorate degree. Referring to their nationalities, 54.2% originate from the Netherlands, 16.7% from Germany, and 29.2% came from other countries (e.g., Romania). Participants came from a diverse range of occupational sectors such as health and safety, industry and production, education, and instruction. They have been working in the same organization for an average of  $M = 6.07$  years<sup>4</sup> ( $SD = 7.83$ ) and had an overall average work experience of  $M = 13.37$  years ( $SD = 12.15$ ). Most participants worked either between 35 and 40 hours per week (36.5%) or more than 40 hours per week (33.3%) on average. In 81.3% of cases, participants had a supervisor themselves, and in 33.3% of cases, they were supervising other employees.

### **Procedure and Design**

Participants were invited to the baseline survey with links and QR codes distributed via email, flyers, and social media by Bachelor and Master students over a duration of one year (June 2022 - April 2023) with a nearly equal distribution of participants per calendar

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<sup>2</sup> One participant was removed for the calculation of the age mean and from age as a control variable due to indicating an age of 332. However, apart from this, this person was included in all further analyses.

<sup>3</sup> One participant took the option “otherwise defined or not prefer to say”.

<sup>4</sup> There were some statistically significant outliers when it came to occupational years. However, these were still included because they also represent the participants with the highest age and work experience (e.g. age 60 and 33 company years). Thus, they were of no concern and were not excluded.

year. This study was conducted via Qualtrics XM in English and was approved by the ethical committee of the Faculty of Behavioural and Social Sciences at the University of Groningen. The participants were informed about the study's aims, confidentiality, procedure, risks, and their rights as participants before taking part in the baseline survey. After receiving this information, they were asked if they wanted to provide active consent (or not). Furthermore, an incentive for participation was given which included a raffle of three prizes of 50€ each between all participants who complete the baseline survey and at least five daily surveys. In addition, all participants had the option to get a feedback report about the general findings of the study.

In the baseline survey, participants were asked to provide demographic information for instance age, gender, highest achieved level of education, as well as occupation, working hours, work experience, et cetera. Additionally, work characteristics, different personality traits, and general well-being were assessed during the baseline survey. At the end of this baseline survey, participants were asked to provide their email addresses to be able to invite them to the ten-day daily surveys following the baseline survey.

For this ten-day daily survey, a questionnaire was sent each working day over a two-week interval to all participants, who were asked to only complete this survey if they worked on that day. All ten daily surveys were the same. The questionnaire measured if employees experienced negative work events, how impactful these negative work events were, and how much fatigue they experienced at the end of that day. Afterward, the ten daily surveys were matched and the mean score of each participant on each item across their days of participation was calculated.

Both types of surveys were part of a bigger study that also measured other variables like positive work events and sensory processing sensitivity. However, these other measures

do not apply to the analysis carried out in this study and therefore will not be elaborated on any further.

## **Measures**

### ***Neuroticism***

Neuroticism was measured in the baseline survey using Donnellan and colleagues' (2006) Mini-IPIP four-item measure for neuroticism with two of the items being reverse-coded. Participants were asked to indicate how accurately certain statements reflect them, for example, "I have frequent mood swings.". Participants rated these statements on a five-point Likert-type scale from 1 (very inaccurate) to 5 (very accurate), with a high score indicating that the statement is more reflective of the participant and the participant scores high on neuroticism. The Cronbach's alpha calculated for this scale was  $\alpha = .63$ .

### ***Negative Work Events***

We measured the experience of negative work events in each daily survey with the same 19 items which were each based on the 19 categories of negative work events by Schmitt and Scheibe (2022). The measure of negative work events asked participants to indicate if they experienced such a negative work event on this day and if they did, how impactful this situation was for them. This included items such as "You were assigned additional tasks or short deadlines that lead to an overload", which were rated by the participants on a five-point Likert-type scale from 1 (Did not experience this situation; no impact) to 5 (Situation experienced; very significant impact). The lowest score indicates not experiencing this event on this day with high scores indicating the event was experienced with increasing impact. The items were re-coded for the analysis so that not experiencing such an event was counted as a missing score and if someone experienced an event it was re-coded to a four-point scale. Here, a score of 1 indicated "Situation experienced; little impact", and a

score of 4 indicated “Situation experienced; very significant impact”<sup>5</sup>. Furthermore, the Cronbach’s alpha for this scale was not calculated because reliability for this scale cannot be expected due to being a formative scale without an expected homogeneity of item responses. Some events are expected to occur less frequently than others, which results in these rare events being weighed lower than more common ones.

