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The importance of worry across diagnostic presentations: Prevalence, severity and associated symptoms in a partial hospital setting

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ABSTRACT

Although excessive worry has been linked primarily with Generalized Anxiety Disorder (GAD), recent work suggests worry is dimensional, with potential relevance to a range of psychiatric disorders. The current study examined associations between worry and psychological symptoms across several primary diagnoses and tested worry's hypothesized unique relation to GAD in an acute psychiatric setting. Participants were 568 patients with primary diagnoses of Major Depression, Bipolar Disorder-Depressed, Bipolar Disorder-Manic, and Psychosis. Participants completed a structured diagnostic interview and questionnaires at admission. Partial correlations controlling for GAD diagnosis indicated that worry correlated with higher depression and poorer overall well-being in the Depressed, Bipolar-Depressed, and Psychosis groups and decreased functioning in the Depressed, Bipolar-Manic, and Psychosis groups. Depressed and Bipolar-Depressed groups endorsed the highest level of worry. A comorbid anxiety disorder was associated with higher worry across primary diagnoses, even after controlling for GAD. Of the anxiety disorders, GAD and Panic Disorder diagnoses predicted higher worry scores. Results discussed in terms of conceptual implications for worry as a transdiagnostic concept and clinical interventions.

1. Introduction

Over the last 25 years, research on worry has grown substantially. Although worry was initially conceptualized as merely a co-occurring symptom of anxiety, it is now considered a topic worthy of study in its own right (Purdon & Harrington, 2006). Despite increased attention of late however, worry remains largely understudied, particularly outside the context of Generalized Anxiety Disorder (GAD). Historically viewed as uniquely related to GAD, recent work has shown that worry is common in a number of psychological disorders, including other anxiety disorders and depression (Gladstone et al., 2005; Mohlman et al., 2004; Starcevic, 1995). Such findings have cast doubt on the notion that severe worry is linked exclusively to GAD, prompting hypotheses that worry is an important transdiagnostic concept (Harvey, Watkins, Mansell, & Shafran, 2004; Starcevic et al., 2007) with implications for a number of psychiatric disorders. More work in this area is needed to further understand worry across the anxiety disorders and depression, as well as in other diagnostic groups for which worry might be relevant. The current study sought to examine the prevalence and severity of worry across a number of diagnostic groups, to investigate associations between worry and other psychological symptoms across primary diagnoses, and to determine the extent to which severe worry is unique to GAD.

1.1. Is worry uniquely associated with GAD?

Worry is defined as a relatively uncontrollable chain of primarily verbal-linguistic thoughts about uncertain events with the potential for future negative outcome (Borkovec, 1994; Borkovec, Robinson, Pruzinsky, & DePree, 1983; Pruzinsky & Borkovec, 1990). Worry can be classified under the broader conceptualization of self-focused attention that exists across disorders, hypothesized to represent a shared underlying cognitive process (Ingram, 1990). Although similar to other intrusive or repetitive forms of cognitive activity, worry can be differentiated from obsessions (Turner, Beidel, & Stanley, 1992; Wells & Morrison, 1994) and rumination (Hughes, Alloy, & Cogswell, 2008).

Worry is the hallmark feature of GAD (American Psychiatric Association, 2000). Although excessive worry is presumed to have a unique association with GAD, research support for this notion is mixed. While a small body of literature suggests that individuals with GAD endorse significantly higher levels of worry compared to those with MDD (Becker, Goodwin, Hölting, Hoyer, & Margraf, 2003; Chelminski & Zimmerman, 2003; Gladstone et al., 2005) and other anxiety disorders, including Social Anxiety Disorder, Panic Disorder, Specific Phobia, and Post-traumatic Stress

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Disorder (PTSD) (Chelminski & Zimmerman, 2003; Fresco, Mennin, Heimberg, & Turk, 2003; Hoyer, Becker, & Roth, 2001), findings linking excessive worry to GAD have been equivocal. In some studies severe worry has failed to distinguish individuals with and without a GAD diagnosis. For example, when the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) was used as a screening instrument for GAD in an inpatient sample, the measure was unable to adequately identify the GAD group, with 49% of the sample falsely classified (Salzer, Stiller, Tacke-Pook, Jacobi, & Leibing, 2009). In another study, Ruscio (2002) found that only 20% of a sample of "pathological worriers" met diagnostic criteria for GAD.

