

Northumbria Research Link

Citation: Akram, Umair, Mccarty, Kristofor, Akram, Asha, Gardani, Maria, Tan, Alice, Villarreal, Daniel, Bilsborough, Emily, Dooher, Grace, Gibbs, Grace, Hudson, Jess L, Mills, Rachel, Subramaniam, Viknesh and Allen, Sarah (2018) The relationship between Type D personality and insomnia. *Sleep Health*, 4 (4). pp. 360-363. ISSN 2352-7218

Published by: Elsevier

URL: <https://doi.org/10.1016/j.sleh.2018.04.005> <<https://doi.org/10.1016/j.sleh.2018.04.005>>

This version was downloaded from Northumbria Research Link: <http://nrl.northumbria.ac.uk/38311/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)



Northumbria
University
NEWCASTLE

The relationship between Type D personality and insomnia

Umair Akram PhD^{a*}, Kristofor McCarty PhD^b, Asha Akram PhD^c, Maria Gardani PhD^d, Alice Tan^e, Daniel Villarreal^a, Emily Bilborough^a, Grace Dooher^a, Grace Gibbs^a, Jess L Hudson^a, Rachel Mills^a, Viknesh Subramaniam^e, Sarah Allen PhD^b

^aDepartment of Psychology, Sociology and Politics, Sheffield Hallam University, UK

^bDepartment of Psychology, Faculty of Health and Life Sciences, Northumbria University, UK

^cDepartment of Psychology, The University of Sheffield, UK

^dSchool of Psychology, University of Glasgow, UK

^eTunku Abdul Rahman University College, Malaysia, KL

Running-Title: Type D personality and insomnia

For submission to: Sleep Health as a Brief Communication

Words: 1652

References: 26

Number of Tables: 1

Number of Figures: 0

Keywords: Insomnia, Personality, Negative Affect, Social Inhibition, Type D, Sleep

COI: No conflicts of interest declared in relation to this paper.

Funding: This research was supported by the Department of Psychology, Sociology and Politics at Sheffield Hallam University.

***Corresponding Author:** u.akram@shu.ac.uk Department of Psychology, Sociology and Politics, Sheffield Hallam University, Collegiate Crescent, Sheffield, South Yorkshire, S10 2BP, UK.

Abstract

Objectives: Type D personality is characterised by the combination of social inhibition and negative affectivity. This study examined the relationship between Type D personality and insomnia symptoms amongst a sample of the general-population. *Methods:* Adults from the general-population (n=392) completed online measures of Type D personality (DS14) and insomnia severity. *Results:* Individuals with the Type D personality trait reported significantly greater symptoms of insomnia relative to Non-Type Ds. Moreover, insomnia-symptoms were independently related to negative affectivity (NA) and social inhibition (SI) and the Type D interaction (i.e. synergistic product of SI and NA). Linear regression analysis determined that NA but not SI significantly predicted insomnia symptoms after controlling for age and sex. However, after accounting for the Type D interaction, negative affectivity remained the only significant predictor of insomnia-symptoms. *Conclusions:* The Type D personality type appears to be related to insomnia-symptoms, both as a categorical and dimensional construct. These outcomes support prior research evidencing that whilst Type D personality is related to poor sleep in adolescents, NA appears to be the main contributor.

Introduction

Insomnia is influenced by a number of predisposing, precipitating and perpetuating factors, which are behavioural, biological, environmental, or psychological in nature (1). At symptom level, insomnia is highly prevalent, affecting up to 30% of the general population (2,3). An individual's personality may act as a predisposing, and potentially perpetuating, factor of the disorder. Indeed, literature concerning personality concurs that individuals with insomnia exhibit increased neuroticism, internalization, anxious concerns, and negative components of perfectionism (4-7). However, research concerning the relationship between Type D personality and sleep difficulties remains limited (8), with no research to date examining the specific role of insomnia symptoms within the general population.

