

Sociobiological Perspectives on Clinical Depression

Essay

PSYC 404

Abnormal Psychology

Luke Howison

300052852

Clinical depression is a mental illness that causes negative affect, anhedonia, sleep disturbance and fatigue, feelings of sadness, emptiness or worthlessness, and suicidal ideation that can potentially lead to suicide, the largest single cause of injury-related death in New Zealand. Evolutionary psychology proposes to use evolutionary ideas to explain the origin of human behaviours such as altruism and cooperation, mate selection, and even mental disorders such as borderline personality disorder and depression. This essay will examine and evaluate modern sociobiological explanations of depression.

Depression

Clinical unipolar depressive disorders include several affective mood disorders, such as Major Depressive Disorder (Single Episode and Recurrent), Dysthymic Disorder and Double Depression. These depressive disorders differ in severity and length, but share several major symptoms in common, including:

Depressed mood

Anhedonia (Loss of interest or pleasure)

Feelings of overwhelming sadness or fear, or seeming inability to feel emotion (emptiness)

Feelings of guilt, helplessness, anxiety, and/or fear.

Loss of interest in previously pleasurable activities.

Disturbed sleep patterns, either insomnia or sleeping more than normal

Changes in activity levels - may be retarded or restless

Altered appetite and marked weight gain/loss.

Fatigue

Lowered self-esteem

Decreased ability to concentrate or make decisions

Suicidal ideation

(Barlow & Durand, 2002)

Relatively temporary sadness or a depressed mood are normal human emotions. To constitute clinically significant depression, symptoms must last two weeks or longer, and be so severe that they begin to interfere with daily living. Depression can be classified into different types in many ways (Stevens & Price, 1996). A major classification is the separation of endogenous depression, caused by hereditary and personality factors, from reactive depression, which is precipitated by environmental events such as the loss of a close family member, relationship breakup or job loss (Barlow & Durand, 2002). Another important conceptual classification is major, moderate and minor depressive disorders, relating to the severity of negative affect and other symptoms (Stevens & Price, 1996).

The precise causes of depression are varied. Inherited genetic factors play a part, as do personal variables such as self-esteem, distorted thinking and locus of control. Changes in levels of neurotransmitters in the brain are strongly associated with depression, but may not be causal. Depression is co-morbid with many other mental disorders such as addiction and post-traumatic stress disorder, and some medical conditions such as hepatitis. Many episodes of depression are precipitated by major negative life events such as death of a loved one, unemployment or financial difficulties (Barlow & Durand, 2002).

Depression's characteristic changes in brain chemistry, which allows for effective pharmacological treatments. Several generations of medication are available, each generation being more effective and having less side effects (Price & Stevens, 1996). Cognitive-behavioural therapy is also effective at helping identify and remedy environmental causes of depression and relieving distorted cognitions, negative affect and lack of motivation. For extreme cases of persistent, drug-resistant depression, electro-convulsive therapy (ECT) remains a relatively safe and very effective treatment, though definitely one of last-resort (Barlow & Durand, 2002). With good support, medication and psychotherapy, there is a good prognosis for most depressed individuals.

Three types of depression are particularly important for the purposes of this essay (Stevens & Price, 1996), including Major depressive disorder, which features intense negative affect and often suicidal ideation, and is relatively short-lived (two weeks to six months). Minor depression (dysphoria) is less intense but longer-lasting (on the order of two years or more) but sufferers may have episodes of major depression (known as 'double depression') (Barlow & Durand, 2002). Post-partum or post-natal depression is essentially a depressive episode associated with giving birth.

Evolutionary psychology

Evolution's central mechanism is natural selection, which requires three factors:

Variation (in organisms and their traits)

Competition (struggle for resources)

Heritability (traits can be transmitted to offspring).

Because of these factors, natural selection operates on organisms. In the competition for resources, some organisms will have particularly advantageous traits and have an increased chance of surviving and reproducing. Its offspring, will tend to share in these advantageous (adaptive) traits. The concept of 'fitness' covers the adaptive traits an organism has which increases its chances of surviving and reproducing.

We can analyse human behaviour using evolutionary models because different behaviours will have different levels of fitness. Being averse to snakes to the point of running away, for example, is quite an adaptive behaviour in an environment containing poisonous snakes.

