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Title: **Individuals with currently untreated mental illness: Causal beliefs and readiness to seek help**

Short title: Causal beliefs and readiness to seek help

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Abstract (359 words)

Aims: Many people with mental illness do not seek professional help. Beliefs about the causes of their current health problem seem relevant for initiating treatment. Our aim was to find out to what extent the perceived causes of current untreated mental health problems determine whether a person considers herself/himself as having a mental illness, perceives need for professional help and plans to seek help in the near future.

Methods: In a cross-sectional study, we examined 207 untreated persons with a depressive syndrome, all fulfilling criteria for a current mental illness as confirmed with a structured diagnostic interview (M.I.N.I.). The sample was recruited in the community using adverts, flyers and social media. We elicited causal explanations for the present problem, depression literacy, self-identification as having a mental illness, perceived need for professional help, help-seeking intentions, severity of depressive symptoms (PHQ-9), and whether respondents had previously sought mental health care.

Results: Most participants fulfilled diagnostic criteria for a mood disorder (*n*=181, 87.4%) and/or neurotic, stress-related and somatoform disorders (*n*=120, 58.0%) according to the ICD-10. N=94 (45.4%) participants had never received mental health treatment previously. Exploratory factor analysis of a list of 25 different causal explanations resulted in five factors: biomedical causes, person-related causes, childhood trauma, current stress and unhealthy behavior. Attributing the present problem to biomedical causes, person-related causes, childhood trauma and stress were all associated with stronger self-identification as having a mental illness. In persons who had never received mental health treatment previously, attribution to biomedical causes was related to greater perceived need and stronger help-seeking intentions. In those with treatment experience, lower attribution to person-related causes and stress were related to greater perceived need for professional help.

Conclusions: While several causal explanations are associated with self-identification as having a mental illness, only biomedical attributions seem to be related to increase perceived

need and help-seeking intentions, especially in individuals with no treatment experiences. Longitudinal studies investigating causal beliefs and help-seeking are needed to find out how causal attributions guide help-seeking behavior. From this study it seems possible that portraying professional mental health treatment as not being restricted to biomedical problems would contribute to closing the treatment gap for mental disorders.

Introduction

Too many people with mental illness do not seek professional help (Kohn et al., 2004), but it is still unclear why individuals with clinically relevant mental health problems chose to deal with their mental health problem on their own (Dietrich et al., 2016). Beliefs about the causes of their current symptoms are potential determinants of timely, delayed or unsuccessful help-seeking for mental disorders. In particular, etiological beliefs among persons who have not yet sought help for their mental health problems seem relevant for initiating treatment, but so far, in this highly relevant group, studies on causal explanations and their impact on help-seeking behavior are lacking (Magaard et al., 2017a). Previous studies have investigated etiological beliefs in patients who are already using mental health services (e.g. Khalsa et al., 2011; Tompkins et al., 2016), in students (e.g. Chen & Mak, 2008, Iselin & Addis, 2003) and in the general population (e.g., Angermeyer et al., 2011; Read et al., 2006; Schomerus et al., 2014).

Causal attributions are a central illness representation within the self-regulation model, which has been used to predict illness behavior mostly for medical, but also mental disorders (Leventhal et al., 1998). Internal, external, biological or psychological causal attributions likely imply different coping and help-seeking strategies in dealing with a mental disorder. For example, the "mental illness is an illness like any other" approach which uses a predominantly biological way of explaining mental illness has been widely criticized for potentially increasing stigmatizing attitudes (Angermeyer et al., 2011; Larkings & Brown, 2017; Read et al., 2006; Schomerus et al., 2014), which in turn have been identified as one barrier to seeking professional help (Clement et al., 2015). At the same time biological illness models are associated with stronger recommendations of a range of help-seeking strategies in schizophrenia, including psychotherapy and medication among general population (Speerforck et al., 2016), and specifically with preference for pharmacotherapy in depression among psychotherapy clients (Tompkins et al., 2016). Biological causal beliefs were related

to more social distance towards individuals with schizophrenia and depression (Angermeyer et al., 2017a). Among college students biological causal attributions were related to stronger, while social-personal causes were related to lower self-assessed likelihood to seek help (Chen & Mak, 2008; Gangi, Yuen, Levine, & McNally, 2016), indicating that different causal attributions have different implications for the process of help-seeking.

Rickwood and coworkers proposed a model for the process of seeking professional help that starts with awareness or appraisal of a personal mental health problem, followed by the expression of symptoms and need, and finally ends with willingness to seek help (Rickwood et al., 2005). Affected persons thus need to recognize or identify their health problems as a potential mental illness, perceive need for professional help and develop help-seeking intentions, before they eventually seek professional help. We expect that etiological beliefs do not only determine help-seeking intentions, but also impact on the early stages of the help-seeking process, problem appraisal and perception of need. In this study, we therefore examine how different causal explanations are associated with these early stages of the help-seeking process in persons with currently untreated mental health problems. In particular, we want to find out whether in untreated persons, biological explanations are related to stronger, and psycho-social explanations to weaker readiness to identify as having a mental illness, acknowledge need for help and express intentions to seek help.

