

A BORING STORY ABOUT WORK: DO BORED EMPLOYEES RUMINATE?*

UNA HISTORIA ABURRIDA SOBRE EL TRABAJO: ¿LOS EMPLEADOS ABURRIDOS RUMIAN?

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Ernesto **Rosario-Hernández**¹, Lillian V. **Rovira Millán**², Natalie C. **Sánchez-García**³, Clara M. **Padovani Rivera**⁴, Ángela **Velázquez Lugo**⁵, Ishi M. **Maldonado Fonseca**⁶, Laura **Bisbal Vicéns**¹

¹ Ponce Health Sciences University, Ponce, Puerto Rico; ² University of Puerto Rico at Cayey, Cayey, Puerto Rico;

³ Carlos Albizu University, San Juan, Puerto Rico; ⁴ REIO Puerto Rico, Ponce, Puerto Rico;

⁵ Pontifical Catholic University of Puerto Rico, Ponce, Puerto Rico; ⁶ University of Puerto Rico at Rio Piedras, San Juan, Puerto Rico

ABSTRACT

The purpose of this study was to examine effects of boredom at work on psychological and sleep health and how rumination moderates these relationships. A total of 518 employees participated in this cross-sectional research design study from different organizations in Puerto Rico. Employees completed self-report questionnaires of boredom at work, work-related rumination, depression, anxiety, and sleep health. Boredom at work and rumination have a direct effect on psychological and sleep health. Meanwhile rumination moderated the relationship between boredom at work and psychological health. Because the research was exploratory and cross-sectional, conclusions are necessarily tentative. However, the findings add to the scant body of knowledge about boredom at work and its effects on psychological and sleep health, especially the addition of rumination as a moderator, which it will serve as a useful guide to future research. Management must pay attention to boredom at work due to its impact on employees' psychological and sleep health, and to consider redesigning work as well as supporting employees that actively search to be challenged at work. Boredom at work is an important yet neglected area of human resources management and organizational psychology research. The current study is the first to examine if bored employees ruminate and how this affects employees' psychological and sleep health.

KEYWORDS: Boredom at work, Psychological health, Sleep health, Rumination, Moderation

RESUMEN

El propósito del presente estudio fue examinar el efecto del aburrimiento laboral en la salud psicológica y del sueño, y cómo la rumiación modera estas relaciones. Un total de 518 personas empleadas en diferentes organizaciones en Puerto Rico. Las personas participantes completaron los cuestionarios de aburrimiento laboral, rumiación relacionada con el trabajo, depresión, ansiedad y bienestar del sueño. El aburrimiento laboral y la rumiación tuvieron un efecto directo en la salud psicológica y del sueño. Mientras que la rumiación moderó la relación entre el aburrimiento laboral y la salud psicológica. Dado que el estudio fue de tipo exploratorio y transeccional, las conclusiones son necesariamente tentativas. Sin embargo, los presentes hallazgos añaden al escaso cuerpo de conocimiento acerca del aburrimiento laboral y sus efectos en la salud psicológica y del sueño, especialmente la adición de la rumiación como variable moderadora, la cual puede servir como guía para futuras investigaciones. La gerencia tiene que prestarle atención al aburrimiento laboral debido a su impacto en la salud psicológica y del sueño, y considerar rediseñar los trabajos como también apoyar los/las trabajadores/as para que activamente puedan buscar ser retados en la desempeño de sus trabajos. El aburrimiento laboral es una variable importante, pero descuidada en la investigación de recursos humanos y la psicología organizacional. El presente estudio es el primero que examina si los/as empleados/as que se aburren en sus trabajos, rumian y como afecta la salud psicológica y del sueño.

PALABRAS CLAVE: Aburrimiento Laboral, Salud Psicológica, Salud del Sueño, Rumiación, Moderación

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Correspondence should be sent to Dr. Ernesto Rosario-Hernández, School of Behavioral and Brain Sciences, Clinical Psychology Programs, Ponce Health Sciences University, PO Box 7004, Ponce, Puerto Rico, 00732-7004. Phone: 787-840-2575, Ext. 2502, e-mail: erosario@psm.edu

The link between job demands exposure and employee's health is a relationship that has catches the attention of researchers in the occupational health psychology area for a long time (Pereira & Elfering, 2014). Nevertheless, most of the researches focus on high job demands and its effect on employee's health (e.g., Darr & Johns, 2008; Drach-Zahavy, 2008; Hallman et al., 2003; Leiter, 1992; Melamed et al., 1995; Pearson, 2008; Rosario-Hernández et al., 2014; Rosario-Hernández et al., 2015). While the effects of having to work beneath one's own capabilities and experiencing underutilization and under challenge have been examined less thoroughly but nonetheless they can cause stress and affect employees' health as well (e.g., Fischer, 1993, 1998; Lechmann, Burkert, Daig, Glaesmer, & Bruhler, 2011; Parasuraman & Purohit, 2000).

