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Repressive Coping and Theories about Psychotherapy

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Abstract

Repressive coping style has been found to be related to an interpretive bias of negative information. The current study looks to explore differences in understanding toward psychotherapy among groups of four coping styles as classified by Weinberger, Schwartz and Davidson. Participants answered four questionnaires measuring reactions to psychotherapy; attitudes to, and beliefs about, psychotherapy; effectiveness of cures; prognosis of psychological problems; as well as questions regarding their contact with psychotherapy and demographics. Parallel analyses identified two clearly interpretable factors for each of the four questionnaires. A series of one-way ANOVAs indicated differences among groups in understanding of psychotherapy. Moderated hierarchical regressions show that demographic variables, contact with psychotherapy, trait anxiety, social desirability and the interaction between trait anxiety and social desirability predicted these differences. Limitations and implications were discussed.

Keywords: Repressive coping; Psychotherapy; Anxiety; Social desirability.

Introduction

Repression is considered as a general personality style with manifestations in many different domains [1]. Indeed there has been recent lively debate around the difference between coping and defense mechanisms [2] as well as concerning defense mechanisms in normal populations [3]. Repressors have been shown to inaccurately represent their state of anxiety as lower than other criteria for anxiety would suggest particularly in public as opposed to private [4,5]. This calls into question the validity of their self-report measures of other internal states; however, both cognitive and behavioural studies have demonstrated that repressors do indeed use different coping strategies from non-repressors.

Originally, much of the research evidence focused on the concept of the repressive personality was based on assessing repression by means of the Repression ± Sensitisation Scale [6]. However, several later studies have shown that this scale correlates highly with several different measures of anxiety [7,8], thus leading to a confounding between repression and truly low anxiety [9]. In order to distinguish a repressor from a truly low anxiety person, Weinberger Schwartz and Davidson [10] combined scores of anxiety (from the Taylor Manifest Anxiety Scale, TMAS; [11]) and defensiveness (from the Marlowe-Crowne Social Desirability Scale, M-CSD; [12]). These two measures yield a classification into four groups of repressiveness:

(i) Repressor – High on defensiveness and low on anxiety;

(ii) Defensive, high anxious – high on defensiveness and high on anxiety;

(iii) Truly low anxious – low anxious, low on defensiveness and anxiety;

(iv) Non-defensive, high anxious – low on defensiveness and high on anxiety.

Thus dispositional repressors report feeling little or no anxiety but are defensive and protective about their self-esteem. Repressors are different from low anxiety people who are not defensive; from defensive high anxious who report and feel anxiety and from the high anxiety person who reports to be not defensive but anxious. In short repressors are extremely self-protective [13].

Furnham et al. [14] reviewed the repressive coping literature and concluded that although repressors are cognitively hypersensitive to positive and especially negative cues, to which they react physically with manifold signs of stress, in virtually every self-report study they appear to be most adapted, relaxed, and happy. More recently, Myers [15] conducted a 30 year review of repressive coping style literature, showing many research indicating repressors' tendency to avoid negative affect. Studies using self-report measures found that repressors avoid negative self-relevant information rather than being overly positive [16]. There is now an extensive literature on repressor-sensitization and psychological adjustment [17]. This study focuses on how repressors understand psychotherapy.

Lay perceptions of psychotherapy

Public perceptions of psychotherapists and the process of psychotherapy have been speculated to have important implications in terms of the number and type of individuals who choose to seek psychological treatment [18-20]. In addition to these influences on potential clients and on their actual experience of treatment, popular perceptions of psychotherapy are likely to have significant implications for public policy and mental health reform [21]. There have been a number of papers on such issues as cultural differences in the perception of psychotherapy [22], beliefs about psychotherapeutic treatments and help-seeking [23] as well as beliefs about counseling [24].

Therefore, obtaining a more thorough understanding of the nature of popular perceptions and their antecedents may be helpful in designing interventions to modify negative attitudes towards seeking help [25].

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The general public (as potential clients) is increasingly faced with a bewildering array of psychotherapy interventions available, although some are clearly similar in theory and practice. These include seeing a therapist, attending training courses or focus groups, observation and/or taking medication or getting hypnosis. Deciding whether or not to seek help is associated with a range of factors including the availability of services, financial costs and individual socio-demographic and psychological variables. It is also crucially associated with the perceived effort required in, and possible psychological pain associated with, treatment which is the focus of this paper. The term psychological pain refers here to the distress associated with the treatment process.

The groups least likely to utilize mental health services are men, older people and people from ethnic minorities who are more likely to display avoidance behavior, resistance to treatment and denial of mental illness [26]. Aside from these influential factors, two major criteria that lay people factor into their choice or recommendation of a therapy presumably is the perceived efficacy of the treatment and the associated side effects for specific psychological issues. Prospective patients of many of the talking therapies, particularly psychoanalytic therapies, often seem ignorant of the psychic effort that they are required to make and the possible emotional pain that results from their therapy [27]. It is expectations such as these that facilitate or hinder the effectiveness of therapy [28] as well as the choice of therapy.