Other work also suggests that GAD groups fail to endorse higher levels of worry compared to other diagnostic groups. Similar levels of worry have been found in MDD and GAD groups (Starcevic, 1995) and a more recent report showed that worry was comparable across individuals with MDD and GAD, MDD and Panic Disorder, and MDD and Obsessive-Compulsive Disorder (OCD) (Gladstone et al., 2005). Another study reported that those with a primary diagnosis of GAD or Social Anxiety Disorder endorsed higher worry compared to those with Panic Disorder (Starcevic et al., 2007). In addition, patients with any comorbid depressive or anxiety disorder endorsed higher worry severity compared to those without a co-occurring disorder. Similarly, Mohlman et al. (2004) failed to find difference in worry between older patients with GAD and Panic Disorder, and another study suggested that there were no differences in worry between individuals with "pure" GAD, Social Anxiety Disorder, and Panic Disorder with and without agoraphobia (Starcevic et al., 2007). Finally, other work indicated that associations between worry and GAD are similar to associations between worry and Panic Disorder and OCD (Gladstone et al., 2005; Mohlman et al., 2004).

Further empirical evidence also demonstrates that worry correlates positively with rumination, depression, anxiety, and PTSD symptom severity (Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Hong, 2007; Segerstrom, Tsao, Alden, & Craske, 2000; Tull, Hahn, Evans, Salters-Pedneault, & Gratz, 2011) and in an experimental study by Andrews and Borkovec (1988) worry induced both depressive and anxious affect. Recent work has also linked several dimensions of worry with delusional ideation and delusional and hallucinatory distress (Morrison & Wells, 2007; Startup, Freeman, & Garety, 2007). For example, Morrison and Wells (2007) found that social worry predicted depression in a group of patients with schizophrenia spectrum diagnoses. Their results also suggested that patients with schizophrenia spectrum diagnoses did not differ from patents with anxiety disorders on measures of social worry, health worry, or metacognitive worry.

1.2. Worry as a transdiagnostic concept

How can we explain these findings, which seem to contradict the notion that severe worry is associated specifically with GAD? Starcevic et al. (2007) suggest that methodological factors may explain some inconsistencies and point out several issues that should be clarified in future work. First, the nature of the samples studied differed substantially across studies (e.g., community samples, specialty mood or anxiety clinic samples, or a general pool of psychiatric outpatients). Second, worry was assessed using different questionnaires across studies, although most used the PSWQ. The authors also point out the effect of comorbid anxiety and MDD on worry severity was accounted for to various degrees by previous studies and may have significantly impacted the results.

A more fundamental issue, however, is that the extant literature casts doubt on the notion that severe worry is limited to GAD, generating the hypothesis that worry may be important across a number of disorders. A recent taxometric examination provides substantial support for this idea (Olatunji, Broman-Fulks, Bergman, Green, & Zlomke, 2009). Results from this study suggest that worry is most accurately conceptualized as a dimensional construct, present to some extent in all individuals, and that worry has relatively equal associations with anxiety, depression, and stress across the entire continuum.

Conceptually, worry is linked with Social Anxiety Disorder, Panic Disorder, Obsessive-Compulsive Disorder, Posttraumatic Stress Disorder, health anxiety, depression, insomnia, and psychosis (Purdon & Harrington, 2006). For example, it seems likely that individuals with Panic Disorder may worry about having a panic attack and plan ways to avoid or escape potential situations, while individuals with social anxiety may worry about upcoming social situations. Worry might also be implicated in Bipolar Disorder, as it seems reasonable to hypothesize that individuals with the diagnosis might worry about future mood episodes.

Overall, the impact of co-occurring worry on symptom severity or psychological distress outside of GAD is not well understood. However, a small body of literature suggests that worry is linked with a number of symptoms and may worsen other conditions. For example, worry has been associated with insomnia (Harvey & Greennall, 2003), problematic interpersonal processes (Borkovec, Ray, & Stöber, 1998), poorer perceived health, and higher perceived stress (Kertz & Woodruff-Borden, 2011). Worry has also been shown to exacerbate physical problems. In one study of patients with Multiple Sclerosis worry was associated with sleep disturbance, fatigue, pain, problem-solving deficits, and disability status (Bruce & Arnett, 2009) and health worry was related to increased pain in a sample of older adult men (Blyth et al., 2011). Thus, it appears that worry is associated with a number of symptoms outside the context of GAD.

1.3. The current study

The current study therefore had several objectives. First, to examine the prevalence of worry and its association with measures of psychological symptoms across diagnostic groups in an acute psychiatric setting. Second, we examined the impact of co-occurring GAD and other anxiety disorders to assess the extent to which worry is uniquely associated with GAD compared to other primary diagnoses and other anxiety disorders.