There are some studies suggesting that monotonous and repetitive work tasks have an effect on employee's health (e.g., Cox, 1985; Davis et al., 1983; Melamed et al., 1995). However, there are some studies about boredom at work in Puerto Rico (Hernández Báez, 2013; Martínez Lugo & Rodríguez Montalbán, 2016; Martínez Lugo, Rodríguez Montalbán & Sánchez Cardona, 2013; Sánchez-Cardona et al., 2020), but none of these examine the effects of boredom on employees' health. Moreover, there are not literature related to boredom and work-related rumination and its effect in the psychological and sleep health of employees. Therefore, the purpose of this cross-sectional study was to examine the effects of boredom at work on employees' psychological and sleep health. Also, this research pretends to examine the moderating role of work-related rumination on the relationship between these variables.

Literature review

Boredom at work. Although stressors can be conceptualized as factors in the work environment that present demands and opportunities that exceeds the skills and capabilities of workers, but they also can pose

constraints that may result in underutilization of workers' skills and abilities. In other words, characteristics of the job, the work environment, and the nature of the work itself may generate perception of job demands' overload as well as under load (Parasuraman & Purohit, 2000). In this way, boredom in general can be defined as an aversive subjective state of low arousal and dissatisfaction attributed to an inadequately stimulating environment (Mikulas & Vodanovich, 1993). While Fisher (1993) defines it as a transitory affective state in which a person feels a pervasive lack of interest in a current activity are a number of different components to the experience of boredom, including unpleasant, aversive feelings (affective components), as well as altered perception of time (cognitive components), reduced arousal (physiological components), facial, vocal, and postural expressions of boredom (expressive components), and the motivation to change the activity, or to leave the situation (motivational components). Thus, the experience of boredom is frequently encountered in contemporary work environments (Cleary, Sayers, Lopez, & Hungerford, 2016) and appears to be a very common phenomenon linked to many negative outcomes for employees as well as for organizations (Whiteoak, 2014). It has been estimated that 15% to 87% of employees report that they feel bored at work at least sometimes (e.g., Fisher, 1993; Mann, 2007; Rothlin & Werder, 2008; Watt & Hargis, 2010). Meanwhile, Martínez Lugo et al. (2013) define boredom at work as a work-related subjective state composed by decoupling, disinterest and the perceived extension of time at work. Martínez Lugo et al. indicate that there is a psychological detachment of work-related tasks or activities caused by a lack of stimulation associated to the job. Also, there is an indifference related to the tasks or activities that are performed on the job and the person perceive that work-time is endless.

Rumination. Martin and Tesser (1996) conceptualize rumination as a class of conscious thinking that revolves around a common instrumental theme and that is repeated in the absence of immediate environmental demands. Meanwhile, work-related rumination may be considered as a set of thoughts of a repetitive nature directed at work issues (Cropley & Zijlstra, 2011). According to Vahle-Hinz, Bamberg, Dettmers, Friedrich, and Keller (2014), the central argument in relation to persistent cognitions indicates that relaxing after a stressful workday can be impaired if a stressful experience is revived during free time. There is evidence which indicates that even after people has left their jobs, work stress is related to psychological and physiological responses (Frankenhaeuser, 1981). Cropley and Zijlstra point out that thinking about work when not on it is not compatible to disconnect from work, and therefore, it makes difficult to recuperate and to restore personal resources. If people do not control these thoughts, they may experience negative emotional reactions that are manifested in such ways as strain, annoyance, and/or anger, which clearly have a negative effect in the recuperation process. Thus, rumination can be seen as both as a stressor and an early manifestation of stress (Pravettoni, Cropley, Leotta, & Bagnara, 2007).

Boredom at work, psychological health, sleep health, and rumination. The psychological health consequences of boredom at work have been noted in several studies. Previous research suggested that boredom at work leads to increased distress and depression (Game, 2007; Sommers & Vodanovich, 2000; Weisner, Windle, & Freeman, 2005). For example, Lehmann, Burkert, Daig, Glaesmer, and Brähler (2011) found a positive and significant relationship between boredom at work and depressive symptoms ($\beta = .31$, $p < .05$) in a sample of 1,178 German employees. In another study in The Netherlands, van Hoof and van Hoof (2014) found a relationship between work-related boredom and depressed mood ($r = .28$,

$p < .01$). In terms of anxiety, Game (2007) found that those employees who did not coped well with boredom at work, shown higher levels of anxiety. On the other hand, there is a scarce literature about the effect of boredom on sleep health; nevertheless, this few studies found that boredom at work has been associated with sleepiness (Fisher, 1993; Game, 2007). Thus, we propose the following hypotheses:

- H₁: Boredom at work is positively related to depression.
- H₂: Boredom at work is positively related to anxiety.
- H₃: Boredom at work is negatively related to sleep health.
- H₄: Boredom at work is positively related to rumination.

