

# Type D personality versus the Big Five personality traits and the experience of Social Anxiety

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## **Abstract**

This study aimed to investigate whether or not the Type D personality corresponds with the combination of a high score on neuroticism and a low score on extraversion from the Big Five personality. We hypothesized that the Type D personality is not a differential construct and would not show more predictive value than the Big Five scale on social anxiety. Participants were Tilburg University students who filled in several questionnaires. Correlations and logistic regressions were used to analyse the data. This showed that the Type D personality indeed corresponds with the combination of a high score on neuroticism, and a low score on extraversion. However, the Type D personality showed more predictive value on social anxiety than the Big Five scale did. This leads to the idea that the Type D personality could be more often used as a predictor of emotional distress in the general population. Currently, the Type D personality is mostly used as a predictor of psychological distress and morbidity in cardiac patients. It is also used as a predictor of mental and physical well-being in non-cardiovascular patients. Application in non-patients is underused, but this line of research could be deployed to promote the validity of the Type D personality for mental or emotional distress in non-patients, the general population, as well.

**Key words:** Type D personality, Big Five, extraversion, neuroticism, social anxiety, predictor.

## **Introduction**

For many years, psychologists have tried to identify and categorize personalities into different groups of individuals. As a result, various models of personality exist and are used today. One of these models is the Five-Factor Model, or perhaps better known as the Big Five (Widiger & Trull, 1997). The Big Five is considered an influential model, especially in the 1990s (De Vries, Tybur, Pollet, & Van Vught, 2016). It is a model that has regularly been attempted to be perfected by researchers (Costa & McCrae, 2008). It states that there are five major dimensions of personality, namely: neuroticism versus emotional stability; extraversion versus introversion; conscientiousness; agreeableness versus antagonism; and openness versus closeness to experience (Widiger & Trull, 1997). The personality of an individual is measured among these different dimensions and together they form a depiction, as comprehensive as possible, of the individual's personality.

Another way of categorizing individuals which is often used nowadays, is by dividing them into 'type groups'. A much debated type for instance, is the Type D personality. Despite the name, the Type D personality is not based on specific personality traits but rather characterized by the combination of two stable personality traits: negative affectivity and social inhibition (Denollet, 2000; Denollet & Van Heck, 2001). Negative affectivity stands for experiencing negative emotions such as sadness, anger and worry. Social inhibition is defined by the inhibition of emotions and behavioural expressions during social interaction (De Fruyt & Denollet, 2002; Denollet, 2005). Over the years, various studies have shown that the Type D construct can be used as a predictor of psychological distress and morbidity in cardiac patients, and as a predictor of mental and physical well-being in non-cardiovascular patients (Williams & Wingate, 2012). However, the construct can be used in the general population as well (Williams & Wingate, 2012; Mols & Denollet, 2010). For example, the construct can be used as a predictor in the general population for different aspects of mental or emotional distress, such as depression, stress, anxiety and social anxiety (Mols & Denollet, 2010; Svansdottir et al., 2013).

Social anxiety is defined as anxiety resulting from the presence or anticipation of personal evaluation in social situations (Schlenker & Leary, 1982; Hofmann & DiBartolo, 2010). These social situations can be real or imaginary and are situations in which an individual can become the centre of attention. For example when the individual is engaged in a conversation or knows that he will have to give a speech. The important difference between social anxiety and other forms of anxiety is therefore the feared prospect of people making

judgments of the individual (Schlenker & Leary, 1982). This aspect is a unique component of social anxiety (Boelen & Reijntjes, 2009) that is absent in other forms of anxiety. Social anxiety can among other things lead to feelings of belief that one is not capable of achieving self-presentational goals, hesitation, minimal self-disclosure, inhibition and withdrawal from social situations, and interfered academic performance (Schlenker & Leary, 1982; Strahan, 2013). Also the study of negative affectivity in socially anxious youth is growing (Hofmann & DiBartolo, 2010). Especially inhibition in social situations and negative affectivity are outcomes that are recognizable from the Type D personality. This shows that the Type D construct could serve as a good predictor of social anxiety.

Despite findings on the predictive value of the Type D construct, an often heard criticism is that it is not new and not differential enough. The characteristics of the Type D personality overlap with the Big Five dimensions of neuroticism and extraversion (Howard & Hughes, 2012; Denollet & Van Heck, 2001). Individuals with Type D personality score high on neuroticism which is reflected in negative affections, and low on extraversion which is reflected in social inhibition. Results showed as well that the Type D personality could be represented by the combination of low extraversion and high neuroticism (Howard & Hughes, 2012). However, the Type D construct was created to distinct ‘a homogeneous subgroup’ by measuring the combination of two stable personality traits and not to measure aspects of personality that are not sufficiently defined (Denollet & Van Heck, 2001).

Nonetheless, it is questionable whether or not the Type D individuals and the high-neuroticism and low-extraversion individuals really are two different ‘groups’ of people. In this study, which built forwards from the study by Howard and Hughes (2012), we focus on the predicting values of the Type-D construct and Big Five personality on social anxiety to see if Type D individuals are in fact individuals who score high on neuroticism, and low on extraversion. It is important to study the predicting values of these constructs on social anxiety because we need to know whether or not we are dealing with two different constructs. Therefore this study aims to investigate whether or not the Type D personality corresponds with the combination of a high score on neuroticism and a low score on extraversion. By doing this, we hypothesize that the Type D personality is not a differential construct. If we compare the Type D personality with the Big Five personality for predictive value on social anxiety, we predict that the Type D personality will not show more predictive value than the Big Five scale.