### ***Fatigue***

Fatigue was measured in the daily surveys using a three-item measure, which was an adapted version of Frone’s and Tidwell’s (2015) measurement scale. This measure asked participants to indicate how fatigued they felt at the end of the work day. Statements included, for example, “At the end of the workday today, I felt mentally exhausted.”. Participants rated these statements on a five-point Likert-type scale from 1 (not at all) to 5 (extremely), with higher scores indicating a stronger experience of fatigue<sup>6</sup>. The Cronbach’s alpha calculated for this scale was  $\alpha = .91$ , indicating that the scale is highly reliable.

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<sup>5</sup> One statistical outlier was observed and not excluded because this participant, over all ten days, only experienced two categories of negative work events and scored both of them high on impactfulness. In the current sample, the average of different categories of negative work events being experienced was 6.74. Due to this participant only experiencing two categories of negative work events they were weighed higher, resulting in an average impactfulness rating of 3.25.

<sup>6</sup> Two participants can statistically be defined as outliers scoring high on fatigue. However, they were kept in because based on the nature of this study levels of fatigue can be quite different depending on the occupation and work environment.

### ***Control Variable***

Participants' age was included as a control variable. This decision was based on findings by Scheibe (2021), who observed that older adults are more resistant to the effects of specifically strong negative work events compared to younger adults. By controlling for age, this alternative explanation for both the main and moderation effect will be eliminated. This allows for consideration of the particular relationship between the three variables relevant to this study independent of age.

### **Statistical Analysis**

In this study, SPSS was used to conduct the data analysis. We started with correlation analysis, followed by multiple hierarchical regression analysis. This analysis was conducted to test the hypothesized main and moderation effect with the data collected through the baseline and daily surveys.

## **Results**

### **Checking Assumptions**

The initial step in the analysis was to check the assumptions necessary for the multiple hierarchical regression analysis (Appendix), firstly checking for differences in our main variables between the two years of data collection. No significant differences between the two years were found for age, negative work events, neuroticism, and fatigue. Subsequently, we checked for normality and linearity of our data, which resulted in both these assumptions being met. Furthermore, heteroscedasticity and multicollinearity concerns in our sample were tested and no indication of either assumption being violated was found. Testing for independence of observations was not necessary, due to this study not having repeated measures. Last but not least, checking for outliers resulted in one participant being excluded from one variable (age) in all further analyses, as mentioned earlier, due to indicating a highly unrealistic age (332 years). Other statistically significant outliers were evaluated individually

and the decision was made to keep them in the data since they are in the expected range of scores. Thus, excluding these outliers was not deemed necessary.

### **Correlation Analysis**

Before starting the main analysis, a correlational analysis was conducted (Table 1). From these correlation checks, it was apparent that both negative work events ( $r = .32, p = .002$ ) and neuroticism ( $r = .27, p = .007$ ) correlate significantly positively with fatigue. This is in line with the correlations that are expected based on our hypotheses. Considering the correlation between the suggested control variable (age) and fatigue, it became apparent that this correlation was significant with  $r = -.38$  ( $p < .001$ ) and went in the argued direction. Despite this, due to the relatively small sample size of this study, this control variable was excluded from all further analyses because of having a correlation lower than  $r = .50$ .

### **Hypotheses Testing**

#### ***Main Effect***

The initial step in our main analysis involved the testing of the first hypothesis, which stated that the experience of negative work events is positively linked to experiencing daily fatigue. This hypothesis was tested by using multiple hierarchical regression analysis. As can be seen in Table 2, the regression coefficient for negative work events was significant ( $B = 0.46, t = 2.75, p = .007$ ). Based on this finding, it can be concluded that there is a positive link between negative work events and fatigue, which supports the first hypothesis. Overall, the model including negative work events and neuroticism as separate predictors for fatigue explains a significant proportion of the variance in fatigue (15.3%; Table 2).