In a series of three studies, Furnham and Wardley [18,29,30] investigated lay people's theories regarding the efficacy of various psychotherapy interventions and the prognosis of different disorders. They identified an interpretable underlying factor structure, with lay people discriminating quite clearly between the efficacies of 22 different therapies. It was further found that subjects felt largely optimistic about the influence of psychotherapy on various psychological problems and participant age and education were significant predictors of these beliefs.

One factor that was predictably related to lay theories about psychotherapy was participant's direct or indirect (through reading) of psychological ideas and therapies. The more experienced subjects had, the more skeptical they were about the usefulness of various treatments. Furnham et al. [30] found, when compared to lay adults, psychotherapists and students were more skeptical and pessimistic about the efficacy of therapy and prognosis for many illnesses. Knowledge about psychological cures led to a greater awareness of the limited benefits of therapy. However, this finding was not replicated by Furnham [27] in his investigation of lay attitudes towards and understanding of psychotherapy in treating two psychotic (bipolar, schizophrenia) and two neurotic (depression, obsessive compulsive) disorders. It was confirmed, however, that participants were generally positive about the experience of psychotherapy but were curiously naïve about the efficacy of psychotherapy.

This study aims to determine the differences among groups with different coping styles in terms of commonly held beliefs about psychotherapy. To our best knowledge, this study is the first to examine the differences between coping styles in mental health literacy. We propose the following hypotheses:

H1. The items of the four questionnaires will load into clearly interpretable factors.

H2. There would be significant effects of experience of seeing a psychotherapist, thought of seeing a psychotherapist and knowing people who have received psychological help in the understanding of psychotherapy.

H3. Age, gender and education would also be significantly related with the understanding of psychotherapy.

H4. There would be a significant difference among individuals with different coping styles in the understanding of psychotherapy.

Method

Sample

In all 196 participants (67 males, 129 females) with an average age of 38.86 (SD=12.89, range of 20 to 72 years) took part. Majority was white (79.6%), 8.2% were black, 5.6% Asian, and the rest identified as other ethnicities (6.6%). In terms of education level, 34.7% have a Bachelor's degree, 28.1% finished high school, 25.0% have college-equivalent education and 11.7% have a Master's degree or a Ph.D.

Measures

Repression Marlowe-Crowne Social Desirability Scale (MCSD; [12]) and State-Trait Anxiety Inventory (STAI; [31]) were used to assess repressive coping style. Both measures were reliable, with Cronbach's alpha coefficients of 0.84 and 0.95, respectively. Following Weinberger et al. [10], participants were divided into four groups according to whether they scored above or below the mean on MCSD (M=16.84) and STAI (M=40.72). Classification of the groups was as follows: Truly low anxious, Non-defensive, high anxious, Defensive, high anxious and Repressors.

Reactions to psychotherapy: This consists of 20 statements about the "clients" of psychotherapy. The instructions read: "After a course of psychotherapy some clients feel better and others do not. Some clients feel the treatment has been enormously helpful and therapeutic while others feel it has been a waste of time. In this part of the questionnaire we want you to indicate how frequently you think clients of psychotherapy report having certain reactions." Subjects responded on a 7-point (7=extremely frequency, 1=very rarely) scale.

Attitudes to and beliefs about, psychotherapy: This consisted of 40 items and concerned such things as the aims of therapists, the nature of the client-therapist relationships, and the experience of therapy for both parties. Subjects responded on a 7-point scale (7=strongly agree; 1=strongly disagree).

The efficacy of "psychological cures": Subjects were presented with a list of 22 different psychological techniques plus a one to two sentence description of each. The list and the descriptions were taken from a number of introductory textbooks on abnormal psychology. They were told to indicate how effective they believe each "cure" is for psychological problems in general. If the cure was considered effective for nearly all or very many psychological problems, they chose 5 or 4, but if rarely or never effective, they chose 2 or 1.

Prognosis for psychological problems: Subjects were given a list of 36 "psychological problems" presented in alphabetical order from agoraphobia to tics, with brief descriptions of the nature of the problem (i.e., fetishism - sexual excitement over nonliving objects). The list was derived from DSM-III and included most of the "relatively well-known psychological problems." They were told to read the following list of psychological and behavioral difficulties and rate each according to how often and easily people recover (good prognosis) to how little people recover (bad prognosis). The higher the number selected the better chance people have of being cured. If people never heard of the problem, or are not sure of what it was, they coded 0.

Demographics and contact with psychotherapy: Participants provided information regarding their age, gender, education level and

ethnic group, followed by three questions in binary form (Yes and no): "Have you ever been to see a psychotherapist?", "Have you ever thought about going to see a psychotherapist?" and "Do you know people who have received psychological help?"

Procedure

The participants were recruited via Amazon Mechanical Turk (MTurk), an online market for enlisting workers to participate in research and surveys. Data from MTurk have been found to be comparable with traditional recruitment methodologies in terms of reliability, while the diversity of the samples surpasses those from standard Internet surveys and student samples [32,33].