Rumination, psychological health, and sleep health. There is evidence that suggest that rumination is associated to a series of health problems such as cardiovascular diseases (e.g., Kivimaki et al., 2006; Suadican, Hein & Gyntelberg, 1993), negative mood (e.g., Pravettoni et al., 2007), cortisol secretion in saliva (e.g., Rydstedt, Cropley, Devereux & Michalianou, 2009) and sleep disorders (Åkerstedt et al., 2002; Berset, Elfering, Luthy, Luthi, & Semmer, 2011; Cropley et al., 2006; Groeger, Zijlstra & Dijk, 2004; Nysten, et al 2007). For instance, in a study conducted by Rosario-Hernández et al. (2013), it was found that rumination was significantly related to depression and anxiety ($\beta = .306$ & $\beta = .360$, respectively). Another study shown that people who experience persistent thoughts about work were three times more likely to suffer from sleep disturbances, compared to those who did not (Åkerstedt et al., 2002). Meanwhile, Rosario-Hernández et al. (2015) found a significant and negative relationship between rumination and sleep health in a sample of Puerto Rican employees ($\beta = -.358$, $p < .05$). Therefore, we propose the following hypotheses:

- H₅: Rumination is positively related to depression.

- H₆: Rumination is positively related to anxiety.
- H₇: Rumination is negatively related to sleep health.

Moderating role of rumination. We expect the relationship between boredom at work and psychological and sleep health not to be equally strong for all employees. Specifically, we expect these relationships to be moderated by employees' rumination levels. For example, Moreno Jiménez, Rodríguez Muñoz, Sanz Vergel and Rodríguez Carvajal (2008) found that rumination and detachment moderated the relationship between the exposure of workplace bullying (social stressor) and insomnia in a sample of 523 Spanish workers, in which high rumination exacerbated insomnia, whereas that detachment attenuated it. Moreover, there is evidence in some studies in samples of employees from Puerto Rico that rumination mediated the relationship between job demands and psychological, physical and sleep health (e.g., Rosario-Hernández et al., 2013; Rosario-Hernández et al., 2015).

Based on this, we propose that those employees high in rumination will manifest higher symptomatology of depression and anxiety (poorer psychological health), and lower levels of sleep health. Thus, the following hypotheses are proposed:

- H₈: Rumination moderates and strengthens the relationship between boredom at work and depression.
- H₉: Rumination moderates and strengthens the relationship between boredom at work and anxiety.
- H₁₀: Rumination moderates and weakens the relationship between boredom at work and sleep health.

Based on previous empirical studies, we developed and tested a model in which boredom at work and rumination has direct effects on psychological (depression & anxiety) and sleep health. Also, rumination moderates the relationships between boredom at work and psychological and sleep health (see Figure 1).

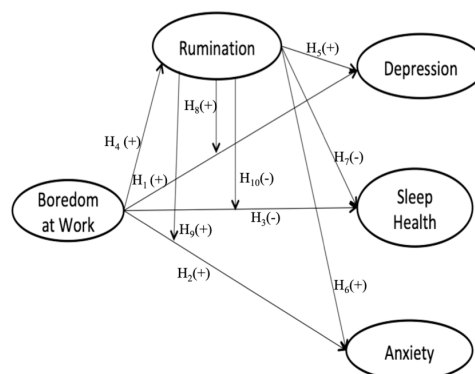


FIGURE 1.
Research model proposed.

METHOD

Participants

A convenience sample of 518 workers participated in this cross-sectional study. Participants in the study were enrolled from different private and public organizations in Puerto Rico. Inclusion criteria for subjects'

participation were being 21 years of age or older and worked at least 20 hours per week. As presented on table 1, the sample of the study was composed of 56.0% (290) females, 66.9% (345) of the sample was between 21 to 45 years of age. In terms of tenure, 76.3% (395) had a permanent one, and 62.9% (326) of the research participants worked for a private organization.

TABLE 1.
 Socio-demographic information about the sample.

Variable	<i>n</i>	%	Variable	<i>n</i>	%
Gender			Type of Organization		
Male	187	36.1	Public-State	158	30.5
Female	290	56.0	Public-Federal	17	3.3
Age (Years)			Private	326	62.9
21-25	66	12.7	Position Type		
26-30	78	15.1	Management	92	17.8
31-35	57	11.0	Non-Management	403	77.8
36-40	72	13.9	Tenure		
41-45	72	13.9	Permanent	395	76.3
46-50	59	11.4	Temporary	109	21.0
51-55	58	11.2	Marital Status		
56-60	31	6.0	Single	164	31.7
61-65	12	2.3	Married	241	46.5
≥ 66	8	1.5	Widowed	8	1.5
			Divorced	48	9.3
			Living Together	50	9.7

Note: *n*=518; SD=Standard Deviation.

