The role of job insecurity and work-family conflict on mental health evolution during COVID-19 lockdown

Mirko Antino*

Paula Ruiz-Zorrilla*

Ana I. Sanz-Vergel**

Jose Maria Leon-Perez ***

Alfredo Rodriguez-Muñoz*

*Universidad Complutense de Madrid

** University of East Anglia

*** Universidad de Sevilla

*Correspondence should be addressed to: Mirko Antino, Complutense University of Madrid. Faculty of Psychology, Campus de Somosaguas, 28223 Madrid, Spain. Phone: +34 91 39423057. E-mail: m.antino@psi.ucm.es

Abstract

The aim of this intensive longitudinal study was (1) to explore the temporal evolution of two mental health indicators (anxiety and depressive symptoms, and insomnia) throughout COVID-19 lockdown in Spain, and (2) to examine its association with two work-related stressors (job insecurity and work-family conflict). A sample of 1519 participants responded to several questionnaires during the lockdown (between March 16, and April 29, 2020). Results of latent growth modelling showed a curvilinear increase of our two mental health indicators over time (a logarithmic growth for anxiety and depression, accentuated during the first part of the lockdown, and a quadratic growth for insomnia, accentuated during the second part). Regarding its association with work-related stressors, we found that higher levels of job insecurity and work-family conflict were related to higher levels of anxiety, depression, and insomnia. Additionally, we found a significant interaction between time and the two forms of work-family conflict (work-to-home and home-to-work), showing that people with more work-family conflict experienced stronger growth in all mental-health indicators. Overall, this study contributes to the description of the temporal dynamics of mental health during the COVID-19 outbreak in Spain, as well as its association with two key work-related stressors.

Keywords: COVID-19 Pandemic**,** Job Insecurity, Work-Family Conflict, Mental Health, Work Stress.

The role of job insecurity and work-family conflict on mental health evolution during COVID-19 lockdown in Spain

Coronavirus disease 2019 (COVID-19) was first reported in December 2019 in Wuhan City, China, and rapidly spread across the world, representing a serious public health challenge, and a challenge for researchers in several disciplines.

The uncertainty of the COVID-19 crisis together with quarantine and social isolation has been defined as a major traumatic experience, which is likely to lead to both immediate (acute) and long-term (chronic and delayed) psychopathology (for a review, see Torales et al, 2020). Immediate psychological reactions to traumatic life events are quite common, and natural recovery can be expected in most cases after the event (Goldmann & Galea, 2014; Yehuda et al., 2015). Nonetheless, in a significant proportion of individuals, this acute stress reaction develops into prolonged consequences such as posttraumatic stress disorder and other comorbidities (e.g., Haag et al., 2017). Accordingly, we decided to study two strain outcomes that have been documented during the COVID-19 crisis (Wang et al., 2020), and are considered common short-term responses to acute stressors but also can evolve in subsequent disorders (Buysse et al., 2008). We, therefore, focused on anxiety and depression (a mood disorder characterized by nervousness, worries, loss of interest, and depressive states, Andrews et al., 2001) and insomnia (defined as dissatisfaction with sleep quantity and quality according to the American Psychiatric Association, 2013). The mechanisms through which we hypothesize a growth in the two strain outcomes are based on the Conservation of Resources (COR) theory (Hobfoll, 1989; Hobfoll et al., 2018).

Complementarily, and based on Frese and Zapf's (1988) models of work stressor-strain trajectories over time, we study mental health evolution during the lockdown period in Spain (between March and May 2020). Furthermore (and integrating Frese and Zapf's

models with COR theory), following a stress-vulnerability approach, we study how exposure to work stressors (at the beginning of the strict wide lockdown in Spain: March 14, 2020) can be a vulnerability factor that exacerbates the negative impact of the COVID-19 outbreak on employees' mental health. Specifically, we examine how these mental health trajectories may vary depending on exposure to work-related stressors such as work-family conflict (conceptualized as "a form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect", Greenhaus & Beutell, 1985, p. 77) and job insecurity (conceptualized as "perceived threat to the continuity and stability of employment as it is currently experienced", Shoss, 2017, p. 1914). Both constructs are backed by solid empirical evidence: on the one hand, and since the work of Goode in 1960, work-to-home conflict is considered as a prime example of chronic role strain and it may be experienced as a chronic stressor; on the other hand, a large amount of empirical evidence has uncovered the stressor role that job insecurity can play, with strong impact on health and job-related outcomes (Cheng & Chan, 2007).

Therefore, and especially under a crisis (like the current pandemic crisis), people may experience some cumulative effects from being exposed to multiple stressors (Frese & Zapf, 1988) and can enter into resource loss spirals that make them more vulnerable to the harmful effects of the lockdown on mental health (Hobfoll, 2018). In other words, within the emergency context of the COVID-19 outbreak, we study the impact of different work-related stressors, both job insecurity as well as work-family conflict (both work-to-home and home-to-work conflict), on the presence and intensity of several mental-health indicators. More specifically, we first explore the time evolution of two mental health indicators (anxiety and depression, and insomnia) over time. Second, we study the direct relationship between job insecurity and work-family conflict on our mental health indicators, expecting stronger negative consequences for people with more insecurity and

higher levels of both types of work-family conflict. Third, we study how the two work-related stressors (job insecurity and work-family conflict) do impact the time evolution of the mental health indicators, to study whether individuals experience different time evolution patterns (like the accumulation of negative health symptoms) above the direct impact.

Overall, we consider that our study makes four important contributions. First, we deepen existing knowledge on cumulative stress (Frese & Zapf, 1988) by examining health trajectories under absolutely extraordinary circumstances. This may serve as a foundation for future studies on health and wellbeing conducted during times of worldwide crisis. Second, we incorporate two moderators that are key in crises: Job insecurity and work-family conflict. Understanding how exposure to these stressors affects health over time may help managers and policymakers implement actions to attenuate these effects over difficult times. Third, we add to the COR theory (Hobfoll, 1989; Hobfoll et al., 2018) by examining cycles of resources loss under extremely stressful circumstances. A research design and context as the present one offers an interesting opportunity for studying the main corollaries from COR theory, as they are dynamic in nature. Finally, from a practical point of view, we consider (and we hope) that this type of work will help our society and our policymakers to better prepare for future crises, and put all the necessary arrangements in place by building on empirical like those that we offer.

COVID-19 outbreak impact on mental health

To fully understand the logic of our research, we consider it important to highlight some contextual elements. The COVID-19 was elevated to international public health emergency by the World Health Organization (WHO) on January 30, 2020, and then as a

pandemic on March 11, 2020. During this month, the epicenter of the disease moved to Europe, being Spain among the hardest-hit countries. By the last day of our data collection, April 29, 2020, a total of 244.683 COVID-19 confirmed cases and 27.136 deaths (521 per million) had been reported in Spain, which declared the state of emergency and imposed a nationwide lockdown on March 14, 2020 (Royal Decree-Law 463/2020, the date where we started our data collection). This context of uncertainty together with lockdown and social isolation policies has been defined as a prolonged stressor likely to lead to both immediate (acute) and long-term (chronic and delayed) psychological disorders (see Pfefferbaum & North, 2020; Torales et al, 2020). Indeed, an increase in strain during the lockdown period is expected according to the COR theory (Hobfoll 1989; Hobfoll et al., 2018).

More specifically, we hypothesize that during the lockdown period, we will observe a general increase in strain. According to the COR theory, individuals struggle to obtain, increase, and protect their valued psychological, social, and emotional work-related resources. This theory asserts that a stress-related answer can emerge when individuals perceive that their important resources are susceptible to loss, when they are losing resources and when individuals perceive that they are unable to increase resources after an effort (high resource investment). Considering the exceptional situation of the COVID-19 lockdown, individuals are likely to enter a loss cycle of resources. When valued resources such as jobs, health, or even our freedom, are threatened, individuals may experience strain reactions. During other difficult periods like the macro-economic crisis in 2008, scholars showed how worries about various aspects of our lives directly impacted health and wellbeing (Minnotte & Yucel, 2018). In this sense, a fundamental principle of COR theory is that resource loss is more salient than resource gain because it represents a threat to survival. In line with this, individuals who experienced resource

loss would be less capable of stress resistance and more susceptible to further resource losses.

We, therefore, hypothesize that:

Hypothesis 1: We will observe an increase of psychological strain, both anxiety and depressive symptoms (H1a) and insomnia (H1b) during the COVID-19 outbreak and lockdown.

