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Depression and Social Functioning: Examining Two Interpersonal Theories

by

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Honors Thesis

Submitted to

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Abstract

The purpose of this study was to test the specific predictions of two theories of depression and social functioning. One, the Social Navigation Hypothesis, is an adaptationist approach that predicts that depression functions to increase an individual's ability to analyze and solve problems in their social system. The individual engages in behaviors such as feedback seeking in order to identify potential problems and develop solutions. In contrast, Interpersonal Theory predicts that depression is related to aversive social behaviors that can lead to rejection. Adult American participants ($n=155$) were recruited from Amazon's Mechanical Turk. They completed an online survey that took approximately half an hour, and answered questions relating to depressive symptoms, social rejection, social problem-solving, feedback seeking, and social functioning. Depressive symptoms were negatively related to social problem-solving skills, and Excessive Reassurance Seeking was a significant mediator of the positive relationship between depression and social rejection. Negative Feedback Seeking was not a significant mediator of the relationship. Furthermore, rumination was not a mediator of the relationship between depression and social problem-solving. Most participants retrospectively indicated that social functioning was easier for them when they were not depressed. From the current study, there was no compelling evidence that depression functions as an adaptation for social functioning. Although the Social Navigation Hypothesis was not supported by the results of this study, other adaptationist theories of depression remain plausible. Future directions in this area are discussed.

Depression and Social Functioning: Examining Two Interpersonal Theories

“Men act upon the world, and change it, and are changed in turn by the consequences of their action. Certain processes, which the human organism shares with other species, alter behavior so that it achieves a safer and more useful interchange with a particular environment. When appropriate behavior has been established, its consequences work through similar processes to keep it in force. If by chance the environment changes, old forms of behavior disappear, while new consequences build new forms.” (Skinner, p. 1, 1957)

The discovery of evolutionary theory and natural selection represents one of the greatest advancements in science over the course of history. As the study of human behavior, the science of psychology benefits from an understanding of Darwinian theory and the natural forces which have shaped behavior and mental processes (Darwin, 1859, 1874). Evolution offers a well-evidenced, theory-driven explanation for the complex functional organization of the myriad organisms of our planet—one that is without equal in scientific validity. Evolutionary theory derives its legitimacy from its reduction of the astronomical improbabilities of the complexity of life into an organized system, by “taming” chance (Dawkins, 1986; Tooby & Cosmides, 1992, Buss, 1995). Underpinnings of evolutionary theory can be distinguished in the seminal writings of psychologists like William James (1892) and B. F. Skinner (1957). However, the field largely dismissed Darwinism during the twentieth century (Tooby & Cosmides, 2005). Biologists have long questioned the psychological field’s entrenched environmentalist stances, similarly calling into question the legitimacy of the science behind some behavioral approaches (Tooby & Cosmides, 1992). Likewise, psychology and anthropology may be too quick to identify cross-cultural differences, rather than similarities that would indicate shared, evolved features. The social sciences have “dismissed” universal design and the role of biology in human behavior (Tooby & Cosmides, 1992). However, there have also been occasions where the scientific field may be too quick to assign an evolutionary origin to a behavior or a mechanism, without

properly considering the environmental and cultural influences on the behavior. The application of evolutionary theory to clinical psychology without rigorous, scientific evidence to support it does justice to neither field.

The field of psychology has produced hypotheses from every subdiscipline to explain the prevalence of mental disorders. In particular, highly prevalent disorders have been examined as potential adaptations, as such prevalence indicates that they may be advantageous. Specifically, this study examined the competing predictions of an adaptationist approach and a behavioral approach to the relationship between depression and social functioning. The goal of this study was to test specific predictions of two theories of depression and social functioning outcomes, the Social Navigation Hypothesis (Watson & Andrews, 2002) and Interpersonal Theory (Coyne, 1976).

Evidence for the Role of Social Support

Both the Social Navigation Hypothesis and Interpersonal Theory approach depression in regard to its social functioning outcomes. However, the two theories have different hypotheses about the ways that depression affects social functioning. Both studies acknowledge a number of positive outcomes associated with the development of strong social support systems. Beckes and Coan (2011) posit that the human brain has evolved with the assumption of the availability of social resources, such that the ‘baseline’ condition is close interaction with other humans. When that assumption is violated, humans are physiologically taxed. Studies have found that receiving support during the threat of a shock attenuates threat-related neural activity, and that this is the case even when the support is given by a stranger (Coan, Schaefer, & Davidson, 2006). Furthermore, giving support to a partner who is in pain also decreases threat-related neural activity, and increases activity in the reward related ventral striatum (Inagaki & Eisenberg,

2012). Social support and emotional intelligence can also predict subjective well-being (Gallagher & Vella-Brodrick, 2008). Rich, diverse social relationships are related to improved physical health and longevity (Cohen & Janicki-Deverts, 2009). A meta-analysis found that strong social relationships led to a 50% increased likelihood of survival (Holt-Lunstad, Smith, & Layton, 2010). In all, it has long been accepted that the human capacity to form close, cooperative relationships with other humans has been of singular importance in the survival of the species (Berscheid, 2003). Both the Social Navigation Hypothesis and Interpersonal Theory acknowledge the importance of social systems; however, they have opposite predictions about the role that depression plays in social functioning outcomes.

Adaptations and Depression

Tooby and Cosmides (1992) define an adaptation as 1) an inherited and reliably developing mechanism or system of mechanisms, which 2) became a feature of the species' design because 3) it corresponded with other recurrent properties either in the environment or in the organism 4) which either directly or indirectly resulted in an increase in reproduction in the species (see also Buss, Haselton, Shackelford, Bleske, & Wakefield, 1998; Nettle, 2004). Adaptations are incredibly important in the study of evolution, as they can explain why a mechanism was developed and how it is involved in cause-and-effect relationships in the world (Tooby & Cosmides, 2005). Recently, there has been an increased interest in exploring various psychological phenomena from an adaptationist perspective, in order to examine what adaptive function it may serve and what problems may it solve. In particular, several evolutionary interpretations of the function of depression have recently been developed.

Depression is a serious illness than can interfere with one's work, sleep, concentration, memory and ability to feel interest or pleasure in activities such as eating or sex. It can also lead

to feelings of irritability, restlessness, hopelessness, guilt, and worthlessness, and may cause fatigue and somatic pain. People who suffer from depression may harm themselves, or think of or attempt suicide (“What is depression?,” 2015). Major depressive disorder is one of the most common mental illnesses in the United States. It is highly heritable, highly comorbid with other disorders, and can lead to severe functional impairment (Sullivan, Neale, & Kendler, 2000; Kessler et al., 2003; Murray et al., 2013). Furthermore, the results of a meta-analysis indicate that people who are depressed have an increased risk of mortality, and suggest that, even in subclinical forms, depression should be considered a life-threatening disorder (Cuijpers & Smit, 2002). The lifetime prevalence of depression in the United States is 16.2% and the 12 month prevalence rate 6.6% (Kessler et al., 2003). Bromet et al. (2011) found comparable cross-national rates, lifetime and 12 month prevalence rates were 14.6% and 5.5% in ten high-income countries, and 11.1% and 5.9% in eight low to middle income countries. Furthermore, Chang et al. (2008) found that a previous disparity in cross-national rates in a study that reported lower prevalence rates of major depressive disorder in East-Asian countries than in the West was due to a higher diagnostic threshold used in assessment in Asia. High, cross-cultural prevalence of a phenomenon can suggest an adaptive origin, and it is possible that some phenomena remain prevalent due to the increased fitness that they confer to the individual and the species as a whole. The Social Navigation Hypothesis examines depression from this approach.