Materials

Background questionnaire. We created a background questionnaire to gather information about the research participants. In this background questionnaire we asked the participants to provide information about their gender, age, tenure, marital status, among others, to enable us to describe the subjects of the study.

Boredom at work. To measure under challenge demands at work, we used the Job Boredom Scale developed by Martínez Lugo, Rodríguez Montalbán, and Sánchez Cardona (2013). This is an eight-item scale with a Likert seven-point scale ranging from 0 (Totally Disagree) to 6 (Totally Agree). According to authors, confirmatory factor analysis using structural equation modeling support the internal structure of one factor. Also, authors reported a Cronbach's alpha coefficient of .95, which support the scale reliability.

Work-related rumination. To measure rumination, we used the Work-Related Rumination Scale (Cropley, Michalianou, Pravettoni, & Millward, 2012). The scale is composed of three subscales of five-items each, which are affective rumination, problem

solving pondering, and detachment. The response format is a Likert five-point scale ranging from 1 (Very rarely / never) to 5 (Very Often / always), and each subscale produces a total score that can range from one to 25. According to the authors, internal structure of the scale has been examined through factor analysis technique, which support the three dimension components. Authors of the scale have reported its reliability via Cronbach's alpha and these coefficients ranged from .81 to .90. In the present study, it was used the affective rumination scale only.

Depression. To measure depression we used the PHQ-9 developed by Kroenke, Spitzer, and Williams (2001). The PHQ-9 is a nine-item questionnaire used for the assessment of depressive symptoms in primary care settings. This questionnaire evaluates the presence of depressive symptoms over the 2 weeks prior to the test's being filled out. Each of the items can be scored from 0 (not at all), to 3 (nearly every day). The general score can range from 0 to 27 and is interpreted as follow: a score of 0 to 4 means that the subject has minimal or no symptoms, 5 to 9 signifies mild depression, 10 to 14 signifies moderate depression, 15 to 19 signifies moderately severe depression, and 20 to 27 signifies that the subject has severe

depression. Its validity and reliability as a diagnostic measure, as well as its utility in assessing depression severity and monitoring treatment response are well established (Löwe, Kroenke, Herzog, & Gräfe, 2004; Kroenke et al., 2001; Löwe, Schenkel, Carney-Doebbeling, & Göbel, 2006; Löwe, Unützer, Callahan, Perkins, & Kroenke, 2004).

Anxiety. To measure anxiety, we used the GAD-7 (Spitzer, Kroenke, Williams, & Löwe, 2006). The GAD-7 is a seven-item questionnaire that measures general anxiety symptomatology and asked patients how often, during the last 2 weeks, they were bothered by each symptom. Response options were “not at all,” “several days,” “more than half the days,” and “nearly every day,” scored as 0, 1, 2, and 3, respectively. In addition, an item to assess duration of anxiety symptoms was included. The general score can range from 0 to 21 and the total score may be categorized into four severity groups: minimal (0-4), mild (5-9), moderate (10-14) and serious (14-20). Authors of the scale reported a Cronbach’s alpha coefficient of .93. In terms of its construct validity, internal structure was supported by factor analysis technique and convergent validity with its association to similar measures such as the Beck Anxiety Inventory and the anxiety subscale of the Symptom Checklist-90.

Sleep health. We used the Sleep Well-Being Indicator developed by Rovira Millán and Rosario-Hernández (2018) to measure sleep well-being. This indicator is a twelve-item instrument in a Likert-frequency response format ranging from 1 (Never) to 6 (Always). This indicator has three subscales, which are sleep duration, sleep quality, and consequences related to sleep. Authors report reliability through Cronbach’s alpha and ranged from .79 to .86. Factor analysis results support the internal structure of three dimensions. It is important to mention that only the sleep duration and sleep quality subscales were used in the present study.

Procedure

The research proposal was submitted to the Institutional Review Board (IRB) of the Ponce Health Sciences University and it was approved on February 25, 2015 with the protocol number 150217-ER. Participants were contacted from different organizations and were invited to participate in the study. All those who agreed to participate in the study were explained the purpose of the research. They were given the consent form, background data sheet and the study questionnaires. The questionnaires were administered individually as well as in groups by the researchers at the different organizations contacted.

Data Analysis

For data analysis, partial least squares structural equation modeling (PLS-SEM) was used following the two step procedure suggested by Hair, Hult, Ringle, and Sarstedt (2017). First, confirmatory factor analysis aimed to assess the measuring model; and secondly, evaluation of the structural model. Also, we examine the moderating effects of rumination provided by the SMART-PLS program. In order to examine the simple slopes of those significant moderation results, we used the PROCESS for SPSS v2.11 (Hayes, 2013) and for the interpretation of moderation results, we graphed them using ModGraph-I (Jose, 2013). It is important to mention the two reasons for the use of PLS-SEM in the present study, as Chin (2010) points out, that it has a soft distributional assumption and given that the Kolmogorok-Smirnov and Shapiro-Wilks tests were significant suggesting that scores were not distributed normally. Also, the high model complexity of the current study justifies the use of PLS-SEM because the model tested has multiple moderation analysis.