#### ***Moderation Effect***

The second hypothesis postulates that the positive relationship between negative work events and fatigue is strengthened by high levels of neuroticism. To determine if neuroticism acts as a moderator, a multiple hierarchical regression analysis was used to test if the

interaction effect between negative work events and neuroticism makes a significant contribution to the model (Table 2). The contribution this interaction effect made to the model was not significant ( $B = 0.21$ ,  $t = 1.06$ ,  $p = .291$ ). This nonsignificant contribution is further emphasized by the  $R^2$  change of the model including only the main effects compared to the model also including the interaction effect being low with  $R^2$  change = .01 ( $F(1,89) = 1.13$ ,  $p = .291$ ). Based on this, it can be concluded that there is no evidence in support of a moderation effect of neuroticism being present because including the interaction effect in the model only led to an increase of 1% of the explained variance in fatigue. Overall, this suggests that neuroticism does not moderate the relationship between negative work events and fatigue, resulting in the second hypothesis not being supported.

### ***Exploratory Analysis***

Another main effect that was additionally tested despite not being hypothesized in the first place, was the main effect of neuroticism on fatigue. This was done because a multitude of previous research indicated this main effect of neuroticism on fatigue (Bosmans et al., 2019; Calderwood & Ackerman, 2011; Hochwälders, 2009; Roloff et al., 2022; Sørengaard et al., 2019). The present analysis also found this main effect to be significant ( $B = 0.28$ ,  $t = 2.32$ ,  $p = .023$ ; Table 2), being in line with the findings of previous studies.

Based on the results found in our analysis, it can be concluded that fatigue can be best predicted by negative work events and neuroticism separately, excluding the interaction effect. This regression model explains 15.3% of the variance in fatigue ( $R^2 = .15$ ), thus explaining a significant proportion of the variance in fatigue with two predictors (Table 2).

## **Discussion**

The present study sought to add to the existing knowledge in the field of industrial and organizational psychology by testing whether there is a link between negative work events and experienced fatigue and if this experienced fatigue after such events differs depending on



one's level of neuroticism. Supporting evidence was found for the first prediction that negative work events are positively linked with employee fatigue. Furthermore, based on the current sample, it was shown that this positive association is quite strong and that fatigue can be predicted to a great extent by the experience of negative work events. For the second prediction that high levels of neuroticism strengthen the positive relationship between negative work events and fatigue, no favorable evidence was detected for the present sample.

The results for the first proposition are in line with the COR theory (Hobfoll, 1989), which states that negative events that are limiting the availability of resources and hamper opportunities which can result in resource gain. This, based on Hobfoll and colleagues (2018), can result in fatigue because people try to preserve these resources by exerting additional energy to maintain them, which is in line with the resource investment principle. This theoretical explanation, as posed by the COR theory, translates to the findings that experiencing negative work events positively predicts fatigue.

Continuing with the second prediction that high neuroticism strengthens the positive relationship between negative work events and fatigue, no supporting evidence was observed which may be explained by a multitude of factors. First of all, the relatively small sample size causes the study to have lower power which is especially critical for finding moderation effects. Secondly, neuroticism may not act as a moderator of the relationship between negative work events and fatigue but it may affect the circumstances in which negative events are experienced. Moreover, this is in line with Hobfoll (1989) and Weiss and Cropanzano (1996), who both found that individuals high in neuroticism seem to be more susceptible to negative events. Additionally, it was found that individuals high in neuroticism are likely to evaluate events more negatively (Suls & Martin, 2005). Combined with findings that individuals high in neuroticism seem to be more sensitive to losses (Calderwood & Ackerman, 2011), this could explain why neuroticism might not be acting as a moderator of

the relationship between negative work events and fatigue, but rather that neuroticism directly affects in which way and how often negative events are experienced, to begin with. Thirdly, according to the affective events theory, neuroticism might not moderate the relationship between negative work events and fatigue directly (Weiss & Cropanzano, 1996). Rather, high neuroticism individuals might provoke animosity among other individuals towards themselves. Drawing upon this, neuroticism might moderate another aspect of this conceptual model. Namely, by evoking animosity in others, one is directly experiencing more negative work events due to others' hostility. Based on this, it may be expected that a moderation effect of neuroticism is present in the current conceptual model, yet for different aspects than expected. Overall, the multitude of factors presented could explain why we found no difference in experienced fatigue caused by negative work events between participants with low and high levels of neuroticism. Furthermore, suggestions were given for other aspects of the conceptual model for which neuroticism might function as a moderator.