Type D personality, also known as the *distressed personality*, indicates a joint tendency to experience negative emotions whilst also inhibiting self-expression in social interaction due to a fear of rejection or disapproval by others(9). This personality type is characterised by the two stable traits: negative affectivity (NA) and social inhibition (SI) and it is proposed that it is specifically the synergistic combination of the two traits which is important (9). Type D personality has been associated with a range of negative health outcomes and increased psychological distress (e.g. 10-13). Therefore, considering the nature of Type D personality, and the relationships between personality traits associated with poor-sleep and insomnia (i.e. neuroticism, anxious concerns) (14-15), Type-D personality may theoretically also be related to insomnia. Indeed, amongst a sample of police officers and nurses, Type D personality has been determined as a significant predictor of sleep disturbances (16). More recently, Condén and colleagues (8) determined that adolescents with Type-D personality were at a four times increased risk of having sleep disturbances and reduced total sleep time. Further, associations between Type D personality and sleep problems have also recently been demonstrated in cardiac patients (17,18).

Type D personality was traditionally conceptualised as a categorical variable with individuals scoring above a threshold on both SI and NA are classified as Type D (9), however recent recommendations propose that it is alternatively represented as a dimensional construct (13,19). Therefore, in line with previous studies (e.g.13) Type D will be considered as both a categorical and a continuous variable within the current study. Whilst Type D personality may act as a marker for disturbed sleep amongst adolescents(8), cardiac patients (17,18), police officers and nurses (16), it has yet to be determined whether this extends to members of the general population presenting symptoms of insomnia. Therefore, the present study aimed to examine the relationship between Type D personality and insomnia symptoms amongst a sample of the general population. Specifically, we aimed to determine whether: i) individuals categorised as Type D report increased insomnia symptoms relative to their non-Type D counterparts; ii) dimensions of NA and SI are independently related to insomnia symptoms; and iii) the dimensional Type D construct may have a greater predictive value for insomnia symptoms, over and above that of NA and SI in isolation.

Based on the extant literature to date, we hypothesised that Type D personality would be related to increased symptoms of insomnia. Additionally, we aimed to explore regression analyses utilising the dimensional (NA x SI) interaction to determine the influence of Type D and its components on insomnia symptoms.

Method

Sample and Procedure

A cross-sectional online questionnaire based study was implemented comprising of questions designed to assess the relationship between Type D personality and insomnia symptoms. The study was approved by the Sheffield Hallam University Research Ethics Committee, and all participants provided informed consent.

The survey was advertised to members of the general population through social media, 'call for participants' (website), and students at four Northern UK universities, through each institutions course participation scheme. 459 participants began the survey, and 430 respondents provided complete data. Those who indicated that they conducted shift work, suffered from a disorder of the central nervous system, were currently using medication which effects sleep, or had a prior head injury or reported symptoms of a sleep disorder other than insomnia were excluded from analysis ($n=38$). This resulted in a final sample of 392 participants (mean age= 23.22 ± 9.87 , range 18-76, 75% female). Of note, standard cut-offs of the SLEEP-50 questionnaire (20) was used to ensure the absence of a sleep/wake disorder other than insomnia. (see 'Measures' for details).

Measures

Type D personality was assessed using the 14-item DS14 (9). Specifically, this measure comprises two 7-item subscales to measure NA (e.g. "I often feel unhappy") and SI (e.g. "I am a closed kind of person") with a maximum score of 28 on each scale. Each item is measured on a 5-point Likert scale: (0=false), (1=mostly false), (2=neutral), (3=mostly true), (4=true). Traditionally, Individuals who score high on both subscales represented by a cut-off ≥ 10 are classified as Type D (9). In order to analyse Type D as a dimensional construct, a continuous measure of Type D was computed using the arithmetic product of SI and NA scores. This is in line with recent studies examining the dimensional Type D construct (e.g. 13). Assessment of internal consistency yielded a Cronbach's alpha of .91 for NA and .87 for SI.