In addition, within this unexpected and unexplored (at least, at the date of our data collection) pandemic situation, based on Frese and Zapf's work (1988) on cumulative stress, we formulate an exploratory research question on the specific time evolution pattern of the strain. We adopted an exploratory approach because of the lack of research carried out within the pandemic context to provide evidence-based arguments. The only study we have found has been carried out in the UK, where the lockdown started later than in Spain, and restrictions were much softer (Fancourt et al., 2020).

Frese and Zapf (1988) proposed five theoretical models of what they call exposure time models, where they differentiate among several types of effects that a specific stressor can have on psychological and psychosomatic dysfunction over time. The first, named *stress reaction model*, suggests that individuals experience a specific strain during the exposition to the stressor and that the improvement will start with the remotion of the stimuli (same decrease as the increase). According to this theoretical model, the exposition to the lockdown would bring to a linear increase and a subsequent decrease after the removal of the mobility restrictions.

The second, named the *accumulation model*, suggests that the impact over time increases in the first stage of exposure and that the strain stabilizes at a ceiling level; according to this model, even after the exposure is reduced, the strain remains stable,

because of the attainment of a "breaking point". According to this model, we would expect an initial growth in our strain and a stabilization that lasts after the removal of the stressor.

The third, the *dynamic accumulation model*, is similar to the accumulation model, with the difference that it considers how certain individuals can be more vulnerable and that therefore stressors can have a stronger impact on them. According to this third model, we would expect two types of effects among those scoring high in job insecurity and work-family conflict. On the one hand, a stronger direct effect; on the other hand, a potential different growth pattern and will come back to this specific growth type in the next subsection. The dynamic accumulation model is in line with Fancourt et al. (2020), who hypothesized that socio-demographic aspects such as gender or education might affect trajectories of mental health. For example, they found that at the beginning of the lockdown, women, people with lower levels of educational attainment, and people with pre-existing mental health conditions reported higher levels of anxiety and depressive symptoms.

The fourth, *the adjustment model*, suggests that after an initial increase, individuals adapt to the stressors, and therefore the strain decrease, even in presence of the stressor. According to this model, we would expect an initial growth and an adaptation (a negative growth) after the adjustment period. We consider this trajectory may also be possible as the state of emergency was such an extraordinary circumstance, that strain levels could immediately appear, and then be reduced once the measures were explained to the population and individuals started to get used to them. This is the pattern that Fancourt et al. (2020) found in their study. At the beginning of the lockdown, anxiety and depressive symptoms increased. Then, there was a sharp decline in depressive symptoms and anxiety between weeks 2 and 5 during the strict lockdown period, with symptoms

plateauing as further lockdown easing measures were introduced. Again, please note this was not as strict as in Spain (as an example, in the UK, one form of exercise a day was allowed, while in Spain people were not allowed to leave their houses).

Finally, according to the fifth theoretical model, the *sleeper effect model*, the strain appears after an accumulation process and starts to manifest after a breaking point. According to this model, the exposition to the lockdown would show an initial maintenance of strain level and a delayed increase; additionally, the removal of the stressor would not result in a decrease of the strain. It is possible that individuals experienced this trajectory: The initial shock about what was happening maintains people alert and trying to adjust to the situation and keep energetic resources for what may come, reducing thus the initial impact on strain. A clear example is the solidarity that was found over the first weeks with neighbors gathering every evening at 20.00 o´clock to show appreciation to health workers. We would therefore expect no increase in the short-term of the strain because the dysfunction appears time after exposure to the stressor.

To summarize, and specifically related to our research context (where the lockdown-related measures were there and only a few restrictions were eased over the data collection period) we consider that four scenarios could potentially occur: a) a linear growth of the strain (according to the stress reaction model); b) an initial linear growth with a second stage of negative growth (according to the adjustment model); c) an initial rapid increase with the stabilization/ceiling effect of the curve (according to the accumulation and dynamic accumulation models); and d) a lagged effect with a maintenance of the initial levels of strain with a growth after a time exposure (according to the sleeper effect model). Worthy to be mentioned, that stress accumulation theories (Dormann & van de Ven, 2014) claim about different time lags in which the reaction can be observed: immediate (minutes after the exposure), short-term (hours up to one day),

mid-term reactions (one day up to a month), meso-term reactions (one month up to one year), long term (one year up to ten years) and grand term (more than a decade). While a clear time frame is not available in the literature to predict when specific strain will appear (especially under an unexplored situation like the pandemic lockdown), as we collected our data over several weeks, we consider that this allows sufficient time to experience a strain reaction. Therefore, and in absence of previous clear empirical evidence on the type of growth we could expect, we adopted an exploratory approach that leads us to the following research question:

> *Research question one:* we will explore the type of growth of both anxiety and depressive symptoms (Rq1a) and insomnia (Rq1b) during the COVID-19 outbreak and lockdown.

Exposure to work stressors as exacerbating factors

The COVID-19 lockdown (besides its direct impact on mental health) represents a context to study how work-related issues impact mental health. Indeed, the job market and several work settings have completely changed, with millions of employees being furloughed, other millions of people being forced to work remotely in a rather abrupt way. Furthermore, the lockdown means that individuals have to juggle both work and family-related responsibilities at the same time and (often) in the same physical space. For these reasons, as previously mentioned, in the present work, we study the role that two key work-related stressors play in mental health evolution: job insecurity and work-family conflict.

Regarding the first one, job insecurity has been linked to employees' health and well-being, particularly in times of economic turbulence (Montani et al., 2019), affecting both physical (e.g., Ferrie et al., 2016; Khubchandani & Price, 2017; Virtanen et al.,

2013), and mental health, by increasing anxiety and depressive symptoms (Kim & Dem Knesebeck, 2016; Khubchandani & Price, 2017; Llosa et al., 2018). Furthermore, the subjective nature of job insecurity, which can impact employees' health even in absence of objective indicators of dismissal (De Witte et al., 2016), fits ideally with the contextual elements of the COVID-19 pandemic situation, where the uncertainty in the job market generated by the COVID-19 crisis may have impacted individuals' job security experiences.

Concretely in Spain, the government has taken exceptional job-related measures during the COVID-19 outbreak, like a general moratorium for job dismissal and a special legal formula called 'ERTE' (Temporary Employment Regulation Process, which means a temporary collective lay-off or the reduction of working hours, in which the Government subsidies and guarantees a proportional part of workers' wages). According to the Spanish Government (2020), both measures have been widely used by companies involving more than 3 million workers in Spain (over 15% of the whole active workforce in 2019). This scenario has likely generated an increased experience of uncertainty, especially considering that the Spanish job market is characterized by high rotation rates, impermanence, instability, and precariousness (Martinez-Lucio, 2017). Such uncertainty (job insecurity in our model) easily fits in with what COR theory classifies as a threat of resource loss (a strong predictor of stress). More specifically, job insecurity is characterized by a loss of resources related to identity, income, social connection, and social status (Jiang & Probst, 2014; Schreurs et al., 2010), which are key elements for individual wellbeing. Considering the former reasoning, we hypothesize:

> *Hypothesis 2:* Job insecurity will be positively related to psychological strain, both anxiety and depressive symptoms (H2a), and insomnia (H2b) during the COVID-19 outbreak and lockdown.

Additionally, considering both the nature of the construct as well as the specific context of this study, we consider that job insecurity represents a vulnerability factor that can change the strain experienced during the lockdown. According to the *dynamic accumulation model* (Frese & Zapf, 1988), we expect that workers experiencing job insecurity will have a stronger increase in strain compared to less vulnerable individuals. More specifically, the theory postulates that vulnerability elements (such as job insecurity) generate a weakening effect on the psychophysiological system so that new stressors have a higher impact than normal. COR theory (Hobfoll, 1989; Hobfoll et al., 2018) can also help us understand this exacerbating effect of job insecurity: When individuals are worried about losing their jobs, the worries do not let them with enough energy to invest resources in other activities such as active problem-solving or simply psychologically disconnect and focus on other activities. This generates a loss spiral in which those individuals higher in job insecurity have no resources to invest and therefore no opportunity to build new resources such as energy, which finally leads to lower wellbeing. We, therefore, postulate that:

> *Hypothesis 3*: Job insecurity will impact the time evolution of psychological strain, both anxiety and depressive symptoms (H3a) and insomnia (H3b) during the COVID-19 outbreak and lockdown, such that workers with higher job insecurity will increase stronger growth patterns.