Methods

Sample and study design

Our aim was to include individuals living in the community who were not seeking professional help for a current mental health problem. We thus invited persons with symptoms of depression via newspaper advertisements, social media posts and handing out flyers to participate in our study. We focused our adverts on symptoms of depression because it is one of the most common mental disorders in the general population (Alonso et al., 2004)

and many of its symptoms can be easily described without any psychiatric terminology. To ensure that undiagnosed persons could relate to the adverts, we described symptoms of depression in plain language, without mentioning the diagnosis or referring to psychiatry or mental illness (see Appendix for details). Figure 1 displays a flow chart of our sampling as well as inclusion and exclusion criteria.

##Figure 1##

Altogether, 429 people contacted the study center and underwent telephone screening using the PHQ-9 (Patient Health Questionnaire – Depression). PHQ-9 scores of 5-9 are considered indicating mild, 10-14 moderate, and >14 severe depression (Kroenke et al., 2010). We invited all persons with a PHQ-9 score >=8 and reporting that they did not currently receive any professional treatment for their complaints for a personal interview. We chose a screening threshold below the "moderate" category to account for persons who would only reluctantly disclose their symptoms in a telephone screening. 266 participants were invited, of which 31 (12%) did not attend after 2-3 follow-up calls and attempts to re-schedule the interview, resulting in 233 persons completing the interview. Almost three out of four participants (*n*=169, 72.8%) were reached by newspaper advertisements and about one in four (*n*=52, 22.4%) by social media posts. Three trained psychologists with clinical experiences conducted the interviews, being present during the whole interview time (on average 142 min., *SD*=36 min.) and clarifying any potential difficulties occurring with the self-report questionnaire. Interviews were scheduled in neutral locations not reminiscent of psychiatry, for example rooms at the university or at a community health center. Every participant who finished the interview received an incentive of 30 Euros. The study was approved by the local ethics committee of University Medicine Greifswald.

We excluded 26 participants for our final analyses. Four participants stated during the interview that they were actually in treatment and 22 participants were excluded because they

did not fulfil ICD-10 criteria for any mental illness as assessed in the diagnostic interview (M.I.N.I). So our final sample included 207 participants with a present untreated mental health problem, fulfilling ICD-10 criteria for a depressive or other mental illness.

Measurements

The interview consisted of a self-report questionnaire as well as a structured diagnostic interview (face-to-face, German version of the Mini International Neuropsychiatric Interview, M.I.N.I.; Ackenheil et al., 1999; Sheehan et al., 1998) at the end of the interview. The M.I.N.I. assesses psychiatric Axis-I-Disorders from DSM-IV and ICD-10 and was used to determine whether the participants had a mental illness requiring treatment. At the beginning of the self-report questionnaire, socio-demographic variables were assessed (gender, age, education, employment).We assessed the proposed stages of process of help-seeking by the following measures: We use the "Self-Identification as Having Mental Illness – Scale" (SELFI) to measure self-identification with the group of persons with mental illness. Schomerus and colleagues (2012) developed this five-item scale, which measures to what extent participants interpret any symptoms they currently experience as evidence for a mental illness, e.g. "Current issues I am facing could be the first signs of a mental illness". Participants rated each item on a 5-point Likert scale (1=don't agree at all, 5=agree completely, Cronbach's α=.84).

Perceived need for professional help was assessed by asking respondents "Do you think you need any medical or therapeutic help for your present complaints?" with responses given on a seven-point Likert-scale (1=very unlikely, 7=very likely). We asked about need for professional help in a very general manner, because we considered contact with any professional (including general practitioners) a desirable first step towards adequate help.

To measure help-seeking intentions, we asked participants to state whether they were planning to seek help within the next three months. We presented a list of different professionals (general practitioner, psychologist, psychotherapist and psychiatrist), and respondents were asked to rate on a seven-point Likert-scale (1=very unlikely, 7=very likely; Rickwood et al., 2005). We used separate scores for intentions to seek specialized help with mental health professionals (MHP) and to seek general medical help with a general practitioner (GP). For the MHP-score, we recorded the highest single score regarding any of three mental health professionals mentioned (psychologist, psychotherapist and psychiatrist). So both the GP and MHP intention score had a minimum of 1 and a maximum of 7.

To find out whether and to what extent participants attributed their symptoms to different causes, we used a 25-item list of causal explanations derived from the illness perception questionnaire (IPQ-R; Moss-Morris et al., 2002) and items used in several population surveys on mental disorders in Germany (Angermeyer et al., 2013; Schomerus et al., 2006; Speerforck et al., 2014). Participants rated each potential cause on a 5-point Likert scale (1=don't agree at all, 5=agree completely). For our analyses we performed an exploratory principal-component factor analysis, calculating factor scores with mean zero and standard deviation one.