Insomnia symptoms were assessed using The Insomnia Severity Index (20) The ISI consists of 7 items examining the severity of insomnia symptoms over the past two weeks including difficulty initiating and maintaining sleep, and awakening too early. Items are scored on a 5-point likert scale, with total scores ranging from 0–28. Higher scores represent greater insomnia severity. Assessment of internal consistency yielded a Cronbach's alpha of .87.

Subscales of the SLEEP-50 (21) ensured the absence of: apnoea, sleepwalking, narcolepsy, restless legs syndrome/periodic limb movement, and circadian rhythm disorder. The SLEEP-50 consists of fifty items; in the current study items relating to insomnia (assessed by the ISI) or sleep hygiene (not a sleep disorder) were omitted. The participants were asked to rate to what extent the items have been applicable in the past month (0=not at all, 4=very much). An example item is: "I am told that I wake up gasping for air". Total scores of: ≥ 15 indicate apnea; ≥ 7 sleepwalking; ≥ 7 narcolepsy; ≥ 7 restless legs syndrome/periodic limb movement; and ≥ 8 a circadian rhythm disorder.

Statistical Analyses

An Independent samples t-test was used to determine any significant difference in the severity of insomnia symptoms between Type D and Non-Type Ds. Moreover, Pearson's bivariate correlational analyses examined the influence of NA, SI and the dimensional Type D interaction (NAxSI) on insomnia symptomology. Finally, hierarchical linear regression analyses (using the enter method) determined whether Type D demonstrated greater predictive value than that of NA and SI considered in isolation. Specifically, age and sex were entered as predictors in step 1; NA and SI in step 2; and the Type D (NAxSI) interaction in step 3. Significance was considered at the $p < .05$ level.

Results

Mean scores for the final sample were as follows: ISI, 8.97 ± 5.51 ; NA, 12.86 ± 6.91 ; SI, 12.09 ± 6.60 ; and the continuous Type D interaction (NAxSI), 181.29 ± 163.99 .

Participants were stratified into Type D individuals ($n=200$, mean age= 22.02 ± 7.54 , 79% female) and Non Type Ds ($n=192$, mean age= 24.12 ± 11.50 , 71% female) for the categorical analysis. The results from this demonstrated that individuals categorised as Type D reported a significantly higher ISI score (10.51 ± 5.35) relative to Non-Type Ds (7.24 ± 5.15 : $t(390) = -6.15, p = .001$).

Pearsons correlational analyses indicated that ISI scores were independently related to NA ($r = .42, p < .001$) SI ($r = .25, p < .001$) and the Type D interaction (SA x NI: $r = .38, p < .001$). Moreover, linear regression analysis determined that negative affectivity but not social inhibition significantly predicted insomnia symptoms (step2: 18% total variance explained after controlling for age and sex (step1: 0.05%variance). Interestingly, after accounting for the Type D interaction, NA remained the only significant predictor of ISI score (step3: 19%variance).

INSERT-TABLE-1

Discussion

The present study aimed to examine the relationship between Type D personality and insomnia symptoms amongst a sample of the general population. Our results provide evidence that the Type D personality type is related to symptoms of insomnia, both as a categorical and dimensional construct. Specifically, using the traditional cut-off (9), those characterised as Type D reported greater symptoms of insomnia relative to non-Type D individuals. Additionally, NA, SI and the multiplicative product of these two components were all independently related to symptoms of insomnia. Interestingly, negative affectivity appeared to be the only predictor of insomnia symptoms when NA, SI, and Type D were entered into the regression model, similarly to a recent dimensional analysis of the relationship between Type D and physical symptoms (13). That said, whilst social inhibition was not a significant predictor in the final model, the contribution of the NAxSI interaction was not far from significant. As such, this tentatively suggests that the synergistic effect of the two components contribute to symptoms of insomnia, thus further supporting the categorical analyses. This further exemplifies the merit of the categorical approach as a predictor for negative outcomes, supporting recent research in the area (22). These outcomes support previous research which determined that whilst Type D personality is related to increased sleep-disturbances in adolescents, negative affectivity appears to be the main contributor (8). Here, however we confirm that this pattern of results extends to adult members of the general population presenting symptoms of insomnia after controlling for the presence of other sleep disorders.