Regarding our second vulnerability factor, the lockdown forced people to re-arrange their lives and organize work and private living spaces and schedules. Teleworking has also led to the mixing of private and labor physical spaces, thus breaking temporal and spatial boundaries between work, non-formal work, and leisure (especially in Spain, where 89.9% of the population is living with at least another person and 30.2% lives in households with less than 60 square meters, according to the Spanish Institute of

Statistics, 2020). Overall, this situation represents an appropriate context to study the impact of the interference and conflict between work and private roles in both directions, with a dragging of work-related issues to private life and vice-versa. Indeed, these are the two directions of conflict that the literature has identified: work-to-home and home-to-work conflict (Greenhaus & Beutell, 1985). For example, individuals may experience work-to-home conflict when they are working long hours and having lots of virtual meetings (which makes it difficult for them to pay attention to their family or to household chores), but they can also experience home-to-work conflict (e.g., not having enough time to work because there are family responsibilities to attend at home). These are practical examples, considered as time-based conflict, but it is important to note that apart from time, cognitions are also part of this experience (Geurts et al., 2005). This means that one can be focused on work-related matters (i.e., unfinished tasks, worries about losing the job), therefore not engaging with family activities, or vice-versa (lack of concentration at work due to family worries such as a family member becoming ill, or worries about how the lockdown will affect the children/dependents). This clearly represents a threat for individuals and a key stressor.

Therefore, and coherently with the first stressor, we posit two separate hypotheses. On the one hand, and following coherently with several empirical studies, we focus on the direct impact on strain. In this line, literature shows how a negative impact on employees' work- and family-related outcomes, such as job and family satisfaction (Hill, 2005), as well as on many wellbeing indicators (Mihelič & Tekavčič, 2014), such as physical health (Carlson et al., 2011), perceived health (Mauno et al., 2011) and mental health (Amstad et al., 2011). On the other hand, besides the direct impact of work-family conflict on psychological strain, the difficulties to deal with both work and family responsibilities can be considered as a vulnerability element (Nohe et al., 2015). Indeed,

work-family conflict has been analyzed through the COR theory lens, leading to the conclusion that critical changes in work-family balance like the one triggered by lockdown policies are associated with resources loss spirals that increase levels of distress (Grandey & Cropanzano, 1999). Therefore, and by evoking the same theoretical logic we used for job insecurity, based on the *dynamic accumulation model* (Frese & Zapf, 1988) and the COR theory (Hobfoll, 1989, Hobfoll et al., 2018), we hypothesize an impact on the evolution of the strain.

Hypothesis 4: Work-family conflict will be positively related to psychological strain, both anxiety and depressive symptoms (H4a), and insomnia (H4b) during the COVID-19 outbreak and lockdown.

Hypothesis 5: Work-family conflict will impact the time evolution of psychological strain, both anxiety and depressive symptoms (H5a) and insomnia (H5b) during the COVID-19 outbreak and lockdown, such that workers with higher work-family conflict will experience stronger growth patterns.

Method

Procedure and sample

This study is based on longitudinal data from a general working population sample from Spain. Data were collected during 44 days at nine different time points (between March 16 and April 29, 2020), with a time lag of approximately 3 days between the first and fifth measurement, and a time lag of 1 week between the sixth and ninth measurement. This differential time lag is because, from wave 6, some national lockdown measures were eased (e.g., outdoor activities with kids). In total, via advertisements in institutional webs and social networks, 2,308 participants completed at least one survey of the study, among which 1,519 were working population. All respondents filled a baseline survey and were subsequently asked to participate in the follow-up. As some

participants engaged the first questionnaire later in time, we delimited several time points and placed respondents who entered the study later accordingly. Thus, we obtained a total of 1,330 respondents at our delimited T1. At T2, we obtained 1,111 respondents (83.53% response rate, relative to T1), 1,077 participated at T3 (80.97% response rate, relative to T1), 1,002 participated at T4 (75.33 % response rate, relative to T1), 961 participated at T5 (72.25% response rate, relative to T1), 901 participated at T6 (67.74% response rate, relative to T1), 922 participated at T7 (69.32% response rate, relative to T1), 883 participated at T8 (66.39% response rate, relative to T1) and 876 participated at T9 (65.86% response rate, relative to T1). Overall, the average number of data collection waves in which that participants took place was of 5.79 (SD = 3.21), ranging between a minimum of 1 and a maximum of 10 (including the baseline questionnaire).

Following Ahem and Le Brocque's (2005) recommendations, an attrition analysis was performed to explore whether our data were missing at random or not (MCAR). A Little's MCAR test was performed in SPSS and showed that our dependent variables missing data could be considered to be missed randomly ($\chi^2 = 385.106$, $DF = 60$, $p < .01$). Thus, we retained the whole sample. The data was collected through online surveys hosted by Qualtrics.com. Participants did not receive any financial gratification. Ethical approval was given by the first author's Faculty Ethics Review Board. Data are publicly available at the following repository (information deleted to warranty anonymous peer review, according to the instructions).

Among the 1,519 participants, 75.7% were women. The mean age was of 37.11 years (SD = 11.22). Most of the participants (72.9%) had a stable partner, no children (54.1%) and just 10.3% spent the lockdown alone. 82.5% of the sample had at least a university degree. Participants were from the 17 autonomous communities of Spain, being most of them from Madrid (50.3%). The majority of participants had a job in the

tertiary (49.4%) and quaternary (42.6%) sectors and a large majority (70.1%) were working from home due to the lockdown. 68.2% resided in houses with either terrace, balcony, or garden. Along with the data collection, 0.9% of the sample confirmed having a positive COVID-19 diagnosis.

Measures

General survey data. Participants answered a general survey at the beginning of the study, which comprises the following scales:

Job insecurity. We measured job insecurity with two items from Vander Elst et al. (2014). The specific items were "*I think I will lose my job in the near future*" and "*I feel insecure about the future of my job*". The items were rated on a five-point Likert-type scale ranging from 1 (totally disagree) to 5 (totally agree). Reliability (estimated with Spearman-Brown correlation, recommended option for two items scale following Eisinga, Grotenhius & Pelzer, 2013) coefficient was .88.

Work-family conflict. Work-to-home and home-to-work conflict were measured with two subscales (consisting of two items for each dimension) from the Spanish version of the Survey Work-Home Interaction Nijmegen or SWING scale (Moreno-Jiménez et al., 2009). An example of an item for the work-to-home conflict dimension is "You find it difficult to fulfill your domestic obligations because you are constantly thinking about your work?", and for the home-to-work dimension "You have difficulty concentrating on your work because you are preoccupied with domestic matters?". Items were rated on a four-point Likert-type scale ranging from 0 (never) to 3 (always). Reliability estimated with Spearman-Brown correlation was .76 for the work-to-home conflict subscale and .61 for home-to-work conflict (Eisinga et al., 2013).

Control variables. To rule out alternative interpretations, we measured some control variables. We followed the guidelines of Carlson and Wu (2012) and Becker et

al. (2016) by using control variables only scarcely and focused on possible third variables that may have confounded the relationships of interest (respectively sex, age, and house size for anxiety and depression and age for insomnia). Furthermore, in line with Becker (2005), other demographic variables that have little or no relationship with the DV (e.g., $|r|<.10$), were not included in the final analysis, like having a positive COVID19's diagnostic, educational level, risky job category (healthcare professionals for example), the number of children, number of dependent persons in charge, professional sector, having a garden/terrace during quarantine, nationality or region.

Diary survey data. Participants answered the following scales every three days until the sixth week of confinement, then they answered it every week until the end of the study in the ninth week.

Depression and Anxiety. The Patient Health Questionnaire, a brief four-item screening scale, was used to measure symptoms of depression and anxiety (Kroenke et al., 2009). Participants indicated how often they "felt bothered by" the following problems during the past month: "feeling nervous, anxious or on edge," "not being able to stop or control worrying," "little interest in pleasure in doing things," and "feeling down, depressed, or hopeless." The time frame of the scale was slightly modified to capture day-level experience ("During the last days, how often have you been bothered by the following problems?"). Response options were on a 5-point Likert scale from 0 (never or almost never) to 4 (nearly every day). Items were combined into a single score where a higher score indicates greater symptoms of depression and anxiety. We assessed reliability using Geldhof et al. (2014) procedure for computing omega (ω), which is the most adequate approach to examine reliability in multilevel designs. Omega or composite reliability can be defined as "the ratio of a scale's estimated true score variance relative

to its total variance" (Geldhof et al., 2014; p. 73). The omega reliability coefficient was .65 and .92 for within and between persons, respectively.

