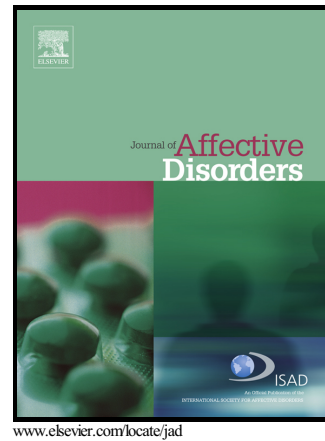


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Distinguishing between emotional distress and psychiatric disorder in primary care attenders:

A cross sectional study of the Four-Dimensional Symptom Questionnaire (4DSQ)

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## Abstract

**Background:** Detection of psychiatric disorder in primary care is a complex issue. Distinctions between 'normal' emotional distress and psychiatric disorder depend on how disorder is conceptualised. Our aim was to explore two different conceptualisations by examining patients' scores on one-dimensional depression measures and scores on the Four Dimensional Symptom Questionnaire (4DSQ), a measure that uniquely has separate dimensions for general distress and depressive disorder.

**Methods:** This was a cross sectional study of 487 primary care patients attending general clinics in Hampshire, UK. Patients completed the 4DSQ, Patient Health Questionnaire-9 (PHQ-9), General Health Questionnaire-12 (GHQ-12) and the Hospital Anxiety and Depression Scale (HADS) whilst in the waiting room.

**Results:** The 4DSQ classified 26% (126/485) of patients as having heightened distress levels and 8% (38/468) as possible cases of depressive disorder. Casesness was consistently higher across the one-dimensional measures (PHQ-9: 16%, GHQ-12: 28%, HADS-D: 13%). Of those patients deemed possible cases by the PHQ-9 ( $\geq 10$ ), the 4DSQ classified 91% (71/78) as having heightened distress and 44% (32/72) as possible cases of depressive disorder.

Limitations: The sample was predominately older and white, which may limit generalisability of the findings to more diverse patient groups. There are limits to self-report measures in the assessment of complex diagnostic issues.

Conclusions: Inclusion of a distinct general distress dimension alongside a dimension focusing on specific depression symptomatology lowered the number of primary care patients classified as possible cases of disorder. This view of symptoms may have implications for the targeting of existing treatments, and may be useful in guiding the development of novel self-management interventions.

Keywords: Distress; depression; primary care; assessment

General Practitioners' (GPs') detection of psychiatric disorder has come under scrutiny (Nuyen et al., 2005) with suggestions that GPs miss around half (52%) of patients with depressive disorder (Mitchell et al., 2009). The proposed need to increase detection and treatment of disorders (Hickie, 2007; McQuaid et al., 1999) runs directly counter to the frequently voiced message that psychological symptoms are too often medicalised and may be overtreated (Dowrick, 2013; Mulder, 2008). These opposing positions add to the complexity GPs face when patients consult with psychological symptoms. Determining when patients present with symptoms reflecting 'normal' distress, and when they show signs suggesting underlying disorder is a difficult process (Hyde et al., 2005). Nonetheless, it is important in providing appropriate care, improving the targeting of interventions and reducing the provision of treatments that may inadvertently lead to harm (Fergusson et al., 2005).

#### *Distinguishing distress from disorder*

The Diagnostic and Statistical Manual of the American Psychiatric Association (DSM) (American Psychiatric Association, 2000) provides the widely accepted consensus on what constitutes mental disorder. These definitions feed into primary care, both through GPs' education and recommendations for practice (Moore et al., 2012). The Patient Health Questionnaire-9 (Kroenke et al., 2001), part of the larger PRIME-MD set (Spitzer et al., 1999), is closely based on the DSM-IV criteria for major depressive disorder and is often recommended for determining the presence of depression in patients (Kendrick et al., 2009). Although as a self-report questionnaire it should be used as indicator of possible disorder, it is