The Social Navigation Hypothesis. The Social Navigation Hypothesis posits that depression leads individuals to focus their cognitive resources on social problems, and encourages social partners to offer care and help (Watson & Andrews, 2002). Watson and Andrews are evolutionary biologists who contend that the prevalence and the genetic role of the development of depression suggest an adaptive origin. They posit that depression results, not

from an imbalanced neurochemistry, but from social problems that resist solution (Cline-Brown & Watson, 2005). They theorize that the inability to feel pleasure and the lack of interest in activities may free the depressed individual to focus their resources on pressing social problems. The Social Navigation Hypothesis also suggests that the poor performance of depressed individuals on tasks such as intelligence tests, memory tasks, and reading comprehension can be explained due to the individuals' cognitive focus on social problems. They theorize that depression serves a social problem-solving function, particularly in that it should lead the individual to develop solutions to their social problems, and it should motivate social partners to offer care and aid. The resulting improvement in social functioning would then perpetuate depressive traits, as the symptoms are fitness enhancing. Specifically, Watson and Andrews predict that known behaviors related to depression, such as feedback seeking and rumination, serve to identify social problems, and analyze and implement solutions. Therefore, they predict that depression is associated with better social problem-solving, due to the increased focus on social problems, and the lack of interest in competing activities.

Watson and Andrews also propose a 'ruminative function' of depression, as depressed individuals are often "consumed with negative thoughts." (p. 6). Watson and Andrews suggest that depressed individuals' extensive focus on the 'unenviable' nature of their social situations suggests a desire to better their situation. Ruminative response style is defined by Nolen-Hoeksema, Morrow, and Fredrickson (1993) as "thoughts and behaviors that focus the depressed individual's attention on his or her symptoms and the possible causes and consequences of those symptoms" (p. 20). Although Watson and Andrews do not directly quote this definition, it stands in line with their proposal that depressed individuals are focused on the problems that may have led to their depression. They predict that this behavior is evidence of the analytical approach that

the depressed individual applies to their depression and their social system. Furthermore, Watson and Andrews identify Negative Feedback Seeking, the tendency for depressed individuals to seek out negative feedback about themselves, as evidence that depression leads to a sustained focus on identifying and addressing issues within the individual's social system. Watson and Andrews suggest that "Negative Feedback may be useful for identifying social problems and anticipating the full range of potential partner responses to one's efforts to solve a problem, including worst case scenarios." (Watson & Andrews, p.6, 2002).

In their writings, Watson and Andrews also discuss direct clinical implications of their theory, particularly in regard to treatment:

The SNH implies that anti-depressant medications risk handicapping the client's ability to navigate and control their social environment; this could, in the long run, hinder the depressive from making key improvements in quality of life. If the SNH is correct, then a therapeutic prime directive to reduce suffering per se may be an irresponsible approach. Even when a therapist can implement a helpful talking therapy, it may be best to let depression work its miserable yet potentially adaptive magic on the social network under protective supervision. (p.11).

Watson and Andrews go as far as to suggest that current treatments of depression, both psychotherapeutic and pharmaceutical, may be directly harmful to people who suffer from depression. The authors caution against the treatment of depression as, according to the Social Navigation Hypothesis, treatment may interfere with the adaptive function of depression. A widely maintained theory of mental illness based on Wakefield's (1992) Harmful Dysfunction Model, conceptualizes a behavior as "harmful" if it interferes with social norms, and "dysfunctional" if a biological mechanism fails to perform its natural function (see also Spitzer,

1999). The Watson and Andrews Social Navigation Hypothesis would claim that depression is neither harmful nor a dysfunction, and as such it challenges the current conceptualization of depression as a mental disorder. The implications of their theory, particularly in regard to treatment, are concerning and necessitate much further research into the validity of the predictions of the Social Navigation Hypothesis.

Interpersonal Theory. In contrast, Coyne's Interpersonal theory of depression is driven by the social consequences that can result from the symptoms of the disorder. He found that nondepressed people who conversed with depressed individuals on the phone were more depressed and rejecting after the conversation (Coyne, 1976). Coyne hypothesized that the behavior of depressed individuals tends to create a negative interpersonal cycle that leads to the continuation, not the abatement, of depressive symptoms that Watson and Andrews predict. Furthermore, two interpersonal behaviors, Negative Feedback Seeking (NFS) and Excessive Reassurance Seeking (ERS), have been conceptualized as risk factors for depression (Timmons & Joiner, 2008). A risk factor is defined as a variable that both precedes and increases the likelihood of an outcome. Joiner, Alfano, and Metalsky (1992) found that individuals who are depressed often engage in Excessive Reassurance Seeking, a behavior which is characterized by the individual's constant inquiries as to whether their social partners "truly" care about them. Although Watson and Andrews (2002) do not identify Excessive Reassurance Seeking directly, the construct is reconcilable with the premise of the Social Navigation Hypothesis: that depressed individuals are particularly motivated to seek feedback from their social partners. However, Joiner predicted that ERS is a particularly aversive behavior, and as such would be associated with negative social outcomes. The researchers found that depression often led to Excessive Reassurance Seeking among peers, which then led to social rejection (Joiner, Alfano,

& Metalsky, 2002). Potthoff, Holahan, and Joiner (1995) examined interpersonal rejection as a mediator of ERS and depression. They found that ERS predicted increases in stressful life events, which then predicted increases in depression. These findings provide evidence in support of Coyne's (1976) original model of a negative interpersonal cycle, in which the behavior of a depressed individual often leads to an environment that maintains depression (Joiner, 2000).

Swann, Wenzlaff, and Tafarodi (1992) characterize Negative Feedback Seeking as the tendency of the depressed individual to seek feedback which confirms their negative view of their situation. Furthermore, depressed individuals tend to gravitate toward people who view them negatively, as this reinforces the depressed individuals' view of themselves. This behavior also leads to social rejection, and the loss of social support. The researchers found that undergraduates who had high scores on a depressive symptoms measure preferred to interact with an evaluator who had evaluated them negatively, as opposed to positively (Swann, Wenzlaff, & Tafarodi, 1992). Depressed individuals also preferred to receive the negative feedback, even when given the choice to participate in another study instead of receiving it. The nondepressed participants showed the opposite results.

In a study of undergraduate roommates, Swann, Wenzlaff, Krull & Pelham (1992) found that people with negative self-views preferred to interact with people who viewed them unfavorably, which was also true for depressed participants. Furthermore, depressed individuals, particularly those who engaged in negative feedback seeking, were the most likely to be rejected by their roommates by the end of the semester, compared with nondepressed participants. The roommates of depressed people were more likely to desire or plan to end the relationship. Giesler, Josephs & Swann (1996) investigated feedback seeking behaviors in individuals who had similar levels of negative self-views. The researchers sought to identify whether negative

feedback seeking was explained more by depression or by low self-esteem. Depression functions above and beyond low self-esteem to make negative feedback more self-confirming. The desire for self-confirming negative feedback can also result in a depressed person responding poorly to those who perceive them positively, and people who are depressed often make an effort to act in such a way that will cause their friend, family member, or colleague to agree with their negative self-view. The actions of depressed individuals often result in rejection from people who attempt to disprove their negative self-views. Watson and Andrews suggest that “Negative Feedback may be useful...” (Watson & Andrews, p.6, 2002). However, the research on this phenomenon suggests that this behavior may not lead to solutions for social problems, but instead sustains an environment of negativity (Giesler, Josephs & Swann, 1996). By surrounding themselves with people who will confirm their negative self-views, depressed individuals regain a sense of control. However, the self-verification process rarely aids the individual in solving social problems or in easing depression.