We controlled our analyses for potential confounders of any associations between causal explanations and different stages of help-seeking process:

We used the German version of the Patient Health Questionnaire (depression subscale) (PHQ-9; Gräfe et al., 2004; Kroenke et al., 2010) to assess current depressive symptoms. Nine items (each representing one symptom of depression) are rated for the last two weeks, indicating on a 4-point Likert scale whether they had occurred 0=not at all to 4=nearly every day (α=.78). A total score ranging from 0-27 was calculated.

We inquired whether participants had previously received any mental health treatment with a psychiatrist or psychotherapist/psychologist (0=No, 1=Yes). Previous research reported

stronger help-seeking likelihood (Chen & Mak, 2008) and changes in causal beliefs (Leykin et al., 2007) associated with treatment experience.

We used the German version of the Depression Literacy Scale (D-Lit; Griffiths et al., 2004) to include the extent of knowledge about depression in our analysis, because low mental health literacy poses a significant barrier in the help-seeking process (Bonabi et al., 2016; Rüsch et al., 2011). D-Lit consists of 22 true/false items with typical and atypical symptoms of depression (α=.73). The scale does not assess etiological beliefs. A total score was calculated.

Statistical analyses

For all scales, missing values of total scores were imputed by individual participant mean if no more than 25% of items were missing (Downey & King, 1998; Roth et al., 1999). Conducting bivariate correlation analysis, we first established the relation between the outcome variables self-identification, perceived need, and help-seeking intentions. Using linear and ordered logistic regression analysis, we then regressed self-identification, perceived need and help-seeking intentions on the five factor scores for causal beliefs, controlling for depression literacy, severity of depressive symptoms, previous help-seeking and socio-demographic variables. We calculated separate analyses for the two subgroups with and without treatment experience in order to find out whether associations differ in both groups of participants. Assumptions for linear regression analysis such as normal distribution of residuals, heteroscedasticity and multicollinearity, were tested and met. Linear regression analysis reported standardized beta-coefficients and ordinal regression analyses reported odds ratios. All statistical procedures were computed using STATA 14.

Results

Sample characteristics

Participants were on average 49.6 years old (*SD*=16.3) and mostly female. As seen in Table 1 the sample included people of all ages, with lower numbers in the 35-44 years age group. The majority of participants was employed or retired. Participants' level of education was higher compared to statistical data for the local general population (LGP; statistical office Germany, 2015): 35.9% had completed 12 or 13 years of schooling (LGP: 20.3%), 55.1% had completed 10 years of schooling (LGP: 53.3%) and only 6.8% had completed 9 years of schooling or less (LGP: 19.7%). About half of participants reported that they had previously been in treatment because of mental health problems. Of these, fifty persons (24.2% of the sample) reported that they had sought help with a psychiatrist and eighty-six persons (41.5%) with a psychotherapist/psychologist. Table 1 additionally consists of sample characteristics for participants without and participants with mental health treatment experience. In the subgroup of non-help-seekers the percentage of men was higher than in the subgroup of past-help-seekers.

##Table 1##

On average, participants reached a PHQ-9 total score of *M*=12.9 (*SD*=4.7, range 3-27), corresponding to a moderate depression. All participants met diagnostic criteria for at least one mental illness according to ICD-10 (table 2). Most participants fulfilled diagnostic criteria for a mood disorder or neurotic, stress-related and somatoform disorders according to the ICD-10 (M.I.N.I.). Altogether, 47.3 % (*n*=98) of participants simultaneously met criteria for both an F3 and F4 disorder. The most frequent disorders were recurrent depressive disorder (*n*=69, 33.3%), major depression (*n*=62, 30.0%) and double depression (*n*=25, 12.1%). Fourteen participants fulfilled diagnostic criteria for a substance use disorder and two participants for behavioral syndromes associated with physiological disturbances and physical factors.

##Table 2##

On average, participants correctly answered 11-12 of 22 items of the depression literacy scale (*M*=11.5, *SD*=3.7, range 1-20). Before performing an exploratory principal-component factor analysis, we computed Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. Bartlett's Test of Sphericity ($p \leq .001$) indicated that data were suitable for factor analysis (Williams et al., 2010). Overall KMO was 0.776. We restricted our factor analysis to those 22 (of 25) items having at least a moderate degree of common variance (KMO>.70; Beavers et al., 2013). Varimax rotation resulted in seven uncorrelated factors with an Eigenvalue >1. Scree plot examination led us to retain five factors with Eigenvalues 1.20-5.01 for further analyses.

Table 3##

Table 3 shows rotated factor loadings, mean scores and standard deviations for every single item, showing that the most frequently endorsed causes were “stress and worries”, “my emotional wellbeing, e.g. feeling sad (…)”, “my own behavior”, and “family problems”, “my personality” and “my attitudes”, all rated with a mean ≥3.0. We termed the first factor (eigenvalue 5.01, e.g. “bacteria or viruses”, “chemical imbalance in the brain”) ‘biomedical causes’. The second factor (eigenvalue 2.51, e.g. “my attitudes”, “weakness of will”) referred to ‘person-related causes’. The third factor (eigenvalue 1.68, e.g. “growing up in broken families or in an orphanage”, “sexual or physical abuse during childhood or adolescence”) was termed ‘childhood trauma’. We termed the fourth factor ‘stress’ (eigenvalue 1.36, e.g. “stress and worries”, “family problems”). The fifth factor (eigenvalue 1.20, “alcohol use” and “smoking”) centered around ‘unhealthy behavior’.