often used as a diagnostic tool. Indeed, Kroenke et al.'s key paper states: "Brevity coupled with its construct and criterion validity makes the PHQ-9 an attractive, dual-purpose instrument for making diagnoses and assessing the severity of depressive disorders" p.612 (Kroenke et al., 2001). A primary issue of concern with this shorthand way of defining depressive disorder is that it removes a critical element from the previous DSM editions that also features in the renewed DSM-5 (American Psychiatric Association, 2013). The DSM-5 states: "An expectable or culturally approved response to a common stressor or loss such as the death of a loved one is *not a mental disorder*." [emphasis added] p.20. Thus, to apply the DSM-5 definition correctly to distinguish and determine the presence of psychiatric disorder in practice, and to treat accordingly, the context in which the symptoms are occurring must be taken into account.

The idea of a distinction between emotional distress and psychiatric disorder deviates from the commonly used continuum conceptualisation of depressive disorder, where presence of disorder is based primarily on functioning and symptom severity (Parker, 2000; Taylor & Fink, 2008). Nonetheless, it is consistent with the DSM-5 criteria for Major Depressive Disorder (MDD), which highlights the importance of distinguishing depressive disorder from loss reactions, and that determining between them "inevitably requires the exercise of clinical judgment based on the individual's history and the cultural norms for the expression of distress in the context of loss" p.161 (American Psychiatric Association, 2013). Within the debates regarding how best to define psychiatric disorder, Jerome Wakefield continues to make a strong case for the importance of a distinction (Horwitz and Wakefield, 2007). Wakefield proposes that psychiatric disorder should be set apart from non-disordered distress reactions, and reserved for the 'harmful dysfunction' of an internal system (Wakefield, 2007), biological, affective or cognitive. The harmful dysfunction conceptualisation allows the possibility of severe (often functionally disabling) distress that is not being driven by a disordering internal system. Rather, the distress experienced may be an appropriate response to environmental/social stressors. For example, according to control theory (Carver and Scheier, 1982) negative affect plays a key role in guiding human behavior by providing feedback into control-systems that encourage the disengagement from particular non-rewarding or punishing goals (Carver et al., 1996; Carver and Scheier, 1990). Importantly, Wakefield's definition aligns closely with that of the DSM-5 wherein disorder is proposed as caused by dysfunction in the psychological, biological or developmental processes that underlie mental functioning (American Psychiatric Association, 2013).

*Symptom measures*

Despite the importance of the clinician's ability to listen for the context in which the patient presents their symptoms, valid and reliable symptom measures can be useful tools to inform decision making and are vital for research. Measures such as the PHQ-9 (Kroenke et al., 2001) and the General Health Questionnaire-12 (GHQ-12) (Goldberg and Williams, 1988) are one-dimensional measures of symptoms. When used for determining probable caseness, they reflect the broad continuum view, with high scores representing the possible presence of psychiatric disorder. If one takes the view that a distinction is important (as in the DSM-5), recommended cut points on one-dimensional measures do not delineate symptoms which may differ systematically (see DSM-5, p.161) depending on whether they are occurring as reactions to stressors or dysfunctioning internal systems e.g. pervasive negative beliefs (Beck et al., 1979). Although self-report measures will always have limitations, moving beyond one-dimensional to multidimensional measures might speed the identification of symptoms reflecting possible psychiatric disorder as opposed to general distress reactions. Once distinguished, causes of the symptoms may be more directly targeted and care varied appropriately.

*The Four-Dimensional Symptom Questionnaire*

The Four Dimensional Symptom Questionnaire (4DSQ) was developed in primary care by Terluin et al. (2006) to measure general distress, depression, anxiety and somatisation as four distinct but related dimensions. Terluin et al. (2006) propose that general distress comprises symptoms including feeling down, worry, irritability, poor concentration and sleep problems. They conceptualise distress as the manifestation of symptoms in direct response attempting to maintain homeostasis in the presence of demanding life stressors (which can be anything that poses a threat to such bio-psycho-social homeostasis (Terluin et al., 2006)). Depression, however, is conceptualised as reflecting a dysfunction of emotional regulation (Terluin et al., 2006). Although likely to include all those symptoms indicating distress, depression may be identified by additional symptoms that are likely to reflect the presence of dysfunction in underlying mental processes. Anhedonia, the inability to experience pleasure, may be a key distinguishing factor alongside thoughts of self-harm/suicide and pervasive negative thoughts of the self. For anxiety disorders, key distinguishing factors beyond distress may be free floating anxiety, irrational fears and avoidance behaviour (Terluin et al., 2014). We will refer to distress/disorder distinctions for simplicity throughout this paper, however distress will