Furthermore, previous research has identified social consequences resulting from rumination. Nolen-Hoeksema, Morrow, and Fredrickson (1993) found that depressed individuals who engaged in higher levels of ruminative response had longer periods of depressed mood, even after the initial severity of the mood was taken into account. Furthermore, research has demonstrated that ruminative responses to depression lead to longer periods of depressed mood, because they interfere with problem-solving and behaviors that contribute to learned helplessness (Nolen-Hoeksema, 1991). Wisco and Nolen-Hoeksema (2008) characterize ruminative response style as a risk-factor for depression. Previous research on depression and social functioning has elicited a number of consequences for depressed individuals. Kochel, Ladd, and Rudolph (2012) studied elementary school children and found that depressive symptoms predicted peer rejection

and victimization in the next school year. A large body of research has shown that depressed individuals often have impaired social problem-solving skills, and that these deficits moderate the impact of major negative life events (Nezu, Nezu, & Clark, 2008). Although depressed individuals may interact with social partners just as frequently as nondepressed individuals, they tend to rate their interactions as less intimate and less enjoyable (Nezlek, Hampton, & Shean, 2000). Thus, the same depression-related behaviors that the Social Navigation Hypothesis predicts are adaptive, other theories suggest that these behaviors are aversive, problematic, and related to social rejection.

Study Overview

The current study seeks to examine which theory better predicts observed relationships among depressive symptoms, social and cognitive functioning, and social rejection. We purposefully did not recruit clinically depressed participants for this study. Instead, we chose to include a continuous measure of depressive symptoms in order to examine the possibility of a curvilinear relationship between depression and social functioning. Although Watson and Andrews contend that even severe depression may be functional, we chose to examine a range of symptoms and examine the possibility of an adaptive peak of depression. The results of this study are important in order to consider what evidence exists for the adaptive features of depression. Furthermore, Watson and Andrews (2002) suggest that current treatment of depression may be problematic if it is indeed an adaptive trait. However, much more evidence is needed, before suggesting alteration or cessation in treating this illness.

Four main research questions were addressed in this study, in order to test the conflicting predictions of both the Social Navigation Hypothesis and Interpersonal Theory, as described below.

1. Are depressive symptoms, at any level, related to better social problem-solving?

The SNH conceptualizes depression as a mechanism of social problem-solving. The theory would predict that depression would lead to better social problem-solving, or at least that there is an adaptive peak in depressive symptoms that is associated with better problem-solving. However, Interpersonal Theory predicts that depression is related to more difficulty in navigating social problems, and that the symptoms of depression maintain a negative cycle of depression. Therefore, depression would be negatively related to social problem-solving.

2. Are Excessive Reassurance Seeking and Negative Feedback Seeking significant mediators of a relationship between depression and social rejection?

Both theories would predict that these constructs would be related to depressive symptoms, but with different outcomes. The SNH predicts that feedback seeking behaviors function to analyze problems in the relationship, therefore they should not be related to negative social outcomes. However, Interpersonal Theory predicts that depression is positively related to social rejection and predicts that ERS and NFS are aversive and contribute to rejection in the social system. Thus, Interpersonal Theory would also predict that these constructs would mediate this positive relationship between depression and social rejection.

3. Is ruminative response style a significant mediator of the relationship between depression and social problem-solving?

Both theories acknowledge a relationship between rumination and depression. However, the Social Navigation Hypothesis predicts an analytic and problem-solving function for ruminative behavior. Therefore, it would predict that rumination would be positively related to social problem-solving, and that rumination would be a significant mediator of the positive relationship between depression and social problem-solving. However, Interpersonal Theory and Nolen-Hoeksema (1991; 1993) conceptualize rumination as a negative behavior that functions to maintain the cycle of depression without solving social problems. They would predict that rumination would be negatively associated with social problem-solving, and that it would mediate the negative relationship between depression and social problem-solving.

4. Do people who have experienced some level of depression feel that social functioning is easier when they are depressed or not depressed?

Although the SNH would acknowledge that depressed individuals tend to remember events more negatively, they would predict that individuals should characterize their social functioning as unaffected or benefitted by their depression. In contrast, Interpersonal Theory is based on the social functioning problems that are related to depression, and would predict that individuals would characterize their social functioning as harmed by their depression.

Methods

Participants

American adults over the age of 18 ($n = 155$) were recruited from Amazon's Mechanical Turk platform (Ross, Irani, Silberman, Zaldivar, & Tomlinson, 2010; Buhrmeister, Kwang, & Gosling, 2011). Only those with an accuracy rate on previous assessments of 95% or better were

eligible for the study. Eighty-four participants were female, 71 were male, and one indicated a gender other than male or female. Of the participants, 136 reported their race as Caucasian, 13 African-American, 7 Asian/Pacific Islander, 6 Native American. Seven participants indicated that they were Hispanic. The mean age was 35.4 ($SD = 11.08$).

Measures

Demographics (11 items). A basic demographic measure was administered to assess race, ethnicity, level of education, employment status, marital status, children, grandchildren, and spirituality.

Center for Epidemiologic Studies-Depression (CES-D; Radloff, 1977; Orme, Reis, & Herz, 1986; $\alpha=0.95$). The CES-D was administered to measure depressive symptoms. The participants were instructed to respond only regarding their behavior in the last two weeks. The measure consisted of 20 items such as “I was bothered by things that usually don’t bother me,” and “I had crying spells.” The participants rated the truthfulness of these statements on a Likert scale of 0-3 (0=rarely or none of the time, under 1 day; 1= Some or a little of the time, 1-2 days; 2= occasionally or a moderate amount of time, 3-4 days; 3= most or all of the time, 5-7 days).

Social Support Questionnaire (SSQ; Sarason, Levine, Basham, & Sarason, 1983; Qualitative $\alpha=0.99$; Quantitative $\alpha=0.97$). This 27 item measure included questions like, “How many people can you really count on to listen to you when you need to talk?” and “How many people do you feel would help if a family member very close to you died?” After each question, the participant was prompted to rate their satisfaction in that specific area of social support on a 6 point Likert scale from “Very Satisfied” to “Very Dissatisfied.” The original measure asked participants to list up to nine people’s initials and their relationship to the participant for each question. This was modified to avoid fatiguing the participants. Instead, participants were asked

to enter the number of people who would support them in each scenario, and then to rate their satisfaction regarding that area of social support.

Ruminative Responses Scale (RRS; Nolen-Hoeksema, Morrow & Fredrickson, 1993; $\alpha=0.95$). This 22 item measure asked participants to consider their behavior when they felt sad, blue, or depressed. They were then asked to rate the frequency of behaviors such as “Think about how alone you feel” or “Think about a recent situation, wishing it had gone better” on a four point scale of never, sometimes, often, or always.