## **Method**

### *Participants and procedure*

This study is part of the “INHIBIT” study which has been conducted at Tilburg University. Participants were recruited through convenience sampling: they were first-year psychology students from Tilburg University, who received credits for participation. No exclusion criteria were used. The average age of the participants was 20.32 years old ( $N = 209$ ,  $SD = 2.08$ ), with 76.2% being female. Participants filled in several questionnaires (translated into Dutch) in approximately 40 minutes at home. All used questionnaires from this study have been added to the appendix for further perusal (see appendix B).

### *Primary questionnaires*

#### *DS-14*

The DS-14 has been used to identify participants as Type-D personalities and non-Type-D personalities. The questionnaire consists of 14 items. Seven of these items are determined to measure negative affectivity (NA) and seven items measure social inhibition (SI). The items are answered on a five-point Likert scale (0 = strongly disagree, 4 = strongly agree). Examples of these items are “*I often feel unhappy*” for NA and “*I find it hard to start a conversation*” for SI. Possible scores ranged from 0 to 56 and the cut-off score was set on 28.

Previous research has shown that NA and SI scales are internally consistent ( $\alpha = 0.88/0.86$ ). In addition, the results were stable over a period of eighteen months, and not affected by mood or health status (Denollet, 2005; Bergvik, Sørli, Wynn, & Sexton, 2010). Furthermore, the DS-14 showed high construct validity with the NEO-FFI and a three-month test–retest reliability of  $r = .72/.82$  (Denollet, 2005). NA and SI were positively correlated with the neuroticism scale of the NEO-FFI ( $r = 0.68/0.43$ ) and negatively correlated with the extraversion scale of the NEO-FFI ( $r = -0.36/-0.59$ ) (Denollet, 2005; Bergvik et al., 2010).

#### *BFI*

The BFI has been used to measure the Big Five components extraversion and neuroticism. The questionnaire consists of 44 items to measure the Big Five components, of which eight items are used to measure extraversion/introversion and eight items to measure neuroticism/emotional stability. The items are answered on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Examples of these items are “*I see myself as someone who is talkative*” for extraversion and “*I see myself as someone who worries a lot*” for neuroticism. Possible scores ranged from 0 to 40 and the cut-off score was set on 20.

The scales of the BFI have shown good internal consistency ( $\alpha = 0.83$ ) and convergent validity with corresponding scales of Goldberg's adjectives and Costa and McCrae's NEO-FFI (Denissen, Geenen, van Aken, Gosling, & Potter, 2008).

#### *SIAS-10*

The SIAS-10 has been used to measure the amount of social anxiety among participants. The questionnaire consists of ten items to measure social (interaction) anxiety. The items are answered on a five-point Likert scale (0 = not at all, 4 = exceedingly). Examples of these items are “*I have difficulty making eye-contact with others*” and “*I find myself worrying that I won't know what to say in social situations*”. Possible scores ranged from 0 to 40 and the cut-off score was set on 20. Recently this questionnaire has been validated for the Dutch general population with a Cronbach's alpha of 0.92 respectively and sufficient discriminant and construct validity (Kupper & Denollet, 2012; Kupper & Denollet, 2014).

#### *Secondary questionnaires*

##### *GAD-7*

The GAD-7 has been used to measure significant differences within the sample group in Generalized Anxiety Disorder (GAD). The questionnaire consists of seven items to measure generalized anxiety. The items are answered on a four-point Likert scale (0 = not at all, 3 = almost every day). An example of an item is “*Over the past two weeks, how often have you been bothered by the following problems: feeling nervous, anxious or on edge?*”. Possible scores ranged from 0 to 21 with a higher score indicating more severe GAD. The GAD-7 has shown excellent internal consistency ( $\alpha = .92$ ) and strong construct validity (Spitzer, Kroenke, Williams, & Löwe, 2006).

##### *PHQ-9*

The PHQ-9 has been used to measure significant differences within the sample group in depression. The questionnaire consists of nine items to measure depression and its severity. The items are answered on a four-point Likert scale (0 = not at all, 3 = almost every day). An example of an item is “*Over the last 2 weeks, how often have you been bothered by any of the following problems: Little interest or pleasure in doing things?*” Possible scores ranged from 0 to 27 with a higher score indicating more severe depression. The PHQ-9 has excellent internal consistency ( $\alpha = 0.89$ ) and strong construct validity (Kroenke, Spitzer, & Williams, 2001).

### *Statistical analyses*

All analyses have been conducted by using IBM SPSS Statistics 24. As briefly mentioned before, we first have set the cut-off score for Type D personality (DS-14) to examine baseline differences in participant characteristics between participants with Type D personality and non-Type D personality. If participants were exactly at the cut-off score (= 28), they were included as non-Type D personality. The same has been done for extraversion and neuroticism (BFI), to examine baseline differences in participant characteristics between extravert and non-extravert participants, and neurotic and non-neurotic participants (cut-off score = 20). Student's t-tests were then done in case of continuous variables, and chi-square tests in case of categorized variables to compare the groups. If assumptions for the chi-square test were violated, Fisher's Exact tests have been used instead.