share a great deal of overlap with depression (Terluin et al., 2006) such that a patient reaching caseness for depression would very likely also experience heightened distress. Importantly, the reverse may not be the case, and this conceptualisation uniquely allows for identification of distressed patients who are not depressed.

There are key differences between the idea of distress/depressive disorder distinctions and the conceptualisation underlying the 4DSQ, and notions of ‘reactive’ and ‘endogenous’ depression (Parker, 2000). At first the two appear similar; distress comparable to reactive depression as a response to life stressors, and the presented view of depression comparable to endogenous depression, being driven by underlying dysfunction in internal systems. Critically, in this paper we are not seeking to classify ‘distress’ as a psychiatric disorder, thus these reactive and endogenous classifications could still be extrapolated and explored within our ‘depression’ category, although they would not apply to distress.

The view of common psychological symptoms underlying the 4DSQ bears close resemblance to the tripartite model of depression and anxiety (Clark and Watson, 1991). The tripartite model was used to explain the highly correlated relationship between scores on depression and anxiety scales (Joiner and Lonigan, 2000), and the three-factor solution that was often found to be the best fit for depression and anxiety data. The three factors were proposed as representing a non-specific general distress factor, thought to be present in both depression and anxiety, then specific factors pertaining to each disorder respectively (Clark and Watson, 1991). Key to distinguishing depression from the non-specific distress factor and anxiety were low levels of positive affect (PA), corresponding to Terluin et al.’s conceptualisation for their measure. However, an important difference is that Terluin et al. suggest general distress often represents a non-disordered reaction to life stressors. Clark and Watson (1991) suggested that scores on depression and anxiety measures that load predominately on the general distress factor might indicate ‘General Distress Disorder’. General Distress Disorder did not take hold, Clark and Watson (1991) failed to provide a rationale as to why these symptoms would constitute a ‘disorder’, and if pursued they likely would have faced calls of medicalisation (Mulder, 2008).

### *The present study*

The present study was designed to explore the symptom profiles of primary care attenders when provided with a multidimensional measure with a distinct distress factor, the 4DSQ,

compared with measures including the PHQ-9 (Kroenke et al., 2001), the GHQ-12 (Goldberg and Williams, 1988) and the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith, 1983). We used a ‘consecutive attender’ design, where primary care patients are provided with questionnaires in the waiting room before they see their GP. This allowed us to compare our results to previous research using this methodology. For instance, Kessler et al. (1999) conducted a study utilising a consecutive attender design using the one-dimensional GHQ-12, and showed that around 50% of patients attending general clinics had scores reflecting possible psychiatric disorder. This finding was challenged as an example of how using severity measures like the GHQ-12 can medicalise distress (Heath, 1999).

We aimed to describe the symptoms of patients focusing on the 4DSQ dimensions of distress and depression. We also aimed to explore the distress-depression profiles on the 4DSQ of those who were classed as ‘cases’ of depression on the traditional measures. We chose not to focus on anxiety and somatisation dimensions in the current paper for the sake of brevity.

## Methods

### *Participants*

Patients were recruited from general clinics in six primary care practices in the south of England. Eligibility criteria were kept as broad as possible, patients had to be over 18 years and be able to understand written English to take part. The sample size was determined pragmatically, aiming for the highest number of patients feasible within the resource constraints of the project.