### **Practical Implications**

The practical implications as derived from the results found in this study are that negative work events should be avoided to guard against employees being fatigued due to these experiences. This has two directions, from the company/management to employees and also between employees. Companies should try to reduce task-related negative work events as much as possible by, for example, treating mistakes made less harshly to reduce the impact such an event has on the employee. From the employee side, social negative work events could be reduced by, for instance, reducing unfavorable treatment of specific colleagues. These changes could result in a decrease in negative work events which, in turn, may result in lower experienced fatigue which would buffer against decreases in productivity, based on the findings that fatigue predicts decreases in productivity (Ferreira et al., 2019). Furthermore, reducing (emotional) fatigue, which was shown to be a strong predictor of the risk of

developing burnout (Karlafti et al., 2022), may act as a buffer against developing burnout symptoms. In addition, finding no support for neuroticism as a moderator suggested that the effect is equal between individuals with different levels of neuroticism. Consequently, people scoring low and high in neuroticism are likely negatively affected the same amount by negative work events regarding fatigue. However, future studies are advised to be able to generalize these implications to the broader population and to be able to make more precise conclusions, which also focus on different types of participants and occupations.

### **Strengths, Limitations, and Future Research Implications**

Several strengths of this study can be discerned. For one, this study was split into baseline and daily survey parts. This allowed for general and demographic traits to be measured separately from daily measures, avoiding the increase of the lengths of each daily survey and giving a baseline measure of mood in general for each participant.

Secondly, the longitudinal design of the study, measuring negative work events and fatigue over two weeks on each working day, reduces the effect of daily mood differences on the outcome. Because moods are temporary and of short duration (Siemer, 2009), it is unlikely that participants were influenced by them over the whole two weeks. Thus, this design avoids significant mood effects to bias the study outcome.

Thirdly, using scales and event categories that were previously tested by other researchers strengthens the validity of the measures used. The approval of the measures used in the present study and the fact that they were previously validated implies that well-grounded measures were used to test both hypotheses.

This study contains multiple limitations that warrant acknowledgment. Firstly, participants were gathered using a combination of convenience and snowball sampling over personal contacts of university students, who simultaneously also conducted this study. This, in combination with the fact that 63.5% of the participants had a university or doctorate

degree, shows that the findings based on this sample may be biased and cannot be generalized to the general working population. Additionally, this study had a relatively low completion rate of 68.1%, which may have further influenced our result because participants who decided not to complete the study did not disclose reasons why they decided to do so. Thus, future research should try to get a more diverse sample preferably with true random sampling, to be able to generalize findings to a larger group and, if possible, find implementations that raise the completion rate.

In addition, the calculated reliability of the neuroticism scale was low, which could be caused by the relatively small sample size and the low number of items in this scale. In subsequent research, more items should be included and the sample size should be increased. If these changes would be implemented, a higher reliability for this scale can be expected based on the fact that the scale already has acceptable reliability, taking into account the relatively small sample and the low number of items on the scale.

Next, the items on the measure for negative work events also included a multitude of rarer, more extreme events, for instance, “You were physically threatened, harmed, or injured at work”. These were weighed lower than more common ones due to the nature of the daily study design, in which such events were experienced less often. This may have led to an underrepresentation of the possibly strong effects caused by such extreme events.

Additionally, it should be noted that no causal claims can be made based on this study as it lacks temporal precedence and a true random sample. Moreover, independent variables in this study were not manipulated. Besides, this study only used self-report measures which might have biased the result by participants not providing objective reports. Based on this, a recommendation for subsequent research would be to replicate the current study while using a fully experimental study design that does not solely rely on self-report measures.