Results

Exploratory factor analyses

We ran parallel analyses (Monte Carlo simulation) to assess the number of factors to retain for (1) reactions to psychotherapy; (2) attitudes to, and beliefs about, psychotherapy; (3) effectiveness of different cures; and (4) prognosis of psychological problems. Parallel analysis has often been recommended as the most robust method to determine the true number of factors [34,35]. A factor would be deemed significant if the associated eigenvalue was larger than the mean of those obtained from the random uncorrelated data [36]. Here, we follow the recommended procedure to use the eigenvalue corresponding to the 95th percentile derived from the random data [37]. As a result, this method retains fewer factors than what would be using the Kaiser criterion.

Reactions to psychotherapy

The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy for the analysis (0.86) [38]. Bartlett's Sphericity was significant ($p<0.001$), supporting the factor-ability of the correlation matrix. Parallel analysis indicated two significant factors (eigenvalue ≥ 3.30). Following suggestion of parallel analysis, a principal component analysis was conducted with VARIMAX rotation, extracting two factors, which accounted for 46.32% of total variance (Table 1). The first factor concerns the positive reactions to psychotherapy, while the second factor appears to be related to the negative reactions to psychotherapy.

Attitudes to and beliefs about, psychotherapy

The sample was adequate for the analysis, KMO=0.88, Bartlett's Sphericity<0.001. Two significant factors (eigenvalue ≥ 4.55) were extracted via a principal component analysis with VARIMAX rotation, explaining a total variance of 37.20% (Table 2). Here, we observe the same pattern as in Reactions to psychotherapy, whereby the two factors are grouped according to positive and negative attitudes and beliefs.

Effectiveness of different cures

The sample was adequate for the analysis, KMO=0.84, Bartlett's Sphericity<0.001. Two significant factors (eigenvalue ≥ 3.00) were extracted via a principal component analysis with VARIMAX rotation, explaining a total variance of 39.42% (Table 3). The mean scores of the first factor were generally higher than those in the second factor. Thus, the first factor is comprised of the cognitive cures, while the second factor other cures.

Prognosis of psychological problems

The sample was adequate for the analysis, KMO=0.92, Bartlett's Sphericity<0.001. A principal component analysis was conducted with VARIMAX rotation, extracting two factors (eigen value ≥ 2.85), which explained 43.86% of the variance in total (Table 4). The first factor represents psychological problems generally seen as having good prognosis, while the second factor are those generally seen as having poor prognosis. All four questionnaires yielded interpretable factors, confirming H1 (Table 5).

		M	SD	1	2
15	Hopeful, confident	5.16	1.22	0.81	
13	Supported, relieved	5.07	1.28	0.81	
3	In touch with feelings	5.17	1.26	0.79	
7	Better ways of coping	5.15	1.28	0.77	
5	Change or worked on	5.03	1.22	0.74	
17	Family notice improvements	4.93	1.32	0.73	
16	Experience contact as person	4.93	1.16	0.70	
9	Feel involved	5.08	1.23	0.67	
11	Feel understood	5.06	1.23	0.66	
1	Something new	4.51	1.48	0.59	
19	Good value for money	4.32	1.38	0.55	
8	Misunderstood	3.74	1.60		0.73
14	Uncomfortable/painful ideas	3.82	1.62		0.70
12	Left on their own	3.95	1.58		0.69
6	Feel rejected	3.18	1.66		0.64
2	Bored, impatient, doubtful	4.41	1.59		0.60
20	Attracted to therapist	3.48	1.60		0.57
4	Confused/side-tracked	3.52	1.51		0.54
10	Pressured	4.45	1.48		0.47
18	Addicted to therapy	3.48	1.60		0.46

Table 1: Factor loadings for reactions to psychotherapy.

Correlations

A Pearson's correlation revealed that age was significantly and positively related to Positive attitudes and beliefs ($p=0.003$), negatively with Negative attitudes and beliefs ($p=0.02$), Low effectiveness of cure ($p=0.002$), and High prognosis of psychological problems ($p=0.03$). Further, education level was negatively related to Negative reactions to psychotherapy ($p=0.03$). Experience of seeing a psychotherapist, thought of seeing a psychotherapist and knowing people who have received psychological help were all negatively correlated with Negative Attitudes ($p=0.01$; $p=0.004$; $p<0.001$). Thus, H2 and H3 were supported.

ANOVA

A series of ANOVA was run to assess differences among four different coping styles in (1) reactions to psychotherapy; (2) attitudes to, and beliefs about, psychotherapy; (3) effectiveness of different cures; and (4) prognosis of psychological problems. Table 6 presents the ANOVA results.

There were statistically significant differences among groups of different coping styles in positive and negative reactions to psychotherapy, positive attitudes and beliefs, more effective cures, high and low prognosis of psychological problems. This confirms H4.

Post-hoc tests were conducted for the significant findings. We used Tukey HSD post-hoc test for all factors with statistical significance except for Negative reactions, of which we have chosen to apply Games-Howell post-hoc test, due to the violation of homogeneity of variance (Levene's statistics=2.82, $p=0.04$).