For the first hypothesis, that the Type D personality corresponds with the combination of a high score on neuroticism and a low score on extraversion, we have examined the bivariate correlation between Type D personality and neuroticism and extraversion. This in order to see if (and how) Type D personality and neuroticism and extraversion are related to each other.

For the second hypothesis, that the Type D personality will not show more predictive value than the Big Five scale, a binary logistic regression has been conducted to test whether or not the DS-14 and the two Big Five dimensions can predict social anxiety. Analyses will show which construct is the best predictor of social anxiety, and how much the predictions by the DS-14 and the two dimensions of the BFI differ from each other. It will help us answer what this means for the Type D construct and thus whether or not the Type D individuals and the high-neuroticism and low-extraversion individuals really are two different 'groups' of people.

## **Results**

### *Baseline Characteristics*

Before testing our hypotheses, a couple of analyses were conducted in order to highlight significant differences within the sample group. The sample group itself existed of 209 participants, with an average age of 20.32 ( $SD = 2.08$ ). Of all participants, 76.2% was female. The majority was single ( $N = 121$ ) or in a relationship but not living together ( $N = 68$ ). Most participants had finished secondary education ( $N = 118$ ) or high school ( $N = 64$ ) as their

highest level of education so far and most participants were studying ( $N = 193$ ) and/or working part-time ( $N = 84$ ).

Analyses of the sample group showed that there was a significant difference in gender on neuroticism, with more women in the neurotic group than expected ( $X^2 = 15.28$ ,  $df = 1$ ,  $p = .000$ ). According to Cramer's  $V$ , this was a small dependence (*Cramer's  $V = .27$* ). There was a difference in neuroticism on Generalized Anxiety Disorder (GAD) as well, with more neurotic participants having mild, moderate or severe GAD than expected ( $LR = 14.93$ ,  $df = 3$ ,  $p = .002$ ). According to Cramer's  $V$ , this was a small dependence (*Cramer's  $V = .24$* ). Furthermore, levels of extraversion differed among age groups, with extravert people being significantly older ( $t = 2.78$ ,  $df = 205$ ,  $p = .006$ ). Extravert participants were also more often in a relationship (with or without living together) or married than non-extravert participants ( $LR = 8.97$ ,  $df = 3$ ,  $p = .03$ ). According to Cramer's  $V$ , this was a small dependence (*Cramer's  $V = .18$* ).

The only significant differences found in Type D personality were on depression and Generalized Anxiety Disorder (GAD). Participants with Type D personality had more mild, moderate or severe depressions than participants without Type D personality ( $LR = 15.27$ ,  $df = 3$ ,  $p = .002$ ). According to Cramer's  $V$ , this was a small dependence (*Cramer's  $V = .29$* ). Participants with Type D personality also had more mild, moderate or severe GAD than participants without Type D personality ( $LR = 18.91$ ,  $df = 3$ ,  $p = .000$ ). According to Cramer's  $V$ , this was a small dependence (*Cramer's  $V = .31$* ). For more details on all baseline characteristics, see table 1.1 (Appendix C).

#### *Type D personality and neuroticism and extraversion*

As shown in table 2.1 (see appendix C), bivariate correlation analyses showed that the Type D personality is positively correlated to neuroticism ( $r = .402$ ). This is a significant correlation at the 0.01 level (two-tailed). The Type D personality is negatively correlated to extraversion ( $r = -.389$ ). This as well is a significant correlation at the 0.01 level (two-tailed).

When selecting cases in the dataset, we found that there were 14 participants who scored both Type D personality and high on neuroticism and low on extraversion.

#### *Type D and Social Anxiety*

First, an univariate logistic regression was conducted to examine the predictive relationship between the Type D personality and social anxiety. This analysis showed that the Type D

personality is a significant predictor of social anxiety ( $B = 2.57$ ,  $df = 1$ ,  $p = .002$ ,  $Exp(B) = 13.00$ ).

After that, a multiple logistic regression was conducted in which extraversion and neuroticism were added to the regression to see whether or not the predictive relationship between Type D personality and social anxiety persisted. Though the predictive value of the Type D personality lowered somewhat, it still remained significant ( $B = 2.36$ ,  $df = 1$ ,  $p = .007$ ,  $Exp(B) = 10.58$ ). Extraversion was negatively related to social anxiety ( $B = -.45$ ,  $df = 1$ ,  $p = .582$ ,  $Exp(B) = .64$ ). Neuroticism was positively related to social anxiety ( $B = .55$ ,  $df = 1$ ,  $p = .621$ ,  $Exp(B) = 1.73$ ). However, neither relationships were significant.

At last the socio-demographic variables gender, age, marital status and level of education were added to the regression, as were the psychological variables depression and GAD. This increased the predictive value of the Type D personality on social anxiety ( $B = 3.71$ ,  $df = 1$ ,  $p = .002$ ,  $Exp(B) = 40.77$ ) and changed the relationship between extraversion and social anxiety, which became positive although not significant ( $B = .12$ ,  $df = 1$ ,  $p = .906$ ,  $Exp(B) = 1.13$ ). Of the added variables, only education had a significant predictive value on social anxiety ( $B = -1.38$ ,  $df = 1$ ,  $p = .034$ ,  $Exp(B) = .25$ ). For all variables, see table 3.1 (appendix C).

