

## Type D Personality: A Narrative Review

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**ABSTRACT**

*Type D personality is prevalent in approximately one third of individuals with chronic pain and cardiovascular conditions. Type D personality has been associated with several psychological problems including eveningness, mood disorders, eating disorders, addiction, ageism, and suicidal ideation. Eveningness has been the diurnal preference of those with a Type D personality. At least one mood disorder was noted in 70% of Type D samples including depression in 60%, social phobia in 40%, generalized anxiety disorder in 30% and personality disorder in 43%. Several physical problems have also been noted for Type D personality including myofascial pain, fibromyalgia, migraine headaches and insomnia. Diseases that have been associated with Type D personality include infertility, skin problems, cardiovascular disease, cancer and white matter hyperintensity in the brain. A few buffers and interventions have been the focus of research on Type D personality including self-management, interpretation bias modification, and dyadic coping. Methodological limitations of this literature include that sampling has been limited primarily to clinical populations and those clinical conditions have confounded the effects of type D personality.*

**Keywords**

Type D personality, Chronic pain, Cardiovascular disease, Psychological distress, Depression, Anxiety disorders, Social phobia.

Type D personality where the D stands for distressed is defined as a tendency to experience a combination of negative emotions and social inhibition. Those individuals with type D personality tend to be irritable and gloomy and suppress their feelings to avoid rejection. Other emotions they experience include pessimism, anxiety and insecurity. Type D personality has typically been measured by the Type D Personality Scale-14 which has 14 items including 7 for negative affectivity and 7 for social inhibition. Type D has been contrasted to non-distressed type A and B personalities.

Type D personality is prevalent in approximately one third of chronic pain and cardiovascular samples. For example, in a university spine clinic sample of 300 (18 to 85 years old), the prevalence of Type D personality was 32% [1]. In this sample, those individuals with Type D personality had greater pain intensity, anxiety, depression, and disability.

**Psychological Problems**

Type D personality has been associated with several psychological problems. These include eveningness, mood disorders, eating disorders, smart phone addiction, ageism, and suicidal ideation (see Table 1).

**Table 1:** Psychological problems associated with Type D personality (and first authors).

Psychological Problems	First Authors
Eveningness	Stevenson
Mood disorders	Dammen
Eating disorders	O'Riordan
Smartphone addiction	Xie
Ageism	Piterman
Suicidal ideation	Laoufi

**Eveningness** has been the diurnal preference of those with a Type D personality [2]. In this sample (N= 864), Type D personality was associated with eveningness. Other correlates of eveningness were negative affect and social inhibition, which wasn't surprising as they are the two Type D factors. These were accompanied by perfectionistic doubts and concerns as well as increased perception

of critical parental evaluation, all of which seem theoretically and empirically related.

In a sample of adults with coronary heart disease and type D personality (N=47), at least one **mood disorder** was noted in 70% of the sample including depression in 60%, social phobia in 40%, generalized anxiety disorder in 30% and personality disorder in 43% [3]. Metacognition and rumination were associated with negative affectivity in 53% of this sample. But no social inhibition was noted. It's not clear whether these disorders derived from coronary heart disease, Type D personality, depression or possibly all three conditions. Surprisingly, despite all these problems, only 21% of the sample were on medications, and nobody was receiving psychotherapy.

Type D personality has also been associated with **eating disorders** [4]. In this sample (N= 751 with a mean age of 19 years old), serial mediating effects were noted including social support and perceived stress. To have both positive and negative serial mediators was unusual.

Type D personality has also been associated with **nomophobia and smartphone addiction** in Chinese university freshmen [5]. In this sample (N = 653), those with type D personality had nomophobia (fear of losing your phone) and metacognitions (awareness and self-regulation of one's own cognitive processes) about smartphone use which in turn led to smartphone addiction. Without a stepwise regression, it's not clear how much the metacognitions and the nomophobia contributed to smartphone addiction, although there are data on the relationship between nomophobia and smartphone addiction [6].

**Ageism** has also been associated with Type D personality. In a study entitled "Ageism and Type D personality- the protective role of self-esteem and perceived social support", the results for this study (N = 247 community volunteers) are in the title [7]. Ageism as a form of discrimination could certainly lead to both aspects of Type D personality including negative emotions and social inhibition. And self-esteem and perceived social support would be expected to be protective against ageism and type D personality.

Type D personality has also been considered a risk factor for **suicidal ideation** in major depressed individuals (N= 318 major depressed individuals) [8]. In this sample, suicidal ideation was as prevalent as 38%, which is not surprising since the sample was major depressed individuals who are at significant risk for suicidality.

### Physical Problems

Several physical problems have been noted for Type D personality. These include myofascial pain, fibromyalgia, migraine headaches and insomnia (see Table 2).

In the study on **myofascial pain** syndrome, Type D personality was a notable risk factor [9]. Other risk factors for myofascial pain syndrome in this sample were sexual dysfunction and childhood

trauma. The relative contribution of each of these risk factors was not clear, again because a stepwise regression was not conducted, although each of these risk factors would be considered severe.