Insomnia. The Spanish version of the Insomnia Severity Index (ISI: Fernández-Mendoza et al., 2012) was used. The ISI is a screening scale that consists of 7 items assessing difficulty in falling asleep, problems remaining asleep, early morning awakenings, increased daytime sleepiness, impaired daytime sleepiness, impaired daily functioning, low satisfaction with sleep, and worrying about sleep. This measure follows the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria for insomnia (American Psychiatric Association, 2013). Each item is scored on a five-point Likert scale from 0 ("none" or "not at all") to 4 ("very severe problem"). Higher scores on the ISI indicate more severe insomnia. The omega reliability coefficient was .64 and .88 for within and between persons, respectively.

Results

Preliminary steps

First, to assess the dimensionality of out scales, two competing between-subjects Confirmatory Factor Analyses were performed with 1 versus 5 underlying factors, matching our scales. The five-factor model ($\chi 2$ = 344.619, df = 109, p = .00, RMSEA = .06, SRMR = .04, CFI = .94, TLI = .92) fitted notably better than the single-factor one ($\chi 2$ = 1811.714, df = 119, p = .00, RMSEA = .17, SRMR = .13, CFI = .56, TLI = .49). To ensure the quality of the measures across times, we assessed temporal invariance across time measurements, by testing and comparing several consecutive models with a) same factorial structure (configural), b) same factor loadings (metrical) and c) same item *thresholds* (scalar). For depression and anxiety, we found metrical invariance, ($\chi 2$ = 110.983, df = 42, p = .00, RMSEA = .04, SRMR = .03, CFI = .99, TLI = .99), and for insomnia, we found configural invariance ($\chi 2$ = 362.449, df = 126, p = .00, RMSEA =

.04, SRMR = .04, CFI = .99, TLI = .99; comparison with scalar model: $\Delta\chi 2$ = 153.36, Δdf = 56, p = .00) which according to Ployhart & Vandenberg (2010) is an adequate indicator of stability of the measures over time . Finally, descriptives and between level correlations can be found in Table 1.

---Insert Table 1 about here---

Test of Hypotheses

To test our hypotheses, we employed a multilevel analytical strategy based on growth modeling (Bliese & Ployhart, 2002; Gonzalez-Roma, 2019; Ployhart & Vandenberg, 2010) using the software R (R Core Team, 2014). First, we estimated the amount of variability due to intra-individual differences, examining the intraclass correlation coefficient type 1 (ICC1; Bliese, 2000) that indicates the amount of the DV that is a result of between-person differences, across the measurement occasions. For our first dependent variable, the ICC1 indicated that between-person variance explained 64.23% of the variance in anxiety and depression across time, while 37.77% was associated with within-person variations. For our second DV, The ICC1 indicated that between-person variance explained 71.53% of the variance in stress across time, while 28.47% was associated with within-level variations. Overall, these initial checks informed us about the significant amount of within and between level variability, indicating the appropriateness of proceeding with the next analytical steps.

Therefore, and to test our first hypothesis, we made an initial test studying the impact of time on both dependent variables (that informed us on whether in our sample we could observe a general linear growth of both DVs). Results showed us initial support for H1, as we found a general increase for both anxiety and depression ($Estimate_{Time}$ = 0.07, $p < .01$) and insomnia ($Estimate_{Time}$ = 0.07, $p < .01$).

Next step, to answer our first research question, we explored different types of

curvilinear evolution. According to Frese and Zapf's theoretical model (as we described in the introduction section), we could expect a) a linear growth of the strain (according to the stress reaction model); b) an initial linear growth with a second stage of negative growth (according to the adjustment model); c) an initial strong increase with the stabilization/ceiling effect of the curve (according to the accumulation and dynamic accumulation models); and d) a lagged effect with a maintenance of the initial levels of strain with a growth after a time exposure. Considering the first test and the general positive increase in strain that we found (compatible with our scenario "a"), we excluded option "b" (initial linear growth with a second stage of negative growth), as this is not empirical compatible with a general linear growth. Next, we explored two types of curvilinear growth scenarios alternative to the linear growth represented by scenario "a": on the one hand curvilinear models that imply an initial slow increase and a higher increase through the end of the data collection period (namely quadratic and cubic) according to our scenario "d" (a lagged effect with a maintenance of the initial levels of strain with a growth after a time exposure); on the other hand, curvilinear models allowing an initial rapid growth and a slower increase over time (namely a logarithmic model) according to our scenario "c" (an initial strong increase with the stabilization/ceiling effect of the curve).

In terms of estimation, as a preliminary step to explore the curvilinear growth, we studied individual variability in the time-related covariates, by running a baseline model (where the time parameters were fixed to be equal for all the participants) to be compared to a model that allowed the linear time parameter to vary randomly among individuals. For both dependent variables, we found that model with a random slope provided a better fit to the data (anxiety and depression: $Lratio = 484.91$, $p < .01$; insomnia: $Lratio = 580.70$, $p < .01$).

Next, starting with our first dependent variable anxiety and depression, we first explored two models that imply an initial maintenance according to scenario "d" (quadratic and cubic,) but both models were not significant. Subsequently, we tested a curvilinear model allowing an initial rapid growth according to scenario "c", namely a logarithmic model. Allowing the logarithmic time evolution parameter to vary across individuals we obtained a significant increase in model fit (*Lratio* = 59.46, $p < .01$)[i]. Overall, regarding our first outcome, this means that the time evolution of anxiety and depression does not fit into lagged reaction model (Frese & Zapf, 1988) but it does into an immediate reaction model, by showing an initial growth.

Regarding insomnia, we followed the same procedure. We first explored models that imply an initial maintenance (compatible with scenario "d") as with the previous DV, by studying the fit of the quadratic and the cubic time evolution parameters, finding that the quadratic time evolution increased the model fit over the linear model (*Lratio* = 202.68, $p < .01$), while the comparison with the cubic time evolution parameter did not converge[ii]. Subsequently, we tested the fit of the logarithmic model (that implies an initial rapid growth, according to scenario "c") and found an increased fit over the linear model increased the model fit over the linear model (*Lratio* = 179.69, $p < .01$). This pattern of results shows that for insomnia, both an initial maintenance (scenario "d") as well as an initial rapid growth (scenario "c") fitted the data better compared to the linear model, although we found a higher increment in the fit with the quadratic model (showing therefore an initial maintenance compatible with scenario "d"). For that reason, we decided to keep (for the next analytical steps in our model) the quadratic evolution model. Nonetheless, worthy to be remarked (especially considering the exploratory nature of our research question), while with the first dependent variable we found a clear pattern of growth, in this second case both models fitted the data better than the linear growth, being

the first slightly better in terms of fit.

Overall, regarding the first research question, these results suggest that individuals tend to have a curvilinear increase in both DV, which can be represented by a curvilinear logarithmic increase for anxiety and depression (showing a clear initial increase), and a quadratic increase for insomnia (showing how a lagged effect fits slightly better compared to an immediate effect model).

Following with the hypotheses tests, before running the test for H2, we completed the test for H1, by including the retained curvilinear models as predictors instead of using only the lineal growth model and found coherent results. Specifically, for anxiety and depression, as Model 1 (see Table 2) shows, participants reported significant curvilinear (Logarithmic) increases in anxiety and depression during the study ($Estimate_{Time\ Logarithmic} = 0.52$, $p < .01$). For insomnia, Model 1 (Table 3) shows that participants reported a significant curvilinear (quadratic) increase over time ($Estimate_{Time\ Quadratic} = 0.01$, $p < .01$). Overall, H1 was supported by our data.

Regarding our second hypothesis, we stated that job insecurity would be positively related to both our dependent variables (H2a: anxiety and depression; H2b insomnia). Regarding our first DV (H2a), in Model 2 (Table 2) we entered the person-level variables. Both control variables sex ($Estimate_{Sex} = -0.85$, $p < .01$) as well as age ($Estimate_{Age} = -0.03$, $p < .01$) and house size ($Estimate_{House} = -0.003$, $p = .01$) were significantly related to our DV, showing that women, younger people and those who live in smaller houses tend to experience higher anxiety and depression; additionally, our predictor job insecurity was positively and significantly related to anxiety and depression ($Estimate_{Job\ insecurity} = 0.41$, $p < .01$)[1]. Regarding our second DV, in Model 2 (Table 3) we entered the

[1] Additionally, we tested all our models without control variables and the results did not differ substantially. However, according to the logic of Becker et al., (2005), we maintained control variables in our final models.

person level variable. On the one hand, our control variable had a significant relationship with our outcome, showing that younger people tend to experience more insomnia (*Estimate* $_{Age}$ = -0.03, p = .02). On the other hand, job insecurity was positively and significantly related to insomnia (H2b; *Estimate* $_{Job\ insecurity}$ = 0.54, p < .01). Thus, H2a-b were supported by our data. In order to explore the magnitude of the effects, size effects were reported by following Rights & Sterba (2020) recommendations. In doing so, several Rsquared indexes (differentiating between fixed and random effects) were computed and interpreted. Starting with our first dependent variable, anxiety and depression, we found an increase in the Rsquared proportion of total outcome variance explained by predictors via fixed slopes and random slopes covariance of .241. Regarding the Rsquared increase due to fixed effects, the increase was of .212, and regarding the Rsquared increase due to random slopes, it was of -.218. Concerning our second dependent variable, insomnia, the Rsquared increase for fixed and random slopes was of .132. Differentiating between fixed and random sources of variability, while Rsquared increase for fixed slopes was of .103, in the case of random slopes was of .029.