A one-way ANOVA was run to determine differences among coping styles in experience of seeing a psychotherapist, thought of seeing a

		M	SD	1	2
7	Better self-understanding	5.58	1.31	0.72	
11	Strategies reduce conflict/frustration	5.45	1.31	0.72	
38	New coping skills	4.99	1.49	0.69	
14	Expression of suppressed emotion	5.33	1.35	0.68	
4	Confront, cope with objects/situations	5.22	1.28	0.67	
8	Relaxation	5.23	1.42	0.66	
25	Fond of therapist	4.69	1.32	0.65	
40	Extremely emotional	5.21	1.34	0.65	
16	Reassure	5.14	1.41	0.65	
22	Relaxing surroundings	4.93	1.47	0.63	
32	Client-therapist relationship	4.92	1.41	0.53	
23	Establishment of rapport	5.68	1.30	0.62	
19	Change, seek help themselves	5.18	1.51	0.62	
35	Homework, exercises	4.99	1.40	0.60	
6	Take responsibility	4.95	1.48	0.60	
26	Last many months	5.51	1.28	0.58	
18	Originate in childhood	4.87	1.46	0.56	
24	Listening to problems	4.79	1.44	0.55	
9	Alter life-goals	4.67	1.42	0.54	
33	Logical fallacies	4.72	1.36	0.53	
12	Get better	4.69	1.26	0.53	
36	Change irrational beliefs	4.94	1.33	0.49	
3	Dreams	4.39	1.47	0.49	
39	Distorted world view	4.31	1.54	0.45	
21	Skill, personality	4.44	1.37	0.43	
15	Expose to things	4.65	1.63	0.37	
13	Women better	3.88	1.65	0.37	
1	Personality questionnaires	4.79	1.57	0.37	
2	Sexual conflicts	4.19	1.32	0.35	
17	Own solution	4.59	1.47	0.32	
29	Lie on couch	2.94	1.68		0.76
20	Only younger benefit	2.71	1.62		0.75
28	Limited number	3.19	1.60		0.75
10	Unconscious	3.89	1.49		0.54
31	Resistant to change	3.70	1.48		0.53
30	Clients women	3.33	1.58		0.47
37	Two, four sessions	3.35	1.63		0.40
5	Prescribe drugs	4.01	1.74		0.37
27	Last resort	4.53	1.55		0.37
34	Last many years	4.28	1.49		0.68

Table 2: Factor loadings for attitudes to and beliefs about, psychotherapy.

psychotherapist and knowing people who have received psychological help (Table 7). There were statistically significant differences among groups in thought of seeing a psychotherapist and knowing people who have received psychological help, while the difference was marginally significant in the experience of seeing a psychotherapist.

Post-hoc tests were conducted to explore the differences. Due to the violation of homogeneity of variance in all three variables, Games-Howell post-hoc test was chosen as most appropriate.

*Footnote: A two-way ANOVA revealed that the main effect of trait anxiety was a significant in six out of eight factors, social desirability in one, and the interaction term in none.

Regression

Herein, we conducted a moderated hierarchical regression. Ethnicity was dummy coded with white being the referent group. The criterion variables are the eight factors: positive reactions, negative reactions, positive attitudes, negative attitudes, cognitive cures, other cures, good prognosis and poor prognosis. Social desirability, trait anxiety and the interactional term were entered in the first step, followed by demographic variables (age, gender, education, ethnicity), as well as contact with psychotherapy (experience of seeing a psychotherapist, thought of seeing a psychotherapist, knowing people who have received psychological help) (Table 8).

The regressions revealed interesting results. For positive reactions, trait anxiety was the only significant predictor in step 1 ($p=0.001$). In step 2, trait anxiety remained significant ($p<0.001$), while thought of seeing a psychotherapist emerged as a positive predictor ($p=0.02$). Social desirability marginally negatively ($p=0.058$), while trait anxiety positively predicted negative reaction in step 1 ($p=0.05$). Trait anxiety remained a significant positive predictor ($p=0.03$), while social desirability and education became significant predictors (ps=0.04). The interaction term of social desirability and trait anxiety significantly and negatively predicted positive attitude in step 1 ($p=0.04$). The interaction term remained significant in step 2 ($p=0.02$), along with age ($p=0.04$). The significant predictors of negative attitude were gender ($p=0.05$) and knowing people who had received psychological help ($p=0.01$). In the model predicting cognitive cures, trait anxiety was a significant negative predictor in step 1 ($p=0.01$), remained significant in step 2 ($p=0.01$), while thought of seeing a psychotherapist was a significant positive predictor in step 2 ($p=0.01$). For other cures, knowing people who had received psychological help was the only significant predictor ($p=0.002$), while age was a marginally negative predictor ($p=0.052$). Trait anxiety significantly negatively predicted good prognosis in step 1 ($p=0.03$), remained significant in step 2 ($p=0.02$), while experience of seeing a psychotherapist negatively ($p=0.01$) and thought of seeing a psychotherapist positively predicted good prognosis ($p=0.01$). The only predictors that was significant for poor prognosis in step 2 was knowing people who had received psychological help ($p=0.001$), while the interaction term was marginally significant ($p=0.066$).