We tested four related hypotheses. First, we predicted that worry would be associated with increased symptom presentation in individuals across several diagnostic groups, controlling for a diagnosis of GAD. Second, we examined worry scores across the four diagnostic groups, again controlling for a diagnosis of GAD, predicting that worry would be highest among depressed patients. Third, we hypothesized that the presence of a comorbid anxiety diagnosis other than GAD would also be associated with higher levels of worry across diagnostic groups. Finally, we predicted that a Social Anxiety Disorder diagnosis would significantly predict worry scores compared to other anxiety disorders, over and above GAD and primary diagnoses.

2. Methods

2.1. Participants

Participants were patients presenting for treatment at a partial hospital program in a private psychiatric hospital in New England. Some patients were referred by their outpatient treatment providers for an increased level of care while others were stepping down from an inpatient hospitalization. Data from our program demonstrates that in the time frame of the present study (July 2010–September 2011) 47.5% of patients were referred from the

community (e.g., outpatient referrals) and 52.5% were from inpatient referrals. The partial program serves patients with a wide range of Axis I symptoms and diagnostic comorbidity is exceedingly common; 70% (n = 271) of the sample met criteria for more than one DSM-IV disorder, with an average of 2.24 diagnoses (SD = 1.24).

This study focused on the presentation of worry in patients presenting with primary diagnoses of Depression, Bipolar Disorder, and Psychosis. For this reason, inclusion criteria were that the patient met criteria for a primary diagnosis of Major Depression (single episode or recurrent), Bipolar Disorder, or a Psychotic Disorder. Bipolar patients were divided into two subcategories, including Bipolar, most recent episode depressed (Bipolar-Depressed; n = 66), Bipolar most recent episode manic or hypomanic (Bipolar-Manic; n = 30). Patients with primary diagnoses other than these were excluded from the study. This includes patients with a diagnosis of Bipolar Disorder, most recent episode mixed (n = 13), Mood Disorder Not Otherwise Specified (n = 91; diagnosed by the program psychiatrist), no diagnosis (n = 14), and other diagnoses (Generalized Anxiety Disorder n = 17, Obsessive-Compulsive Disorder n = 9, Post-Traumatic Stress Disorder n = 6, Panic Disorder with Agoraphobia n = 6, and Social Anxiety Disorder n = 3) were excluded from the sample. This resulted in a sample of 590 patients. Of these, 22 had missing data for the PSWQ-A and so were excluded from the sample. A Chi-square analysis suggested that the missing data group did not differ from the group with PSWQ-A data on prevalence of comorbid GAD diagnosis, or the diagnosis of another comorbid anxiety disorder, disorders that may have inflated the relevance of worry to symptoms. The final sample included 568 patients: 379 in the Depression group, 66 in the Bipolar-Depressed group, 30 in the Bipolar-Manic group, and 93 in the Psychosis group. See Table 1 for diagnostic characteristics and comorbidity in the groups.

2.2. Measures

2.2.1. Miniature International Neuropsychiatric Interview (MINI; Sheehan et al., 1998)

The MINI is a structured interview assessing for DSM-IV Axis I symptoms (e.g., mood, anxiety, substance abuse, psychosis). Each MINI diagnostic module consists of a series of screening items followed by questions about specific symptomatology. The *MINI* has strong reliability and validity in relation to the Structured Clinical Interview for DSM-IV (SCID-IV), with inter-rater reliabilities ranging from kappas of .89–1.0 (Sheehan et al., 1998). For the current sample, inter-rater reliability between the MINI and the program psychiatrists ranged from substantial to outstanding (Landis & Koch, 1977): Depression kappa = .69, Bipolar-Depressed kappa = .75, Bipolar-Manic kappa = .89, Psychosis kappa = .84.

2.2.2. Center for the Epidemiological Studies of Depression-10 (CESD-10; Andersen, Malmgren, Carter, & Patrick, 1994)

The CESD-10 is a widely used, brief instrument for measuring symptoms of depression. Items assess for symptoms of depression (e.g., "I felt depressed") and response anchors range temporally from 0 = rarely or none of the time (less than 1 day) to 3 = most or all of the time (5–7 days). The CESD-10 has proven to be reliable and valid and had high internal consistency in this study (α = .89).

2.2.3. Penn State Worry Questionnaire-Abbreviated (PSWQ-A; Hopko et al., 2003)

The PSWQ-A is a well-validated, single factor, 8-item measure designed to assess worry severity. Derived from Meyer et al. (1990) original 16-item instrument, items on the PSWQ-A consist of statements about worry (e.g., "Many situations make me worry") that participants rate on a 5-point Likert-type scale ranging from 1 (Not at all typical of me) to 5 (Very typical of me). Total scores range from 8 to 40, with higher scores indicating higher levels of worry. Reliability in the present study was very high (α = .95).