H3 stated that job insecurity would impact the time evolution of our DVs, predicting a more severe increase for participants with higher job insecurity. For anxiety and depression (H3a), in Model 3 (Table 2) we entered the interaction between job insecurity and the curvilinear time parameter, to study to what extent participants differed concerning anxiety and depression evolution depending on their level of job insecurity, and the interaction parameter was not significant (*Estimate* $_{Time\ logarithmic*Job\ insecurity}$ = -0.01, p = .78). The Rsquared increase for fixed and random slopes together was of .003. Separating between fixed and random sources of variability, while the Rsquared increase for fixed slopes was of -.001, in the case of random slopes it was of .003. For insomnia (H3b), in Model 3 (Table 3), we entered the interaction between job insecurity and the

quadratic time parameter (*Estimate* $_{Time\ quadratic*Job\ insecurity}$ = 0.00, p = .65), but no significant effect was found. The Rsquared increase for fixed and random slopes together was of .047. Separating between fixed and random sources of variability, while the Rsquared increase for fixed slopes was of -.035, in the case of random slopes it was of .082. Thus H3a-b were not empirically supported.

H4 stated that also work-family conflict may be related to psychological strain. In model 3 our second and third predictors, work-to-home and home-to-work conflict, also showed positive and significant relationships with anxiety and depression (H4a; *Estimate* $_{Work\text{-}to\text{-}Home\ conflict}$ = 0.40, p < .01; *Estimate* $_{Home\text{-}to\text{-}Work\ conflict}$= 0.88, p < .01), and insomnia (H4b; *Estimate* $_{Work\text{-}to\text{-}Home\ conflict}$= 0.72, p < .01; *Estimate* $_{Home\text{-}to\text{-}Work\ conflict}$= 0.89, p < .01). Thus, support for H4a-b was found.

H5 predicted that work-family conflict would impact the time evolution of our DVs. Following the same procedure, for anxiety and depression in Model 4 (Table 2), we tested the interaction between work-to-home conflict and the curvilinear time parameter (*Estimate* $_{Time\ logarithmic*Work\text{-}to\text{-}Home\ conflict}$ = 0.14, p = .02). As shown in Figure 1, people experiencing higher work-to-home conflict had stronger increases in anxiety and depression. The Rsquared increase for fixed and random slopes together was of .007. Separating between fixed and random sources of variability, while the Rsquared increase for fixed slopes was of -.005, in the case of random slopes it was of .012. Finally, in Model 5 (Table 2), we tested the interaction between home-to-work conflict and the curvilinear time parameter, (*Estimate* $_{Time\ logarithmic\ *\ Home\text{-}to\text{-}Work\ conflict}$ = 0.20, p < .01) and found a similar pattern: people experiencing higher home-to-work conflict showed stronger increases over time in anxiety and depression. The Rsquared increase for fixed and random slopes together was of -.023. Separating between fixed and random sources of variability, while the Rsquared increase for fixed slopes was of -.026, in the case of

random slopes it was of .003.Thus, support for H5a was found in our data. For insomnia, Model 4 (Table) tested the interaction between work-to-home conflict and the quadratic time parameter (*Estimate* $_{Time\ quadratic*Work\text{-}to\text{-}Home\ conflict}$ = 0.01, p = .01). As shown in Figure 3, people experiencing higher work-to-home conflict had stronger increases in insomnia. The Rsquared increase for fixed and random slopes together was of .058. Separating between fixed and random sources of variability, while the Rsquared increase for fixed slopes was of -.034, in the case of random slopes it was of .092. Finally, in Model 5 (Table 3) we tested the interaction between home-to-work conflict and the quadratic time parameter and found a significant effect (*Estimate* $_{Time\ quadratic*Home\text{-}to\text{-}Work\ conflict}$ = 0.01, p = .01). As shown in Figure 3, people experiencing higher home-to-work conflict showed stronger increases in insomnia. The Rsquared increase for fixed and random slopes together was of .001. Separating between fixed and random sources of variability, while the Rsquared increase for fixed slopes was of -.076, in the case of random slopes it was of .078. Thus, H5b was supported by our data.

---Insert Table 2, Figure 1, and Figure 2 about here---

---Insert Table 3, Figure 3, and Figure 4 about here---

As a general overview of the results, beside the significant effects that we found, we highlight the relatively small effect sizes (see tables 2 and 3). This means, that even if significant, our data still show a certain amount of variability to be explored.

Additional analysis

To further investigate the nature of the growth, and in order to shed light to the relatively small size effects we found in our analysis, we conducted some additional

analyses[2]. Specifically, we used an alternative analytical strategy, namely the latent growth curve analysis (Berlin et al., 2014). Latent Growth Curve Analysis is an exploratory person-centered approach that allows researchers to classify heterogeneous individuals into groups (named classes), depending on the way they evolve in a particular variable (Berlin et al., 2014). In other words, this technique allows creating (based on an exploratory approach) different clusters of participants that share a common pattern of evolution over time for a specific dependent variable.

For both DVs (anxiety/depression and insomnia) we run several model estimations[3], allowing trajectory shapes to freely vary, with different number of clusters (classes). The main result (common to all the models we run) is that we found a main cluster that includes a high percentage of the participants, showing a very little/none increase in the dependent variable. This may have occurred due to the fact that not all our sample was subjected to an increase of the strain factors (job insecurity and work-home interference).

As an example in this line, in a 2-clusters solution for anxiety and depression (entropy level - .80 – that indicated a good fit to the data) participants were classified either in a stable cluster, showing a low and constant level of these symptoms over time (representing a 75,79% of the sample), or in a growing cluster (reflecting a shaped increase at the beginning of the data collection and a subsequent slow and constant decline in the increase (24.21% of the sample). Consistently with our results, those participants that were classified in the second cluster had significantly higher values of job insecurity ($F = 23.31, p < .001$) and work-family conflict ($F = 11.54, p < .001$). This view is coherent

[2] We would like to thank the action editor and the two anonymous reviewers for their inspiring insights, that helped us to develop this additional section.
[3] Additional information (fit indexes, model comparison, etc.) can be found in online supplemental material.

with our predictions (and somehow support our hypotheses 2 and 4), as those participants that showed an increase in anxiety and depression were those that had higher vulnerability factors (job insecurity and work family conflict). Overall, this additional analysis pattern helps to understand why the mean values of our dependent variables had only a slight increase and why the effect size even if significant are not strong, since more than the 70% of the sample was satisfactorily (in terms of model fit, and quite consistently in different models) classified in an almost flat growth cluster (meaning that more than the 70% of the sample did not experience any changes in our dependent variables during the study).

Discussion

During the COVID19 pandemic lockdown, we examined the evolution of two different mental health indicators over time. As a main consideration, we found that the majority of the participants had almost no growth (around 75%, as shown in the additional analysis section). Nonetheless, the remaining 25% of the sample had higher levels of both symptoms, and this lead to a general (although not strong) growth evolution for both anxiety and depression and insomnia. Also, we found that job insecurity and work-family conflict (both work-to-home as well as home-to-work conflict) were positively related to those negative experiences, meaning that people with more job insecurity tend to experience more depression and anxiety as well as more insomnia, and the same pattern was found for work-family conflict. This pattern of results is particularly clear by comparing those participants that had no growth with those that had an increase in strain (see additional analysis section). Furthermore, we found that people with more work-family conflict (both work-to-home as well as home-to-work) experienced a stronger

growth. On the other hand, the time evolution (beyond the direct effect) of both anxiety and depression, and insomnia did not depend on job insecurity.