#### *Extraversion and neuroticism and Social Anxiety*

Another logistic regression was conducted to examine solely the predictive relationship between extraversion and neuroticism, and social anxiety. This regression showed that extraversion was negatively related to social anxiety on a significant level ( $B = -1.61$ ,  $df = 1$ ,  $p = .033$ ,  $Exp(B) = .12$ ). Neuroticism was positively related, but not on a significant level ( $B = .85$ ,  $df = 1$ ,  $p = .434$ ,  $Exp(B) = 2.33$ ).

The same socio-demographic and psychological variables as before were added to the regression but this altered the relationship with extraversion ( $B = -1.77$ ,  $df = 1$ ,  $p = .046$ ,  $Exp(B) = .17$ ) and neuroticism ( $B = .74$ ,  $df = 1$ ,  $p = .517$ ,  $Exp(B) = 2.10$ ) only slightly. Again level of education was the only added variable with a significant predictive value on social anxiety ( $B = -1.12$ ,  $df = 1$ ,  $p = 0.39$ ,  $Exp(B) = .33$ ). See table 3.2 (appendix C) for a complete overview of the analyses.

## **Discussion**

### *Interpreting results*

Building forwards from the study by Howard and Hughes (2012), the aim of this study was to examine whether or not the Type D personality corresponds with the combination of a high score on neuroticism and a low score on extraversion. We hypothesized that the Type D personality is not a differential construct. If we would compare the Type D personality with the Big Five personality for predictive value on social anxiety, we predicted that the Type D personality would not show more predictive value than the Big Five scale.

Although we did find that the Type D personality corresponds significantly with the combination of a high score on neuroticism and a low score on extraversion, we did not find that the Big Five scale had more predictive value than the Type D personality. Multiple logistic regressions showed that extraversion and neuroticism were not significant predictors of social anxiety whereas the Type D personality was. The predictive value of the Type D personality even increased when socio-demographic and psychological variables were added to the regression while adding these socio-demographic and psychological variables had an unstable and still non-significant effect on the predictive value of neuroticism and extraversion. The combination of extraversion and neuroticism was closest to gaining a significant predictive level when solely their relationship with social anxiety was tested. Extraversion then showed significant predictive value, but neuroticism did not. Therefore our hypothesis that the Type D personality would not show more predictive value than the Big Five scale, has been rejected.

When comparing the results with those found by Howard and Hughes (2012), both studies seem to be in line that the Type D personality could be represented by the combination of low extraversion and high neuroticism. However, it is remarkable that it is extraversion in this study which eventually showed significant predictive value instead of neuroticism. In the study by Howard and Hughes (2012) it was mainly neuroticism that indicated anxiety. Despite the fact that anxiety and social anxiety are not exactly the same concept, it is surprising that neuroticism shows no significant association with social anxiety in this study. After all, research has confirmed that all forms of anxiety disorders involve elevated levels of negative affectivity or neuroticism (Boelen & Reijntjes, 2009). However, it is the combination of specific cognitive factors ultimately that defines the development of an anxiety disorder. For example, the fear of judgement by others is a specific cognitive factor that determines the emergence of social anxiety (Boelen & Reijntjes, 2009). Perhaps the set of cognitive factors

that is responsible for social anxiety does not necessarily derive from neuroticism but from other traits (such as extraversion) as well.

That people who score low on extraversion seem to have more risk on developing social anxiety could be explained by the fact that they are less likely to engage in social events (De Vries et al., 2016). They generally choose solitary over social groups. It is plausible to think that people who prefer to spend their time alone could feel uncomfortable in a social group. In addition, it is found that introvert people acquire conditioned fear responses more easily than extravert people do (Clark, Watson, & Mineka, 1994). Perhaps this combination of preferring to be alone and easily acquiring conditioned fear responses (in this case for interpersonal judgement) explains why people low on extraversion seem to be more prone to develop social anxiety. Another explanation could be found in positive emotionality, the tendency to experience positive emotions, which is closely related to extraversion (Naragon-Gainey, Watson, & Markon, 2009). Several studies indicated that social anxiety is characterized by low positive emotionality. Studies also showed that low positive emotionality is more strongly related to social anxiety than to other forms of anxiety (Naragon-Gainey, Watson, & Markon, 2009). Thus if people are less extravert, they are more likely to experience low positive emotionality and this in turn is associated with the presence of social anxiety.

The only added socio-demographic variable that had significant predictive value on social anxiety was education. The higher the level of finished education, the less likely it was for social anxiety to occur. This may seem like an odd finding, because all participants were university students, but it is important to keep in mind that there are various ways to be admitted at university. Therefore it is not necessary for all students to have the same level of finished education. Perhaps the finding that the higher the level of finished education, the less likely it was for social anxiety to occur, can be explained by the fact that students who study at higher levels of education are more often faced with situations in which they can be judged by other people. Such as when they have to give a presentation or have to collaborate with other students in tasks. Because they face these situation so often, students become less scared. This, however, is only a hypothesis. It could also be explained the other way around: people with social anxiety are less likely to continue their study because they have to face other students, have to collaborate, have to interact with authority figures and have to integrate into campus-life (Strahan, 2003). All of this can be very overwhelming for an

individual with social anxiety. As a result, there are few people with social anxiety at a high level of education.