2.2.4. Schwartz Outcome Scale-10 (SOS-10; Blais et al., 1999)

The SOS-10 is a well-validated and reliable, single factor, 10-item measure designed to examine a broad domain of psychological health in a variety of settings (Young, Waehler, Laux, McDaniel, & Hilsenroth, 2003). Each item on this 10-item scale assesses for psychological well-being (e.g., "My life is according to my expectations"). Participants rate items on a 7-point Likert scale from 0 (Never) to 6 (All or nearly all of the time). Total scores, with higher scores indicating better psychological health, range from 0 to 60. Internal consistency of the SOS was high in the present study (α = .94).

2.2.5. Behavior and Symptom Identification Scale (BASIS-24; Eisen, Normand, B, Spiro, & Esch, 2004)

The BASIS-24 is a 24-item measure that has demonstrated good psychometric properties across inpatient, outpatient, residential, and partial hospital settings as a broad assessment of psychopathology and associated distress. The BASIS-24 consists of six subscales which assess for symptoms over the past week: (1) depression/functioning ("Feel sad or depressed?"), (2) interpersonal problems ("Get along with people in your family?"), (3) self-harm ("Think about ending your life?"), (4) emotional liability ("Have mood swings?"), (5) psychosis ("Hear voices or see things?"), and (6) substance abuse/dependence ("Did you have an urge to drink alcohol or take street drugs?"). Respondents rate items on a 5-point Likert-type scale from 0 ("None of the Time") to 4 ("All of the Time") and higher scores indicating worse functioning. Subscales range from 0–8 (self-harm) to 0–24 (depression/functioning) and total scores reflect overall functioning. Reliability of BASIS-24 total scores in the current study was high (α = .87). Subscale reliability was high (α = .80) for depressive/functioning, interpersonal problems, self-harm, and substance abuse/dependence, and moderate for emotional lability (α = .74) and Psychosis (α = .61). The psychosis subscale was not included in this study.

2.3. Procedure

Approval for the study was granted by the hospital's Internal Review Board and all patients gave informed consent to be included in the study. Before receiving any form of treatment, patients completed the MINI, a demographics survey, and a battery of self-report measures. The battery of self-report measures was also completed at discharge.

2.4. Data analytic plan

The Statistical Package for the Social Sciences version 17.0 (SPSS) was used for all analyses. To test the first hypothesis, partial correlations between worry and depression, functioning, relationships, self harm, emotional liability, substance use, and overall psychological well-being were examined across the four diagnostic groups, controlling for GAD diagnosis. Second, to examine worry scores across the four groups, an analysis of covariance (ANCOVA) was constructed, with GAD diagnosis as the covariate and primary diagnosis as the independent variable. PSWQ-A scores were used as the dependent variable. To test the third hypothesis that a comorbid anxiety other than GAD would be associated with higher worry, we first constructed a variable coded for the presence of absence of an anxiety disorder other than GAD (Social Anxiety Disorder, Panic Disorder, Post-traumatic Stress Disorder, or Obsessive-Compulsive Disorder). We then ran a two-way ANCOVA, with primary diagnosis (Major Depression, Bipolar-Depressed, Bipolar-Manic, or

Table 1
Diagnostic presentations and comorbidity by diagnostic groups.

	Primary diagnosis			
	Major Depression	Bipolar Depressed	Bipolar Manic	Psychosis
Generalized Anxiety Disorder	33.5% (127)	37.9% (25)	3.3% (1)	15.1% (14)
Social Anxiety Disorder	23.7% (90)	12.1% (8)	6.7% (2)	19.4% (18)
Panic Disorder	14.2% (54)	9.1% (6)	3.3% (1)	10.8% (10)
Obsessive-Compulsive Disorder	10.3% (39)	7.6% (5)	3.3% (1)	15.1% (14)
Post-Traumatic Stress Disorder	10.8% (41)	13.6% (9)	0.0% (0)	4.3% (4)
Total Diagnoses (M, SD)	1.9 (1.0)	1.8 (.89)	1.2 (.38)	1.7 (.92)

Note: Cells may not add to the total number of participants as multiple comorbid diagnoses are represented. Values in parentheses indicate ns.

psychosis) and comorbid anxiety other than GAD as the independent variables and worry score as the dependent variable, again controlling for a GAD diagnosis. Finally, to test the fourth hypothesis we constructed a regression equation, again predicting worry scores and controlling for GAD diagnosis in Block 1. In Block 2 we then entered the primary diagnosis variable, and in Block 3 each of the other anxiety disorders (dummy coded as present or absent), including Social Anxiety Disorder, Panic Disorder, Post-traumatic Stress Disorder, or Obsessive-Compulsive Disorder.