Furthermore, the conceptual model for this study is small and probably missed out on other possible moderators, predictors, and mechanisms. Therefore, it is likely that it is not a holistic representation of any individual employee. Future research should focus on developing a more holistic model and on applying it to a broader study involving a larger sample. For example, adding positive work events to the model as a moderator to examine if they buffer against the positive link between negative work events and fatigue. Based on Fredrickson's (2001) broaden-and-build theory of positive emotions, experiencing positive emotions can mitigate the negative effect of negative emotions. Therefore, it can be argued that experiencing a large number of positive work events in comparison to the number of negative work events experienced weakens their link to fatigue, thus moderating the link between negative work events and fatigue.

Last but not least, upcoming research should seek to repeat this study with the same sample after a year or two. This could provide valuable information about long-term changes in the experience of fatigue after experiencing negative work events. Furthermore, this might give an insight into whether the relationship between negative work events and fatigue might be strengthened in individuals high in neuroticism, over a longer period of time.

## **Conclusion**

The findings presented in this study make an important contribution to the field of industrial and organizational psychology, broadening our understanding of the effects negative work events and neuroticism have on employee fatigue. The supportive evidence found for a positive predictive relationship between negative work events and fatigue highlights the detrimental consequences such events can have for the workforce. This provides us with further insights into fatigue in a work environment and gives us options on what can be done to reduce the experience of fatigue, mitigate decreases in productivity, and buffering against burnout development. Thus, making significant improvements for

organizations and their employees, in general. Additionally, suggestions for further research are made which pose starting points to dive deeper into this topic to establish ways in which experienced fatigue in the workplace can be minimized. Lastly, options are given to decrease work-related fatigue and improve well-being in the workforce overall.

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**Table 1***Correlations*

		<i>M</i>	<i>SD</i>	1	2	3	4
1	Age	35.76	13.31	-			
2	Negative work events	1.70	0.50	-.15	-		
3	Neuroticism	2.80	0.71	-.10	.21*	-	
4	Fatigue	2.16	0.84	-.38**	.32**	.27**	-

*Note.*  $N = 96$

\*. Correlation is significant at the .05 level (2-tailed).

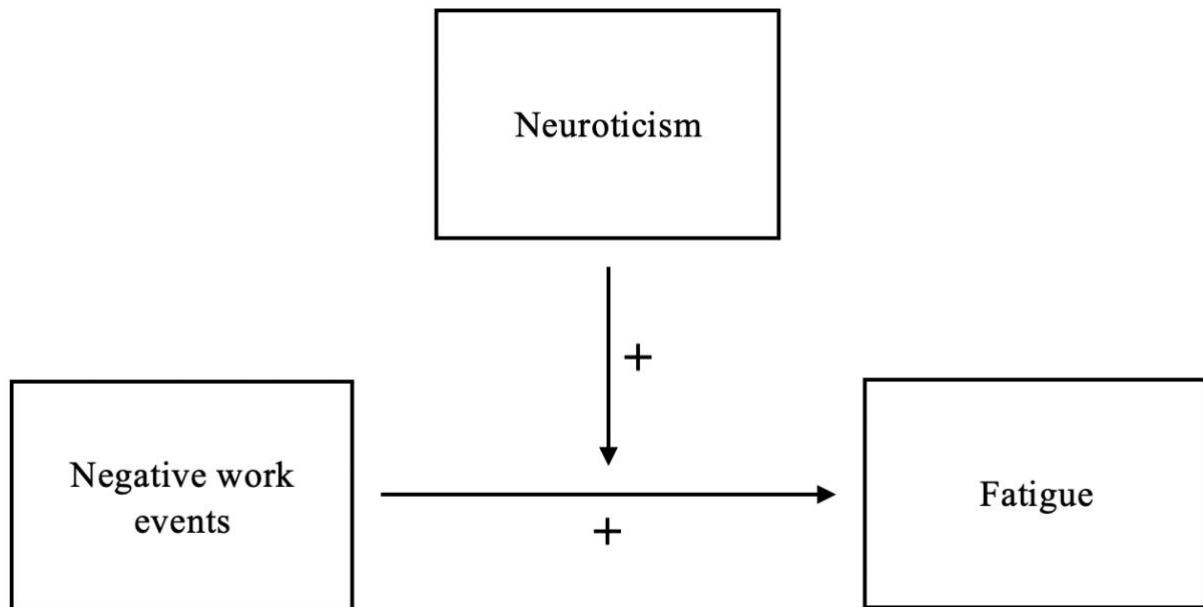
\*\*. Correlation is significant at the .01 level (2-tailed).