Evolutionary psychologists believe that the characteristic adaptations that humans possess developed in an environment than today, that is termed the environment of evolutionary adaptedness (EEA). Hundreds of thousands of year ago, archaeological research suggests, humans lived in small groups of between 50-100 individuals. Life was difficult and there was an intense struggle for resources. For instance, women probably could not bring up babies by themselves, because the sheer caloric demand of a child outweighs the ability of a pregnant (and post-pregnant) mother to obtain food. Instead, women needed support from others, including male partners (Stevens & Price, 1996).

Evolutionary psychiatry is the attempt to explain abnormal behaviour such as sexual paraphilias, with the evolutionary psychology model (Stevens & Price, 1996). The model challenges the medical model of mental illness, which focuses on mental illness as an aberration to be altered so that sufferers are 'fixed' back to a norm.

Instead, "evolutionary psychiatry" proposes that many mental illnesses are characteristic adaptations, which in the current environment are now maladaptive. Only when their evolutionary origins are understood can effective treatments be designed and implemented for mental illnesses.

Of course it is accepted that some mental illnesses are the result of injury or genetic error. Brain damage caused by injury cannot be explained evolutionarily. Rett's Syndrome, a rare, extremely damaging illness resulting in mental retardation with autism-like symptoms is an X-linked, dominant genetic disorder (Barlow & Durand, 2002); it is also not in need of an evolutionary explanation.

Evolutionary psychology has been challenged on the grounds that it has too much explanatory power. It has the potential to provide a "Just So" story for any trait or behaviour. There are arguments to explain extra-pair copulations sought by men and exclusive relationships sought by women, and it has matching arguments to explain exclusive relationships sought by men and extra-pair copulations sought by women. This is a potentially valid criticism, but specific evolutionary arguments remain sound; there are many observable sex differences between men and women, which are well-explained by evolutionary theories of differential sexual strategies. The focus must be on the predictions made by evolutionary hypotheses and theories, and empirical evidence from research, preferably experimental research, which match these predictions.

Depression as an evolutionary adaptation

The first question one might ask is, does depression meet the criteria for consideration as an adaptive trait? Certainly. There is variation in both the levels of depression between individuals, and their propensity to be depressed, and depression is genetically heritable, as evidence from numerous adoptive and twin studies has shown. For instance, identical twins have a concordance rate for mood disorders of 70%, while fraternal twins have a concordance rate of 23% (Price & Stevens, 1996).

As a variable behaviour, depression will be normally distributed, that is, some individuals will have generally higher levels of depression than others. Evolutionary psychology does not seek to explain individual differences in depression, but rather its prevalence, the reason why it is observed to be widespread among all human cultures. Hence, endogenous depression is seen as not so important, and reactive depression is seen to be a more relevant phenomenon. However, endogenous depression is examined (Price & Stevens, 1996).

The first sociobiological theory of depression was proposed in 1967 with observations of macaque monkey troops by John Price. Price noted that monkeys who lost in hierarchical encounters and were forced into a subordinate social role behaved similarly to depressed human individuals. He proposed that depressed mood, irritability and anxiety in both monkeys and humans are behaviours which maintain a socially subordinate role. Acceptance of subordinate roles is necessary in hierarchically arranged groups, such as groups of monkeys and humans. (Price, 1967, cited in Sloman, 2005).

In its modern form, this idea goes by many different names, including rank theory (Price & Stevens, 1996), and the involuntary subordinate strategy (Sloman, 2005). These theorists propose that, in the EEA, humans lived in small hierarchical groups, which was adaptive and necessary for hunting and repelling predators. Higher positions in the hierarchy was very important to reproductive success. However, challenging superiors would be a very dangerous activity, so it was generally better to accept subordinate roles after losing social conflicts. Depressive states, then, exist as an adaptive behaviour to help individuals who are defeated in conflicts to accept their defeat, rather than throw more energy and resources into the conflict, conceptualised as a *yielding subroutine*. Also, it would help the winner of a social conflict to recognise that they did not need to hurt the loser any more. This would help restore social harmony quickly after a conflict (Price & Stevens, 1996).