Theoretical implications

We consider that our results have some theoretical implications. First, and in order not to overstate our contribution, we want to refer to the relatively low effect sizes we found. As previously mentioned, the majority of the participants did not suffer an increase in strain during the data collection. This is in our view a contribution in itself, that helps to understand the impact of an extraordinary situation like the lockdown. Nonetheless, a relatively small (but still significant and socially relevant) part of the participants experienced an increase in strain, and this offers (from our point of view) us the possibility to contribute to several literatures. In this line, based on Frese and Zapf (1988) model on cumulative stress and COR theory (Hobfoll, 1989, Hobfoll et al., 2018), we consider that these results may have some relevant implications for theory. First, regarding our contribution to the cumulative stress theory, our results revealed how two strain indicators seem to show two different evolution patterns, supporting the assumption that strain responses require more or less time to manifest (e.g., Frese & Zapf, 1988; Hobfoll et al., 2018; Pindek et al., 2019). In this line, Frese and Zapf (1988), claimed that time is crucial to understand the stressor-strain relationship. Concretely, in our exploration, anxiety and depression seem to follow a growth pattern in line with the accumulation and dynamic accumulation models: there is an initial rapid increase with a potential the stabilization/ceiling effect of the curve at the end of our data collection, according to the accumulation and dynamic accumulation models). In contrast, insomnia seems to increase following a lagged effect with a maintenance of the initial levels of strain and then a growth after a time exposure compatibly with the sleeper effect model (Frese & Zapf, 1988), However, (as shown in our results) insomnia has a less clear pattern of growth (as

a scenario “c” showed only a slightly worse fit compared to the scenario “d”). A possible explanation is that anxiety and depression frequently can lead to insomnia, meaning that (at least for part of our sample) they appear in the first place, while insomnia could be a consequence. Indeed, this sleep disturbance persists even after these disorders remit (van Mill et al., 2010). As Hatzinger et al. (2004) suggest, sleep complaints are a “scar effect” of a depressive or an anxiety disorder. In that sense, at the cognitive level anxiety and depression seem to follow the classical stress reaction and adjustment models; whereas the effects of stressors on insomnia are more delayed, fitting better with accumulative models that propose prolonged activation and investment of resources, when no successful, may be associated with more physiological impairment like sleep problems and insomnia. In addition, our study highlights that not only does time play a crucial role in explaining wellbeing impairment but also the nature of the outcomes that each study addresses (Dormann & van de Ben, 2014). In this line, and following Dormann and van de Ben’s work, we consider that is important to highlight the specific time frame of our research, where we offer empirical evidence for mid-term reactions (one day up to one month).

Additionally, and specifically related to the context of the study, the significative non-linear increase of health-related impairment following exposure to trauma or severe stress is in line with recent findings of the psychological consequences of COVID-19 (e.g., Huang & Zhao, 2020). These findings are in accordance with previous literature on disasters which revealed that people usually experience moderate-to-severe symptoms of psychological disorder in the period immediately after being exposed to traumatic events (Goldman & Galea, 2014, p. 171). Although our results in this line have to be carefully interpreted (we did not have any pre-measure, as discussed in the limitation section), our findings suggest that a situation like the COVID-19 outbreak could represent a stressful

situation resulting in increased health impairment in the short-term. Our growth pattern is partially (in the initial stage) compatible with Fancourt et al.'s (2020) results, although we did not find the same decrease pattern. In terms of Frese and Zapf (1988) theory, this incongruence seems to suggest some differences in terms of the adjustment process. We consider that this clearly opens a way for future studies, where the comparison of different contexts and within different time frames could shed some light.

As a second contribution, our findings are grounded on the dynamic accumulation model (Frese & Zapf, 1988) that considers how certain individuals can be more vulnerable and stressors can therefore have a stronger impact on them (or, in other words, some vulnerability factors can provide more dynamism to stress models, exacerbating negative consequences and modulating strain evolution patterns over time). This model is also compatible with the tenets of the COR theory and the definition of caravan passageways as "the environmental conditions that support, foster, enrich, and protect the resources of individuals, families, and organizations, or that detract, undermine, obstruct, or impoverish people's resource reservoirs." (Hobfoll, 2012, p. 229). In this line, on a first inspection of our data, we saw how younger women seem to be particularly at risk, which may suggest a higher sensitivity to stressful life events in women due to gender role differences and other social determinants (e.g., Dalgard et al., 2006; Simonds & Whiffen, 2003). These results are in line with Fancourt et al.'s (2020) findings, who reported that at the beginning of the lockdown, women, people with lower levels of educational attainment, and people with pre-existing mental health conditions reported higher levels of anxiety and depressive symptoms. Our findings extent these potential environmental conditions that may protect or undermine employees' resources by incorporating other job stressors such as job insecurity and work-family conflict.

Concerning our first job-related stressor, job insecurity, to understand its potential role as a vulnerability factor, we will recur to recent calls in the literature. In fact, in a recent review of longitudinal studies on the short and long-term effects of job insecurity on health-related variables (De Witte et al., 2015), the authors identify some critical gaps where our findings represent a contribution. First, authors outline the need for more longitudinal studies focusing on the (longitudinal) impact of job insecurity on specific wellbeing aspects like anxiety and depression, as available empirical studies were not conclusive in this line (while results were more coherent when studying general wellbeing indicators, opening for potential differential effects depending on the nature of the wellbeing related outcomes). In this line, our results seem to contribute by identifying a clear direct effect on both anxiety and depression, as well as on insomnia (two strain indicator that seems to have two different time evolution patterns).

Second, and more strictly related to our contribution, the authors claim for more longitudinal studies to clarify the nature of the stressor; more specifically, authors describe how according to the COR theory, the consumption of resources occurs over time and that this would imply a lagged effect or a stronger growth over time. Our results do not offer empirical support to this statement, as we saw how job insecurity did not affect time evolution of the strain beyond a direct effect (especially considering our second strain outcome of insomnia, which presented a time evolution compatible with a lagged effect). A potential explanation is that governmental measures like the ERTEs could have protected some resources (i.e., money) or, at least, may limited resources loss spirals. However, as we did not measure who was affected by these measures, further research should clarify the role of job insecurity as a stressor that impacts the evolution of strain; in this line, future empirical research could benefit by deepening into potential intervening factors (Vander Elst et al., 2016), studying the interactive role of job

insecurity with other stressors (Minnotte & Yucel, 2018) or by incorporating other facets of job insecurity (Jiang & Lavaysse, 2018).

On the contrary, moving to our second work-related stressor work-family conflict, we found both a direct effect as well as an interaction with time: the increase of mental health problems over time becomes very clear in the case of high work-to-home and home-to-work conflict (whereas this was not found for job insecurity). One explanation may be that the most proximal outcome is work-family conflict: Individuals are experiencing this stressor on a daily basis as they are under lockdown.

Overall, these findings speak to our third contribution related to the COR theory. Building on the basic assumptions of COR theory (Hobfoll, 1989, Hobfoll et al., 2018) in integration with Frese and Zapf's model, our work suggested that exposure to stressful events is related to resource loss (i.e., higher strain). In this line, our results show that individuals who have gone through a lockdown and have also experienced significant work-family conflict showed higher mental problems over time. Work-family conflict might drain resources more quickly since individuals with difficulties in balancing work and family will be less capable of stress resistance and more susceptible to further resource losses. The meta-analysis conducted by Amstad and colleagues (2011) also concluded that both types of conflict have negative effects on mental health. In a similar vein, recent findings from panel and diary studies support the spillover model, in which stress from work/home role spills over to the home/work (Carlson et al., 2019; Sanz-Vergel et al., 2015; Sonnentag & Binnewies, 2013). Therefore, it seems that experiencing work-to-home and home-to-work conflict has cumulative effects over time, which exacerbates the increased anxiety and depression derived from the COVID-19 outbreak and the concurrent preventive measures taken. Also, this prolonged exposure to stressors,

and the lack of recovery opportunities from them, may lead to a physiological hyperactivation that results in insomnia (Akerstedt et al., 2012; Neto et al., 2016).

However, please note these studies only analyze linear effects. Indeed, there is a lack of studies examining whether work-home conflict has a cumulative effect on health. Only recently, Borgmann et al. (2020) examined this relationship in a sample of German parents. In their data, work-family conflict does not have a cumulative effect on self-reported general health. The authors call for more research focused on analyzing more points in time. We extend Borgmann and colleagues' study by demonstrating that with more than two points, there is a cumulative effect (at least under the extraordinary circumstances of a pandemic).