**Table 2:** Physical problems associated with Type D personality (and first authors).

Physical problems	First authors
Myofascial pain	Uzgel
Fibromyalgia	Simsek, Topal, Ozlu, Gokcen
Migraine headaches	Cho
Insomnia	Uygur

Several studies on **fibromyalgia** have appeared in this literature. In one sample of patients with fibromyalgia (N= 159), the prevalence of Type D personality was 36% [10]. Other risk factors for fibromyalgia were depression, anxiety and somatosensory amplification. Again, because a regression was not performed, the relative importance of these risk factors is not known.

An even greater prevalence of Type D personality was noted in a study comparing patients with fibromyalgia (N=50) versus healthy control participants (N=50) [11]. In this comparison, as many as 60% of the fibromyalgia patients had Type D personality while only 24% of the healthy control participants had Type D personality. Comorbid depression likely explained the high prevalence of 60%, although depression wasn't measured.

A similar prevalence of 64% was noted for Type D personality in a larger sample of individuals with fibromyalgia (N=140) [12]. In this sample, Type D personality was correlated with depression, as might be expected and could explain the high prevalence of 64%.

Depression was also correlated with Type D personality in a sample of 70 patients with fibromyalgia, as was anxiety [13]. That both depression and anxiety were correlated with Type D personality is not surprising as depression and anxiety are frequently comorbid. Lower self-esteem and lower health status were also associated with Type D personality in this sample. That these authors measured both psychological and physical variables as potential mediators was unusual.

Patients with **migraine headaches** have also experienced Type D personality which has, not surprisingly, negatively affected their quality of life (N= 135 patients with migraine headaches in South Korea) [14]. In this sample, as many as 45% experienced Type D personality which again, not surprisingly, intensified their migraine headaches and lessened their quality of life.

Given all these comorbidities of Type D personality, it is perhaps not surprising that **insomnia** has also been a problem associated with Type D personality [15]. In this survey study (N=474), sleep reactivity, sleep effort and sleep hygiene were mediators between Type D personality and insomnia. These sleep mediators are clearly theoretically as well as empirically related to insomnia.

### Diseases

Several diseases have been associated with Type D personality.

They include the relatively unrelated conditions of infertility, skin problems, cardiovascular disease, and cancer (see Table 3).

**Table 3:** Diseases associated with Type D personality (and first authors).

Diseases	First authors
Infertility	Nho, Tola, Wang
Skin disease (acne, psoriasis, melanoma, atopic dermatitis)	Sanchez-Diaz
Cardiovascular disease	Wang, Grinberg
Vascular health	Flangman
Hypertension	Ye
Lower cardiovascular reactivity	O’Riordan
Mortality	Kauw
Breast cancer	Wyciechouska
White matter hyperintensity	Yao

At least two studies in this literature have addressed the relationship between Type D personality and **infertility**. In one study, correlations were noted among Type D personality, fatigue and quality of life in infertile women [16]. In this sample (N=149 infertile women), as many as 41% were reported to have Type D personality. It’s not clear if the Type D personality led to infertility or the reverse or whether Type D personality and infertility were reciprocally related in this cross-sectional study.

In a study entitled “Fertilization success among women with unexplained infertility”, clinical pregnancy was negatively associated with Type D personality after successful *in vitro* fertilization (N=256) [17]. In a similar study on couples undergoing *in vitro* fertilization (N=452 infertile couples), dyadic coping was said to be effective [18]. These results were based on variables that were actor-partner interdependent.

**Skin disease** has been associated with type D personality in 20 studies that appeared in a systematic review (N= 3124 participants) [19]. In this review, several skin diseases were associated with Type D personality including acne, psoriasis, melanoma, and atopic dermatitis.

At least eight studies have appeared in this literature on the relationship between **cardiovascular disease** and Type D personality. In one study entitled “The combined impact of Type D personality and depression on cardiovascular events after myocardial infarction”, the results are given in the title [18]. In this sample (N= 3568), cardiovascular events appeared after myocardial infarction that was reputedly a combination effect of Type D personality and depression. Although the authors implied that Type D personality and depression caused cardiovascular events as well as myocardial infarction, this was not a longitudinal study in which directionality or causality could be determined. Those problems could have been bi-directional.

**Atrial fibrillation** patients have also been known to have Type D personality components including negative emotions and social inhibition [20]. In this sample of atrial fibrillation patients, as many as 63% were noted to have Type D personality.

In another sample (N=146 adults 30 to 85 years old), an association was reported between Type D personality and **cardiovascular disease history** [21]. In this sample, 27% had a history of cardiovascular disease and 43% had Type D personality based on the Type D Personality Scale–14. Those who had cardiovascular disease had greater distress and those who had both cardiovascular disease and Type D personality had greater depression, anxiety, and stress. Not surprisingly, the group with comorbid cardiovascular disease and Type D personality had more mood disorders.

In a study on the association between Type D personality and **vascular health** in adolescents (N=645), negative affectivity, abdominal circumference and pulse rate were negatively associated with vascular health [22]. Vascular health was positively associated with stress tolerance and management as well as exercise in this sample. Surprisingly, exercise has rarely appeared in this literature even though it would at least be expected to reduce the depression, anxiety and stress associated with Type D personality.