Cognitive-Behavioral Avoidance Scale (C-BAS; Ottenbreit & Dobson, 2004; $\alpha=0.97$). Participants were asked to consider their general behavior regarding strategies they use to deal with problems for this 31 item measure. Scenarios included “I avoid attending social activities” and “There is nothing I can do to improve problems in my social relationships.” They were asked to rate the frequency with which they engaged in such behaviors on a five point scale from “not at all true” to “extremely true.”

Barkley Deficits in Executive Functioning Scale (BDEFS-S; Barkley, 2011; $\alpha=0.95$). This 20 item measure asked participants to consider their behavior over the last six months. They were then asked to rate the frequency of behaviors such as “Procrastinate or put off doing things until the last minute” and “Others tell me I am lazy and unmotivated” on a four point scale from “never or rarely” to “very often.”

Social Rejection Measure (SRM; Lev-Wiesel, Sarid, & Sterberg, 2013; $\alpha=0.95$). The 21 item measure asked participants to rate the frequency of their peers’ behavior towards them. The measure included scenarios such as “I was rejected by my friends” and “My friends blamed me for bad things that had happened.” The participants rated the frequency of these events on a scale from “never” to “often.”

Depressive Interpersonal Relationships Inventory (DIRI; Joiner & Metalsky, 2001; $\alpha=0.92$). This 24 item measure included questions such as “Do you frequently seek reassurance from the people you feel close to as to whether they really care about you?” and “How important is it for you to always be accepted by your friends?” They rated the importance of these scenarios on a seven point scale from “not at all” to “very.”

Feedback Seeking Questionnaire (FSQ; Swann, Wenzlaff, Krull, & Pelham, 1992). This 12 item questionnaire asked participants to help the researchers in future studies by selecting questions that they would most like to have a friend answer about them. The participants were asked to select from the list of 12 questions the five questions that they would most like to have a close friend answer about them. The 12 questions addressed six themes such as intelligence, relationships, art, athletics, and social skills. For each theme, one question was phrased negatively and the other was phrased positively. For example, “What are some signs you have seen that your friend is not especially high in social skills?” and “What are some signs you have seen that your friend has good social skills?” For each question participants could select “yes, include this question” or “no, do not include this question.”

Retrospective Depression and Social Functioning Questionnaire (see Appendix; $\alpha=0.78$). This 6 item exploratory measure was created in order to assess the participants’ personal understanding of their social functioning abilities while they were depressed. If the participants indicated that they had never been depressed for a week or longer, they were not shown these questions. Although participants who were shown this question indicated that they had been depressed at some point, we purposefully did not include criteria for major depression. In this way our data should reflect a range of severity of depression.

Social Problem Solving Inventory Revised (SPSI-R; D’Zurilla & Nezu, 1990; D’Zurilla, Nezu, & Maydeu-Olivares, 2002; $\alpha=0.92$). This 25 item measure assessed behavior regarding social problem solving. Behaviors included “When I have a problem to solve, one of the first things I do is get as many facts about the problem as possible” and “I feel threatened and afraid when I have an important problem to solve.” Participants rated these behaviors on a five point scale from “not at all true of me” to “extremely true of me.” For the results of this scale, a total score was calculated consistent with the scoring instructions.

Procedure

Approval for this study was granted by the University of Richmond Institutional Review Board. Participants completed the measures in the order they are listed above. For the Retrospective Depression and Social Functioning Questionnaire, only those who answered ‘yes’ to the question, “In your opinion, has there ever been a time when you were depressed for a week or longer?” were shown the rest of the measure (see Appendix). The survey took approximately 30 minutes to complete, and participants were compensated \$2.00 for their time. After completing the survey, each participant was directed to a debriefing screen that informed them of the purpose of the study, and directed them to online resources in case the items referring to depressive symptoms had raised any questions for them. They were also instructed to consult with their primary healthcare provider if they had any concerns about their mental health.

Results

As shown in Table 1, correlation analyses were conducted in order to justify further analysis. Correlations indicated that higher levels of depressive symptoms were significantly related to increased social rejection, negative feedback seeking, excessive reassurance seeking, and rumination.

Depressive Symptoms and Social Problem-Solving.

As shown in Figure 1, higher levels of depressive symptoms were negatively related to social problem-solving skills ($r = -.59, p < .01$). Both a linear ($F(1, 153) = 82.65, p < .001, r^2 = .35$) and quadratic ($F(2, 152) = 44.75, p < .001, r^2 = .37$) equation were applied to the data. Although the quadratic equation accounted for slightly more variance, it was not expressed as an inverted U.

ERS and NFS as Mediators of Depression and Social Rejection.

Simple mediation analyses were conducted using PROCESS for SPSS (Model 4; Hayes, 2014) in order to test whether Excessive Reassurance Seeking and Negative Feedback Seeking were significant mediators of the relationship between depression and social rejection. Indirect effects were estimated using bootstrap analysis with 10,000 resamples and evaluated by examining 95% confidence intervals of the indirect effect. As shown in Figure 2, There was a significant positive relationship between depression and social rejection ($B = .35, p < .001$), between depression and ERS ($B = .83, p < .001$), and between ERS and social rejection ($B = .06, p < .01$). Excessive Reassurance Seeking was a significant mediator of the effect of depression on social rejection (indirect effect = .05, 95% CI: .01, .12, r^2 of mediation = .09). As shown in Figure 3, Negative Feedback Seeking was also examined as a mediator of the relationship between depression and social rejection. Again, there was a significant positive relationship between depression and social rejection ($B = .38, p < .001$), and there was also a significant relationship between depression and NFS ($B = .51, p < .001$); however, there was not a significant relationship between NFS and social rejection ($B = .05, p = .14$). Furthermore, Negative Feedback Seeking was not a significant mediator of depression and social rejection (indirect effect = .02, 95% CI: -.01, .08).

Rumination as a Mediator of Depression and Social Problem-Solving.

Figure 4 depicts the mediational model that tested ruminative response style as a mediator of the relationship between depression and social problem-solving. There was a significant negative relationship between depression and social problem-solving ($B = -2.85$, $p < .001$), and a significant positive relationship between depression and ruminative response style ($B = .71$, $p < .001$). There was not a significant relationship between ruminative response style and social problem-solving ($B = -.65$, $p = .17$). Furthermore, ruminative response style was not a significant mediator of the relationship between depression and social problem-solving (indirect effect = $-.46$, 95% CI: $-1.17, .20$).

Retrospective Depression and Social Functioning.

Figure 5 represents the mean responses to five areas of social functioning, measured by the Retrospective Depression and Social Functioning Questionnaire. Of 155 participants, 100 answered yes to the question, “In your opinion, has there ever been a time when you were depressed for a week or longer?” On average, participants indicated that social functioning was easier for them when they were not depressed ($M = 4.17$, $SD = .75$). In order to examine the possible impact of a rumination effect on the data, Figure 6 represents the mean response with the first question, “Thinking thoroughly about my social problems,” removed ($M = 4.24$, $SD = .75$). There was no correlation between the ratings of the five areas of social functioning on the retrospective questionnaire and levels current depressive symptoms ($r = .01$, $p = .90$).

Discussion

This study tested the specific predictions of two theories of depression and social functioning. Furthermore, we used continuous and sub-clinical threshold measures in order to measure depressive symptoms. This was in order to examine depression on a spectrum, as

opposed to only examining depression that met diagnostic criteria. This study also examined behaviors related to depression in order to better understand how they relate to social functioning in depressed individuals.