### *Measures*

#### *The Four Dimensional Symptom Questionnaire (4DSQ)*

The 4DSQ (Terluin et al., 2006) comprises four subscales measuring distress (16 items), depression (6 items), anxiety (12 items) and somatisation (16 items). Respondents rate the extent to which they have experienced the listed symptoms/thoughts/feelings over the last seven day using five response options: ‘no’, ‘sometimes’, ‘regularly’, ‘often’, ‘very often or constantly’. Scorings are 0 for ‘no’, 1 for ‘sometimes’, and 2 for the remaining response options. The 4DSQ depression and anxiety sub-scales have strong criterion validity with structured diagnostic interviews for depression and anxiety (Terluin et al., 2006), and show

convergent validity with measures including the HADS (Terluin et al., 2009). The distress subscale represents a unique conceptualisation, nonetheless, Terluin et al. (2006) showed it had good criterion validity with GP recording of any psycho-social diagnosis or reason for consultation by GPs in a large consecutive attender study. Additionally, the distress subscale has shown significant associations with life events, psychosocial problems, work stress, and social dysfunctioning (Terluin et al., 2009). Originally developed in Dutch and translated into English, a recent study demonstrated that separately, each of the English 4DSQ subscales appeared to measure the same constructs as the Dutch subscales in a Canadian sample (Cronbach's alpha for the scales ranged from .85-.92) (Terluin et al., 2014).

#### *The Patient Health Questionnaire-9 (PHQ-9)*

The PHQ-9 is a nine-item scale that corresponds directly to the DSM IV criteria for Major Depressive Disorder. Participants answer items regarding depressive symptoms on a four-point scale ranging from 0 (not at all) to 3 (nearly everyday). The PHQ-9 has strong convergent validity with measures such as the Beck Depression Inventory (Dum et al., and internal reliability ranging from .86-.89 (Kroenke et al., 2001).

#### *The General Health Questionnaire-12 (GHQ-12)*

The GHQ-12 is a 12-item questionnaire measuring a range of symptoms associated with psychiatric disorder (Goldberg and Williams, 1988). It asks if symptoms have been present in recent weeks with responses ranging from much more than usual (3) to not at all (0), and has been used to detect possible disorder in primary care (Kessler et al., 1999). Reported validity coefficients for the GHQ-12 are high (Goldberg et al., 1997). We scored the GHQ-12 dichotomously (0 1 2 3 became 0 0 1 1).

#### *The Hospital Anxiety and Depression Questionnaire (HADS)*

The HADS measures depression and anxiety on two 7-item subscales (Zigmond and Snaith, 1983). It focuses particularly on the cognitive components of depression and anxiety, as it was developed for use in hospital settings. Participants are asked to rate how they have felt over the last week and responses range from 0 to 3. Despite broad use and reports of reliability (Bjelland et al., 2002), some have now called for its use to be stopped, due to reports of inconsistent factor structures across studies and problems with confusing item wordings (Coyne and van Sonderen, 2012).

We also collected demographic information including gender, age, marital status, ethnicity, and occupation.

### *Procedure*

Study research assistants visited the waiting rooms of participating practices over 63 days between January 2013 and April 2014. Patients were informed of the study through letters sent to those who had appointments on a study day or by posters displayed in the practice. As stipulated by the NHS Ethics Committee, to avoid coercion, patients who wanted to take part approached the study team and completed a questionnaire pack.

### *Ethics*

This study was approved by Portsmouth Research Ethics Committee (REC). REC reference: 12/SC/0692

### *Analysis*

Data were analysed in Stata v12.1 using descriptive statistics. A total score was calculated for each of the key measures by adding up the scores on the component questions according to the scoring rubric recommended for each scale. These scales, and their proposed cut-points, are based upon each participant completing all the component questions. Where this was not the case and items were skipped, the participant's total score has been scaled up. For example, a participant who skipped 2 items on the PHQ-9 and scored 10 out of 21 would have had their score increased to 12.86 out of 27. Due to the skewed nature of the data, means and standard deviations are presented alongside medians and interquartile ranges and the Spearman correlation coefficient alongside the Pearsons correlation coefficient.