Practical implications

Our study also has important practical implications that deserve to be discussed. Directly related to the work domain, from a managerial perspective, organizations should offer regular communication and clarification to staff about what is likely to happen and the measures that they take and are planning to take. In that way, employees will be able to reduce the anxiety due to lack of information and uncertainty (e.g., Boelen & Reijntjes 2009) reducing thus the detrimental consequences of job insecurity on health-related outcomes (Jiang & Probst, 2014).

Also, work-family conflict during the COVID-19 outbreak and its concurrent preventive measures harm mental health-related outcomes in the short term. This has happened in circumstances that required extra attention to family/private issues due to lockdown, but the practical implications of this finding can be applied to other situations like families taking care of relatives with chronic diseases, for example. To reduce work-family conflict, particularly under challenging circumstances, organizations should provide employees with infrastructure and skills so that they can handle work and private

spheres (Fiksenbaum, 2014). For example, organizations can offer training on time management, be mindful of the caring responsibilities, respect, and be flexible with working patterns. Similarly, at home, families can put in place strategies such as negotiating role responsibilities (Voydanoff, 2005) and ensure they dedicate some time for leisure (Hahn et al., 2014).

Limitations and further research

Building on the limitations of this study, we would like to reflect on these by offering opportunities for future research.

To begin with, the specific context of the study makes it difficult to understand what factors could specifically impact strain growth, as the pandemic, social isolation, lockdown, and other relevant psychological phenomena were co-occurring. Additionally, and even if we started our data collection the first day of the lockdown in Spain, strictly speaking, we are not able to study the impact of the COVID-19 outbreak, because no pre-measure was available. Ideally, by having several measures before the beginning of the lockdown, we could model discontinuity on the growth (Bliese & Lang, 2016), which would allow us to clearly study the impact of the outbreak. Therefore, while our results are limited to the examination of the trajectories during the lockdown, future research should employ more complex designs. In addition, besides collecting data during 9-time points comprising 44 days, the lockdown policies were eased at all, and therefore it is possible that our findings only reflect initial stages of the cumulative stress models. Therefore, future studies should combine different time lags in their studies to have a clearer picture of the stressors-strain relationship over time. In doing so, the combination of psychological and physiological measures (see Juster et al., 2010) may contribute to integrate different models that highlight the role of time when addressing the consequences of stress exposure and its potential spillover and crossover effects.

Second, we considered exposure to work-related stressors (i.e., job insecurity and work-family conflict) to establish different starting points between-subjects because we were interested in their role, as vulnerability factors related to the organizational context, in explaining employee mental health and well-being. Further studies may check the changes over time of work-related stressors before, during, and after the COVID-19 outbreak and their association with employee mental health and wellbeing. Moreover, future studies should address reciprocal effects that challenge traditional assumptions in which stressors cause strain as causality could also flow the other way (see Guthier et al., 2020). In that sense, it is possible to argue that mental health impairment may lead to increased exposure to threats of job loss and experience higher work-family conflict.

Third, although we included a heterogeneous sample from all the regions of Spain, our sampling strategy did not allow us to reach a representative sample of the Spanish working population. This could have generated a misrepresentation of specific sectors of the population, for example, people with fewer resources (and no internet access), that are typically more vulnerable (Bartikowski et al., 2018) and that does experience specific difficulties in terms of job accessibility in the Spanish context (Calderon-Gomez, 2019; Campos et al., 2014). Therefore, even if a large part of our sample did not show any increase in our dependent variable, this could also be caused by a underrepresentation of more vulnerable workers in our sample. Directly linked to the previous point, our results come from a specific cultural context, and this could be especially relevant considering the work and family variables included in our study. On the one hand, concerning job insecurity, because of the specificity of the job market, and the specific political actions that took place during the lockdown; on the other hand, concerning work-family conflict, because of the prevalence of specific family structures in the Country and its impact on caregiving habits (Oliva et al., 2014).

Finally, our research context presents some specificities in terms of the social protection system, the healthcare system as well as the so-called welfare state (Esping-Andersen, 1990; Ferrera, 1996) that have to be considered when trying to establish cross-cultural comparisons or generalizing our results to different socio-cultural contexts. Regarding the work of Esping-Andersen, who proposed a typology of welfare states based on power resources (differentiating between the social-democratic model, the liberal model, and the conservative model), Spain has been traditionally classified as a conservative-corporatist case (Arts & Gelissen, 2010). This had strong consequences on the Spanish labor market, which has been characterized for decades by increasingly promoting deregulation, having a segmented structure, and a fragile attachment (Bentolila, 2012). In this line, several sets of measures were implemented to tackle the economical crisis, that resulted in promoting liberalization and austerity, thus facilitating an increase of dismissal and employment instability (Picot & Tassinari, 2014). Specifically related to our model (just as an example) job insecurity could be considered as a psychosocial correlate of an intrinsic feature of our labor market. Therefore, we remark that cross-cultural comparisons should carefully consider those specificities to generalize our results.

Conclusion

Our study, carried out in exceptional circumstances, shows the importance to address mental health from a psychosocial perspective, by considering two key work-related stressors that can severely impact mental strain and their evolution over time: job insecurity and work-family conflict.

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Table 1: *Means, Standard Deviation and between level correlations*

Variable	*Mean*	*SD*	1	2	3	4	5	6	7
1 Age	37.11	11.22	1						
2 Sex	1.25	0.45	.07**	1					
3 House size	102.29	65.94	.11**	-.01	1				
4 Job Insecurity	2.09	1.27	-.15**	-.04**	-.04**	1			
5 Work-to-Home Conflict	1.69	0.76	-.01	-.07**	-.06**	.02*	1		
6 Home-to-Work Conflict	1.48	0.65	-.09**	-.09**	-.03**	.03**	.53**	1	
7 Insomnia	7.68	4.66	-.11**	-.09**	-.07**	.17**	.21**	.21**	1
8 Anxiety and depression	4.14	2.94	-.20**	-.17**	-.11**	.20**	.22**	.27**	.51**

N = 1519
*$p < .05$; **$p < .01$

Table 2. *Discontinuous growth models results to test the time evolution of anxiety and depression.*
(included as separate file)

Table 3. *Discontinuous growth models results to test the time evolution of insomnia.*

(included as separate file)

Figure 1. *curvilinear evolution of anxiety and depression as a function of home-to-work conflict*

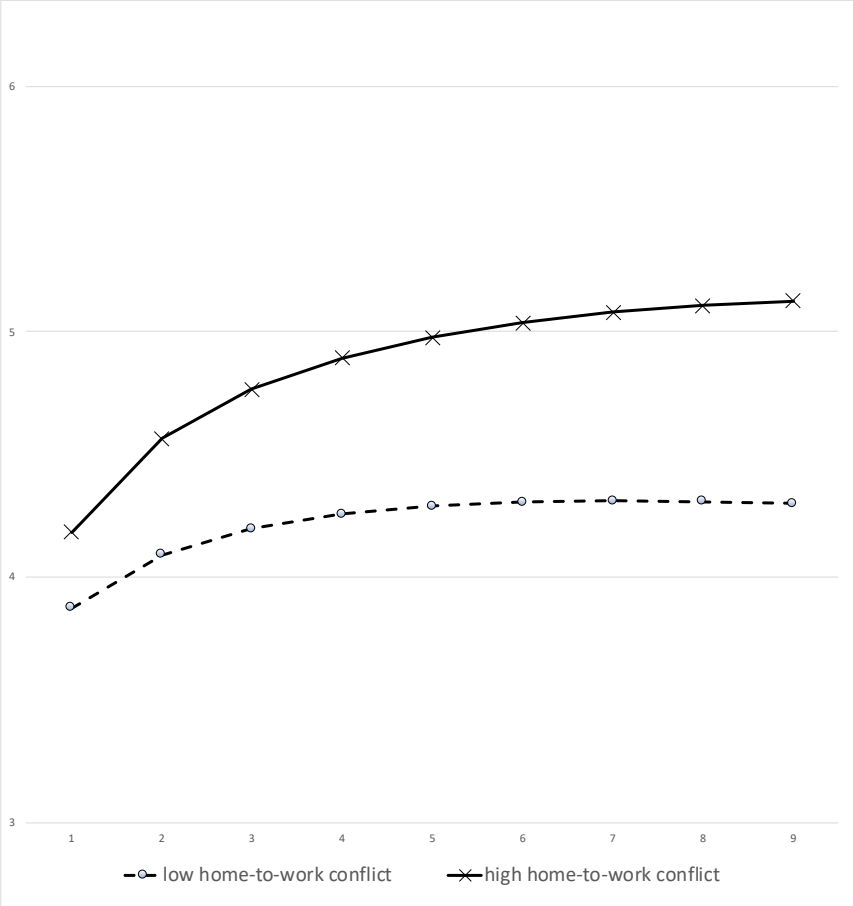


Figure 2. *curvilinear evolution of anxiety and depression as a function of work-to-home conflict*