Self-identification as having a mental illness, perceived need and help-seeking intentions

The average total SELFI score of all participants was *M*=15.8 (*SD*=4.8; range 5-25). The item-level mean (3.16) is close to the midpoint of the scale, showing that many participants were at least ambivalent towards identifying as having a mental illness.

Participants had a mean score of 4.7 (*SD*=1.9) regarding need, of 4.2 (*SD*=2.2) regarding intention to seek help from a GP, and of 3.0 (*SD*=2.0) for intention so seek help from a MHP, all on scales with a maximum of 7.

Bivariate correlation analyses between self-identification, perceived need and help-seeking intentions showed correlations confirming the expected relationships: (1) SELFI was associated with greater perceived need for professional help ($r(204)=.30$, $p\leq.001$), and with greater help-seeking intentions (MHP $r(203)=.33$, $p \leq.001$; GP $r(203)=.15$, $p=.031$); (2) perceived need was correlated with help-seeking intentions from both a GP ($r(203)=.47$, $p\leq.001$) and MHP ($r(203)=.48$, $p\leq.001$).

Associations between causal explanations and early stages of help-seeking process

To find out how causal explanations are associated with self-identification as having a mental illness, perceived need for professional help and intention to seek help, we calculated linear and ordinal regression models using self-identification, need and intention as dependent variables and the causal explanations factor scores as independent variables (table 4). As potential confounders, we entered depression literacy, previous treatment, and current depressive symptoms into our models, controlling for age, gender and education.

##Table 4##

Controlling for all other variables, all causal attributions were associated with stronger self-identification. Attributing the problem to biomedical causes was associated with greater perceived need for help, and with stronger intentions to seek help both from a GP and a MHP. Person-related causes were related to lower perceived need. Childhood trauma, stress and belief in unhealthy behavior as a cause were unrelated to need, or help-seeking intentions.

Beyond causal attributions, depression literacy and previous treatment experience were both associated with stronger self-identification. Depressive symptoms were related to

stronger perceived need, and men, compared to women, were less likely to intend seeing a MHP.

To examine whether the results differ in the two subgroups of participants with vs. participants without treatment experience, we repeated our regression analyses for these subgroups. The results (table 5) can be summarized as follows: (1) the associations of biomedical causes and all help-seeking variables were stronger in the 'no treatment experience' subgroup, and not significant in the subgroup with treatment experience. (2) In those without treatment experience, stress as a cause increased self-identification, while it was associated with lower perceived need in those with treatment experience. (3) In those reporting previous treatment experiences, endorsing person-related causes and childhood trauma, as well as depression literacy and being female were associated with more self-identification. (4) Attributing to person-related causes and stress were related to less perceived need within the subgroup of past-help-seekers, while severity of depression symptoms was associated with more perceived need in both subgroups.

##Table 5##

Discussion

We examined how perceptions of the causes of current, untreated mental health problems are related to the early stages of the help-seeking process. While most etiological beliefs were associated with stronger identification with having a mental illness, only biomedical causal beliefs were associated with need and intention to seek help. This association seemed particularly relevant in individuals without mental health treatment experience. Person-related attributions, in contrast, were associated with less perceived need for help, a finding that was most pronounced in those with treatment experience.

In persons without treatment experience, a biomedical causal model thus seems to be most consistently associated with help-seeking. This is in accordance with previous studies in the general population (Angermeyer et al., 2017b) and in samples of students (Chen & Mak, 2008; Gangi et al., 2016) which consisted of participants who were mostly not affected by mental health problems. Our findings that other, psycho-social illness concepts do not seem to improve help-seeking, also mirror results from student populations (Chen & Mak, 2008; Gangi et al., 2016). Moreover, attributing the problem to person-related causes such as being weak-willed even decreased the likelihood to perceive a need for help. Similarly, depression literacy, which was measured by eliciting knowledge about symptoms and adequate treatment of depression, was not associated with increased need or help-seeking intentions. Perceived need for professional treatment and intention to seek help thus seem to be limited to a very narrow, biomedical concept of personal mental health complaints, particularly in those who have never used mental healthcare before. In our study, this includes biological etiological beliefs like bacteria or viruses that currently play no role in psychiatric explanations of mood or anxiety disorders.