In a sample of patients with **hypertension** (N=324) Type D personality was positively correlated with hypertension [23]. This relationship was noted for the negative affectivity component of Type D personality but not the social inhibition component. Likely the negative affectivity component of Type D personality would more often be correlated with these diseases as opposed to the social inhibition component, although that is unknown as most of the studies have used the total Type D personality score rather than the component scores.

In contrast, Type D personality has been associated with **lower cardiovascular reactivity** in women [24]. In this sample (N=173 undergraduate students), Type D personality predicted lower systolic blood pressure reactivity to a mental arithmetic stressor among females. The authors referred to this as “blunted cardiovascular reactivity”. This was one of the few experimental studies in this literature as most findings have been based on survey data. It’s not clear why in “blunted cardiovascular reactivity” systolic blood pressure was lower but diastolic blood pressure was not given that changes in systolic and diastolic blood pressure typically co-occur.

In a systematic review and meta-analysis by the author of the arithmetic stressor study, Type D personality was also a risk factor for cardiovascular reactivity in as many as 17 studies [25]. In these studies, lower blood pressure reactivity was a response to acute psychological stress (non-social stressors), again in females. In still another cardiovascular sample (N= 1055 with congenital heart disease), Type D was a risk factor for as severe an outcome as mortality [26].

**Breast Cancer** has been associated with Type D personality in at least one study in this current literature. In this sample, Type D personality traits and the Big Five personality traits were related. The Big Five personality traits included neuroticism and openness, and the Type D personality trait was specifically negative affectivity. Although the inclusion of both types of personalities in

the same study is unusual, the findings across the different types of personality in this study are consistent as the Big Five neuroticism and openness traits have also been considered negative traits.

**White matter hyperintensity** (indicating small vessel disease or neuronal damage) has been associated with negative affectivity in the only study that addressed a potential underlying biological mechanism in this literature [27]. In this study, negative affectivity was a risk factor for severe brain conditions including ischemic stroke and white matter hyperintensity.

### Buffers and Interventions

A few buffers and interventions have been the focus of research on Type D personality. They include self-management, interpretation bias modification, and dyadic coping (see Table 4).

**Table 4:** Buffers and interventions for Type D personality (and first authors).

Buffers and interventions	First authors
Self-management	Lu, Kim
Online interpretation bias modification	Mousavi
Dyadic coping	Wang

**Self-management** was a buffer for Type D personality in two studies on elderly patients. In one study, elderly patients with chronic heart failure (N=173) were assessed during hospitalization and at 1,3,6 and 12 months post-hospitalization [28]. In this sample, self-management of Type D personality included management of medication, diet, psychological and social adaptation.

In the other study on **self-management**, the sample was comprised of older adults in long-term care hospitals (N=287) [29]. In this study, Type D personality, cognitive illness perception, depression, and approach coping contributed to 79% of the variance in self-management. This is a surprising combination of both positive and negative variables that contributed to such a significant amount of the variance in self-management.

In the **online interpretation bias modification** study, Type D personality college students (N=84) were randomly assigned to 10 sessions of android application-based interpretation bias modification across a period of 8 weeks [30]. The results were decreased withdrawal and disengagement of the students. It's not clear why this research group didn't refer to the decrease in withdrawal and disengagement as a decrease in the social inhibition component of Type D personality which is specifically what they measured.

**Dyadic coping** (the joint process of partners managing stress together and using shared strategies to reduce tension) was a buffer for Type D couples experiencing in vitro fertilization treatment in a study already reviewed [18]. Given that the problem of infertility is a shared problem, the shared coping by the partners was not surprising.

### Methodological Limitations of this Literature

Several methodological limitations can be noted for this literature.

They include sampling, data collection and data analysis limitations.

Sampling has been limited primarily to clinical populations. These have been typically chronic pain and cardiovascular samples. This limited sampling suggests that the results may not generalize to non-clinical samples.

Many Type D Personality effects are likely more related to the comorbid clinical problems of the Type D personality individuals which have confounded the effects of Type D personality. In addition, most of the negative effects are also associated with depression and other mood disorders like anxiety, which would also confound the Type D personality effects. Stepwise regressions have not been conducted to determine the relative contributions of the Type D personality and comorbid conditions to the negative effects. The analyses have typically been mediation/moderation analyses rather than stepwise regression which do not enable the determination of the relative contributions of predictor variables. Further, some serial moderators have been both positive and negative and seem to have been arbitrarily selected by the researchers and may be considered biased or "pet variables".

The negative emotions component of Type D personality likely explains most of the negative effects rather than the social inhibition component. But the total Type D personality total score was typically used rather than the component scores.

Most of the data have been derived from surveys rather than experimental and observational data that have been rare in this current literature on Type D personality. Despite these limitations, the Type D personality characteristics have been clearly delineated in this literature and will help inform future research. Future research may include not only the total Type D personality score, but also the scores for the negative emotions and social inhibition components. Regression analysis can determine the relative importance of these components. Comparisons might also be made between Type D and other personality types, for example, Type A and Type B, which by themselves have very limited literatures.

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