RESULTS

The research model of figure 1 was analyzed using Smart-PLS 3.2.4, a PLS-SEM tool (Ringle, Wende, & Becker, 2015). It assesses

the psychometric properties of the measurement model, and estimates the parameters of the structural model. This tool enables the simultaneous analysis of up to 200 indicator variables, allowing the examination of extensive mediation and moderation among latent predictor variables indicators.

The measurement model

The data indicates that the measures are robust in terms of their internal consistency reliability as indexed by Cronbach's alpha and composite reliability. All the Cronbach's alphas and the composite reliabilities of the

different measures range from .82 to .94, which exceed the recommended threshold value of .70 (Hair et al., 2017). In terms of the validity, all outer loadings reached the threshold of .70 as indicated by Hair et al. (2017). In addition, consistent with the guidelines of Fornell and Larcker (1981), the average variance extracted (AVE) for each measure exceeds .50, which is an indication of the convergent validity of the measures. Moreover, the elements in the matrix diagonals, representing the square roots of the AVE, are greater in all cases than the off-diagonal elements in their corresponding row and column, supporting the discriminant validity of the scales (see table 2).

TABLE 2.
 Measurement model results.

Construct	Correlation Matrix					Item	Outer Loading	α	CR	AVE
	BW	Rum	Dep	Anx	SH					
Boredom at Work	(.82)					BW-1	.81	.93	.94	.66
						BW-2	.82			
						BW-3	.77			
						BW-4	.79			
						BW-5	.83			
						BW-6	.77			
						BW-7	.87			
						BW-8	.85			
Rumination	.26	(.81)				Rum-1	.85	.87	.91	.66
						Rum-5	.76			
						Rum-7	.85			
						Rum-9	.83			
						Rum-15	.77			
Depression	.60	.53	(.80)			Dep1	.83	.86	.92	.64
						Dep-2	.85			
						Dep-4	.80			
						Dep-5	.75			
						Dep-6	.77			
						Anx-1	.86			
						Anx-2	.90			
Anxiety	.44	.63	.77	(.84)		Anx-3	.88	.93	.94	.70
						Anx-4	.86			
						Anx-5	.80			
						Anx-6	.79			
						Anx-7	.75			
						SH-1	.68			
						SH-2	.88			
						SH-4	.93			
Sleep Health	-.27	-.43	-.43	-.49	(.72)	SH-5	.67	.82	.87	.52
						SH-8	.91			
						SH-9	.91			

Note: α=Cronbach's Alpha; CR=Composite Reliability; AVE=Average Variance Extracted; the elements in the matrix diagonals within parenthesis represent the square roots of the AVE.

However, there is some research (Henseler, Ringle, & Sarstedt, 2015) that criticizes the Fornell and Larcker, and the cross-loadings criterion for the assessment of discriminant validity because these approaches do not reliably detect the lack of discriminant validity in common research situations. Although Hair et al. (2017) indicate that the Fornell and Larcker, and the cross-loading approaches still constitute standard means for discriminant validity; Henseler et al. propose assessing the heterotrait-monotrait ratio (HTMT) of the correlations. The HTMT approach is an estimate of what the true correlation between two constructs would be, if they were perfectly measure. A correlation between two constructs close to one indicates a lack of discriminant validity. Therefore, Henseler et al. (2015) suggest a threshold value of .90 if the path model includes constructs that are conceptually very similar. In other words, a HTMT above .90 suggests a lack of discriminant validity. Correlations between constructs appear on table 4, all

correlations are below the threshold of .90, suggesting the discriminant validity of the measures.

Since the HTMT can serve as the basis of a statistical discriminant validity test. Henseler et al. (2015) recommend the use of bootstrapping technique to derive a bootstrap with a 95% confidence interval with 5,000 random subsamples. Thus a confidence interval containing the value of one indicates a lack of discriminant validity. Conversely, if the value of one falls outside the interval's range, this suggests that the two constructs are empirically distinct. Since HTMT-based assessment using confidence interval relies on inferential statistics, one should primarily rely on this criterion. In the present study, none of the correlation between the constructs in the bootstrapping 95% confidence interval included the value of one; therefore, this suggests that the constructs are empirically distinct (see table 5).

TABLE 3.
Heterotrait-Monotrait ratio of correlations (HTMT).