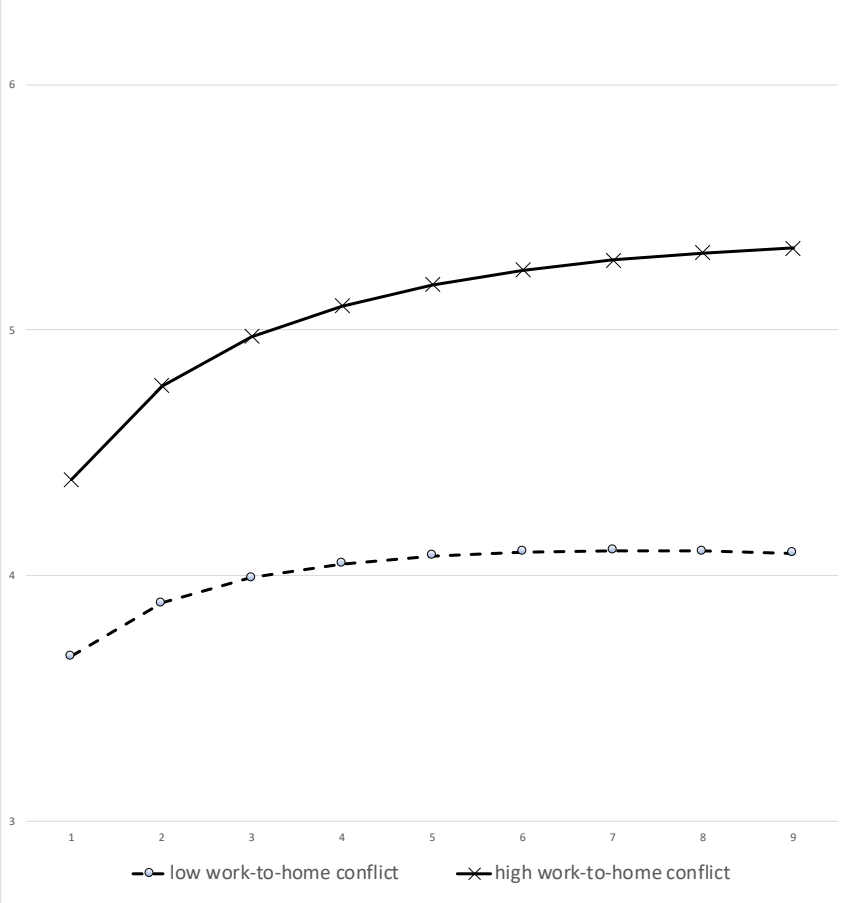


Figure 3. *curvilinear evolution of insomnia as a function of work-to-home conflict*

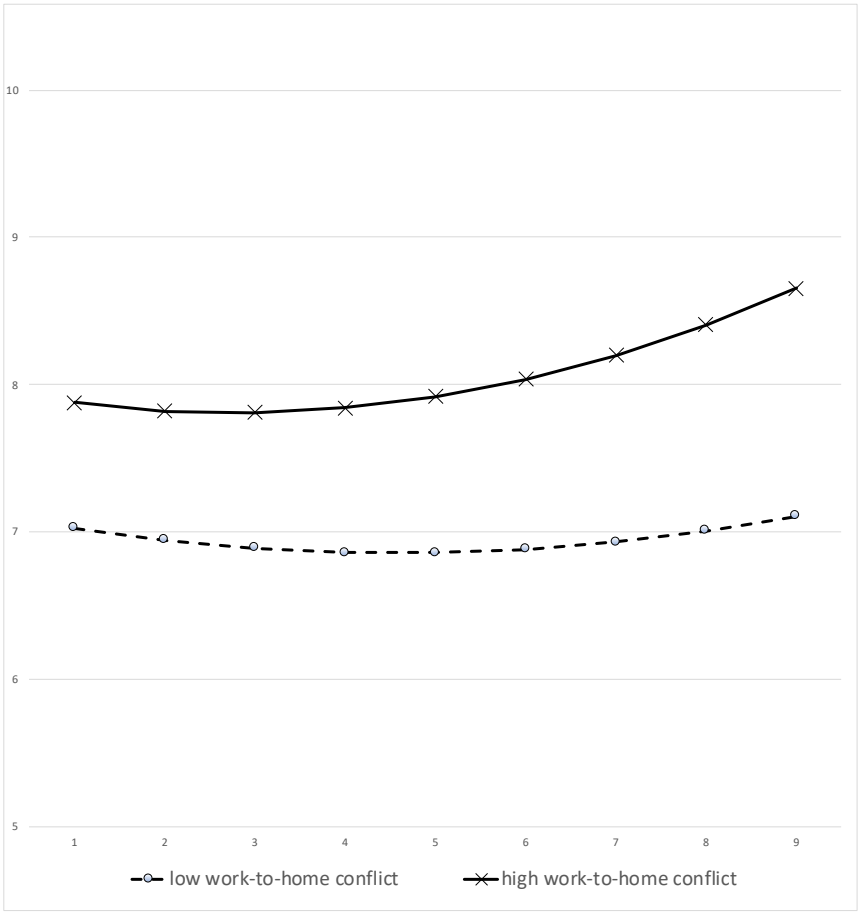
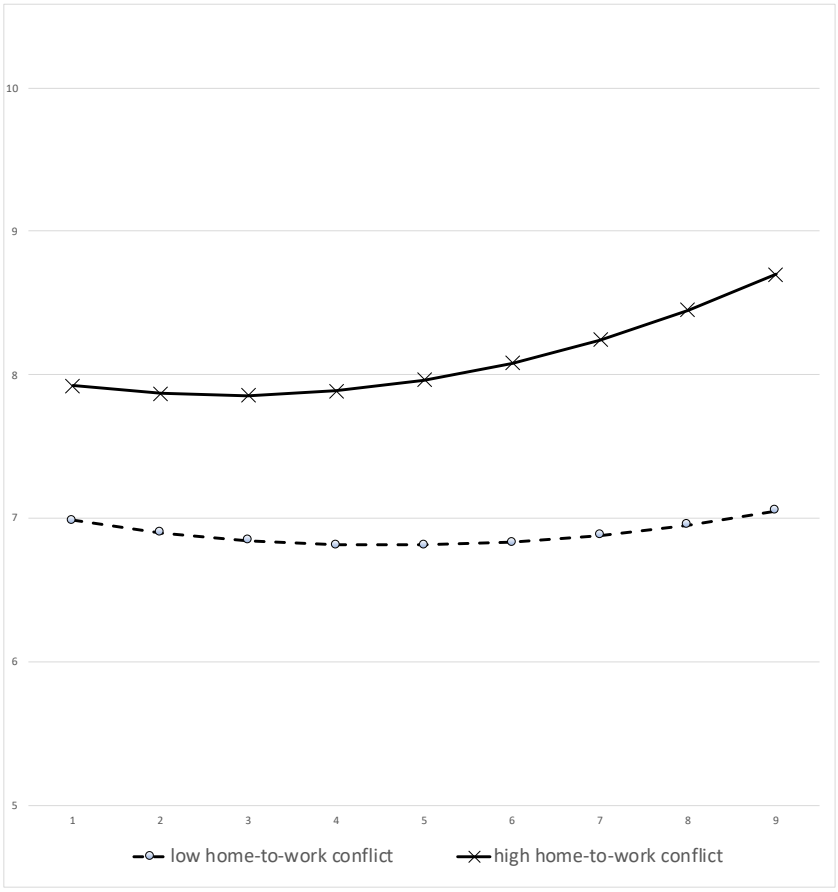


Figure 4. *curvilinear evolution of insomnia as a function of home-to-work conflict*



Endnotes

[i] We additionally run a test for the autoregressive structure and found that a model allowing autocorrelation improved the fit to the data (*Phi* = .16, $p < .01$), so this feature was included in the subsequent model (meaning that we controlled for autocorrelation). Additionally, we checked for heteroscedasticity, as the variance of anxiety and depression may vary over time and found that modeling the increase in variance did not significantly improve the fit to our data (*Lratio* = 3.21, $p = .08$).

[ii] Additionally, we run a test for the autoregressive structure and found that a model allowing autocorrelation fits the data better (*Phi* = -.21, $p < .01$): subsequent models were therefore estimated including this feature. The increase in the variance was excluded because of convergence problems.