Discussion

This study aimed to assess the group differences in terms of coping style in commonly held beliefs toward psychotherapy among

		M	SD	1	2
17	Existential therapy	3.56	0.97	0.77	
15	Thought stopping therapy	3.47	0.94	0.71	
7	Systematic desensitization	3.52	0.96	0.68	
5	Psychotherapy	3.80	0.88	0.66	
13	Assertiveness training	3.56	0.89	0.66	
14	Rational-emotive therapy	3.52	0.89	0.65	
18	Gestalt therapy	3.28	0.98	0.60	
21	Group therapy	3.46	0.93	0.56	
20	Biofeedback	3.07	0.96	0.52	
16	Non-directive therapy	2.94	1.03	0.45	
12	Modelling/Role playing	3.13	0.94	0.44	
22	Primary scream (Rebirth) therapy	1.92	1.06		0.78
3	Psychosurgery	2.04	1.01		0.78
2	Electroconvulsive therapy	2.85	1.03		0.67
9	Aversion therapy	2.72	1.02		0.62
10	Token economies	2.71	0.99		0.57
4	Megavitamin therapy	2.48	1.07		0.49
11	Behaviour contracting	2.80	0.98		0.49
8	Implosion therapy	2.90	0.96		0.45
6	Psychodynamic theory	3.11	0.93		0.45
19	Hypnosis	3.77	0.99		0.42
1	Chemotherapy	2.85	1.03		0.37

Table 3: Factor loadings for effectiveness of different cures.

		M	SD	1	2
29	Paranoia	4.16	1.67	0.81	
28	Obsessional thoughts	4.61	1.64	0.79	
27	Neurosis	4.45	1.61	0.79	
12	Depression	4.70	1.66	0.77	
5	Anxiety/Panic attacks	4.94	1.57	0.76	
30	Phobias	4.69	1.73	0.76	
31	Sleep disorders	4.96	1.67	0.76	
13	Enuresis	4.88	1.90	0.75	
18	Compulsive gambling	4.18	1.71	0.73	
24	Insomnia	4.75	1.71	0.71	
19	Hyperactivity in children	4.63	1.66	0.69	
26	Manic-depression	3.92	1.60	0.68	
14	Exhibitionism	4.05	1.90	0.66	
1	Agoraphobia	4.69	1.73	0.65	
2	Alcoholism	4.24	1.67	0.65	
33	Suicide attempts	4.13	1.75	0.64	
23	Kleptomania	4.44	1.72	0.64	
11	Drug dependence	4.04	1.66	0.63	
21	Hypochondriasis	4.23	1.81	0.62	
8	Conduct disorders in children	4.17	1.75	0.60	
9	Delusions	4.06	1.60	0.59	
7	Compulsive behaviours	4.28	1.52	0.58	
3	Anorexia	4.18	1.51	0.57	
17	Frigidity	4.01	1.60	0.54	
16	Fetishism	3.59	1.69	0.53	
20	Hysteria	3.70	1.59	0.52	
32	Stuttering	4.36	1.81	0.46	
25	Impotence	4.25	1.75	0.42	
10	Dementia	2.72	1.43		0.76
34	Senile dementia	2.58	1.45		0.68
36	Nervous ticks and twitches	3.65	1.64		0.61
35	Schizophrenia	3.19	1.52		0.60
6	Childhood autism	3.07	1.39		0.57
4	Amnesia	4.94	1.57		0.54
15	Epilepsy	3.29	1.69		0.54
22	Homosexuality	2.70	1.84		0.54

Table 4: Factor loadings for prognosis of psychological problems.

		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)	Positive reaction	0.00	0.71***	0.04	0.59***	-0.01	0.41***	-0.06	0.08	0.12	-0.13	0.04	0.10	0.01
(2)	Negative reaction		0.04	0.40***	0.01	0.16*	-0.05	0.24**	-0.01	-0.16*	-0.16*	-0.08	-0.05	-0.10
(3)	Positive attitudes			0.00	0.69***	-0.15*	0.55***	-0.19**	0.21**	0.06	-0.14	-0.03	0.07	0.12
(4)	Negative attitudes				0.03	0.63***	-0.11	0.36***	-0.17*	-0.16*	-0.09	-0.19**	-0.21**	-0.32
(5)	Cognitive cures					0.00	0.48***	-0.11	0.12	0.10	0.05	0.02	0.10	0.07
(6)	Other cures						-0.12	0.41	-0.22**	-0.07	-0.01	-0.08	-0.14*	-0.30***
(7)	High prognosis							0.00	0.06	-0.02	0.02	-0.11	0.06	0.02
(8)	Low prognosis								-0.16*	-0.12	-0.02	-0.04	-0.07	-0.29***
(9)	Age									-0.01	0.09	0.01	-0.02	0.16*
(10)	Gender										-0.09	0.13	0.06	0.07
(11)	Education											0.07	0.00	0.07
(12)	Experience												0.66***	0.38***
(13)	Thought													0.47***
(14)	Psychological help													

Note: *p<0.05, **p<0.01, ***p<0.001

Table 5: Correlation matrix of demographic variables and factor scores.