Sloman (2005) presents an example of rank theory, or the involuntary subordinate strategy, in action, with a case study of "Muriel". Muriel is a depressed senior executive who is about to lose her job. She wishes to fight bitterly to keep her job, even though there is little hope. "Because Muriel felt victimized, she felt she had to right the wrong that had been done her and she became engaged in a struggle she felt she could not win. As a result, her IDS was triggered and she became depressed." (Sloman, 2005). After Muriel is advised to

accept the job loss, but negotiate for a better redundancy package, she does so successfully. Her involuntary subordinate strategy is then turned off, and her depression goes into remission.

Rank theory might be an acceptable explanation of reactive minor and moderate depression, but it doesn't seem to explain extremely depressed individuals who lose interest in all activities and may have suicidal thoughts. Rank theorists suggest that major depression, and endogenous depression, might be instances of abnormal overactivation of the general depressive subroutine (Price & Stevens, 1996).

The Social Risk Hypothesis (SRH) (Allen & Badcock, 2003) seeks to explain major depression as a cry for help when an individual is at risk of being ejected from a social group. The somatic actions of depression are thus an adaptive strategy which make an individual appear completely socially non-threatening. Depressed individuals are experimentally observed to be hypersensitive to negative social signals. They send submissive social signals, and have inhibited risk-seeking behaviours (eg, being socially outgoing, inquisitive and curious). These should increase their chances of being accepted back into a group, and indeed social support is observed to increase for depressed individuals. This theory would most easily explain reactive depression in cases of relationship breakdown (parents, siblings, spouses), unemployment and job loss. In particular, rejection from a social group, such as being discharged from the military, might have a particularly strong effect (Allen & Badcock, 2003).

The Social Navigation Hypothesis (SNH) (Watson & Andrews, 2002) is a slightly different theory of major depression which emphasises two hypothetical functions. Firstly, depression is seen to focus the sufferer on social problems, putting cognitive resources into analysing and solving social problems - the *social rumination* function. The other function is similar to the social risk hypothesis: anhedonia and lack of action affects social partners (close actors in the sufferers social network) by affecting their own fitness. This sends honest social signals and also acts as a "passive fitness extortion" which motivates the social partners to produce social support to the individual - a *social motivation* function (Watson & Andrews, 2002). This conceptualisation as an indirect extortion differentiates social motivation from Allen and Badcock's social risk hypothesis. In the SNH, social actors are tied together via social contracts and letting the depressed person down results in less resources or support for the social partners. They are forced to help, rather than answering the call for help altruistically.

For Watson and Andrews, the SNH theory explains both major and minor depression: minor depression is the social rumination function in action, whereas, as in the SRH, major depression is an instance of the social motivation function. The social navigation hypothesis has potentially greater explanatory power, because there are many situations which might cause an individual to require additional social support, for instance the

negative life events observed to trigger depression, such as the loss of a loved one or prolonged unemployment.

Here we see that sociobiological theory has developed a tier of explanatory theories for each level of depression. In minor depression, the strategies are yielding, submissive strategies to help individuals accept defeat. Then there is the social rumination strategy of minor depression, that this helps focus attentional resources on social problems (depressed people are highly socially aware). And thirdly major depression is hypothesised to be a form of help-seeking, possibly extortionary, calling social partners to give the depressed person more support.

(Note that these differing tiers of theory do not suggest that depression consists of several different mechanisms. Depression is a unitary psychological phenomenon. Instead, sociobiological theories suggest that different severities of depression are being invoked for different reasons, just as other mechanisms, like tears, can be used for different reasons - tears can express grief, fear or joy.)

The hypothesis of support seeking fits with our intuitive understanding of suicide attempts by depressed individuals. The majority (99%) of suicide attempts are really cries for help - attempts to gain increased social support or protest social constraints (Barlow & Durand, 2002). Depressed people are often depressed because of their poor environmental situation rather than endogenous factors. And we observe that depressed people do get lots of attention and help from their social network. But if this is the case, why doesn't depression turn off quickly when social support is offered? Perhaps it needs to be ongoing so that the support is ongoing. Also, if the depression mechanism was turned off quickly, then the need for social support would seem less important.

