Behavioural Analysis and Modification of Worry: A Preliminary Exploration

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The term worry in itself is controversial in nature. Psychologists like Wolfenstein (1957) and O'Neill (1985) have overlapped it with anxiety. O'Neill (1985) argued that worriers are anxious individuals, whereas, non- worriers are less anxious individuals. A certain amount of worry is constructive in much the same way that a minimal level of anxiety is constructive. So if worry and anxiety both relate to behaviour in the same way, according to O'Neill no purpose is served by adding another word to ones vocabulary which has essentially the same meaning as the existing word namely anxiety. He further indicated that worry and anxiety are two referents of the same thing - worry indicating only the cognitive component, anxiety including the autonomic component. Hence according to him a separate treatment paradigm cannot be created to eliminate worry. According to O'Neill a technique that reduces anxiety would reduce both the cognitive and the autonomic component.

Borkovec et al. (1985) have maintained that worry is the cognitive component of anxiety and, despite its similarity with anxiety the worry process has inward attention focusing influence, flow and content. It is difficult to introduce an anxiety reducing technique in the case of worry as most of the time the fear cues are not identified. Worriers are prone to worry about a wide range of topics so it becomes difficult to isolate the exact cues triggering worry. Borkovec maintains that, if the worrier is taught to respond to the initiation of worry with relaxation and adaptive self-statements, and by doing so to terminate the continuation of the anxiety provoking worry, then the client may learn to generalize the skill applicable to a wide variety of worry and other anxiety related cues.

Psychiatrist Edward Hallowell (1997) believed that worry is a form of fear. Hallowell maintained that worry stems from vulnerability and powerlessness, as the result of situations such as simple shyness,

depression, general anxiety disorder, distress over the actions of another, and post-traumatic stress disorder. **Psychologist Russell (1965)** who also considered worry as a "form of fear" argued that all forms of fear are capable of producing fatigue. In many cases fatigue is associated with strenuous work for a living, and to a great extent, fatigue in such cases is due to worry. Therefore, a man who has learnt not to worry will find the fatigue of daily life enormously diminished.

Janis and Leventhal (1965) suggested that there is a "work of worrying" which enables the person to cope more effectively with a painful reality situation. According to them the "work of worrying" begins as soon as one becomes aware of an impending danger. When this danger is perceived as threatening, then the worry starts. Hence they understand that worry is a form of inner preparation that increases a person's level of tolerance for subsequent threat or danger stimuli. Arnold (1960) and Odier (1956) had also expressed a similar notion. According to Arnold worrying prepares for action, and hence it is constructive. But he omitted the fact that it can also have adverse effects when worry continues beyond limit. Then the person ceases to be rational and his judgment becomes irrational.

Wolfenstein (1957) maintained that "worrying is the projection of anxiety over some external danger...." Hence it is either a by-product of anxiety or originating from some external stimuli that is fearful or threatening. Wolfenstein did not differentiate between worry and anxiety and maintained that process of worrying is related to anxiety because one attempts unrealistic alternatives to solve problems, indulges in magical reasoning and repeats those thoughts obsessively.

Heider (1958) differentiated worry from fear and anxiety and maintained that "... it is mainly an active cognitive process rather than a passive experience of emotion". Hence it is not a neurotic reaction, instead ..."the worrier is cognitively preoccupied with a problem. He focuses on it and tries to solve it and since there is lack of external feedback he turns these attempts into vicarious problem solving. Hence, the person is constantly making an assessment of alternatives, the probability of

occurrence and their possible consequences etc..." Brown (1980) defined worry "... as a process of the intellect." She further stated that worry as a matter of fact, is simply problem solving activity fraught with uncertainty. Breznitz (1971) while maintaining that worry is mainly a cognitive process, defined worry as "if an external threat concerning a possible future event touches upon an anxiety-inducing content, the process of worrying starts." He adds that when one is preoccupied with the problem then it induces anxiety and because of anxiety one pays more attention to the threat than is really due. At this stage, one is agitated beyond realistic level and is just unable to leave the problem. Borkovec et al (1983) agreed that "worry is a chain of thoughts and images that are negative and relatively uncontrollable, and hence is closely related to fear processes."