	M (*SD*)							
	Reactions		**Attitudes and beliefs**		**Effectiveness of cures**		**Prognosis of problems**	
	Positive	**Negative**	**Positive**	**Negative**	**Cognitive**	**Other**	**High**	**Low**
Truly low anxious	0.22[a,b] (0.78)	-0.01[a,b] (1.14)	0.16[a] (0.83)	-0.02[a] (1.04)	**0.33 (0.93)**	-0.04 (1.06)	**0.40[a] (1.14)**	**-0.21 (1.04)**
Non-defensive, high anxious	**-0.29[b] (0.99)**	**0.27[b] (0.86)**	-0.10[a] (0.95)	0.01[a] (0.74)	-0.20[a] (0.94)	-0.01 (0.86)	**-0.21[a] (0.79)**	-0.07[a] (0.85)
Defensive, high anxious	-0.37[a] (0.93)	0.19[a] (0.83)	**-0.29[a] (0.92)**	**0.28[a] (1.10)**	**-0.32 (1.00)**	**0.23[a] (1.14)**	-0.17[a] (1.18)	**0.41 (1.14)**
Repressors	**0.35 (1.04)**	**-0.39 (1.04)**	**0.23[a] (1.08)**	**-0.14[a] (1.13)**	0.20[a] (1.02)	**-0.13[a] (1.01)**	0.09[a] (0.94)	-0.11[a] (0.86)
Total	-0.00	-0.01 (1.00)	0.02 (0.98)	0.01 (1.00)	-0.00 (1.00)	-0.01 (1.00)	0.00 (1.01)	-0.02 (0.97)
	F(3,180)=6.61	*F*(3,180)=5.28	*F*(3,180)=2.66	*F*(3,180)=1.35	*F*(3,184)=4.19	*F*(3,184)=1.00	*F*(3,175)=3.03	*F*(3,175)=3.03
η_p^2	0.10	0.08	0.04	0.02	0.06	0.02	0.05	0.05
p	<0.001	0.02	0.05	0.26	0.01	0.39	0.03	0.03

Note: Items sharing one or more superscripts in each column are not significantly different from each other (p>0.05). Bold indicates the highest and lowest mean score in each question

Table 6: ANOVA results for group differences in reactions, attitudes and beliefs of psychotherapy, effectiveness of cures and prognosis of problems.

	M (SD)		
	Experience of seeing a Psychotherapist	**Thought of seeing a sychotherapist**	**Knowing people who have received psychological help**
Truly low anxious	0.31 (0.47)	0.53 (0.58)[a,b]	**0.84 (0.37)**
Non-defensive, high anxious	**0.39 (0.49)**	0.58 (0.50)[a]	0.67 (0.48)[a]
Defensive, high anxious	0.35 (0.48)	**0.59 (0.50)[b]**	0.59 (0.50)[a]
Repressors	**0.17 (0.38)**	**0.29 (0.46)**	**0.56 (0.50)**
Total	0.30 (0.46)	0.48 (0.50)	0.65 (0.48)
	F(3,185)=2.46	*F*(3,185)=4.95	*F*(3,185)=2.82
η_p^2	0.04	0.07	0.04
p	0.06	0.002	0.04

Note: Items sharing one or more superscripts in each column are not significantly different from each other (p > .05). Bold indicates the highest and lowest mean score in each question

Table 7: ANOVA results for group differences in having the experience of, thoughts of seeing a psychotherapist and knowing people who have received psychological help.