**Table 2***Regression Analysis<sup>a</sup>*

	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
<b>Model 1: main effects</b>					
(Constant)	2.16	.08		26.65	<.001
Negative work events	0.46	.17	.27	2.75	.007
Neuroticism	0.28	.12	.23	2.32	.023
<i>R</i> <sup>2</sup>		.15			
<b>Model 2: interaction effect</b>					
(Constant)	2.15	.08		26.08	<.001
Negative work events	0.43	.17	.26	2.56	.012
Neuroticism	0.26	.12	.22	2.21	.03
Negative work events *	0.21	.20	.11	1.06	.291
Neuroticism					
<i>R</i> <sup>2</sup>		.16			

*Note.* *N* = 96. The predictor variables were mean centered.

<sup>a</sup> Dependent variable: Fatigue.

**Figure 1***Conceptual Model*

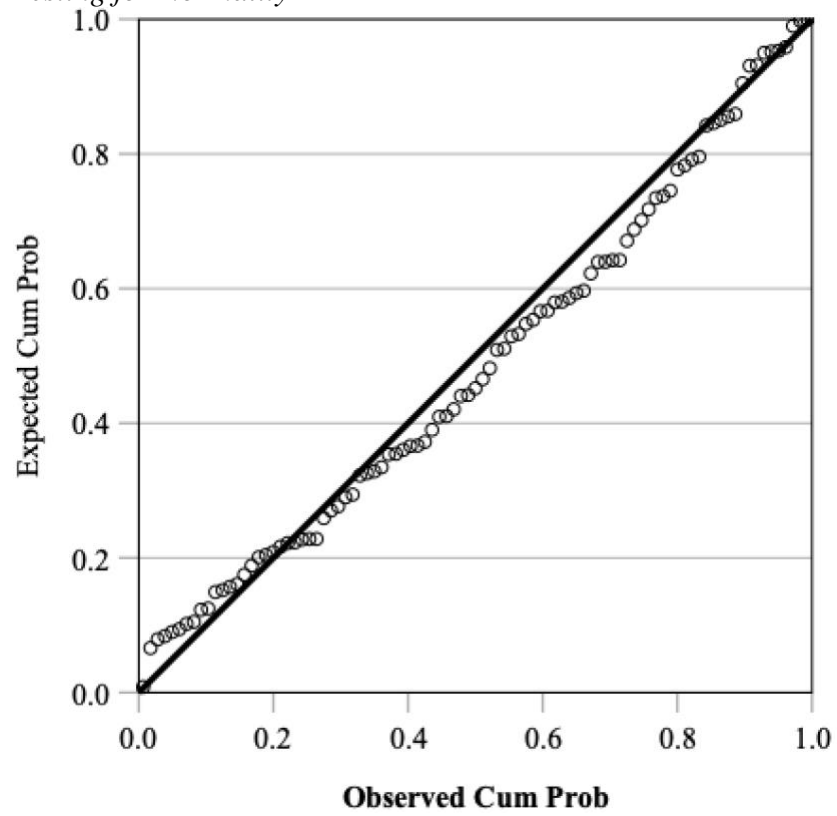
### Appendix

#### *Testing for Differences between Study Years*

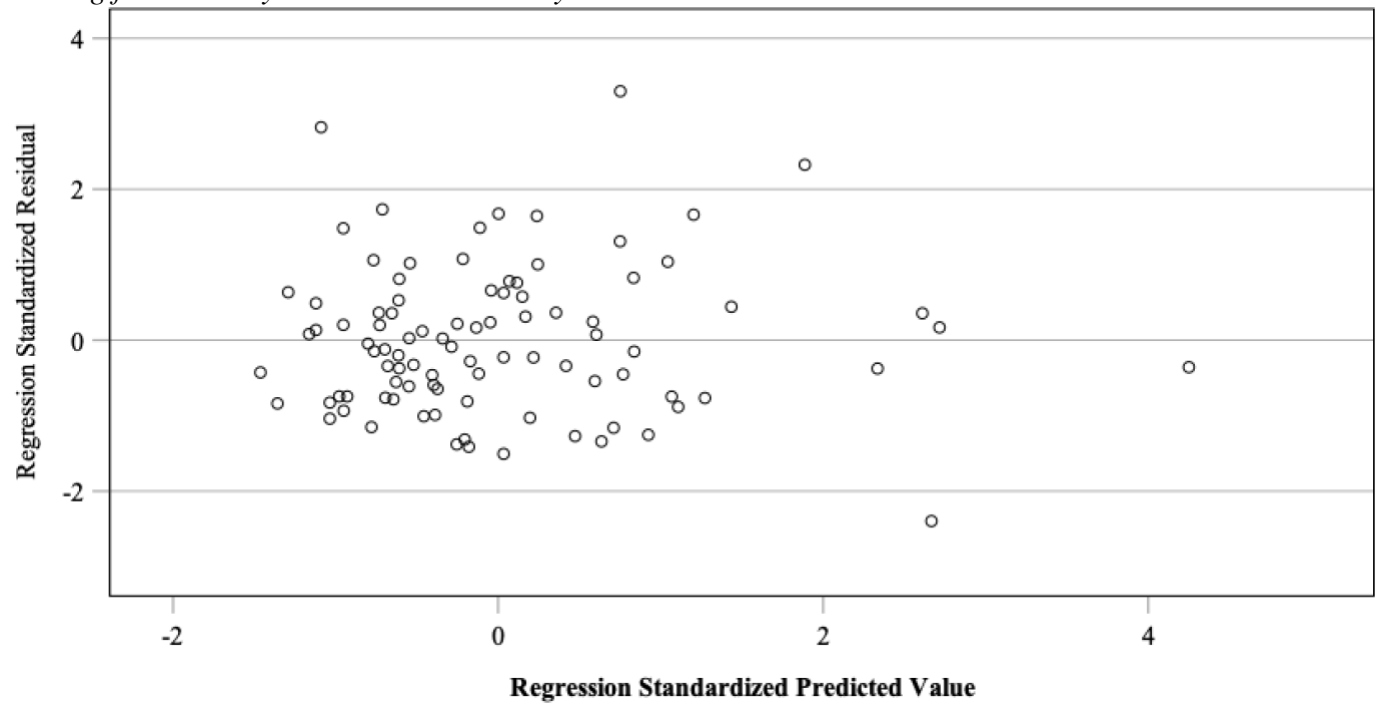
		<i>t</i>	<i>df</i>	Two-sided <i>p</i>
Age	Equal variances assumed	0.38	93	.702
	Equal variances not assumed	0.38	86.23	.704
Neuroticism	Equal variances assumed	-1.67	94	.098
	Equal variances not assumed	-1.72	93.92	.089
Negative work events	Equal variances assumed	-1.43	91	.155
	Equal variances not assumed	-1.44	88.58	.154
Fatigue	Equal variances assumed	-0.89	94	.377
	Equal variances not assumed	-0.87	78.43	.389

*Note.*  $N = 96$

Testing for Normality<sup>a</sup>



<sup>a</sup> Dependent variable: Fatigue

*Testing for Linearity and Homoscedasticity<sup>a</sup>*

<sup>a</sup> Dependent variable: Fatigue



*Testing for Multicollinearity<sup>a</sup>*

	<i>B</i>	<i>SE</i>	Tolerance	VIF
<b>Model 1: main effects</b>				
(Constant)	2.16	.08		
Negative work events	0.46	.17	.96	1.05
Neuroticism	0.28	.12	.96	1.05
<b>Model 2: interaction effect</b>				
(Constant)	2.15	.08		
Negative work events	0.43	.17	.94	1.07
Neuroticism	0.26	.12	.95	1.06
Negative work events * Neuroticism	0.21	.20	.96	1.04

*Note.*  $N = 96$ . The predictor variables were mean centered.

<sup>a</sup> Dependent variable: Fatigue.