3. Results

3.1. Preliminary analyses and sample description

Diagnostic groups (Depressed, Bipolar Depressed, Bipolar-Manic, and Psychosis) were compared on demographic variables to identify potential confounding factors in comparing symptom presentations. The four groups did not differ significantly in terms of age ($F(3, 564) = 1.992$, $p = .13$), race (χ^2 (24, $N = 566$) = 26.83, $p = .31$), or education ($\chi^2(12, N = 564) = 8.88$, $p = .72$), however there was a significant difference for sex ($\chi^2(3, N = 568) = 18.54$, $p < .001$), with more men and fewer women in both Bipolar Disorder groups and the Psychotic Disorder group, and more women in the Depressed group.

The sample as a whole was highly symptomatic across a number of domains (see Table 2). The overall sample presented with high levels of worry, approaching two full standard deviations above published non-clinical norms (Crittendon & Hopko, 2006). Individuals with a diagnosis of GAD also endorsed higher worry than those without the disorder, $t(566) = -8.28$, $p < .001$, $M = 33.15$ (SD = 7.07) and $M = 26.51$ (SD = 9.30), respectively. As a comparison, Crittendon et al. (2006) found that the average score was 14.9 (SD = 6.82) in a community sample of older adults and 21.8 (SD = 8.2) in an undergraduate sample. We are not aware of published normative data for the PSWQ-A for intensive outpatient or partial hospital levels of care; however one study of inpatients receiving treatment for Obsessive-Compulsive Disorder found worry levels similar to those in the present sample (Calleo, Hart, Björgvinsson, & Stanley, 2010).

This sample also reported high levels of depression. The overall sample mean fell almost one standard deviation above the established clinical cut score for severe depression (Andersen et al., 1994). In terms of general psychological health as measured by the SOS, the sample scored within the expected range for adult outpatients (Blais, Kehl-Fie, & Blias, 2008). Subscales of BASIS-24 were in line with previously demonstrated benchmarks of patients in partial level of care (Idiculla, 2007).

3.2. Hypothesis testing

First, to test the hypothesis that worry is associated with increased symptoms of distress across primary diagnostic groups, we examined partial correlations between worry and depression, functioning, relationships, self harm, emotional liability, substance use, and overall psychological well-being, controlling for a GAD diagnosis (see Table 3). For the Depressed and Psychosis groups, worry correlated with depression, functioning, emotional liability, self-harm, and overall well-being. In the Bipolar-Depressed group, worry correlated moderately with decreased well-being, and in the Bipolar-Manic group, worry correlated positively with depression and with decreased functioning. Worry was also associated with poorer relationships in the Depressed group. These results highlight the relevance of worry to a number of psychological symptoms, regardless of primary diagnosis.

To test the second hypothesis that worry would be highest in the Depressed group compared to either of the Bipolar groups or the Psychosis group. An ANCOVA revealed a significant effect for primary diagnosis, $F(3, 563) = 19.82$, $p < .001$. Post hoc pairwise comparisons indicated that the Depressed group endorsed the highest level of worry ($M = 29.97$, SE = .43), although this was not statistically different from that of the Bipolar-Depressed group ($M = 28.80$, SE = .1.02). Both the Depressed group and the Bipolar-Depressed group reported significantly greater worry than the Bipolar-Manic ($M = 19.95$, SE = .1.53) and Psychosis ($M = 24.84$, SE = .87) groups. Additionally, the Psychosis group reported significantly more worry than the Bipolar-Manic group. These results suggest that worry is equally high in both Depressed and Bipolar-Depressed groups, and elevated in patients with psychosis.

The third hypothesis was tested by examining whether the presence of a comorbid anxiety diagnosis other than GAD was associated with higher levels of worry across the four primary diagnoses, again controlling for GAD diagnosis. The interaction term was nonsignificant, $F(3, 559) = .10$, $p = .96$, and the primary diagnosis was significant, as expected based on the previous hypothesis test. The effect for comorbid anxiety was significant, $F(1, 559) = 6.08$, $p = .01$, with a mean worry score of 28.21 (SE = 1.19) for the group with comorbid anxiety compared to 24.94 (SE = .59) for the group without comorbid anxiety. These results suggest that across all primary diagnostic groups, the presence of a comorbid anxiety disorder is associated with higher worry, even when controlling for GAD diagnosis.