Altogether the findings of this study could support the view of Denollet and Van Heck (2001) that the Type D construct was created to distinct a homogeneous subgroup by measuring the combination of two stable personality traits and not to measure aspects of personality that are not sufficiently defined - in this case, extraversion and neuroticism. If we follow the view of Denollet and Van Heck we could assume that extraversion and neuroticism are not specifically enough defined to predict social anxiety accurately. If the aspects are indeed too broadly defined, this could perhaps help explaining the unstable effect adding socio-demographic and psychological variables had on neuroticism, and especially extraversion.

### *Limitations*

This study faced two big limitations of the same nature. First of all, the sample group that was used here consisted of only psychology students from Tilburg University. These participants are not representative for the rest of the population, because they are too alike in many aspects, such as level of education, work, and age. Second, because the sample group existed of only psychology students from Tilburg University, convenience sampling was used. This strategy of collecting participants limits further possibilities of generalizing the results to the general population. Other studies should minimize these limitations by using random sampling.

A limitation of another nature is the fact that the BFI only uses eight items to measure extraversion, and eight items to measure neuroticism. Despite that all used questionnaires in this study showed good validity, the small amount of available items selected from the BFI to measure extraversion and neuroticism makes it possible that the items do not cover the concepts of extraversion and neuroticism entirely. As a result, the participant could be falsely categorized as extravert or not extravert, neurotic or not neurotic. In order to make this measurement more reliable, another questionnaire could be used such as the NEO-FFI. This is an extended Big Five questionnaire with 60 items in total (12 items per domain) where the BFI only has 44 items in total (Costa & McCrae, 2008).

Despite that the limitations concerning the used sample group threaten the possibility of generalization, they also provide benefits. For example, because the students needed to finish the questionnaires in order to receive credits, no participants dropped out and all

questions were filled in. There were no missing answers. And because the students were psychology students, it is more likely that they understood the questions better and were more aware of their anonymity while filling in the answers. This reduces the risk of socially desired answering.

### *Recommendations*

This study focused on the predictive value of the Type D personality and extraversion and neuroticism on social anxiety. Findings suggest that the Type D personality is a better predictor of social anxiety than the combination of extraversion and neuroticism. Further research should examine whether or not this is also the case for other forms of emotional distress. If it is, this will all contribute to the view of Denollet and others that the Type D personality indeed is a distinctive construct, separate from other designations like the combination of extraversion and neuroticism (Denollet & Van Heck, 2001; Howard & Hughes, 2012). The Type D personality could be promoted as a construct that is capable of predicting in the general population for different aspects of mental or emotional distress, such as depression, stress and other forms of anxiety.

Another recommendation would be to compare the Type D personality to the facets of extraversion and neuroticism. The NEO-PIR is a questionnaire that could be used for that. It is an extended Big Five questionnaire which uses a different classification than the BFI. It has six facets per personality trait, and eight items per facet (Costa & McCrae, 2008). The BFI has about four items per facet. Previous studies regarding the relationship between the Big Five traits and the Type D personality have used versions of the NEO Personality Inventory as well (such as De Fruyt & Denollet, 2002; Denollet, 2005; Svansdottir et al., 2013). As a result, these studies can be better compared to each other. Despite the fact that the use of the BFI gives this study a rare research perspective, its originality does not weigh up to the given that a lot of information can get lost by using only those five broad domains. Thus by using the NEO-PIR, the Type D personality can be compared to better defined facets of neuroticism and extraversion. It can be examined whether or not there is a combination of extraversion- and neuroticism facets that corresponds better with the Type D personality than just the general concepts of extraversion and neuroticism. If there is, it can be tested whether or not these facets show more predictive value regarding social anxiety than the Type D personality and the general concepts of extraversion and neuroticism. Then, if the Type D personality still shows the most predictive value, this could be interpreted as a clear indication that the Type D personality is an essential construct.

Thus if the Type D personality continues to prove its predictive value in future research, the DS-14 could be more often used as a predictor of emotional distress in the general population. For example, it has been shown in the general population that the Type D personality is capable of predicting depression, stress, and forms of anxiety such as social anxiety (Mols & Denollet, 2010; Svansdottir et al., 2013). Nevertheless, the Type D personality is mostly used as a predictor of psychological distress and morbidity in cardiac patients, and as a predictor of mental and physical well-being in non-cardiovascular patients (Williams & Wingate, 2012). This line of research however, should be used to promote the validity of the Type D personality for mental or emotional distress in non-patients, the general population, as well. Schools could, for instance, conduct the DS-14 on their pupils to detect Type D personality and provide them with extra help if necessary. Extra help could take the form of preventive control and be required if it turns out that the pupil with Type D personality is likely to develop social anxiety for example. It is suggested that individuals with social anxiety are more likely to drop out of college (Strahan, 2013). If they do drop out, this can have considerable consequences in various areas: social relationships, employment, personal development, and so on. It shows how important early detection of the Type D personality can be for an individual's future. If schools have the opportunity to help an individual in an early stage with assistance from psychotherapists or school-based interventions, perhaps considerable consequences can be prevented. Naturally, this is not just the case for social anxiety, but for all sorts of emotional distress that can be predicted by the Type D personality. It is therefore that it is important to continue examining the predictive value of the Type D personality and its applications: to keep gaining new insight in this construct and all its possibilities for use in practice.