According to Rachman (1978), intrusive unwanted thoughts are defined as "repetitive thoughts, images or impulses that are unacceptable and unwanted". He hence draws a similarity between worry and intrusive-unwanted thoughts like relative uncontrollability, disturbing and repetitiveness etc. What makes one person take life's ups and downs in stride while another agonizes over the smallest upset? The answer isn't completely understood, but research suggests that nature and nurture play equal roles in spawning worry-prone types Worry is a relatively common experience, there are several factors that can lead to worry,

Biological, psychological, social and cultural factors all appear to influence the development of chronic worrying. The contributing factors may include:

Personality - research suggests that people who were inhibited or reserved as children may be more likely to develop chronic worry and eventually, generalized anxiety disorder as adults. Personality traits such as emotional sensitivity and shyness also make worrying more likely. Along with personality traits worry could also be a result from our learned behaviour. Our habitual ways of thinking are learned over many years, and they are influenced by a range of environmental, social and family

influences. A tendency to be preoccupied with imaginary worries can train our mind, over time, to habitually worry.

Genetics: "There are probably dozens of genes that influence a person's predisposition to anxiety, plus a host of environmental factors that are as important as all the genes combined," explains William T. Riley, Ph.D., co-director of Virginia Commonwealth University's Anxiety Disorders Program at the Medical College of Virginia in Richmond. Indeed, many of us pick up the worry trait from our parents, either because they were big-time worrywarts themselves or just the opposite — they rarely worried at all.

According to Borkevec (1983), a pioneer in the field of worry research, two-thirds of worriers come from role-reversal relationships with their parents. "As children, they didn't feel their parents were worrying enough, so they took the responsibility upon themselves," he explains anxiety (as a trait) may be inherited, and the family environment (including the role models provided by parents) may influence the development of worry/anxiety.

Today, we are finally beginning to understand the biology of worry, to pinpoint what is happening in the nerve cells of the worrier, rather than his soul. It turns out that some of us may be born worriers. Our autonomic nervous systems are cranked up higher, and our blood pressure, pulse, and respiratory rate may be higher. And we may be less sensitive than others to the brain's natural stress modulators, which are activated by the neurotransmitter GABA (gamma-amino butyric acid). People who have a good supply of GABA, or brains that are especially responsive to it, may be innately cool and calm.

By contrast, a fascinating 1996 study actually linked a gene (called SLC6A4) to individuals who are highly susceptible to anxiety, pessimism, and negative thinking hence contributing to a life time of chronic worry and anxiety. Researchers at Yale University (2007) found that there is a gene which is responsible for chronic worry and over thinking. Brain

scans have shown that people who ruminate have excess activity in a part of their brains called the cingulate cortex.

Brain chemistry: Research indicates that anxiety is associated with altered brain chemistry. However, it is unclear whether anxiety causes the physical changes, or the physical changes cause the anxiety. Simply stating worry is what happens when human beings allow simple fear to reach the part of their brain called the cerebral cortex. This then transforms into a special / complex form of fear added with anticipation, memory, imagination, and emotion.

Environmental / situational factors: A traumatic or stressful event that threatens an individual's security can trigger a sense of overwhelming vulnerability and powerlessness. Worry takes many forms, but it almost always stems from an overwhelming sense of vulnerability and powerlessness. Many of us locate the source of worry outside ourselves, believing it is triggered purely by life experiences: "What is going on in the world to make me feel this way?" Such thoughts only increase our feeling of vulnerability. And, as anyone who has worried knows all too well, even when the world is right, worry surfaces. Rational reassurances do not go into the psyche of the worrier. The worrier may be momentarily calmed, but the fire soon flares again, contributing to the development of chronic worry.

Hence we can see that there are numerous factors that lead to worry. Today there is a sharp increase in the number of worriers, the main reasons for this are the fast paced life that we all live, comprised of increased competition, insecurity, no time for recreation etc.

Various theories have evolved in response to intriguing questions related to worry. Borkovec et al. (1983) suggested that worry may be an example of cognitive avoidance. He believes that worry is initiated by fear images of future negative events, and the subsequent chain of thoughts may represent efforts to avoid the imagined misfortunes. Chronic worriers realize that their worries are useless and illogical and it cannot help them to deal with the future. But on the other hand there is a set of

worriers who believe that if they do not worry, the happening of the feared events becomes more likely. This also reveals the superstitious aspect of worry. Under these circumstances, not to worry in response to a fearful thought would be more anxiety provoking than when worrying.