	Positive reaction		**Negative reaction**		**Positive attitude**		**Negative attitude**		**Cognitive cures**		**Other cures**		**Good prognosis**		**Poor prognosis**	
	β	***t***	***β***	***t***	***β***	***t***	***β***	***t***	***β***	***t***	***β***	***t***	***β***	***t***	***β***	***t***
Step 1																
Social desirability	-0.01	-0.14	-0.15	-1.91†	-0.06	-0.72	0.06	0.74	-0.08	-0.94	0.08	1.01	-0.06	-0.72	0.15	1.77
Trait anxiety	-0.27	-3.29***	0.16	2.03*	-0.14	-1.66	0.07	0.77	-0.21	-2.57*	0.05	0.55	-0.19	-2.22*	0.11	1.27
SD x TA	-0.09	-1.17	0.04	.56	-0.16	-2.11*	0.05	0.65	-0.10	-1.29	0.07	0.88	-0.03	-0.41	0.13	1.72
Step 2																
Social desirability	0.00	0.02	-0.17	-2.06*	-0.03	-0.29	-0.03	-0.30	-0.05	-0.65	0.02	0.18	-0.04	-0.50	0.11	1.32
Trait anxiety	-0.33	-3.95***	0.19	2.34*	-0.14	-1.62	0.07	0.76	-0.24	-2.76**	0.02	0.24	-0.21	-2.31*	0.09	1.07
SD x TA	-0.10	-1.31	0.06	.78	-0.16	-2.13*	0.07	0.98	-0.11	-1.44	0.07	1.02	-0.05	-0.66	0.14	1.85†
Gender	0.09	1.27	-0.15	-2.03	0.06	0.81	-0.14	-1.99*	0.12	1.56	-0.06	-0.82	-0.00	-0.01	-0.08	-1.06
Ethnicity	0.11	1.46	0.06	.75	0.06	0.85	-0.10	-1.36	0.00	0.00	-0.06	-0.80	0.05	0.65	0.00	0.04
Age	0.02	0.26	0.05	.71	0.16	2.05*	-0.08	-1.11	0.07	0.94	-0.15	-1.96†	0.02	0.19	-0.09	-1.17
Education	-0.13	-1.78	-0.15	-2.10*	-0.12	-1.55	-0.08	-1.14	0.04	0.58	0.00	0.05	0.03	0.38	0.05	0.63
Experience	-0.03	-0.35	-0.07	-.76	-0.14	-1.39	0.00	-0.02	-0.12	-1.25	0.09	0.91	-0.26	-2.59**	-0.03	-0.26
Thought	0.25	2.47*	-0.04	-.36	0.18	1.69	-0.14	-1.34	0.26	2.52*	-0.07	-0.72	0.29	2.75**	0.10	0.98
Knowing	-0.04	-0.53	-0.09	-1.04	0.09	1.12	-0.23	-2.83**	0.01	0.10	-0.26	-3.16**	0.01	0.12	-0.28	-3.34***
Step 1	*F* (3, 178)=4.55**		*F* (3, 178)=4.62**		*F* (3, 179)=2.04		*F* (3, 179)=0.34		*F* (3, 182)=2.51†		*F* (3, 182)=0.55		*F* (3, 173)=1.67		*F*(3, 173) = 1.92	
	Adj R^2=0.06		*Adj* R^2=0.06		*Adj* R^2=0.02		*Adj* R^2=-0.01		*Adj* R^2=0.02		*Adj* R^2=-0.01		*Adj* R^2=0.01		*Adj* R^2 = 0.02	
Step 2	*F* (10, 171)=3.13**		*F* (10, 171)=2.94**		*F* (10, 172)=2.25*		*F* (10, 172)=3.32***		*F* (10, 175)=1.88*		*F* (10, 175)=*2.50*		*F* (10, 166)=1.51		*F*(10, 166) = 2.28*	
	Adj R^2=0.11		*Adj* R^2=0.10		*Adj* R^2=0.06		*Adj* R^2=0.11		*Adj* R^2=0.05		*Adj* R^2=0.08		*Adj* R^2=0.03		*Adj* R^2 = 0.07	

***p<0.001 **p<0.01 *p<0.05

Table 8: Moderated hierarchical regression predicting eight factors of understanding of psychotherapy.

individuals in terms of (1) reactions to psychotherapy; (2) attitudes to, and beliefs about, psychotherapy; (3) effectiveness of different cures; and (4) prognosis of psychological problems. All hypotheses proposed were supported.

The factor structures of all four questionnaires had fewer factors compared to previous studies [18,27,29,30,39]. The two-factor structures yielded in this study could be considered more parsimonious. The divergence in factor structure could be due to the statistical procedure selected for this study, which was agreed as the best method to determine the true number of factors [34,35]. Results show that in general, respondents believed that positive reactions towards psychotherapy were more frequent among clients, while negative reactions were less frequent. Attitudes to, and beliefs of, psychotherapy showed similar pattern to those of Furnham et al. [39] and Furnham [27], whereby majority of the participants did not believe patients lie on the couch and that younger people are more likely to "get better".

Overall, these results show participants held generally positive attitudes and beliefs about psychotherapy which is very common. For effectiveness of cures for psychological problems, participants believed that cognitive cures are most effective, in concert with Furnham [27] and other cures less so, with the exception of hypnosis.

People seem to believe strongly in the "talking cures" more so than other types of intervention. Participants' perception of the prognosis of psychological problems also showed similar pattern to Furnham and Wardley [29] whereby neurotic disorders were seen as having fairly good prognosis, while they were more pessimistic about homosexuality and dementia. To a large extent this could be seen to be reasonably realistic and in line with the data on treatment efficacy.

In terms of contact with psychotherapy, Repressor group was the least likely to report having thought of seeing a psychotherapist and to having knowing people who have received psychological help. This difference was significant when compared to Non-defensive, High Anxious and Defensive, High Anxious group. Given that Repressors are hypersensitive to anxiety-provoking information, particularly when such information is of a personal nature [14]; it could be possible that thought about seeing a psychotherapist and information about people who have received psychological help are perceived as negative by Repressors, leading them to suppress these thoughts and information. To a large extent the whole process of psychotherapy is to surface and confront beliefs and fears which repressors prefer not to confront. However it is possible, but unlikely, that the Repressor group were less likely to see a psychotherapist because they were more psychologically healthy and adjusted that the other four groups. Indeed, the literature suggests that the opposite might be true.