### *Results*

#### *Sample population*

The sample comprised 487 patients. Participants were predominantly older, female and retired. The sample was almost exclusively white. The sample characteristics are reported in Table 1 below:

*The 4DSQ subscales*

First we broadly examined the patients' scores on the scales to determine the average level of symptoms of our sample. The mean and medians for each 4DSQ subscale and the additional one-dimensional measures are reported below in Table 2. Scores indicate that the majority of the sample population were not suffering from any psychological symptoms that might reach caseness or higher levels of severity (see table below). The skewed nature of the data is to be expected in general waiting room studies with an unselected sample.

*4DSQ Correlations with other scales*

We examined the correlations of one-dimensional scales (including the PHQ-9 etc.) and the 4DSQ subscales in order to explore the relationships between the measures. Since the 4DSQ purports to measure similar constructs to other validated scales, we would expect a high level of correlation. Given the skew in the data, both the Pearson and Spearman correlation coefficients have been calculated. Both give similar results. The existing scales were all significantly positively correlated with the 4DSQ dimensions at the 5% level. They all tended to show a higher correlation with the 4DSQ distress dimension than the depression dimension.

*Classification of caseness*

Next we aimed to determine how the measures, with their different conceptualisation of symptoms, classified patients as possible cases of psychiatric disorder. As the 4DSQ-distress subscale does not have a gold standard comparator to determine cut points, Terluin et al. (2006) determined a score with acceptable sensitivity and specificity to detect any psychological reason for consultation from GP consultation records ( $\geq 11$ ). However, percentages presented in Table 4 below are best viewed as those patients with heightened distress, rather than a 'case' of distress; we do not conceptualise distress as a disorder. Cut points for 4DSQ depression caseness ( $\geq 6$ ) along with caseness on the PHQ-9 ( $\geq 10$ ), GHQ-12 ( $\geq 3$ ) and the HADS-D ( $\geq 8$ ) have all been determined by comparison to structured diagnostic interviews. Whilst the scales are all correlated, the scores suggest a lack of agreement regarding possible caseness for disorder. A larger proportion of patients are classified as depressed by the PHQ-9, GHQ-12 and HADS-D than by the 4DSQ-depression subscale.

Similar proportions of patients were identified by the 4DSQ as having heightened symptoms, but their scores were more likely to reflect distress than depression, where possible caseness was identified in 8% of this sample.

We then examined only those patients in our sample who were classified cases by the widely used measures. We wished to observe how the symptoms profile of those patients who were meeting caseness on one-dimensional measures would be described by the 4DSQ. It is apparent that distress is an element of what the other scales are identifying when they classify individuals as cases of possible psychiatric disorder. Table 5 below shows how those classified as cases of possible depression would be classified by the 4DSQ. The pattern that repeats throughout all the scales is that the 4DSQ distress subscale corresponds very highly to the conceptualisation of depression according to the other measures. However, there is much less agreement when focusing on core depression features measured by the 4DSQ-subscale, such as anhedonia and thoughts of self-harm.

Finally, as the PHQ-9 is based directly on the DSM IV criteria for major depression, we used this scale specifically to look at patients' scores on both the depression and distress subscales and how this compared to caseness for depression as measured by the PHQ-9. Table 6 below shows the relationship between caseness on this the PHQ-9 and both the distress and depression subscales of the 4DSQ. There are a small number of patients who are scoring as cases on the PHQ-9, who do not have high distress scores or are cases of depression on the 4DSQ. This may be due to the somatic items on the PHQ-9 (e.g. tiredness) that would not be picked up by these particular 4DSQ subscales. There a number of patients (33/72, 45.8%) who are being classed as cases of depressive disorder by the PHQ-9, who have heightened distress, but do not meet caseness as measured by the depression scale of the 4DSQ.