Speculating about the reasons why non-biological etiological concepts are not associated with perceived need or help-seeking intentions in untreated individuals, it is possible that belief in person-related causes might be associated with perceptions of personal responsibility for health changes, whereas biomedical causes seem to be associated with less responsibility (Chen & Mak, 2008). It is noteworthy that participants with treatment experience were particularly prone to associating personal attributions with lower need and help seeking intentions. One could argue that lower need and intentions result from believing in one's ability to deal with the problem alone, which could be the result of successful previous treatment. However, reluctance to express need and help-seeking intentions could also be the result of negative treatment experiences and reduced belief in treatment effectiveness. Moreover, person-related causal attributions might also be related to self-stigma

and self-blame, making the person feel undeserving of professional help (Mak & Wu, 2006). Other attributions were mostly unrelated to help-seeking intentions and need. Attributing present symptoms to current stress could imply that once the stressful situation is resolved, symptoms will disappear, without any need to contact a mental health professional (which would explain in the lower odds for expressing need in those with treatment experience). Attributing one's own symptoms to childhood trauma could imply that help-seeking from a professional might lead to a confrontation with unpleasant memories. However, since most associations were not significant, interpretation of these negative findings is difficult.

To improve help-seeking for common mental health problems like depression and anxiety disorders, it should be made more clear that professional therapeutic help is useful not only for problems that seem to have a biomedical etiology and that professionals are trained in dealing with psychosocial problems. This message would also mirror the public's strong preference for psychotherapy over medical treatment for mental health problems (Angermeyer et al., 2017b). This seems even more necessary since self-identifying as having a mental illness was, in our study, related to most causal explanations of the present complaints, and not restricted to biological causal beliefs. Thus, persons might feel they have a mental health problem for the 'wrong reasons', and therefore not consider seeking professional help. The full scope of a bio-psycho-social etiological model of mental disorders and the wide range of treatment options including counselling, psychotherapy, psychosocial therapies and medication needs to be further promulgated. Otherwise, the help-seeking pathway remains as narrowly restricted to biomedical illness beliefs as observed in our sample of untreated persons with current mental health problems.

Some limitations of our study need mentioning. First, we used a convenience sample of untreated people with a depressive syndrome in Germany that cannot be regarded representative for all persons with mental disorders. Our sample was on average better educated and included more individuals from lower and higher age-groups compared to the

general population. Second, our selection procedure screening for individuals who were suffering from symptoms of depression (PHQ-9) might have introduced a selection bias towards individuals who are aware of their symptoms and more likely to self-identify as having a mental illness, perceive need or intend to seek help, compared to individuals being not aware of these symptoms. However, our approach via newspaper and social media adverts yielded a diverse sample with a considerable burden of untreated mental disorders, and almost half of our sample had never sought help for mental health problems previously. Third, we did not conduct a physical examination. Although our diagnostic interview contained exclusion criteria for any known medical illness participants were aware of, it is still possible that mental health problems were caused by a yet unrecognized medical disorder. Fourth, it is unclear whether the incentive of 30 Euros has had an impact on response behavior of participants. Albeit, we hold the view that the incentive was important to promote motivation for participation in this study. Fifth, we used a generic list of causal explanations, assessing the degree of agreement, but not the most important causal explanation from the participant´s perspective. Open-ended questions might yield more detailed insights into the causal beliefs of untreated individuals with mental health problems (Magaard et al., 2017b). Sixth, we used two scales specific to depression to assess both knowledge and symptom severity and did not include burden by other symptoms and general mental health literacy in our analyses. However, while 12.6% of our sample did not fulfil criteria for a depressive disorder, due to our screening procedure all participants did experience some degree of symptoms of depression. Finally, our findings are correlational based on cross-sectional data and cannot prove causal relations.

Future research is needed to understand the mechanisms linking symptom appraisal, causal beliefs, self-identification as having a mental illness and help-seeking intention in untreated persons with mental health problems with and without treatment experience. Longitudinal studies investigating causal beliefs and early as well as late stages of the help-

seeking process (including actual help-seeking) are needed to find out how causal attributions guide help-seeking behavior. Also, to find out whether associations between causal beliefs and help-seeking differ between different mental health problems such as posttraumatic stress disorder, eating disorders or psychotic disorders, comparative studies with participants with different mental health problems are necessary. In order to develop targeted early interventions to increase help-seeking, understanding how conceptualizations of mental illness guide help-seeking in those with and without treatment experience is necessary. From this study it seems likely that portraying professional mental health treatment as not being restricted to biomedical problems would contribute to closing the treatment gap for mental disorders.

Availability of Data and Materials: Data and materials are available from the first author upon request.

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Table 1:
Characteristics of the sample.