Depressive Symptoms and Social Problem-Solving.

The study found a negative relationship between depression and social problem-solving skills, which suggests that increasing levels of depressive symptoms are related to worse social problem-solving. This result does not support the Social Navigation Hypothesis, which predicts that the primary adaptive function of depression is to solve social problems that resist solution. Instead, this finding supports the Interpersonal Theory's prediction that depression is not related to better social problem-solving. Interpersonal Theory predicts that this negative relationship may be due to the aversive behaviors that are associated with depression, as well as the lack of interest in social interaction that many depressed individuals display. Furthermore, a quadratic equation was applied to the data in order to examine the possibility of a curvilinear relationship between depression and social problem-solving skills. Although the Social Navigation Hypothesis predicts that even severe depression can be adaptive, we examined the possibility of an adaptive peak in the relationship. However, no such pattern was found. The quadratic line was expressed as a "U," indicating that there is not a middle ground of depressive symptoms that is associated with better problem-solving skills.

ERS and NFS as Mediators of Depression and Social Rejection.

Two such aversive behaviors were examined, in order to better understand their relationship with depression and social functioning. Both Excessive Reassurance Seeking (ERS) and Negative Feedback Seeking (NFS) were examined as mediators of the relationship between depression and social rejection. Both ERS and NFS were significantly related to depression, as

predicted by both the Social Navigation Hypothesis, and Interpersonal Theory. However, a significant positive relationship between depression and social rejection was found, indicating that depression is related to problems in the social system, in contrast to the predictions of the Social Navigation Hypothesis. Furthermore, ERS was a significant mediator of the relationship between depression and social rejection. This finding also does not support the Social Navigation Hypothesis, which predicts that feedback seeking behaviors function to analyze potential problems in the social environment, in order to develop solutions to solve them. Instead, this finding supports the hypothesis of the Interpersonal Theory, which predicts the ERS is aversive and can cause problems in social relationships. Although NFS was related to depression, it was not a significant mediator of that relationship. This finding does not directly support either theory, because it suggests that the construct is neither related to increased or decreased social rejection for people who are depressed. It may be the case that Excessive Reassurance Seeking is a more aversive behavior than Negative Feedback Seeking, and as such may lead to more frustration and rejection in the social system.

Rumination as a Mediator of Depression and Social Problem-Solving.

A third mediation analysis was conducted in order to examine ruminative response style as a mediator of the relationship between depression and social problem-solving. Both the Social Navigation Hypothesis and Interpersonal Theory predict that depression is related to rumination. This prediction was reflected in the data, which indicated that depression is positively related to rumination. However, the data indicate a negative relationship between depression and social problem-solving skills. This result is in direct contrast with the predictions of the Social Navigation Hypothesis. Furthermore, there was a nonsignificant negative relationship between rumination and social problem-solving, and ruminative response style was not a mediator of the

relationship between depression and social problem-solving. Again, this result does not support the main hypothesis of the SNH, which predicts a ruminative function of depression such that people who are depressed are better able to identify and solve social problems. However, because the data did not indicate any relationship, this finding also does not support Interpersonal Theory, which predicts a negative relationship. In regards to rumination as mediator of the relationship between depression and social problem-solving, neither theory was supported by the results of the mediation.

Retrospective Depression and Social Functioning.

Finally, participants' retrospective reports of their depression and social functioning were examined in order to explore whether people who had experienced depression found that social functioning was easier when they were depressed or when they were not depressed. The majority of participants indicated that the five areas of social functioning were easier when they were not depressed. However, a small minority indicated that these behaviors were either easier when they were depressed, or just as easy when they were depressed or not depressed. We examined the possibility that the effect may have been driven by confusion due to the wording of the first item, "Thinking thoroughly about my social problems." As discussed, depression is associated with engagement in rumination, which is characterized by constantly thinking about the negative emotional state, and the consequences of depression. Some participants may have been referring to their engagement in rumination during their experience with depression. A better way to word this item may have been, "Thinking thoroughly about my social problems in order to develop effective ways of solving them." As shown in Figure 6, there is a steeper trend when the first item is removed from the graph. As shown in the correlation table, there was no significant correlation between depressive symptoms and mean rating of social functioning on the

retrospective questionnaire. This suggests that those who indicated that their social functioning was more difficult when they were depressed were not necessarily currently depressed.

Conclusion.

The data from the current study do not support the Social Navigation Hypothesis. Furthermore, other features of depression also suggest that this theory may not be representative of depression as it is experienced by people today. As Watson and Andrews note, stressful life events such as divorce, unemployment, or loss of a family member can be risk factors for depression (Kendler, Karkowski, & Prescott, 1999). However, depression is not always evoked by appropriate triggers, and can often occur randomly (Nettle, 2004). Furthermore, the Social Navigation Hypothesis posits that the depressive episode should persist until the problem has been solved, and then abate. However, research suggests that depression tends to be chronic and recurrent (Nettle, 2004). As the results of this study indicate, the prevalence and cross-cultural occurrence of depression does not constitute sufficient evidence for an adaptive function. As Nettle (2004) notes, maternal mortality during childbirth is a significantly prevalent event that occurs cross-culturally. However, this does not establish that maternal mortality is an adaptation. Instead the rate of maternal mortality is a carefully balanced side-effect of the decidedly adaptive size of the brains of our species. Likewise, the global prevalence rates of depression are not in and of themselves sufficient evidence for any adaptive function of depression.

Implications for Adaptationist Theories of Depression.

The results of this study are not to suggest that there are no compelling adaptationist theories of depression. However, many of the other theories do not go as far as the Social Navigation Hypothesis to suggest a direct, socially adaptive outcome, nor do they all endorse Watson's and Andrews' approach to treatment. Akiskal (2001) conceptualized depression as the

byproduct of the adaptation for sensitivity to suffering. Hagen (2003) posited the “bargaining model” of depression, suggesting that depressive symptoms function as a “labor strike” wherein the depressed individual removes themselves from the social system, in order to compel assistance from social partners. Relatedly, Hagen, Watson, & Hammerstein (2008) proposed that self-harm may be a functional behavior that sends a signal of need to social partners, which may be more credible than a less costly behavior. Stieglitz, Schniter, von Rueden, Kaplan, and Gurven (2014) studied Bolivian forager farmers and found that depression operated as a consequence of reduced functional ability and increased social conflict. Their findings also suggest that depression is related to conditions that have been experienced by humans long before the modern era. Among the same population, von Rueden et al. (2014) found that political influence led to decreased cortisol, whereas those who had lost influence had higher levels of cortisol. These studies suggest less direct functions of depression, and do not conceptualize depression as an implicitly beneficial mechanism. Moreover, these theories do not predict that depression functions as an analytical and problem-solving mechanism.

Limitations and Future Directions.

Some limitations of this study included its reliance on self-report measure of depression and social functioning. Further research in this area of study could utilize measures of constructs such as rejection and problem-solving from teachers, family members, and social partners, in order to examine more objective reports of these constructs. Furthermore, a longitudinal design would strengthen our understanding of the causal, long term effects of depression on social functioning. There is evidence that people who are depressed remember events more negatively, in which case data on the retrospective measure may have been affected. However, the results of this study are supported by previous studies that have examined social functioning as rated by

the social partners of people who are depressed (Swann, Wenzlaff, Krull, & Pelham, 1992; Joiner, Alfano, & Metalsky, 2002).