Construct	1	2	3	4	5
1. Boredom at Work					
2. Rumination	.27 [.19; .36]				
3. Depression	.65 [.56; .73]	.60 [.50; .69]			
4. Anxiety	.47 [.35; .57]	.70 [.61; .77]	.87 [.82; .91]		
5. Sleep Health	.16 [.08; .26]	.26 [.16; .36]	.25 [.14; .36]	.26 [.16; .37]	

Note: Elements in the brackets are the confidence intervals of .90 for the HTMT's criteria correlations.

The structural model

After the measurements were tested for validity, the structural model as provided in Figure 1, which represent the relations among the constructs assumed in the theoretical model or latent variables, was tested (see table 4). In order to examine the structural

model and as recommended by Hair et al. (2017), first, we checked the structural model for collinearity issues by examining the variance inflation factor (VIF) value of all sets of predictor constructs in the structural model. They fluctuated between 1.141 and 1.181, all VIF values are clearly below the threshold of 5; therefore, collinearity among predictor

constructs is not a critical issue in the structural model (see table 5). Also, table 5 shows the R² values of rumination (.066), depression (.520), anxiety (.495), and sleep health (.079), explaining 6.6%, 52.0%, 49.5%, and 7.9% of the variance, respectively. Falk and Miller (1992) suggest a value of .10 for a R-squared as a minimum satisfactory level, only rumination and sleep health endogenous latent variables did not reached the threshold level of the R-squared values. Also, all Q² values of rumination, depression, anxiety, and sleep health are above zero (.038, .306, .318, & .100, respectively), which provide support of the model's predictive relevance regarding the

endogenous latent variables. The effects sizes for boredom at work achieved f² values of .07 on rumination, .41 on depression, .13 on anxiety, and .04 on sleep health, which exceeds the minimum threshold of .02 (Chin, Marcolin, & Newsted, 2003). While effect sizes for rumination on depression, anxiety, and sleep health archived well above the threshold (.26, .49, & .18, respectively). Finally, the moderating effects of boredom at work and rumination archived the minimum threshold on depression and anxiety, but did not reached it on sleep health (.02, .02, & .00, respectively).

TABLE 4.
Structural model results.

Construct	R ²	Adj. R ²	f ²				Q ²	VIF
			Rum	Dep	Anx	SH		
Boredom at Work (BW)			.07	.41	.13	.04		1.141
BW * Rum				.017	.021	.002		1.181
Rumination (Rum)	.066	.064		.26	.49	.18	.038	1.144
Depression (Dep)	.520	.517					.306	
Anxiety (Anx)	.495	.493					.318	
Sleep Health (SH)	.079	.074					.100	

Structural model of results for all direct effects and the beta values of all path coefficients are also shown in table 6. Boredom at work had positive and significant relation to depression (b = .476, p < .001) and anxiety (b = .269, p < .001); in contrast, had negative and significant relation to sleep

health (b = -.182, p < .001). On the other hand, rumination had positive and significant relation to depression (b = .374, p < .001) and anxiety (b = .530, p < .001), but a negative and significant relation to sleep health (b = -.401, p < .001).

TABLE 5.
Direct effects hypotheses results and conclusions.

Hypothesis	Path	Beta value	SE	t-value	p-value	Confidence Intervals		Conclusion
						Bias Corrected 2.50%	97.50%	
H ₁	BW→Dep	.476***	.048	9.98	.001	.378	.566	Supported
H ₂	BW→Anx	.269***	.053	5.08	.001	.165	.374	Supported
H ₃	BW→SH	-.182***	.038	4.74	.001	-.255	-.105	Supported
H ₄	BW→Rum	.257***	.047	5.46	.001	.160	.346	Supported
H ₅	Rum→Dep	.374***	.041	9.11	.001	.297	.457	Supported
H ₆	Rum→Anx	.530***	.039	13.54	.001	.452	.602	Supported
H ₇	Rum→SH	-.401***	.039	10.18	.001	-.476	-.322	Supported

Note: n=898.

In terms of the moderating effects of rumination (see table 6), we found that rumination moderated the relation between boredom at work and depression ($b = .079$, $p < .05$) and anxiety ($b = .090$, $p < .01$), but not sleep health ($b = -.036$, $p = .303$). In order to interpret the moderation effects of rumination, we conducted simple slopes of those significant interactions. With regards to depression (see figure 2), when rumination is low, there is a significant positive relationship between boredom at work and depression, $b = .1151$, 95% CI [.0711, .1592], $t = 5.1342$, $p < .001$. At the mean value of rumination, there is a significant positive relationship, $b = .1421$,

95% CI [.1095, .1747], $t = 8.5520$, $p < .001$. When rumination is high, there is a significant positive relationship, $b = .1691$, 95% CI [.1376, .2005], $t = 10.5592$, $p < .001$. In respect to anxiety (see figure 3), when rumination is low, there is a significant positive relationship between boredom at work and anxiety, $b = .0770$, 95% CI [.0069, .1471], $t = 2.1566$, $p = .0315$. At the mean value of rumination, there is a significant positive relationship, $b = .1243$, 95% CI [.0733, .1752], $t = 4.7932$, $p < .001$. When rumination is high, there is a significant positive relationship, $b = .1715$, 95% CI [.1252, .2179], $t = 7.2702$, $p < .001$.