The fourth hypothesis that GAD and Social Anxiety Disorder diagnoses would significantly predict worry scores compared to other anxiety disorders was tested with a regression equation, with GAD in Block 1, primary diagnosis in Block 2, and PTSD, Social Anxiety, Panic Disorder, and OCD diagnoses in Block 3. Blocks 1, 2, and 3 were each significant, $F(1, 556) = 68.29$, $p < .001$, $F(2, 555) = 53.85$, $p < .001$, and $F(6, 551) = 23.35$, $p < .001$, respectively. Block 1 explained 10% of the variance in worry, and the addition of the primary diagnosis was significant, resulting in an R-Square change value of 5%. The third block containing the other anxiety disorder diagnoses also resulted in significant model improvement, explaining an additional 4% of the variance in worry scores. The overall model explained 19% of the variance in worry. An examination of the individual predictors indicated that, not surprisingly, GAD diagnosis, $b = .27$, $t = 6.95$, $p < .001$, and primary diagnosis, $b = -.22$, $t = -5.72$, $p < .001$, were significant predictors. Of interest,

Table 2
Means and standard deviations of symptom measures by diagnostic groups.

	All Diagnoses	Depressed	Bipolar Depressed	Bipolar Manic	Psychosis
CES-D	15.5 (8.0)	16.8^{AB} (7.6)	17.5^{CD} (6.9)	6.9^{acE} (5.0)	11.6^{bde} (7.1)
PSWQ-A	28.5 (9.2)	30.1^{AB} (8.4)	29.3^{CD} (8.4)	18.5^{acE} (7.6)	24.1^{bde} (10.0)
SOS	32.2 (15.1)	28.9^{AB} (13.2)	30.9^{CD} (13.6)	51.9^{acE} (14.7)	44.3^{bde} (13.8)
BASIS 24 – DF	2.1 (1.0)	2.3^{AB} (1.0)	2.4^{CD} (0.9)	1.2^{ac} (0.8)	1.7^{bd} (1.0)
BASIS 24 – EL	1.5 (1.0)	1.5^{A} (1.0)	1.9^{aBC} (1.0)	1.1^{b} (1.0)	1.4^{c} (1.0)
BASIS 24 – SA	0.4 (0.7)	0.4 (0.7)	0.5 (0.7)	0.4 (0.8)	0.4 (0.7)
BASIS 24 – R	1.6 (1.0)	1.6^{A} (1.0)	1.6 (0.8)	1.4^{a} (1.2)	1.5 (1.0)
BASIS 24 – SH	0.7 (0.9)	0.8^{AB} (0.9)	0.8^{CD} (1.0)	0.04^{acE} (0.2)	0.4^{bde} (0.7)

DF, depressive functioning; EL, emotional liability; SA, substance abuse; R, relationships; SH, self-harm. Significant differences (using pairwise tests, $p < .05$) between diagnostic groups on a specific symptom measures are indicated by corresponding upper and lower case letters per line (i.e. A > a).

Panic Disorder emerged as the only anxiety disorder in Block 3 that made a significant unique contribution to the prediction, $b = .16$ $t = 4.02$, $p < .00$. This finding suggests that GAD is not the only anxiety disorder significantly associated with worry.

4. Discussion

The current study was designed to examine the severity of worry and its relation with presenting distress across a range of primary diagnoses, and to examine the extent to which worry is uniquely associated with a GAD diagnosis. In summary, our findings suggest that worry was indeed associated with presenting distress across diagnoses, particularly in the Depressed, Bipolar-Depressed, and Psychosis groups. Elevated levels of worry were found in the Depressed and Bipolar-Depressed, and worry was also high in the Psychosis group. Comorbid anxiety disorders, controlling for GAD, were associated with higher worry across the four primary diagnostic groups, and a Panic Disorder predicted worry scores, after controlling for GAD and primary diagnoses. Results are discussed in more detail below.

Worry in this sample is related to multiple symptoms of psychological distress, regardless of primary diagnoses. One of the most robust findings was worry's association with higher depression in the Depressed, Bipolar-Manic, and Psychosis groups. The association between worry and/or GAD and depression is well documented (Regier, Goldberg, Kendler, & Sirovatka, 2010) and these findings provide additional support for the close relation between the two. Worry's relation to poorer relationships in the Depressed group is in line with other work indicating that worry, even outside the context of a GAD diagnosis, is associated with poorer social support

Table 3
Correlations between worry and symptom measures by diagnostic groups.