From a cognitive perspective, central to the maintenance of the disorder is the presence of negatively toned cognitive activity, predominantly characterised as worry and rumination in relation to sleep (23). Despite differences in temporal orientation of these factors (i.e. worry is future-oriented; rumination past-oriented), both involve recurring negatively-valenced thoughts (24). For example, rumination may involve thoughts such as *“because I did not sleep last night I cannot concentrate today”*, whereas worry would encompass thoughts such as *“because I feel anxious I will not be able to sleep tonight”*(25,26). The Type D personality type indicates individuals who are particularly vulnerable to the negative consequences of general distress(27). In this context, worry and rumination relating to sleep may be heightened amongst those with this predisposition, in particular those high in negative affectivity.

The present sample was mostly female, and therefore the outcomes may not be entirely generalizable to males. That said, this is in agreement with research showing that women are more likely to experience insomnia and report the Type D personality type relative to men (8,28). The mean age of the sample was also relatively low, suggesting the outcomes may also not generalize to the older population. It is therefore suggested that future studies should employ a larger heterogeneous sample. Nevertheless, the current study extends our knowledge of the relationship between Type D and sleeping problems in a non-clinical sample. Moreover, whilst a comprehensive assessment to address insomnia symptoms from the perspective of diagnostic criteria was used, the current outcomes cannot be extrapolated to individuals meeting diagnostic criteria for insomnia. Further, given the cross-sectional design, the causality of the relationships identified cannot be conclusively defined.

Overall, we expand on previous research using adolescents (8), cardiac patients (17,18), or specialised populations by highlighting the relationship between Type D personality and insomnia symptoms in the general population. Considering this personality-type may act as a predisposition for future illness (9) (e.g. insomnia), research may wish to address targeted sleep interventions for those who indicate the *distressed* personality type.

References

1. Spielman AJ, Caruso LS, Glovinsky PB. A behavioral perspective on insomnia treatment. *Psychiatr Clin North Am.* 1987; 10, 541-543.
2. Espie CA, Kyle SD, Hames P, Cyhlarova E, Benzeval M. The daytime impact of DSM-5 insomnia disorder: comparative analysis of insomnia subtypes from the Great British Sleep Survey. *J Clin Psychiat.* 2012;73 (12); 1478-84.
3. Morin CM, LeBlanc M, Daley M, Gregoire JP, Merette C. Epidemiology of insomnia: prevalence, self-help treatments, consultations, and determinants of help-seeking behaviors. *Sleep Med.* 2006;7(2):123-30.
4. van de Laar M, Verbeek I, Pevernagie D, Aldenkamp A, Overeem S. The role of personality traits in insomnia. *Sleep Med Rev.* 2010;14(1):61-8.
5. Vincent NK, Walker JR. Perfectionism and chronic insomnia. *J Psychosom Res.* 2000;49(5):349-54.
6. Akram U, Ellis JG, Barclay NL. Anxiety mediates the relationship between perfectionism and insomnia symptoms: a longitudinal study. *PloS one.* 2015;10(10):e0138865.
7. Akram U, Ellis JG, Myachykov A, Chapman AJ, Barclay NL. Anxiety mediates the relationship between multidimensional perfectionism and insomnia disorder. *Pers Individ Diff.* 2017;104:82-6.
8. Condén E, Ekselius L, Åslund C. Type D personality is associated with sleep problems in adolescents. Results from a population-based cohort study of Swedish adolescents. *J Psychosom Res.* 2013;74(4):290-5.
9. Denollet J. DS14: standard assessment of negative affectivity, social inhibition, and Type D personality. *Psychosom Med.* 2005;67(1):89-97.
10. Michal M, Wiltink J, Grande G, Beutel ME, Brähler E. Type D personality is independently associated with major psychosocial stressors and increased health care utilization in the general population. *J Affect Disord.* 2011;134(1):396-403.
11. Mols F, Denollet J. Type D personality in the general population: a systematic review of health status, mechanisms of disease, and work-related problems. *Health Qual Life Outcomes.* 2010;8(1):9.
12. Schiffer AA, Pedersen SS, Widdershoven JW, Hendriks EH, Winter JB, Denollet J. The distressed (type D) personality is independently associated with impaired health status and increased depressive symptoms in chronic heart failure. *Eur J Cardiovasc Prev Rehabil.* 2005;12(4):341-6.
13. Stevenson C, Williams L. Type D personality, quality of life and physical symptoms in the general population: a dimensional analysis. *Psychol Health.* 2014;29(3):365-73.
14. Watson D, Pennebaker JW. Health complaints, stress, and distress: exploring the central role of negative affectivity. *Psychol Rev.* 1989;96(2):234.
15. Williams PG, Moroz TL. Personality vulnerability to stress-related sleep disruption: Pathways to adverse mental and physical health outcomes. *Pers Individ Diff.* 2009;46(5-6):598-603.