TABLE 6.
Moderation hypotheses results and conclusions.

Hypothesis	Path Moderated by Rumination	Beta value	SE	t-value	p-value	Confidence Intervals		Conclusion
						Bias Corrected 2.50%	97.50%	
H ₈	BW→Dep	.079	.033	2.395	.017	.013	.142	Supported
H ₉	BW→Anx	.090	.032	2.796	.005	.026	.154	Supported
H ₁₀	BW→SH	.036	.035	1.026	.305	-.040	.100	Not Supported

Note: n=898.

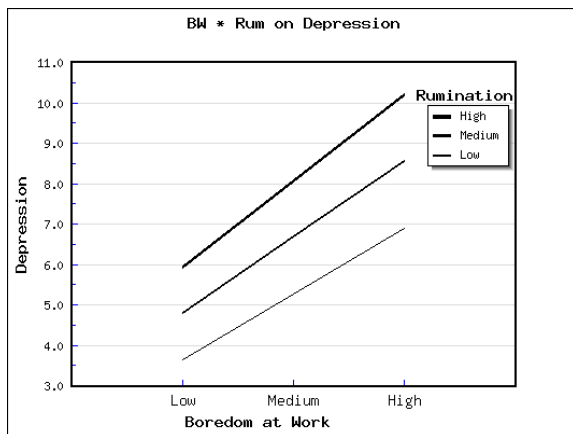


FIGURE 2.
Interactional effects between boredom at work and rumination on depression.

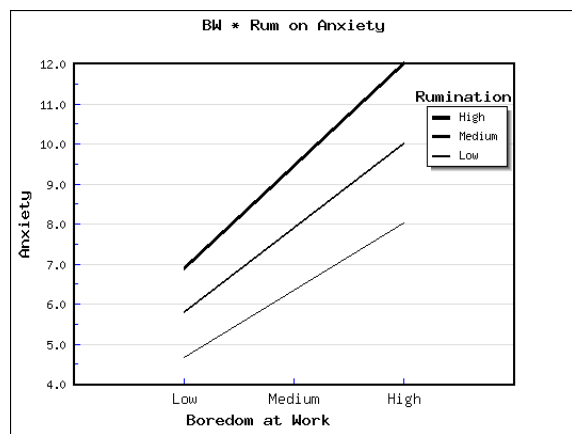


FIGURE 3.
Interactional effects between boredom at work and rumination on anxiety.

DISCUSSION

The purpose of the current study was to examine the direct effects of boredom at work and rumination on psychological and sleep health. Also, we aimed to examine to moderating role of rumination on these

relationships. Results show support to our hypotheses (H1 – H4) of the direct effects of boredom at work on psychological health (depression & anxiety), sleep health, and rumination. Boredom at work has the stronger effect on depression, according to the beta coefficient and its large size effect, concurring

with some of the literature (e.g., Lehmann et al., 2011; van Hoof & van Hoof, 2014; Wiesner, Windle, & Freeman, 2005). Meanwhile, anxiety and rumination have the second and third greatest effect from boredom at work, respectively, which is consonant with some of the literature (e.g., Gordon et al., 1997). On the other hand, the weakest direct effects of boredom at work were on sleep health; nevertheless, the results suggest that boredom at work has a direct effect on sleep health as the scarce literature support (Game, 2007). These results extent and support the idea of Lechmann et al. (2011) that feelings bored at work is accompanied by higher symptomatology of depression and anxiety. This probably implies that boredom at work signal employees that they are not progressing towards their work goals and ultimate goal of growth and development (van Hoof & van Hoff, 2014). Thus, as some authors argue (e.g., Carver, 2004; Carver & Scheier, 1990), based on control theory, it may be assumed that this lack of goal process results in feelings of depression and anxiety because people continuously monitor their pace of progress towards their desired goal and if the goal is not accomplished, may result in a irreconcilable discrepancy that leads to the development of depression, anxiety, and sleep problems. This is important because Wiesner et al. (2005) have found that bored employees not only shown serious depressive symptomatology, but also heavy alcohol use. Therefore, this irreconcilable discrepancy may not only lead to depression, but also to the abuse of alcohol by bored employees due to their perception of a constrained career progress.