	Total sample (n = 207)		No treatment experience (n = 94)		With treatment experience (n = 107)	
	N	%	N	%	N	%
Gender						
Female	147	71.0	60	63.8	83	77.6
Male	60	29.0	34	36.2	24	22.4
Age						
18-24	21	10.6	9	9.6	12	11.2
25-34	30	14.5	15	16.0	14	13.1
35-44	15	7.3	10	10.6	5	4.7
45-54	47	22.7	21	22.3	24	22.4
55-64	58	28.0	22	23.4	34	31.7
> 65	36	16.9	17	18.1	18	16.8
Education in school years*						
12 or 13 years	74	35.9	32	34.0	39	36.4
10 years	114	55.1	55	58.5	56	52.3
9 years	14	6.8	6	6.4	8	7.5
Family status*						
Married	76	36.7	38	40.4	27	25.2
Divorced	44	21.3	17	18.1	25	23.4
Single	78	37.7	35	37.2	40	37.4
Employment*						
University Student	26	12.9	14	14.9	11	10.3
Unemployed	24	11.9	11	11.7	13	12.1
Employed	79	38.2	37	39.4	38	35.5
Pension/ unable to work	12	6.0	3	3.2	9	8.4
Old age pension	50	24.9	22	23.4	26	24.3

Note. N = Number of Participants; % = Percent; * cases do not add up to 207/94/107 due to missing values.

Table 2:
Proportions of M.I.N.I. diagnoses from different ICD-10 chapters in the whole sample (*n*=207) and subsamples of participants without (*n*=94) and with previous treatment experience (*n*=107).

ICD-10 diagnosis	Total sample *n* (%)	No treatment experience *n* (%)	With treatment experience *n* (%)
F1	14 (6.7)	5 (5.3)	8 (7.5)
F3	181 (87.4)	78 (83.0)	98 (91.6)
F4	120 (58.0)	51 (54.3)	63 (58.9)
F5	2 (1.0)	0	1 (0.9)

Note. M.I.N.I. = Mini International Neuropsychiatric Interview, F1 = substance abuse disorders, F3 = affective disorders, F4 = neurotic, stress-related and somatoform disorders, F5 = behavioral syndromes associated with physiological disturbances and physical factors.

Table 3:
Rotated factor loadings (pattern matrix), unique variances of finally analyzed factors from exploratory factor analysis of different causal attributions and mean scores (*M*) and standard deviations (*SD*) of causal explanation items (*n*=187).

Item	Factor 1 'Biomedical'	Factor 2 'Person-related'	Factor 3 'Childhood Trauma'	Factor 4 'Stress'	Factor 5 'Unhealthy Behavior'	Unique-ness variance	*M*	*SD*
24 – bacteria or viruses	0.82					0.24	1.9	1.1
20 – chemical imbalance in the brain	0.77					0.35	1.8	1.1
18 – brain disease	0.58					0.54	2.6	1.3
3 – dietary habits	0.57					0.41	1.7	1.1
5 – coincidence or bad luck	0.48				0.31	0.46	2.4	1.3
6 – environmental pollution or toxins	0.35					0.64	2.2	1.2
9 – my attitudes, e.g. negative thoughts about life		0.75		0.34		0.29	3.0	1.3
21 – weakness of will		0.72				0.39	2.5	1.3
17 – my personality		0.70				0.37	3.1	1.2
8 – my own behavior		0.68				0.31	3.4	1.2
19 – growing up in broken families or in an orphanage			0.79			0.30	1.8	1.3
25 – sexual or physical abuse during childhood or adolescence			0.75			0.36	1.6	1.2
23 – unloving or too strict upbringing			0.71			0.44	2.3	1.4
1 – stress and worries				0.80		0.32	4.1	1.0
10 – family problems				0.77		0.30	3.4	1.3
12 – my emotional well-being, e.g. feeling sad, lonely, anxious, empty		0.55		0.63		0.27	3.6	1.3
14 – alcohol use					0.80	0.33	1.7	1.0
15 – smoking behavior					0.76	0.34	1.6	1.0
22 – shock due to a critical life event such as the loss of a close person	0.35		0.40	0.33		0.53	2.7	1.6

Table 4:
Regression analyses of different causal explanations predicting self-identification as mentally ill (multiple regression analyses, Beta-coefficients), perceived need for professional help and intention to seek help (ordinal regression analysis, odds ratio). All analyses were controlled for depression literacy (D-Lit), previous treatment, severity of depressive symptoms (PHQ-9), age, gender and education (*n*=178).

	Self-identification	Perceived need	Intention to seek help	
			GP	MHP
	β	*OR* [95%-CI]	*OR* [95%-CI]	*OR* [95%-CI]
Causal Explanations				
Biomedical Causes	**0.18****	**1.54 [1.16, 2.05]**	**1.45 [1.10, 1.90]**	**1.38 [1.03, 1.85]**
Person-related Causes	**0.23****	**0.72 [0.53, 0.98]**	0.92 [0.68, 1.24]	1.23 [0.90, 1.69]
Childhood Trauma	**0.16***	1.05 [0.79, 1.40]	0.96 [0.72, 1.27]	0.82 [0.60, 1.12]
Stress	**0.21****	0.78 [0.57, 1.06]	0.90 [0.67, 1.21]	1.26 [0.91, 1.73]
Unhealthy Behavior	-0.05	0.88 [0.67, 1.16]	1.16 [0.89, 1.52]	1.10 [0.83, 1.45]
D-Lit	**0.28*****	1.01 [0.93, 1.10	1.04 [0.95, 1.14]	1.05 [0.96, 1.15]
Previous Treatment	**0.16***	1.20 [0.67, 2.13]	1.28 [0.72, 2.27]	1.60 [0.89, 2.87]
PHQ-9	0.09	**1.16 [1.08, 1.24]**	1.01 [0.95, 1.09]	1.07 [1.00, 1.15]
Age	0.04	1.02 [1.00, 1.04]	1.01 [0.99, 1.03]	0.99 [0.98, 1.01]
Gender	-0.07	0.59 [0.32, 1.07]	0.69 [0.37, 1.27]	**0.49 [0.26, 0.91]**
Education	-0.05	1.05 [0.80, 1.37]	0.94 [0.72, 1.21]	0.90 [0.69, 1.17]
Adj. R^2	0.36			
Pseudo-R^2		0.07	0.02	0.05