Suicide

Many suicide attempts are *not* cries for help, but are attempts to relieve the enormous burden of negative affect with a final solution. Depression, via suicide, can be a lethal disease. This is obviously extremely reproductively maladaptive. How can evolutionary psychology explain suicide? An important relevant difference between the modern world and the EEA is that there would have been no easy means to deliberately commit suicide. The most common means of suicide in modern times are firearms, hanging and poisoning; secondary methods include cutting to induce blood loss, electrocution and self-immolation. None of these means would have been available in the EEA - hundreds of thousands of years ago, firearms, strong rope (and large permanent structures), poisonous chemicals and sharp blades were not yet invented. Available means such as drowning, poisonous foods (berries) and deliberate exposure of self to predators would have been strongly aversive and unlikely to occur except in the most extreme cases of depression.

Suicide is recorded in pre-modern societies. For example, elderly Inuit expose themselves to the elements to commit suicide when food is very tight. This fits well with evolutionary concepts of inclusive fitness; killing oneself in this way increases the chances of survival for one's offspring. This type of suicide is instrumental and cultural, rather than the result of depression.

Theory Evaluation

We have seen several sociobiological theories of depression, which are not necessarily mutually exclusive. The existence of multiple theories is perhaps due to the relative youth of the evolutionary psychology. With further investigation and debate, a particular key theory may come to the fore. However, some researchers do not agree that sociobiology has yet convincingly explained depression. Kaminer and Stein (2004) question whether depression has been shown to be a normal adaptation rather than an over-activated natural function. They also note that some types of depression, in particular seasonal affective disorder (SAD) are not covered by existing evolutionary psychology theories. However, they conclude hopefully that "evolutionary theories ... may eventually enhance our ability to understand and manage depression." (Kaminer & Stein, 2004).

Of course many researchers do believe that sociobiological explanations are potentially very useful, and there are some glimpses of an emerging consensus, for example the SNH and SRH have a similar theory of social support seeking for major depression, and rank theory and involuntary subordinate strategy both agree that minor depression is a strategy for yielding to victors in social conflicts.

Treatment

What do sociobiological theories of the origin of depression mean for treatment? They have several obvious predictions, which are rooted in the proposed mechanisms of yielding strategies and social support seeking. Treatments suggested by evolutionary insights focus not on interfering with the mechanisms of depression (which might still be entirely appropriate for major depression) but on fixing the environmental trigger that has precipitated the depression.

For minor depression, the individual's social environment should be explored. There may be a particular social conflict to be settled. Perhaps the individual could leave that social group (eg, job, circle of friends) and join another, less confrontational one. Or maybe she needs psychotherapy related to that particular conflict: to resolve anger, or learn to be more assertive.

For major depression, the individual needs additional social support. A depressed person will find it very difficult to make new friends (Barlow & Durand, 2002) so existing family and friends will be central to

recovery. The impaired somatic and psychomotor abilities and distorted cognitions of major depression should by all means be treated with anti-depressant medication and cognitive-behavioural therapy, but it may prove very helpful to focus on the role of social support in helping the individual recover from his depression.

Post-partum depression

An interesting addition to sociobiological theories of depression are considerations of post-natal or post-partum depression (PPD). Many mothers experience 'baby blues' or minor depressive feelings after giving birth. The main evolutionary psychology hypothesis to explain PPD is the psychological pain hypothesis. This proposes that when mothers have problems with the child, delivery or resources needed to bring up a child, she needs to make a decision about how much to invest in the baby. Essentially, the theory suggests that PPD causes women to decrease their investment in their baby when circumstances are not optimal for successful child-rearing. This is evolutionarily important because the high cost of children could decrease the health (and thus reproductive success) of the mother and any existing children. If conditions are particularly dire, decreased investment might lead to infanticide via neglect. This is supported by observations that PPD is associated with problems in pregnancy and delivery, low social support and infant vitality. Furthermore, mothers with PPD are seen to significantly reduce their investment in the baby (Hagen, 2002).

This theory may seem quite negative and heartless. However, remember that in the EEA, having a baby was a very costly enterprise, and one not directly under the mother's control. With no contraception, tough choices would have to be made in lean years. In difficult circumstances, decreasing investment in new babies sooner rather than later would be advantageous to women and their existing offspring.