16. De Fruyt F, Denollet J. Type D personality: A five-factor model perspective. *Psychol Health*. 2002;17(5):671-83.
17. Habibović M, Mudde L, Pedersen SS, Schoormans D, Widdershoven JW, Denollet J. Sleep disturbance in patients with an implantable cardioverter defibrillator: Prevalence, predictors and impact on health status. *Eur J Cardiovasc Nurs*. 2018:1474515117748931.
18. Juskiene A, Podlipskyte A, Bunevicius A, Varoneckas G. Type D Personality and Sleep Quality in Coronary Artery Disease Patients With and Without Obstructive Sleep Apnea: Mediating Effects of Anxiety and Depression. *Int J Behav Med*. 2018:1-2.
19. Ferguson E, Williams L, O'Connor RC, Howard S, Hughes BM, Johnston DW, Allan JL, O'Connor DB, Lewis CA, Grealy MA, O'Carroll RE. A taxometric analysis of type-D personality. *Psychosom Med*. 2009;71(9):981-6.
20. Bastien CH, Vallières A, Morin CM. Validation of the Insomnia Severity Index as an outcome measure for insomnia research. *Sleep Med*. 2001;2(4):297-307.
21. Spoomaker VI, Verbeek I, van den Bout J, Klip EC. Initial validation of the SLEEP-50 questionnaire. *Behav Sleep Med*. 2005;3(4):227-246.
22. Timmermans I, Versteeg H, Duijndam S, Graafmans C, Polak P, Denollet J. Social inhibition and emotional distress in patients with coronary artery disease: The Type D personality construct. *J Health Psychol*. 2017;1:1-16.
23. Harvey AG. A cognitive model of insomnia. *Behav Res Ther*. 2002;40(8):869-93.
24. Hiller RM, Johnston A, Dohnt H, Lovato N, Gradisar M. Assessing cognitive processes related to insomnia: a review and measurement guide for Harvey's cognitive model for the maintenance of insomnia. *Sleep Med Rev*. 2015;23:46-53.
25. Carney CE, Harris AL, Falco A, Edinger JD. The relation between insomnia symptoms, mood, and rumination about insomnia symptoms. *J Clin Sleep Med*. 2013;9(6):567.
26. Thomsen DK, Mehlsen MY, Christensen S, Zachariae R. Rumination—relationship with negative mood and sleep quality. *Pers Individ Diff*. 2003;34(7):1293-301.
27. Denollet J, Conraads VM. Type D personality and vulnerability to adverse outcomes in heart disease. *Cleve Clin J Med*. 2011;78(1):13-19.
28. Zhang B, Wing YK. Sex differences in insomnia: a meta-analysis. *Sleep*. 2006;29(1):85-93.