## Discussion

In this study we have shown that the psychological symptom profiles of unselected primary care patients attending general clinics change substantially if provided with a measure that has distinct distress and depression dimensions. Partialling out non-specific distress and focusing on core features of depressive disorder (such as adhedonia and thoughts of self-harm) reduced the proportion scoring as possible cases of disorder from up to 28% to 8%,

with 26% scoring as having heightened general distress. We also showed that by reappraising in this way how depression is conceptualised, just under half (46%) of patients in our sample who were classified as cases of depressive disorder by the PHQ-9, would be identified as experiencing heightened distress, but not showing core depressive disorder symptoms by the 4DSQ.

It may be best to see both the continuum and distinction conceptualisations as differing but valid ways of seeing psychological symptoms. Determining if depression and distress symptoms are distinct statistically is likely to be difficult, with factor analytic results often varying depending on the assumptions made and the specific modeling techniques used. This has been the case with both the HADS (see Cosco et al., 2012) and the GHQ-12 (see Ye et al., 2009), with many different factor structures proposed by different authors for the same scales. Nonetheless, we see value in explicitly highlighting the distinction view of symptoms as threefold: 1) it is theoretically coherent with regard to defining ‘disorder’, 2) it aligns closely with the view expressed within the DSM 5, and 3) it may help develop novel stratified or targeted care approaches for patients with different symptom presentations in primary care. Parker (2000, 2005) suggests that, despite perhaps increasing simplicity and reliability, a unitary approach to symptoms has led to stagnation in the development of new interventions. An additional issue with a broad unitary continuum approach to defining disorder that does not account for context and pays less attention to causal processes, is that it is likely to lead to mismatches with clinician’s diagnoses. GPs are able to use their clinical judgement to take account of the contextual factors and diagnose, or not, accordingly. This is one possible interpretation of studies consistently showing the under-detection of disorder defined in this way by clinicians (Kessler et al., 1999; Mitchell et al., 2009; Mitchell et al., 2011).

Due to the inherent complexity in this area, self-report measures can only offer reasonably limited descriptions of patient’s experience. Nonetheless, with renewed work on theories of mental health states and improvements to the tools we use to measure them, it may be possible to ensure the measures we use have high levels of content validity and the potential to improve patient care. The 4SDQ represents a useful starting example. Adding a distress dimension refines the measurement of depression to its core symptomatology. This characteristic may help reduce potential over-classification of depressive disorder that can occur with one-dimensional scales. It may also allow for the more rapid identification of

patients for whom treatments developed for depressive disorder may be more effective. For those patients who are seeking help for heightened distress without core depression features, it may open new avenues for intervention and support by avoiding being mislabeled as depressed.

With regard to interventions, the distinction view of symptoms may allow us to work toward developing novel and effective self-management programmes, designed specifically for general distress. The current approach to care for psychological symptoms in general practice could be viewed as taking treatments developed for severe disorder and applying them to substantial proportions of patients falling along what is seen as a continuum. This is the case for both antidepressants and Cognitive Behavioural Therapy (CBT). However, the evidence suggests that antidepressants are only effective beyond the placebo response in the most severe (Kirsch, 2008; Kirsch et al., 2008; Moncrieff, 2009), and dropout from 'low intensity' CBT interventions is consistently high (Eysenbach, 2005; Geraghty et al. 2010; Geraghty et al. 2013). These findings may in part stem from the heterogeneity of patients classified as depressed using the current broad continuum conceptualisation. Developing specific interventions for distress to target the potentially large subgroup of patients who experience distress without reaching caseness for depressive disorder, may increase the efficacy of, and engagement with, interventions in this subgroup. Traditional treatments such as antidepressants and CBT, both designed to address dysfunctioning internal systems, whether biological, cognitive or affective may be less effective for patients experiencing non-disordered distress.