Fried and Nesse (2015) offer evidence that depression should be examined by individual symptoms, rather than sum scores. It may be that depression that results from a social crisis, such as the loss of a loved one, is fundamentally different from depression that occurs out of the blue. Certainly, the different symptom clusters and their social functioning outcomes are worthy of further study. Watson and Andrews (2002) address potential problems with using medication to treat depression, if it is indeed adaptive. They suggest a study that examines the social functioning outcomes of depressed individuals who are either taking or not taking medication. A study like this would make the relationship between depression and social outcomes clearer, but furthermore, would indicate whether treatment of depression is directly harmful to one's social functioning. As shown by the responses to the retrospective measure, there are some people who feel that their social functioning was either unaffected or benefited by their depression. People who indicate this type of experience would be interesting to study more thoroughly. It may be that their experiences are related to their specific symptoms, or the onset of their depression. Regardless, it is important to understand why some people have different social functioning experiences. Furthermore, the effects of social rejection and exclusion are also unclear. One meta-analysis found that rejection led to negative emotional state, but did not necessarily affect self-esteem (Blackhart, Nelson, Knowles, & Baumeister, 2009). The results of our study indicate that depression and the behaviors associated with it are related to rejection, but it is not clear how that rejection subsequently affects depressed individuals.

Implications for the Role of Evolutionary Theory in Clinical Psychology.

The implications of this study are important, not only for our understanding of depression and social functioning, but also for the clinical diagnosis and treatment of depression. As evidenced by measures of social problem-solving and social rejection, there is no clear adaptive function of depression. The data indicate that depression can impair social functioning, and lead to social consequences for the depressed individual. Most importantly, the results of the study do not justify the anti-treatment stance that the Social Navigation Hypothesis endorses. As noted by Tooby and Cosmides (2005), the psychiatric field has largely avoided evolutionary theory, or openly ridiculed adaptationist hypotheses of mental disorders (e. g. McCrone, 2003). This study reinforces the importance of the concept of “dysfunction” in evolutionary theory and evolutionary psychology, but most especially in its clinical applications (Wakefield, 2005). Determining what is or is not a ‘mental disorder’ has been the subject of controversy throughout written history, and remains just as controversial today. In the past, critics of psychopathology have noted that most ‘disorders’ result in no physical lesions, and have used this to argue that mental disorder does not exist (Szasz, 1974). However, this is not the view of evolutionary psychology today. It remains the duty of clinical psychologists to recognize that a dysfunctioning mechanism may not be visible, but may still cause harm to an individual (Wakefield, 2005).

Many clinicians believe that evolutionary psychology does not offer relevant, applicable information for the diagnosis and treatment of mental disorders (Troisi, 2012). However, some indirect influences of evolutionary theory are already apparent in the field of clinical psychology. The growing transdiagnostic movement in the clinical psychology field seeks to alter the categorical approach to mental disorder that the Diagnostic and Statistical Manual of Mental Disorders reinforces (McEvoy, Nathan, & Norton, 2009). This movement would find support from the field of evolutionary psychology, which proposes that human behavior and mental

processes should be conceptualized as continuous variables. The acceptance of evolutionary theory can serve to unite and direct the varying subfields of psychology, from cognitive, developmental, social, and clinical. The lofty aim of evolutionary psychology, to empirically and methodically map universal human nature, has yet to be achieved (Tooby & Cosmides, 2005). However, further interest in, and sincere recognition of the importance of integrating evolutionary principles into the study of human nature will surely bring us closer to achieving it.

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Tables and Figures

Table 1.

Descriptive Statistics and Correlations among Study Variables

	CESD	SPSI	SRM	ERS	NFS	RRS
CESD	0.95					
SPSI	-0.59**	0.92				
SRM	0.53**	-0.39**	0.95			
ERS	0.35**	-0.41**	0.36**	0.92		
NFS	0.28**	-0.26**	0.25**	0.07**	†	
RRS	0.67**	-0.46**	0.43**	0.38	0.06	0.95
<i>n</i>	155	155	155	155	155	155
<i>M</i>	1.77	12.19	1.38	2.29	1.81	2.1
<i>SD</i>	0.63	3.49	0.48	1.49	1.11	0.66

*Note: Values on diagonal are Cronbach's α ; * $p < .05$; ** $p > .001$*

Abbreviations designate the following: CESD: Center for Epidemiological Studies-Depression; SPSI: Social Problem-Solving Inventory; SRM: Social Rejection Measure; ERS: Excessive Reassurance Seeking, measured using a subscale of the Depressive Interpersonal Relationships Inventory; NFS: Negative Feedback Seeking; RRS: Ruminative Responses Scale.

† Due to the nature of the FSQ, an α was not calculated.

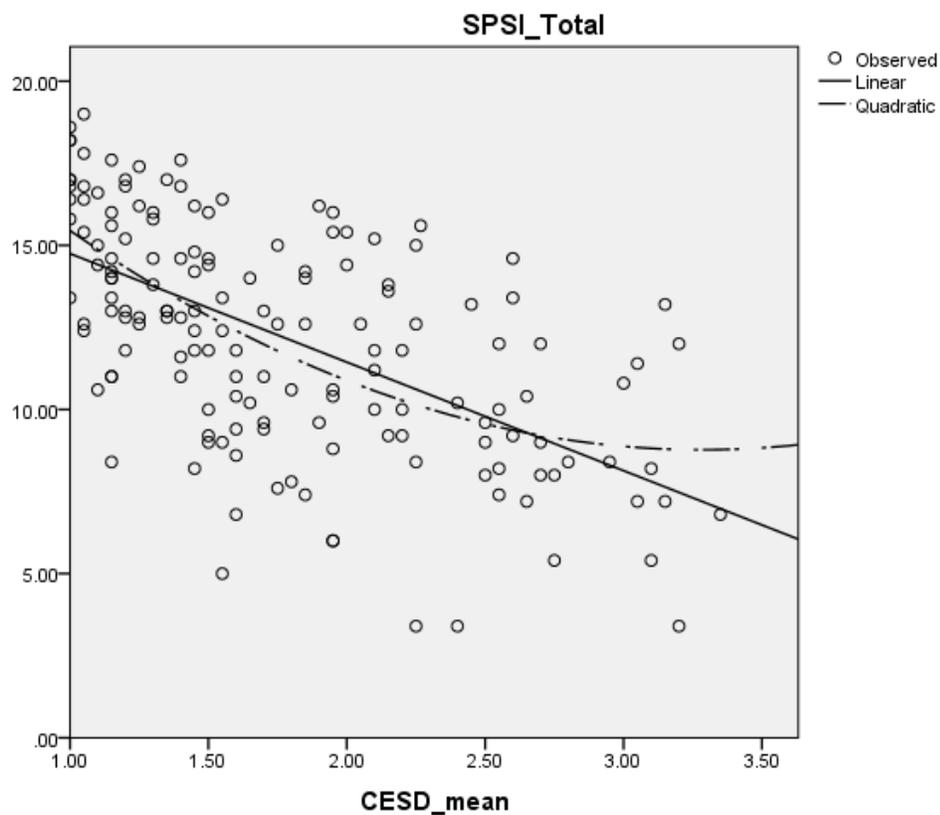


Figure 1. The relationship between depressive symptoms and social problem-solving skills. The above figure depicts two equations applied to data of depressive symptoms and social problem-solving skills.