	1.	2.	3.	4.	5.	6.	7.	8.
Depressed ($n = 379$)								
1. PSWQ-A	–							
2. CES-D	.40**	–						
3. SOS	−.30**	−.10	–					
4. BASIS-24 – DF	.37**	.90**	.00	–				
5. BASIS-24 – EL	.30**	.53**	.14*	.54**	–			
6. BASIS-24 – SA	.01	.12*	.10	.13	.32**	–		
7. BASIS-24 – R	.15*	.01	−.63**	−.10	−.10	−.09	–	
8. BASIS 24 – SH	.11*	.42**	−.12*	.40**	.25**	.11*	.04	–
Bipolar-D ($n = 66$)								
1. PSWQ-A	–							
2. CES-D	.19	–						
3. SOS	−.33*	−.33*	–					
4. BASIS-24 – DF	.22	.86**	−.26*	–				
5. BASIS-24 – EL	.16	.56**	−.01	.58**	–			
6. BASIS-24 – SA	.02	.28*	.02	.33	.36*	–		
7. BASIS-24 – R	.08	.15	−.53**	.12	.00	.15	–	
8. BASIS 24- SH	−.02	.45**	−.30*	.49**	.31*	.03	.17	–
Bipolar-M ($n = 30$)								
1. PSWQ-A	–							
2. CES-D	.41*	–						
3. SOS	−.08	−.41*	–					
4. BASIS-24 – DF	.46*	.72**	−.19	–				
5. BASIS-24 – EL	.26	.48*	−.22	.62**	–			
6. BASIS-24 – SA	.25	.44*	.10	.41	.70**	–		
7. BASIS-24 – R	−.03	.04	−.25	−.22	−.30	−.06	–	
8. BASIS 24 – SH	.22	.55**	−.33	.37	.29	.62**	.20	–
Psychosis ($n = 93$)								
1. PSWQ-A	–							
2. CES-D	.58**	–						
3. SOS	−.65**	−.45**	–					
4. BASIS-24 – DF	.60**	.84**	−.40**	–				
5. BASIS-24 – EL	.44**	.71**	−.32*	.66**	–			
6. BASIS-24 – SA	.05	.14	−.08	.16	.38**	–		
7. BASIS-24 – R	.34*	.25*	−.61**	.11	.13	−.13	–	
8. BASIS 24 – SH	.35*	.56**	−.26*	.54**	.38**	.22*	−.01	–

DF, depressive functioning; EL, emotional liability; SA, substance abuse; R, relationships; SH, self-harm.
* $p < .05$.
** $p < .001$.

(Kertz & Woodruff-Borden, 2011). Further, the finding that worry is related to poorer overall psychological well-being in Depressed, Bipolar-Manic, and Psychosis groups suggests that, independent of diagnosis, worry may be a relevant target for treatment intervention. These results are consistent with findings that worry is a dimensional construct, and as Olatunji, Broman-Fulks, Bergman, Green, & Zlomke, 2010 suggest, targeting interventions only toward individuals who score above an arbitrary cut score would miss subthreshold individuals who might also benefit from a targeted worry intervention to improve functioning and well-being. Olatunji et al. (2010) have also suggested that incorporating dimensional assessments of worry into traditional categorical conceptualizations of diagnoses would provide valuable additional clinical information. Our results provide additional support for their suggestion.

The Depressed and Bipolar-Depressed groups endorsed higher worry compared to the Bipolar-Manic and Psychosis groups, controlling for GAD diagnosis. Although high levels of worry are typically linked with GAD, worry also appears to have a considerable association with unipolar and bipolar depression. This is consistent with Starcevic's (1995) findings that a depressed group endorses worry at a level of severity comparable to that reported in a GAD group. High worry scores in theses groups might also bear upon the larger conceptual issue of the association between GAD and MDD. The two disorders load onto a higher order factor of negative affect (see Mennin, Heimberg, Fresco, & Ritter, 2008 for a discussion) and have high rates of comorbidity (Kessler, Chiu, Demler, & Walters, 2005). Rumination and worry have also been linked (Hong, 2007), perhaps providing another explanation for symptomatic overlap. The association between GAD and MDD has been a primary area of interest in preparation for the DSM-V (see Regier et al., 2010), and although important, a full discussion is beyond the scope of this paper. As it relates to the current study, this findng indicates that although it may be most severe in patients witih a GAD diagnosis, worry is also common in patients with MDD.

Our findings add to the burgeoning literature examining the role of worry in psychosis. While patients with psychosis in this sample endorsed high levels of worry compared to community norms (Crittendon & Hopko, 2006), their average score was lower than the average for depressed groups and for patients with GAD in this sample. Although the high level of worry and its association with other symptoms are in line with work suggesting that worry is important for individuals with psychosis, our findings suggest that the severity is not comparable to that seen in GAD. For example, our work stands in contrast to the finding that 68% of individuals with persecutory delusions reported worry scores comparable to treatment seeking GAD patients (Startup et al., 2007) and Morrison and Wells' (2007) data indicating that patients with schizophrenia spectrum diagnoses report social worry, health worry, and metacognitive worry comparable to individuals with anxiety disorders. There are several possible explanations for our contradictory findings. First, the Psychotic Disorders group in this study is heterogeneous and patients with a variety of hallucinations, delusions, and paranoia are represented here. It could the that worry is related specifically to individuals with a specific presentation, such as persecutory delusions or schizophrenia spectrum diagnoses, as included in the Startup et al. (2007) and Morrison and Wells (2007) studies. Unfortunately, we were not able to examine associations between worry and specific psychotic symptoms due to the number of patients in this group. A second possible explanation is that patients' psychotic symptoms interfered with an accurate reporting of symptoms, either due to limited insight, fearfulness about reporting symptoms, or in some other way.