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## Appendix A

### Searching Methods

For this study, multiple databases have been used in order to find the right articles to serve as background information and to further build on. The first database was Web of Science. The search question was 'Personality traits AND overview' which supplied two useful articles. The second database was Worldcat in which three different search questions were used. The first search question was 'Type D personality AND Emotion\*', the second search question was 'Type D personality' and the third search question was 'Social Anxiety'. The first two search questions supplied one good article to use, the third question hit two useful articles. The last database was PsycINFO with again 'Type D personality AND Emotion\*' as the first search question. This search supplied four articles. The remaining articles used in this study were found by exploring the references used in the articles that were found in the databases.

## Appendix B

Primary and secondary questionnaires (BFI, DS-14, SIAS-10, GAD-7 and PHQ-9).

<b>BFI</b>						
De volgende stellingen hebben betrekking op uw opvatting over uzelf in verschillende situaties. Het is aan u om aan te geven in hoeverre u het eens bent met elke stelling, waarbij u gebruik maakt van een schaal waarop 1 helemaal oneens betekent, 5 helemaal eens betekent, en 2, 3 en 4 zijn beoordelingen daartussenin. Omcirkel achter elke stelling een getal op de onderstaande schaal						
Er zijn geen "goede" of "foute" antwoorden, dus selecteer bij elke stelling het getal dat zo goed mogelijk bij u past. Neem de tijd, denk goed na over elk antwoord.		<b>1 = Helemaal oneens</b> <b>2 = Oneens</b> <b>3 = Eens noch oneens</b> <b>4 = Eens</b> <b>5 = Helemaal eens</b>				
Ik zie mezelf als iemand die...						
1.	Spraakzaam is	1	2	3	4	5
2.	geneigd is kritiek te hebben op anderen	1	2	3	4	5
3.	Grondig te werk gaat	1	2	3	4	5
4.	Somber is	1	2	3	4	5
5.	Origineel is, met nieuwe ideeën komt	1	2	3	4	5
6.	Terughoudend is	1	2	3	4	5
7.	Behulpzaam en onzelfzuchtig ten opzichte van anderen is	1	2	3	4	5
8.	Een beetje nonchalant kan zijn	1	2	3	4	5
9.	Ontspannen is, goed met stress kan omgaan	1	2	3	4	5
10.	Benieuwd is naar veel verschillende dingen	1	2	3	4	5
11.	Vol energie is	1	2	3	4	5
12.	Snel ruzie maakt	1	2	3	4	5
13.	Een werker is waar men van op aan kan	1	2	3	4	5
14.	Gespannen kan zijn	1	2	3	4	5
15.	Scherpzinnig, een denker is	1	2	3	4	5
16.	Veel enthousiasme opwekt	1	2	3	4	5
17.	Vergevingsgezind is	1	2	3	4	5
18.	Doorgaans geneigd is tot slordigheid	1	2	3	4	5
19.	Zich veel zorgen maakt	1	2	3	4	5
20.	Een levendige fantasie heeft	1	2	3	4	5
21.	Doorgaans stil is	1	2	3	4	5
22.	Mensen over het algemeen vertrouwt	1	2	3	4	5
23.	Geneigd is lui te zijn	1	2	3	4	5
24.	Emotioneel stabiel is, niet gemakkelijk overstuurt	1	2	3	4	5
25.	Vindingrijk is	1	2	3	4	5
26.	Voor zichzelf opkomt	1	2	3	4	5
27.	Koud en afstandelijk kan zijn	1	2	3	4	5
28.	Volhoudt tot de taak af is	1	2	3	4	5
29.	Humeurig kan zijn	1	2	3	4	5
30.	Waarde hecht aan kunstzinnige ervaringen	1	2	3	4	5
31.	Soms verlegen, geremd is	1	2	3	4	5
32.	Attent en aardig is voor bijna iedereen	1	2	3	4	5

33.	Dingen efficiënt doet	1	2	3	4	5
34.	Kalm blijft in gespannen situaties	1	2	3	4	5
35.	Een voorkeur heeft voor werk dat routine is	1	2	3	4	5
36.	Hartelijk, een gezelschapsmens is	1	2	3	4	5
37.	Soms grof tegen anderen is	1	2	3	4	5
38.	Plannen maakt en deze doorzet	1	2	3	4	5
39.	Gemakkelijk zenuwachtig wordt	1	2	3	4	5
40.	Graag nadenkt, met ideeën speelt	1	2	3	4	5
41.	Weinig interesse voor kunst heeft	1	2	3	4	5
42.	Graag samenwerkt met anderen	1	2	3	4	5
43.	Gemakkelijk afgeleid is	1	2	3	4	5
44.	Het fijne weet van kunst, muziek, of literatuur	1	2	3	4	5

## DS<sup>14</sup>

Hieronder staan uitspraken die mensen vaak gebruiken om zichzelf te beschrijven.