The regression results show that the interaction between social desirability and trait anxiety was only significant in predicting higher ratings in the positive attitudes towards psychotherapy. Corresponding to previous studies [14,39] trait anxiety appeared to have better discriminative ability than social desirability: trait anxiety was a significant predictor in four of the factors in this study, while social desirability only marginally predicted one of the factors, reaching statistical significance in the second step of the model predicting the same factor. These results corroborate with Furnham et al.'s [14] suggestion that some of the findings based on Weinberger et al.'s classification system can be more parsimoniously understood within a simpler framework of general anxiety or neuroticism. This means that results are best understood in terms of social adjustment and negative affectivity rather than Repression, though this may be contested.

Reactions to psychotherapy

Repressors believed clients of psychotherapy had frequent positive reactions as well as less frequent negative reactions toward psychotherapy, compared to Defensive, high anxious and Non-defensive, high anxious individuals. Regression results extended the findings by showing that only trait anxiety was predictive of believing positive reactions are frequent during psychotherapy, explaining the significant comparisons with the two groups with high anxiety. Further, having thought of seeing a psychotherapist had a positive effect on positive attitudes. In other words, low anxious individuals who have thought of seeing a psychotherapist are more likely to believe clients of psychotherapy have more frequent positive reactions. The ANOVA indicated no significant difference among groups in beliefs of frequent negative reaction during psychotherapy. However, regression results show that less educated, high anxious individuals low on social desirability are more likely to believe that negative reactions during psychotherapy happen frequently. Thus, paradoxically, it seems that those who may most benefit from psychotherapy to reduce their anxiety might be less likely to seek it out because of negative consequences.

Attitudes to and beliefs about psychotherapy

For the factor representing positive attitudes, there was a significant difference between groups, however post-hoc test indicates that the significant difference between Repressor and Defensive, high anxious groups was only marginal. We believe that this marginal significant difference was due to the small power given the small sample size. With a larger sample, this effect may be more observable. Nevertheless, these results indicate that Repressors have a more positive view of psychotherapy than other groups; this is true especially in comparison to Defensive, high anxious individuals, and to a lesser extent with Non-defensive, high anxious individuals. One possible explanation is that Repressors could be suppressing their negative thoughts when answering questions regarding psychotherapy, showing attentional strategies that are hypersensitive towards negative or threatening feedback.

The interaction between social desirability and trait anxiety and age negatively predicted positive attitude. Thus younger individuals who are low on anxiety while high on social desirability, or high on anxiety while low on social desirability are more likely to hold more positive attitudes towards psychotherapy. Men who reported knowing people who had received psychological help are more likely to hold more negative attitudes towards psychotherapy.

Effectiveness of cures

The regression results found low anxious individuals who have thought of seeing a psychotherapist to be more likely to view cognitive cures as more effective. For other cures, individuals who reported knowing people who had received psychological help were more likely to see other cures as less effective. Overall it seemed that our independent variables were not strongly related to perceived efficacy which may be more related to other factors like education particularly in the social and medical sciences.

Prognosis of psychological problems

Truly low anxious participants rated significantly higher in psychological problems generally seen as having good prognosis of than Non-defensive, high anxious, as well as significantly lower than Defensive, high anxious in psychological problems generally seen as having poor prognosis.

On the other hand, regression results revealed that low anxious individuals having thought of seeing psychotherapist are more likely to rate psychological problems generally seen as having good prognosis more highly. This meant that these individuals are more optimistic and less pessimistic than others about the psychological problems seen by majority as having good prognosis. Those who reported knowing people who had received psychological help were more likely to give better prognosis ratings to psychological problems generally seen as having poor prognosis. In short, less anxious people seem better informed about whether illness has a good or bad prognosis.

Limitations and Implications

A number of issues limit the present findings. First, all of the regression models in this study explained only relatively small amount of variance (Adj R^2<0.11), suggesting that there are other variables underlying people's understandings of psychotherapy. Second, there is some evidence that MTurk workers have distinct personality profiles compared with offline samples [40], which limits the generalizability of our findings, but could be addressed in future work with more precise recruitment methods to ensure representativeness.

Despite the limitations, the current study provides practical implications. Findings on differences in the understanding of psychotherapy among groups with different coping styles could be beneficial for clinical commissioners to better understand populations who are more resistant toward psychotherapy. The fact that trait anxiety remained a significant predictor when taking into account other factors meant that it is has unique explanatory ability in people's understanding of psychotherapy. This is particularly useful for targeting clinically anxious individuals, whom this study has shown to believe, more likely than others, that positive reactions are less frequent while negative reactions are more frequent during psychotherapy, that cognitive cures are less effective and the psychological problems to have poorer prognosis when in fact they were generally seen by others as having good prognosis.

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