We found that the presence of a comorbid anxiety disorder was associated with higher levels of worry across the primary diagnostic groups, controlling for GAD diagnosis. Although it would have been ideal to follow up this test with more specific analyses to determine which of the anxiety disorders appeared to increase the worry scores in individual diagnostic groups, small group sizes precluded such an approach. However, there is evidence to suggest that worry is present to a meaningful extent in anxiety disorders other than GAD and that the diagnosis of a comorbid anxiety disorder significantly increases worry. Starcevic et al. (2007) found similar results, reporting that the presence of a comorbid anxiety or depressive disorder, in addition to a primary anxiety disorder, was associated with higher levels of worry. These findings have important clinical implications. As has been suggested by others, the high prevalence of comorbid anxiety in clinical settings suggests that worry is likely common in a large proportion of patients and highlight again that treatment targeted toward worry may be beneficial for a variety of diagnostic groups (Starcevic et al., 2007).

Our hypothesis that a Social Anxiety Disorder diagnoses would predict severe worry after controlling for GAD was not supported. Of the anxiety disorders, Panic Disorder, not Social Anxiety Disorder, significantly predicted worry scores, in addition to GAD diagnosis and primary diagnosis. This finding converges with results from the study by Mohlman et al. (2004) indicating that GAD and Panic Disorder groups endorsed similar levels of worry, and are consistent with work suggesting that GAD groups report more worry than Social Anxiety Disorder groups (Chelminski & Zimmerman, 2003; Fresco et al., 2003; Hoyer et al., 2001). Our findings stand in contrast, however, to a study that found that a Social Anxiety Disorder diagnosis predicted worry compared to the other anxiety disorders (Starcevic et al., 2007). Findings are clearly mixed in terms of which of the anxiety disorders, beyond GAD, are also characterized by severe levels of worry, and additional work is needed in this area. To address the broader question, however, there is some evidence to suggest that severe worry is present in anxiety disorders other than GAD, with diagnoses of Panic Disorder and likely associated with significant worry.

Beyond the examination of diagnoses as predictors in the regression analysis, results also address our objective to examine the extent to which worry is uniquely associated with GAD. Only 10% of the variance was explained by a GAD diagnosis, and even when primary diagnoses and other anxiety diagnoses were entered as predictors, the model as a whole explained only 19% of the variance in worry. This finding suggests that diagnoses actually leave more variance *unexplained* than explained, and that there is much more to worry than a diagnostic categorization. This is consistent with Olatunji et al.'s (2009) finding that worry is a dimensional construct and therefore not linked with a dichotomous diagnosis. Although beyond thes scope of the current discussion, there are a number of theoretical models of GAD and worry (see Behar, DiMarco, Hekler, Mohlman, & Staples, 2009, for a detailed review), hypothesizing about the role of avoidance, metacognition, intolerance of uncertainty, emotion regulaton, and mindfulenss and acceptance. Future work examing these models and assocated variables may explain more about worry than a GAD diagnosis.

This study has several limitations and our results should be interpreted with these in mind. First, the nature of the current sample may have influenced the findings. As a group, participants have high levels of symptoms, frequently have multiple Axis I disorders, and often present with Axis II personality traits. Given these clinical characteristics and the severity of symptoms warranting a partial hospital level of care, findings from this study may not generalize to other groups. Second, the sample size of some of the groups may have limited our power to detect effects. Third, the cross-sectional nature of the study limits our ability to draw directional conclusions about the associations between variables. For example, although worry significantly correlated with depression, given the design of the study, we are unable to interpret if worry leads to depression

or vice versa. Longitudinal designs would be better able to address the directionality of the effects.

4.1. Conclusions

Overall, findings from this study suggest that worry is not uncommon across a range of psychological disorders and is prevalent in a partial hospital setting. Our results indicate that worry is linked with several domains of psychological distress and comorbid anxiety disorders are associated with increased worry severity, an effect seen even when controlling for GAD diagnosis. Although patients with GAD are likely to report the highest levels of worry, findings from this study provide further reason to question the assumption that severe worry is uniquely associated with GAD compared to other anxiety disorders or MDD. Our results provide additional evidence for the conceptualization of worry as a broad transdiagnostic concept with implications for not only the anxiety disorders but also depression, and suggest that clinical interventions targeted at decreasing worry are likely to be beneficial for a broad range of individuals.

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