Note. Significant results are in boldface. *OR* = Odds Ratio; CI = Confidence Interval; GP = General Practitioner, MHP = Mental Health Professionals; Previous Treatment (0=No, 1=Yes); Gender (0=Men, 1=Woman); Education (1=9 school years or less, 2=10 school years, 3=12 or 13 school years); Adj. R^2 = Adjusted R-squared; Pseudo-R^2 = Pseudo R-squared
* $p < .05$, ** $p < .01$, *** $p < .001$

Table 5:
Regression analyses of different causal explanations predicting self-identification as mentally ill (multiple regression analyses, Beta-coefficients), perceived need for professional help and intention to seek help (ordinal regression analysis, odds ratio) in subgroups of participants, who have never and who have been in treatment before. All analyses were controlled for depression literacy (D-Lit), severity of depressive symptoms (PHQ-9), age, gender and education.

	No treatment experience (n = 84)				With treatment experience (n = 94)			
	Self-identification	Perceived need	Intention to seek help		Self-identification	Perceived need	Intention to seek help	
			GP	MHP			GP	MHP
	β	*OR* [95%-CI]	*OR* [95%-CI]	*OR* [95%-CI]	β	*OR* [95%-CI]	*OR* [95%-CI]	*OR* [95%-CI]
Causal Explanations								
Biomedical Causes	**0.33****	**3.03 [1.78, 5.14]**	**1.73 [1.08, 2.77]**	**2.19 [1.33, 3.60]**	0.11	1.06 [0.73, 1.54]	1.33 [0.93, 1.89]	1.14 [0.79, 1.63]
Person-related Causes	0.07	0.75 [0.47, 1.19]	0.86 [0.55, 1.33]	1.23 [0.74, 2.04]	**0.37*****	**0.59 [0.37, 0.92]**	0.93 [0.59, 1.47]	1.23 [0.79, 1.90]
Childhood Trauma	-0.05	0.64 [0.33, 1.24]	0.75 [0.40, 1.40]	0.82 [0.41, 1.64]	**0.26****	1.13 [0.80, 1.60]	1.13 [0.80, 1.60]	0.87 [0.60, 1.27]
Stress	**0.37****	0.98 [0.64, 1.51]	0.75 [0.49, 1.15]	1.59 [0.99, 2.57]	0.18	**0.54 [0.32, 0.90]**	0.97 [0.60, 1.57]	1.04 [0.64, 1.71]
Unhealthy Behavior	-0.08	0.82 [0.52, 1.31]	0.85 [0.53, 1.34]	0.89 [0.54, 1.49]	-0.04	0.86 [0.61, 1.23]	1.38 [0.97, 1.97]	1.21 [0.85, 1.73]
D-Lit	0.20	1.03 [0.89, 1.20]	1.14 [0.98, 1.32]	0.99 [0.85, 1.15]	0.41***	1.02 [0.91, 1.15]	0.99 [0.88, 1.11]	1.09 [0.97, 1.23]
PHQ-9	-0.06	**1.13 [1.02, 1.26]**	1.04 [0.94, 1.16]	1.07 [0.96, 1.20]	0.16	**1.26 [1.13, 1.40]**	0.97 [0.88, 1.08]	1.09 [0.99, 1.20]
Age	-0.06	1.02 [0.99, 1.05]	1.00 [0.98, 1.04]	0.97 [0.94, 1.00]	0.15	1.02 [0.99, 1.05]	1.02 [0.99, 1.05]	1.01 [0.98, 1.04]
Gender	0.00	0.45 [0.19, 1.09]	0.55 [0.23, 1.33]	0.49 [0.20, 1.21]	-0.19*	0.84 [0.33, 2.16]	0.69 [0.27, 1.75]	0.41 [0.16, 1.08]

Education	0.10	0.81 [0.54, 1.22]	0.68 [0.46, 1.01]	0.71 [0.46, 1.11]	-0.08	1.39 [0.94, 2.05]	1.13 [0.78, 1.63]	1.09 [0.76, 1.57]
Adj. R^2	0.22				0.42			
Pseudo-R^2		0.12	0.05	0.09		0.08	0.02	0.04