The second possible avoidant function of worry according to Borkovec (1984) is that the core fear of the worrier has nothing to do with the actual content of the worry. Rather worrying about an issue may be a method of avoiding even more fear producing material. It is a common response from the worriers that they need to find something new to worry about as soon as they find themselves free of the existing worry.

This also in effect reflects the superstitious nature of worry where a worrier forces himself to believe that if he does not worry then a catastrophe will result. But a further hypothesis is that the core fear that exists has little to do with the actual content of the specific fears. Hence specific worries may be a cognitive avoidance of a more fearful material.

According to Borkovec one of the core fears of the worriers is the fear of failure. They fear making mistakes and the potential consequences of social disapproval, hence making it to appear as their greatest fear. Worry originates on the basis of the fear of rejection. Worriers want to avoid making mistakes at all possible costs. The two ways that could possibly be used to avoid making mistakes are: i) Efforts to anticipate as many negative outcomes as possible and ii) Avoidance of actions and decisions that may result in a negative or not so positive feedback from the social environment. So it can be said that the usual worry sequence is initiated by a fear stimulus (environmental/ imaginary) which elicits a mental problem solving activity designed to prevent the occurrence of traumatic future events and /or to devise coping strategies for such events.

Janis (1971) suggested that the work of worrying can partially inoculate the person against severe emotional duress once the threat is confronted.

Meichenbaum (1975) elaborated on this notion by proposing that emotional inoculation occurs when a person undergoes anticipatory problem solving and mentally rehearses coping strategies for dealing with a stressor.

Girodo and Stein (1978) argued that worry helps an individual cope more effectively and less emotionally with a feared event.

Rachman (1971) proposed that unwanted intrusions e.g. the obsessional ruminations are regarded as noxious stimuli which patients have difficulty in habituating to. Obsessive ruminations can be regarded as noxious and largely endogenous stimuli to which the patient has failed to habituate.

Treatment techniques:

Horowitz and Becker claim that there is evidence in clinical literature of cognitive change after stress. Post traumatic syndrome often include repetition of the stressful event in thought and such repetitions seem to be "compulsive" in the sense that they are frequently associated with a subjective sense of "loss of control over thought." These repetitions cannot be avoided even though they are extremely unpleasant Different techniques have been used in the literature for overcoming intrusive unwanted thoughts. Sarason(1960), suggested that when one is ruminating about possible failures then the attention is directed away from the task , the performance suffers because less time has been assigned to the task itself .

Russell (1965) wrote that a disciplined mind blanks out the trouble at moments when nothing can be done about it. He emphasized that by the cultivation of an orderly mind both happiness and efficiency can be increased. According to him many worries can be diminished by realizing their unimportance and learning mental discipline – which is the habit of thinking of things at the right time. Russell (1965) has criticized those techniques of controlling worry that teach the individual to distract their thoughts by turning their attention to something else. The effort of turning one's thoughts, according to Russell is a tribute to the horribleness of

the thought from which one is trying to escape. In this way Russell has criticized the thought stopping techniques which is part of behavior therapy literature to overcome obsessive thoughts. The proper course of action according to Russell is to think of the worrisome thought rationally and calmly until it has become completely familiar. This is very much similar to the habituation training proposed by Parkinson and Rachman (1980).

Carnegie (1984) in this book "How to Stop Worrying and Start living" suggested few steps to overcome worries.

It is evident that for controlling worry, various techniques have been used in Behaviour therapy literature.

Present Study: Matching, Experimental Design and Plan of the Study: The study was conducted in the Psychiatry Department, Institute of Medical Sciences of Benares Hindu University. 40 self-labeled worriers were recruited. These self-labeled worriers were mostly students pursuing higher studies (Post graduate programmes or PhD) They were matched for age, education, socio-economic background and screened on neuroticism and psychoticism questionnaire scores.