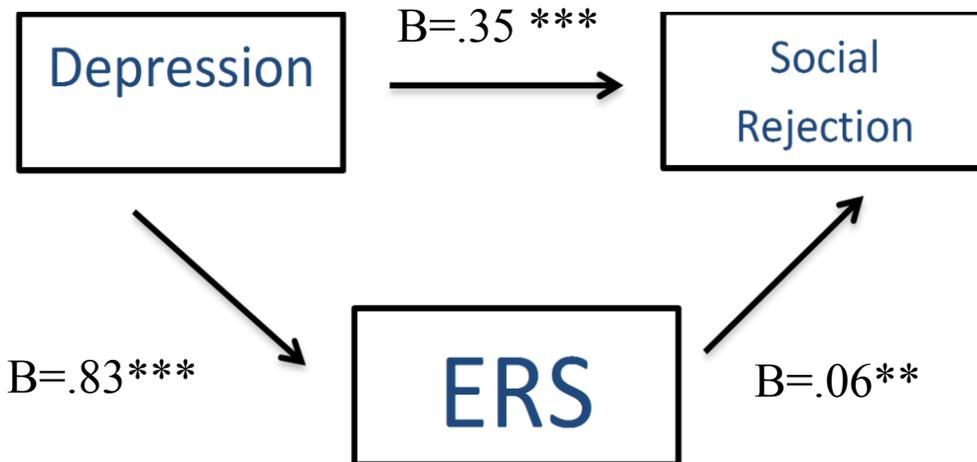


Figure 2. Excessive Reassurance Seeking as a mediator of the relationship between depression and social rejection. The above figure depicts the mediational model wherein Excessive reassurance Seeking was examined as a mediator of the relationship between depression and social rejection.

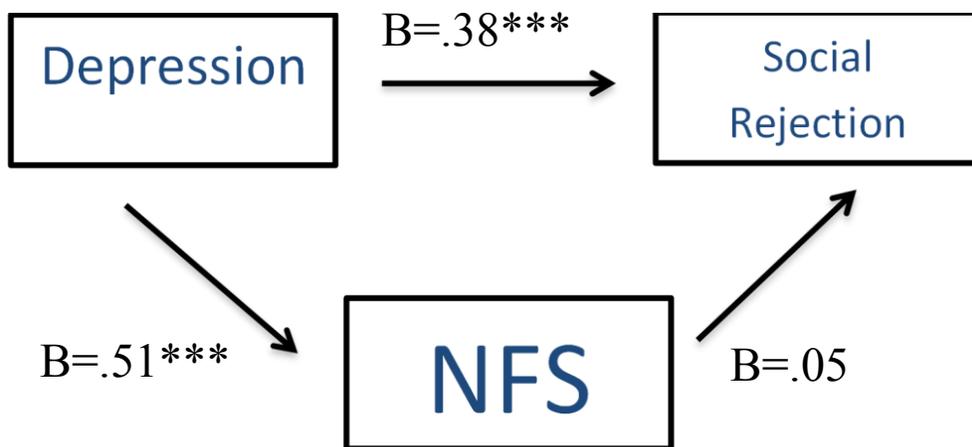


Figure 3. Negative Feedback Seeking as a mediator of the relationship between depression and social rejection. The above figure depicts the model that tested Negative Feedback Seeking as a mediator of the relationship between depression and social rejection.

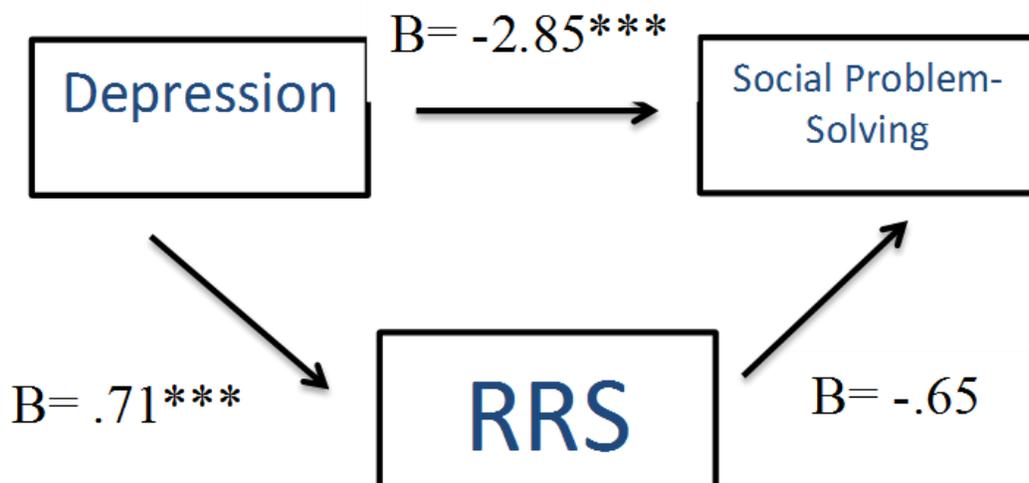


Figure 4. Ruminative response style as a mediator of the relationship between depression and social problem-solving. The above figure depicts the model that tested Ruminative response style as a mediator of the relationship between depression and social problem-solving.