Future trials to evaluate the effect of applying this distinction to service delivery might investigate stratified care based on symptom presentation. For instance, a distinct care pathway could be developed for those patients who present to primary care experiencing heightened distress without core depression symptoms, and where the clinician assesses the key driver of the symptoms to be external stressors. Developed with extensive qualitative work with patients, this pathway may involve educational components about the nature and function of distress, and techniques regarding how to manage difficult emotions in the context of crisis or chronic stressors. The rationales in such a pathway would differ from education about, and subsequent treatment for depression where causes may be attributed primarily to dysfunctional cognitive schemas, or behaviors of the patient. A key test would be to show that stratifying patients to treatment pathways based on distress/depression

distinctions would lead to greater patient well-being and satisfaction than the current continuum approach, where all patients will be treated as having a depressive disorder when they reach a particular threshold of severity and functional disability.

Both qualitative and quantitative methodologies are important in continuing to explore this area. Qualitative research with patients is necessary to ensure conceptual/quantitative exportations of these issues map on to patients' experiences and perceptions of their mental health symptoms. Triangulation of qualitative and quantitative data will support the development of measures and educational rationales that are acceptable to patients. Qualitative work with GPs is also necessary. GPs may draw upon differing models when assessing and treating patients with mental health problems. In depth qualitative studies will enable us to determine if GPs are already applying this distinction, or what issues they foresee in its application to day-to-day practice. If trials and future studies show that investigation of a distinction and application in practice improves mental health care, as context and clinical judgement are important, training for GPs may be necessary to reduce variability in assessment. Future quantitative work could include the 4DSQ in depression trials to explore whether the distress and depression subscales have predictive validity in regard to outcomes. For instance, are patients identified as cases on the depression scale more likely to experience benefit beyond placebo from antidepressants compared to those patients with heightened distress without depression?

There are some limitations to be considered with regard to our data. Our sample was predominantly older, female and white, thus the 4DSQ and additional scales may perform differently in samples with a differing demographic make-up. The 4DSQ is 50 items long which may form a barrier to use. Nevertheless, the Dutch version is used in clinical practice within The Netherlands (Terluin et al., 2008), where patients often take the scale with away when they attend and complete it between appointments (comparable for how lab tests are used for instance). With future research it may be possible to develop a reduced multidimensional scale, suitable for research studies where patient load is an issue. In addition, our conceptualisation could perhaps be applied to existing measures, by weighting certain items that theoretically are more likely to align with emotional distress or psychiatric disorder. Finally, we did not record whether patients in our sample had long-term health conditions such as diabetes, asthma or COPD. Exploring the distinction conceptualisation in patients with multimorbid health conditions may present a fruitful avenue for research. Tools to help

determine whether patient's psychological symptoms are primarily a distress reaction driven by their physical condition, or a reflection of underlying psychiatric dysfunction may facilitate the targeting of appropriate treatment.

To conclude, we are primarily interested in the clinical utility of viewing emotional distress and psychiatric disorder as related but distinct constructs. Research is needed to determine if this view of a distinction aligns with patients' phenomenological experiences', and work is required to develop and evaluate distress-specific interventions for (self-) management. Broadening both conceptual and intervention approaches, by acknowledging the full diversity of psychological problems presented in general practice, may enable GPs to support the mental health of their patients more effectively.

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## Conflicts of interest

BT is the copyright owner of the 4DSQ and receives copyright fees from companies that use the 4DSQ on a commercial basis (the 4DSQ is freely available for noncommercial use in health care and research). BT received fees from various institutions for workshops on the application of the 4DSQ in primary care settings.

## Contributors

MM and AG conceived of the idea for the study. AG, MM, BT, BS and PL developed the study design. BS analysed the data. TK contributed to the analysis plan and interpretation of results. AG drafted the manuscript. All authors contributed to drafts and approved the final submission.