In terms of the direct effects of rumination (H5 to H7), it has a large effect size on anxiety and depression, and a medium effect size on sleep quality as seen in table 5. These results are consonant with some of the literature (Åkerstedt et al., 2002; Berset, Elfering, Luthy, Luthi, & Semmer, 2011; Cropley et al., 2006; Groeger, Zijlstra & Dijk, 2004; Nysten, et al 2007; Rosario-Hernández et al., 2013; Rosario-Hernández et al., 2015); the impact of

rumination on psychological and sleep health is very strong, especially on anxiety. Thus, it appears that rumination does not allow to recover from under challenges at work as it does when there is excessive workload, which suggest that boredom at work or being under challenge can cause stress as well and therefore, affecting employees' psychological and sleep health. Thinking about work related issues when not at work, can deteriorate health because it does not allow a person to recover effectively (Fritz, Sonnentag, Spector & Mcinroe, 2010; Kivimaki et al., 2006; Meijman & Mulder, 1998; Schwartz et al., 2003; Zijlstra & Sonnentag, 2006). The recovery process seems to be influenced by the way people manage to disconnect from job demands, in this case, under challenging job demands and the thoughts related to it (Cropley, Dijk & Stanley, 2006; Sonnentag, Mojza, Binnewies, & Scholl, 2008; Sonnentag & Zijlstra, 2006; Rook & Zijlstra, 2006). Therefore, the mechanism of rumination endangers people's recovery from boredom at work or under utilization that may lead to poor psychological and sleep health (Roger & Jamieson 1988; Cropley, et al., 2006).

Meanwhile, rumination moderates the relationship between boredom at work and psychological health (depression & anxiety; H8 & H9), but not sleep health (H10). Specifically, we found that employees high in rumination shown higher depressive and anxious symptomatology than those low in rumination, which somehow concurs with related literature on high job demands (e.g., Rosario-Hernández et al., 2015). In this way, bored employees who ruminate tend to manifest more depression and anxiety symptoms than those who do not ruminate or are low in rumination. Moreover and according to Kenny (2018), effect sizes of moderations passed the threshold of .01 for medium effect size on two of the endogenous variables, anxiety ($f^2 = 0.021$) and depression ($f^2 = 0.017$), which give us an idea of the moderating effect of rumination on these relationships and its effect on psychological health because Aguinis et al. (2005) indicate

that the average moderation effect sizes is 0.017. On the other hand, rumination did not moderate the relationship between boredom at work and sleep health. Thus, results suggest that rather being tightly intertwined, boredom at work and rumination function largely independently on sleep health, specially since both have a direct effect on sleep health as some literature have shown (Fisher, 1993; Game, 2007; Rosario-Hernández et al., 2015), but not their interaction; therefore, this result is contrary to our expectations.

Limitations and future research implications

While we think the current study has revealed some potentially important findings, a number of study limitations should be considered. Firstly, the data collected and analyzed were derived entirely from self-report questionnaires, which increased the likelihood of common method variance effects. However, we conducted a common method analysis that suggests that this is not a problem in the current study. Second, the establishment of cause and effect is not possible due to the use of a cross-sectional design in the current study. Third, the type of work or tasks was not explored which may have an impact because those workers who perform monotonous and repetitive tasks differ from those workers who have less monotonous and variety of tasks; therefore, it would be important to be asked in future research to better understand its effect on the studied variables in the current study. Fourth, the sample was not representative of the whole Puerto Rican working population; therefore, all conclusions are pertinent only to this particular sample of working participants. Nevertheless, the results provide an insight on the relationship between boredom at work and psychological and sleep health, especially the moderating effect of rumination, as a reference point for future research.

Practical Implications

One practical implication of this research is that provides evidence that boredom at work

has an impact on psychological and sleep health as high job demands do. Therefore, as Harju, Hakanen, and Schaufeli (2014) recommend, management have to pay attention to employees that might be bored by redesigning work in a way that provides them with more challenging and opportunities for development and to support the efforts of employees to actively influence the boundaries of their jobs themselves to alleviate boredom. Moreover, Game (2007) recommends the use of a variety of behavioral and cognitive engagement strategies as ways to cope with boredom at work may be beneficial to both for individuals and organizations.

Directions for Future Studies

We concur with Harju et al. (2014) who recommend the use of longitudinal designs in future research to further investigate how boredom at work develops over time and what its long-term health consequences are. Also, it will be interesting to examine boredom coping skills and how boredom at work might be countered by job crafting because actively align tasks and personal needs of bored employees and might prevent alienation and withdraw, which ultimately would cause boredom at work, which in turn, has an effect on psychological and sleep health.

Conclusions

This study contributes to an underrepresented area of boredom at work and its negative effects on psychological and sleep health and the addition of rumination as a moderator of these relationships. Moreover, results suggest that bored employees may ruminate due to feelings of being under challenged at work and this has an impact on employees' psychological and sleep health, which in turn will have an impact at the organizational level.

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Informed Consent or Assent: Consent informed was offered to all study participants.

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