The experimental design used for the study was non-concurrent multiple baseline design across subjects. This kind of design is recommended in Behaviour therapy literature (Hersen& Barlow, 1976; Watson &Workman, 1981; Greenwood, Hops, Delquardri& Guild, 1974; Houten&Rolider, 1984) because it is easy to check whether the change in dependent variable is due to the independent variable introduced or due to non-specific factors.

There were **three phases** of the study, namely, Pre Experimental Phase, Experimental Phase and Post Experimental Phase.

Dependent Measures of the study were of three types. Self-rating measures, questionnaire scores and physiological measures (heart rate/ minute recording).Self-rating measures were of three types, namely, controllability of worry, intensity of worry and percentage of the day

worried. All three self-rating measures were taken during the experimental phase of the study. Questionnaires (Mental health questionnaire and Anxiety questionnaire) were administered during pre and post experimental phases of the study whereas physiological parameter was used during experimental phase of the study.

Independent variables were all the behavioural interventions; namely, Thought stopping, Stimulus control, Corrective self-talk, Systematic desensitization, Reciprocal Inhibition and Assertiveness training were used in the study.

There were two types of **sessions:** the **evaluation sessions** and the **behavioural intervention sessions**. The evaluation sessions again were of two types: the psycho-physiological evaluation sessions conducted in the laboratory and the questionnaire administration sessions. As far as self-rating parameters were concerned subjects themselves collected data in their real life settings.

Questionnaires were administered during pre and post experimental phases whereas psycho- physiological parameter and self-rating parameters were collected during experimental phase of the study. A typical session of heart rate/minute recording was as follows: 5-min adaptation period (instrument was placed appropriately) i) Heart rate taken for 2-minutes, ii) Heart rate taken for 10-seconds during instructed worry period, iii) Heart rate taken for 1-minute (non-worry period). Two sessions of heart rate recording was done every week.

In this study time-lagged non-concurrent multiple baseline design across subjects was used. When a subject became available, he/she was randomly assigned to one of the baseline lengths (1 wk, 2 wk, and 3wk). Baseline recordings were then carried out until the dependent parameter measures reached the asymptote criteria, and then experimental intervention was introduced. When the second subject became available, he was randomly assigned to one of the remaining baseline lengths and same procedure continued as mentioned earlier.

The major plan of the study was to introduce the intervention variables one after the other in each series until the generalization criteria were met. If generalization criteria were not met and all the techniques of the one group/series were over then the subject was taken to second group/ series where techniques of that group followed in sequence until generalization criteria were met.

Experimental Design & Method

Plan of Study

Stage I	Selection of subjects
Pre-experimental phase	Subject characteristics
	Matching & controls
	Experimental design
Stage II	Sessions
Experimental phase	Setting
	Apparatus
	Procedural details
	Observation & evaluation
	Data analysis procedure
Stage III	
Post-experimental phase	Follow-up procedure

Plan of study

Intake screening & matching of subjects

Randomly allotted to series 1 or series 2

Series 1	**Series 2**
• Baseline	• Baseline
• Thought stopping	• Assertiveness training
• Stimulus control	• Systematic Desensitization
• Corrective self-talk	• Reciprocal Inhibition
• Shifted to series 2	• Shifted to series 1
	• Follow up

After reaching improvement/generalization criteria subjects were put on follow-up. Follow-up was taken at 3-months, 6-months and 9-months interval.

RESULTS

Intervention	No. of Subjects
❖ Stimulus Control	6
❖ Thought Stopping	1
❖ Systematic Desensitization	5
❖ Assertiveness Training	2

Improvement was seen in all dependent variables, namely, questionnaire scores and primary self-rating parameters. Most of the subjects were able to maintain this improvement over time as well. Therefore generalization was across situations (laboratory situation and daily life situation) as well as over time (follow-up).

Conclusion: It can be said that behavioural interventions are effective in controlling intrusive thoughts. It is important to know if the element of anxiety is present or not. If anxiety is seen to exist then it is advisable to start anxiety oriented interventions first. Otherwise, cognitively-oriented interventions are good.

As far as physiological parameters are concerned not much difference was found during worry and non-worry period. In literature also (Borkovec, 1983) it has been observed that there is very little increased body activity during worry periods compared to non-worry periods. Autonomic activity plays little role (Breznitz, 1968) in worry behaviour. That is why worry is considered more as cognitive component rather than pure anxiety.

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