Gelieve bij elk van deze uitspraken een **cirkeltje** te plaatsen rond het **cijfer** dat het best op u van toepassing is.

Per uitspraak is maar één antwoord mogelijk.

		<b>0 = Zeer mee oneens</b> <b>1 = Mee oneens</b> <b>2 = Neutraal</b> <b>3 = Mee eens</b> <b>4 = Zeer mee eens</b>				
1.	Ik maak gemakkelijk contact met mensen	0	1	2	3	4
2.	Ik maak me dikwijls druk om onbelangrijke zaken	0	1	2	3	4
3.	Ik maak vaak een praatje met onbekenden	0	1	2	3	4
4.	Ik voel me vaak ongelukkig	0	1	2	3	4
5.	Ik ben vaak geïrriteerd	0	1	2	3	4
6.	Ik voel me vaak geremd in de omgang met anderen	0	1	2	3	4
7.	Ik zie de zaken somber in	0	1	2	3	4
8.	Ik vind het moeilijk een gesprek te beginnen	0	1	2	3	4
9.	Ik ben vaak slecht gehumeurd	0	1	2	3	4
10.	Ik ben een gesloten persoon	0	1	2	3	4
11.	Ik houd andere mensen liefst wat op een afstand	0	1	2	3	4
12.	Ik maak me dikwijls zorgen	0	1	2	3	4
13.	Ik zit vaak in de put	0	1	2	3	4
14.	Ik weet niet waarover ik moet praten met anderen	0	1	2	3	4

## SIAS<sup>10</sup>

Geef aan in welke mate u vindt dat de onderstaande uitspraken kenmerkend of waar voor u zijn. Kies uit de volgende antwoordcategorieën en geef uw keuze aan door het getal van uw keuze te omcirkelen.

	<b>0 = Helemaal niet</b> <b>1 = Een beetje</b> <b>2 = Nogal</b> <b>3 = Heel erg</b> <b>4 = Buitengewoon</b>				
1. Ik heb moeite om oogcontact te maken met anderen	0	1	2	3	4
2. Ik voel me ongemakkelijk in sociale situaties	0	1	2	3	4
3. Ik voel me gespannen als ik alleen ben met maar één ander persoon	0	1	2	3	4
4. Ik vind het moeilijk om met andere mensen te praten	0	1	2	3	4
5. Ik maak me zorgen dat ik onbeholpen overkom als ik mezelf uit	0	1	2	3	4
6. Ik merk dat ik me zorgen maak dat ik niet zal weten wat ik moet zeggen in sociale situaties	0	1	2	3	4
7. Ik ben gespannen als ik met mensen om ga die ik niet goed ken	0	1	2	3	4
8. Ik heb het gevoel iets gênants te zullen zeggen als ik aan het praten ben	0	1	2	3	4
9. In een groep maak ik me zorgen dat ik genegeerd zal worden	0	1	2	3	4
10. Ik ben gespannen in een groep met mensen	0	1	2	3	4

## GAD-7

Hoe vaak heeft u gedurende de **afgelopen 2 weken** last gehad van de volgende problemen?

Zet een **cirkel** om het **cijfer** wat het beste op u van toepassing is. Per uitspraak is maar één antwoord mogelijk.

	<b>0 = Helemaal niet</b> <b>1 = Verschillende dagen</b> <b>2 = Meer dan de helft van de dagen</b> <b>3 = Bijna elke dag</b>			
Gedurende de <b>afgelopen 2 weken</b> had ik last van:				
1. Een gespannen, angstig of zenuwachtig gevoel	0	1	2	3
2. Niet in staat zijn om te stoppen met piekeren of om controle te krijgen over het piekeren	0	1	2	3
3. Je te veel zorgen maken over verschillende dingen	0	1	2	3
4. Moeite om je te ontspannen	0	1	2	3
5. Zo rusteloos zijn dat het moeilijk is om stil te zitten	0	1	2	3
6. Snel geïrriteerd of prikkelbaar zijn	0	1	2	3
7. Een bevreesd gevoel alsof er iets afschuwelijks zou kunnen gebeuren	0	1	2	3

## PHQ<sup>9</sup>

Hoe vaak heeft u in de **afgelopen twee weken** last gehad van één of meer van de volgende problemen? Gelieve bij elk van deze uitspraken een **cirkeltje** te plaatsen rond het **cijfer** dat het best op u van toepassing is. Per uitspraak is maar één antwoord mogelijk.