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Table 1. Demographic characteristics of the sample

Demographic characteristic	Proportion
Female	294/487 (60.37%)
Age	59.73 (17.36)
Marital status	
• Single	51/486 (10.49%)
• Married	290/486 (59.67%)
• Cohabiting	36/486 (7.41%)
• Divorced	34/486 (7.00%)
• Separated	8/486 (1.65%)
• Widowed	67/486 (13.79%)
White ethnicity	473/485 (97.53%)
Age left education	18.46 (3.18)
Employment status	
Full time employee	93/484 (19.21%)
Part time employee	66/484 (13.64%)
Self employed (full time)	18/484 (3.72%)
Self employed (partime)	22/484 (4.55%)
Homemaker	26/484 (5.37%)
Retired	226/484 (46.69%)
Not in employment due to disability	7/484 (1.45%)
Not in employment due to long term sickness	11/484 (2.27%)
Unemployed	
Student	9/484 (1.86%)
	6/484 (1.24%)

Table 2. Means and median score across all scales

Measure (possible range)	Mean (SD)	Median (IQR)
Distress (0-32)	7.62 (7.58)	5 (2,11)
Depression (0-12)	1.15 (2.51)	0 (0,1)
Anxiety (0-24)	1.94 (3.95)	0 (0,2)
Somatization (0-32)	6.35 (6.21)	5 (2,8.5)
PHQ-9 (0-27)	4.91 (5.75)	3 (1,7)
GHQ-12 (0-12)	2.20 (3.43)	0 (0,3)
HADS-D (0-21)	3.75 (3.77)	3 (1,6)

Note. 4DSQ: Four-Dimensional Symptom Questionnaire. PHQ-9: Patient Health Questionnaire-9. GHQ-12: General Health Questionnaire-12. HADS: Hospital Anxiety and Depression Scale.

Table 3. Spearman and Person's correlations between the scales

4DSQ	PHQ-9		HADS-D		GHQ-12	
	Spearman	Pearson	Spearman	Pearson	Spearman	Pearson
Distress	0.8273	0.8579	0.6821	0.7702	0.7254	0.8054
Depression	0.5845	0.7166	0.6246	0.6992	0.6514	0.6999

Note. 4DSQ: Four-Dimensional Symptom Questionnaire. PHQ-9: Patient Health Questionnaire-9. GHQ-12: General Health Questionnaire-12. HADS: Hospital Anxiety and Depression Scale.

Table 4. Cut points and the number (%) of patients classed as a case on each scale

Scale	Cut point used ( $\geq$ )	Number classed as a case (%)
4DSQ – distress	11	126/485(25.98%)
4DSQ – depression	6	38/468 (8.12%)
PHQ – 9	10	78/479 (16.28%)
PHQ – 9	5	176/479 (36.74%)
GHQ-12	3	131/457 (28.67%)
HADS-D	8	64/464 (13.79%)

Note. 4DSQ: Four-Dimensional Symptom Questionnaire. PHQ-9: Patient Health Questionnaire-9. GHQ-12: General Health Questionnaire-12. HADS: Hospital Anxiety and Depression Scale.

Table 5. 4DSQ distress and depression profiles of patients scoring as cases on the PHQ-9, HADS-D and the GHQ-12.

Case on scale:	Proportion classed as distressed on the 4DSQ	Proportion classed as depressed on the 4DSQ
PHQ – 9 (using cut point of 10)	71/78 (91.03%)	32/72 (44.44%)
PHQ – 9 (using cut point of 5)	111/176 (63.07%)	38/167 (22.75%)
HADS-D	49/63 (77.78%)	29/58 (50.00%)
GHQ-12	92/131 (70.77%)	33/131 (26.61%)

Note. 4DSQ: Four-Dimensional Symptom Questionnaire. PHQ-9: Patient Health Questionnaire-9. GHQ-12: General Health Questionnaire-12. HADS: Hospital Anxiety and Depression Scale.

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Table 6. Classification table showing 4SDQ distress and depression 'caseness' in comparison with the PHQ-9 ( $\geq 10$ )

4DSQ	4DSQ	PHQ-9 –	PHQ-9 +	Total
distress -	dep -	337	7	344
	dep +	0	0	0
distress +	dep -	46	33	79
	dep +	6	32	38
Total		389	72	461

Note. 4DSQ: Four-Dimensional Symptom Questionnaire. PHQ-9: Patient Health Questionnaire-9.