PPD as Bargaining

However, some mothers experience much more severe post-partum depression. Hagen proposes a theory to explain this, observing that in many circumstances, decreasing investment in the baby to the point of infanticide is socially impossible due to social constraints (condemnation by friends, family and spouse). Thus, the severe form of PPD evolved as a bargaining tool, designed to extract increased social support from partners, friends and family when decreased investment in the child was not possible. Thus when a mother perceives insufficient social support or poor mate investment and commitment, an extreme depression could help her obtain sufficient help and resources to successfully raise her child.

In modern times, mothers can do more than decrease investment after birth; they can perform an abortion. Under Hagen's PPD-as-bargaining theory, mothers who perceive that abortion would be unacceptable to their

social network are experiencing social constraints against decreasing their investment in the child, and PPD is a way to bargain for more resources and support with one's social network.

Research

Hagen's (2002) research tested these ideas empirically, examining 240 new parents, looking at their levels of post-partum depression, social support, mate investment and maternal attitude to abortion (for this particular birth). He measured social constraint on decreased investment by measuring the perceived opposition to abortion by close friends and family.

Consistent with the psychological pain hypothesis, mothers in situations of poor social support, too few resources, etc, were more willing to abort their child and experienced more PPD. In addition, and consistent with Hagen's supplementary PPD-as-bargaining theory, mothers who perceived more social constraint on abortion experienced higher levels of PPD. Higher PPD was associated with increased levels of social support and parental investment by their mates.

Although mothers bear most of the weight of child-bearing and -rearing, and evolutionary psychology tends to focus on their role, Hagen measured similar PPD effects in the fathers in his sample.

PPD Treatment

These explanations lead to suggestions for treating PPD: increasing resources and social support by the mother's social network should help ameliorate the effects of post-partum depression quickly. In addition, ensuring that pregnancy and birth go smoothly, and that baby health is as good as possible, should reduce the amount of 'baby blues' mothers experience.

Evaluation

An initial objection to an evolutionary explanation of PPD is to observe that mother's with PPD almost always recover from this and go on to raise their infant normally. But one must remember the different circumstances in the EEA. Only in modern times is food plentiful enough for all mothers to feed their children; and modern medicine advanced enough that almost all human offspring survive childhood. Once upon a time, we were not so fortunate. Compared to current theories for wider depression, PPD theories are quite consistent. If one accepts the wider argument of an evolutionary basis for many important human behaviours, the psychological pain and PPD-as-bargaining hypotheses appear to be potentially helpful explanations for post-partum depression.

To conclude, there are several interesting sociobiological theories of depression. Minor depression is conceptualised as a yielding strategy to accept defeat in social conflict. Depression may also act to focus cognitive resources on solving social problems and conflicts. Major depression may be a mechanism to signal the need for, and receive, increased social support. Post-partum depression in particular is a potentially useful strategy of conserving resources by decreasing investment in a baby in suboptimal childrearing conditions. And when such decreasing investment is not possible, PPD may be a bargaining strategy to force social partners to provide additional childrearing support.

Sociobiological theories of depression are diverse, and while controversial, evolutionary psychology is still a young field. As with any theory in abnormal psychology, the key to evaluating the usefulness of sociobiological theories of depression should be their utility in guiding successful treatment.

References

Allen, N., & Badcock, P. (2003). The social risk hypothesis of depressed mood: Evolutionary, psychosocial, and neurobiological perspectives. *Psychological Bulletin*, *129*, pg 887-913.

Barlow, D., & Durand, V. (2002). *Abnormal Psychology* (3rd Ed). Canada: Wardsworth Group.

Hagen, E. (2002). Depression as bargaining: The case postpartum. *Evolution of Human Behaviour*, *23*, pg 323–336.

Kaminer, D., Stein, D. (2004). Depression: Evolutionary Approaches. *Lundbeck Institute Magazine*, *7*.

Sloman, L. (2005). Is feeling bad good? The evolutionary benefits of depression. *CrossCurrents*, Spring 2005.

Stevens, A., Price, J. (1996). *Evolutionary Psychiatry: A New Beginning*. Routledge, London and New York.

Watson, P. & Andrews, P. (2002). Toward a revised evolutionary adaptationist analysis of depression: The social navigation hypothesis. *Journal of Affective Disorders*, *72*, 1-14.