Gedurende de <b>afgelopen 2 weken</b> :		0 = Helemaal niet 1 = Verschillende dagen 2 = Meer dan de helft van de dagen 3 = Bijna elke dag			
		0	1	2	3
1.	Weinig interesse of plezier in uw gewone activiteiten	0	1	2	3
2.	Zich neerslachtig, depressief, hopeloos voelen	0	1	2	3
3.	Moeilijk inslapen, moeilijk doorslapen of te veel slapen	0	1	2	3
4.	Zich moe voelen of een gebrek aan energie hebben	0	1	2	3
5.	Weinig eetlust of overmatig eten	0	1	2	3
6.	Een slecht gevoel hebben over uzelf, of het gevoel hebben dat u een mislukking bent, of het gevoel hebben dat u zichzelf of uw familie heeft teleurgesteld	0	1	2	3
7.	Problemen om u te concentreren, bijv. om de krant te lezen of om TV te kijken	0	1	2	3
8.	Zo traag bewegen of zo langzaam spreken dat andere mensen dit gemerkt zouden kunnen hebben. Of integendeel, zo zenuwachtig of rusteloos zijn dat u veel meer rond liep	0	1	2	3
9.	De gedachte dat u beter dood zou zijn of de gedachte uzelf op een bepaalde manier pijn te doen	0	1	2	3

## Appendix C

Table 1.1 *Baseline characteristics stratified to Type D Personality, extraversion and neuroticism*

	<b>Total Group (N=209)</b>	<b>Type D (N=49)</b>	<b>Non-Type D (N=160)</b>	<b>P</b>
<i>Socio-demographic variables</i>				
Women	160	38	122	.851
Age < 21	169	45	124	.081
Relationship <sup>a</sup>	88	18	70	.544
Secondary Education	118	28	90	.135
<i>Psychological variables</i>				
Depression <sup>b</sup>	34	17	17	.002
GAD <sup>c</sup>	88	31	57	.000
	<b>Total Group (N=209)</b>	<b>Extraversion (N=188)</b>	<b>Non-Extraversion (N=20)</b>	<b>P</b>
<i>Socio-demographic variables</i>				
Women	160	145	15	.785
Age < 21	168	148	20	.006
Relationship <sup>a</sup>	87	84	3	.030
Secondary Education	118	105	13	.293
<i>Psychological variables</i>				
Depression <sup>b</sup>	34	30	4	.823
GAD <sup>c</sup>	88	75	13	.057
	<b>Total Group (N=209)</b>	<b>Neuroticism (N=158)</b>	<b>Non-Neuroticism (N=51)</b>	<b>P</b>
<i>Socio-demographic variables</i>				
Women	159	131	28	.000
Age < 21	168	135	33	.108
Relationship <sup>a</sup>	88	68	20	.952
Secondary Education	117	29	88	.473
<i>Psychological variables</i>				
Depression <sup>b</sup>	34	26	8	.193
GAD <sup>c</sup>	88	76	11	.244

<sup>a</sup> Relationship: without living together, with living together, married.

<sup>b</sup> Depression: mild, moderate, severe.

<sup>c</sup> Generalized Anxiety Disorder: mild, moderate, severe.

Table 2.1 *Correlations Type D personality (DS-14) and extraversion and neuroticism (BFI)*

	DS-14 Total Scores	BFI-Extraversion Total Scores	BFI-Neuroticism Total Scores
DS-14 Total Scores	1	-.389**	.402**
BFI-Extraversion Total Scores	-.389**	1	-.144*
BFI-Neuroticism Total Scores	.402**	-.144*	1

\* Correlation is significant at the 0.05 level (two-tailed).

\*\* Correlation is significant at the 0.01 level (two-tailed).

Table 3.1 *Relationship between Type D personality and social anxiety (multivariate logistic regression analyses)*

	Odds Ratio	95% CI	<i>p</i>
Type D personality	13.00	2.60-64.91	.002
Type D personality	10.58	1.90-59.03	.007
<i>Big Five dimensions</i>			
Extraversion	.64	.13-3.16	.582
Neuroticism	1.73	.20-15.16	.621
Type D personality	40.77	4.00-415.90	.002
<i>Big Five dimensions</i>			
Extraversion	1.13	.15-8.83	.906
Neuroticism	.95	.08-11.72	.967
<i>Socio-demographic variables</i>			
Women			
Age < 21	.26	.03-2.49	.244
Relationship <sup>a</sup>	1.20	.81-1.78	.356
Education	2.58	.63-10.60	.188
	.25	.07-.90	.034
<i>Psychological variables</i>			
Depression <sup>b</sup>	.18	.02-1.65	.130
GAD <sup>c</sup>	1.57	.52-4.73	.423

<sup>a</sup> Relationship: without living together, with living together, married.

<sup>b</sup> Depression: mild, moderate, severe.

<sup>c</sup> Generalized Anxiety Disorder: mild, moderate, severe.

Table 3.2 Relationship between extraversion and neuroticism and social anxiety (multivariate logistic regression analyses)

	<b>Odds Ratio</b>	<b>95% CI</b>	<b><i>p</i></b>
Extraversion	.12	.05-.88	.033
Neuroticism	2.33	.28-19.48	.434
Extraversion	.17	.03-.97	.046
Neuroticism	2.10	.22-19.89	.517
<i>Socio-demographic variables</i>			
Women	.56	.09-3.62	.538
Age < 21	1.02	.71-1.48	.899
Relationship <sup>a</sup>	1.61	.46-5.64	.460
Education	.32	.11-.96	.039
<i>Psychological variables</i>			
Depression <sup>b</sup>	.37	.05-2.95	.348
GAD <sup>c</sup>	1.46	.54-3.94	.456

<sup>a</sup> Relationship: without living together, with living together, married.

<sup>b</sup> Depression: mild, moderate, severe.

<sup>c</sup> Generalized Anxiety Disorder: mild, moderate, severe.