Note. Significant results are in boldface. OR = Odds Ratio; CI = Confidence Interval; GP = General Practitioner, MHP = Mental Health Professionals; Previous Treatment (0=No, 1=Yes); Gender (0=Men, 1=Woman); Education (1=9 school years or less, 2=10 school years, 3=12 or 13 school years); Adj. R^2 = Adjusted R-squared; Pseudo-R^2 = Pseudo R-squared

* $p < .05$, ** $p < .01$, *** $p < .001$

Appendix

Advertisement Text:

Many people have everyday complaints like **sleep disturbances, tiredness, lack of energy, concentration problems, loss of appetite, joylessness, irritability, lack of interest, aching head and limbs.** Researchers at the Department of Health and Prevention at the University of Greifswald want to find out why some people with such complaints seek medical help while others do not. If you have experienced the above mentioned complaints during the last weeks, please contact us for a detailed interview: xxx@uni-greifswald.de, xxx or xxx (SMS/WhatsApp). All participants of our study will receive a small financial compensation for their efforts.

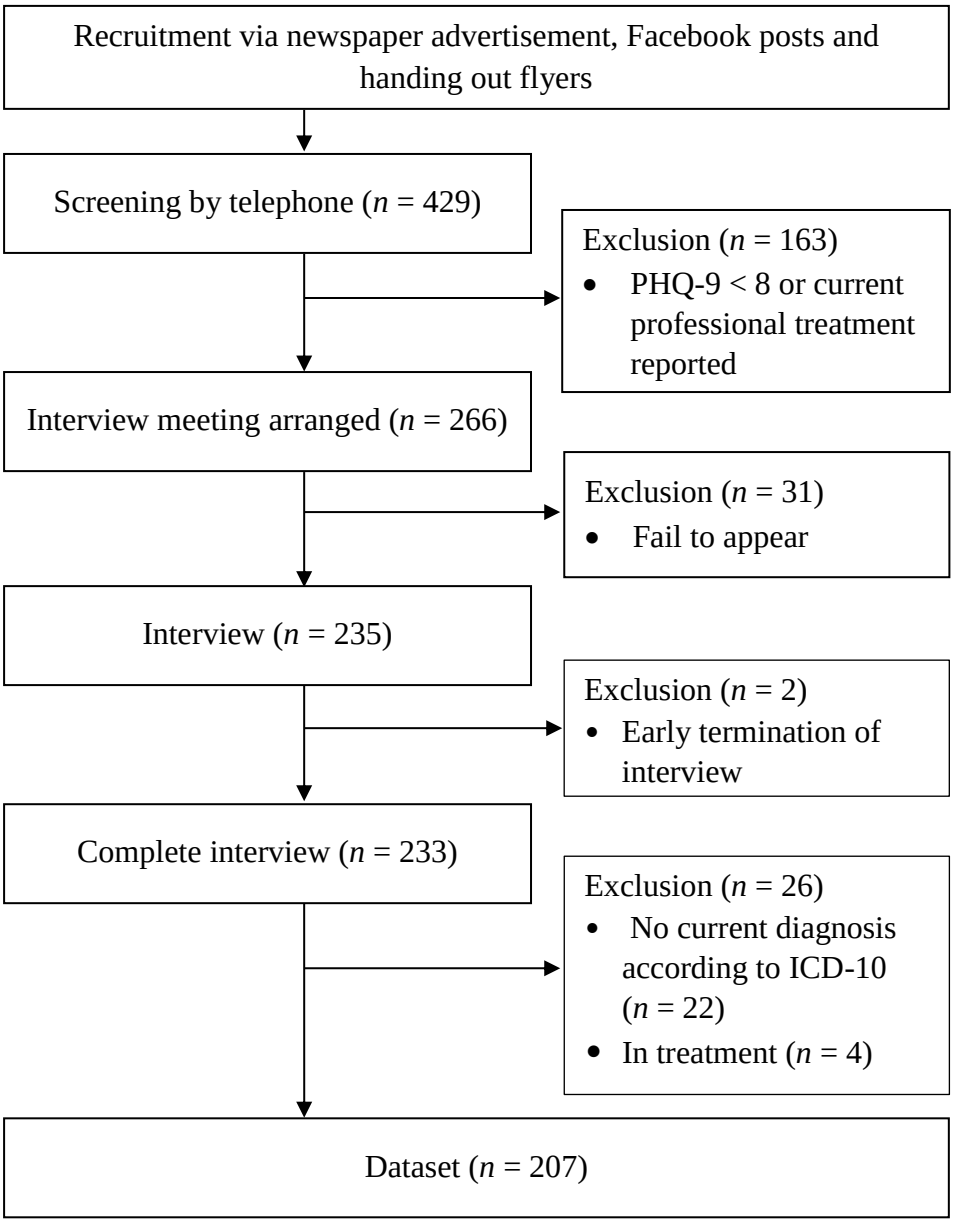

Figure 1. Flow of Participants through the study.