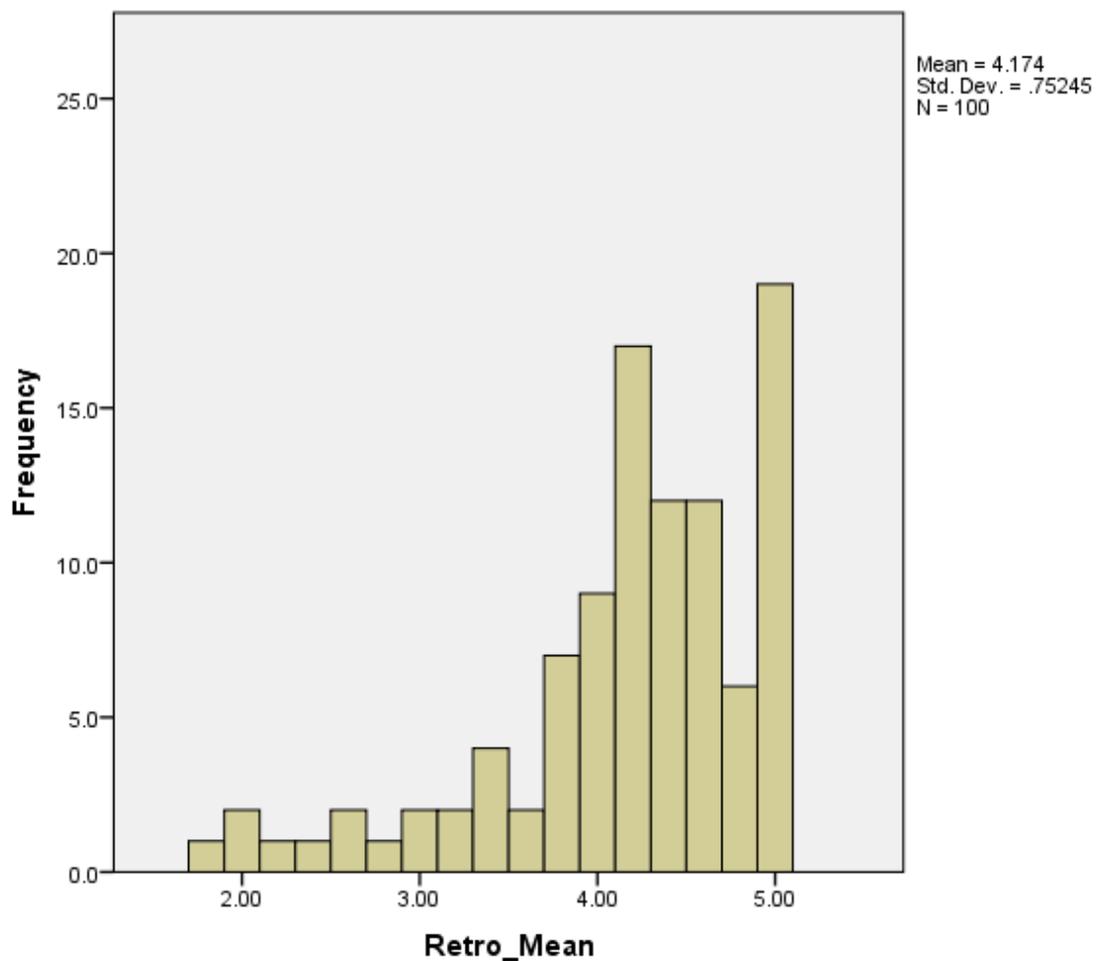


Figure 5. Retrospective ratings of depression and social functioning. The above figure depicts the mean response to the retrospective measure of depression and social functioning. Participants rated five areas of social functioning on a scale from 1= this is a lot easier when I am depressed, to 5= this is a lot easier when I am not depressed.

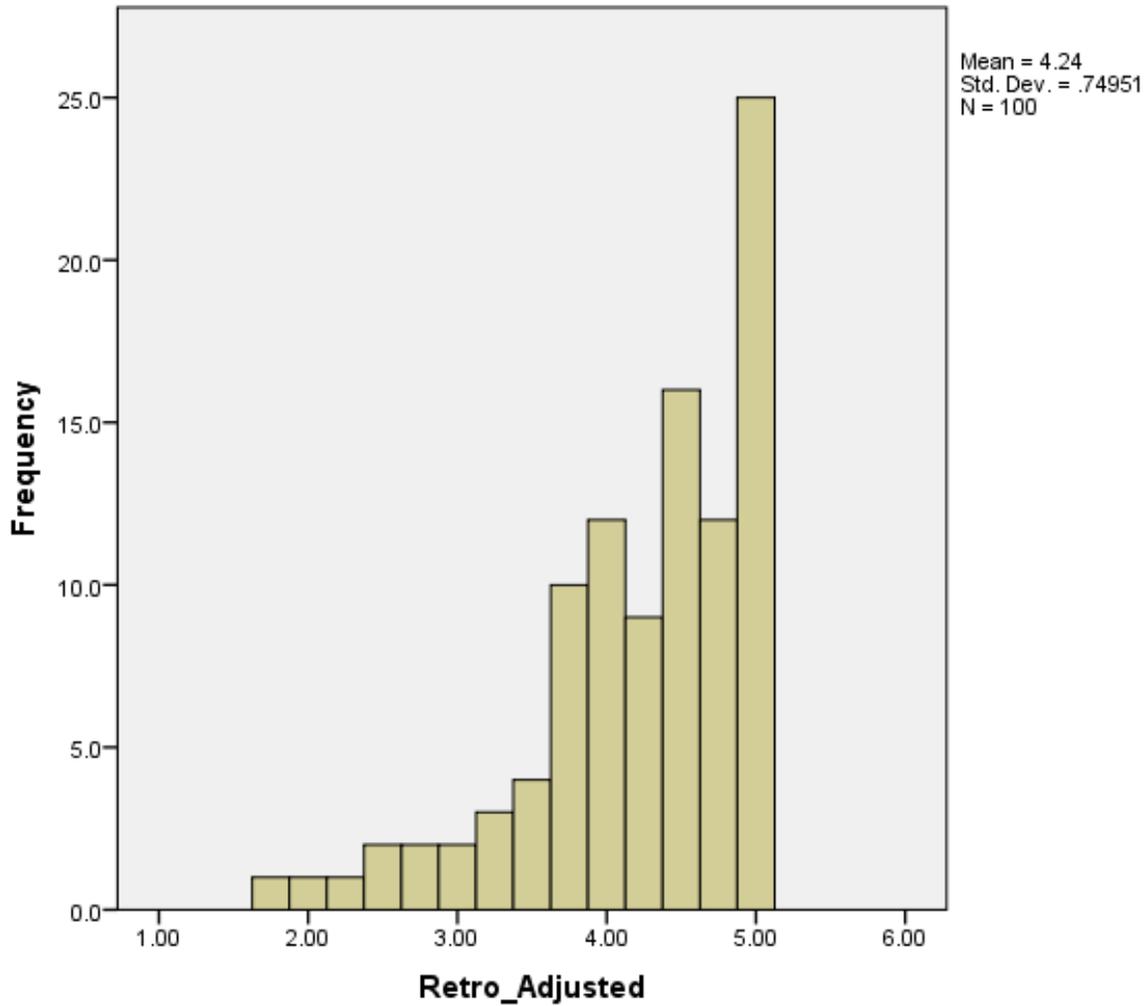


Figure 6. Examining a rumination effect in the retrospective ratings of depression and social functioning. The above figure depicts the mean response to the Retrospective depression and social functioning measure with the first item (Thinking thoroughly about my social problems) removed.

Appendix

Retrospective Depression and Social Functioning Questionnaire

In your opinion, has there ever been a time when you were depressed for a week or longer?

Yes*

No

*Only participants who select yes will be directed to the next set of questions.

The following questions describe certain behaviors. Think about the time when you were depressed for a week or more, and choose a response based on whether the behavior is easier when you are depressed or when you are not depressed.

1. Thinking thoroughly about my social problems.

1. This is a lot easier when I am depressed.
2. This is a little easier when I am depressed.
3. This is just as easy when I am depressed and when I am not depressed.
4. This is a little easier when I am not depressed.
5. This is a lot easier when I am not depressed.

2. Planning actions to resolve important problems.

1. This is a lot easier when I am depressed.
2. This is a little easier when I am depressed.
3. This is just as easy when I am depressed and when I am not depressed.
4. This is a little easier when I am not depressed.
5. This is a lot easier when I am not depressed.

3. Getting help when I need it from friends and family.

1. This is a lot easier when I am depressed.
2. This is a little easier when I am depressed.
3. This is just as easy when I am depressed and when I am not depressed.
4. This is a little easier when I am not depressed.
5. This is a lot easier when I am not depressed.

4. Solving problems in my social group.

1. This is a lot easier when I am depressed.
2. This is a little easier when I am depressed.
3. This is just as easy when I am depressed and when I am not depressed.
4. This is a little easier when I am not depressed.
5. This is a lot easier when I am not depressed.

5. Communicating my problems clearly to those around me.

1. This is a lot easier when I am depressed.
2. This is a little easier when I am depressed.
3. This is just as easy when I am depressed and when I am not depressed.
4. This is a little easier when I am not depressed.
5. This is a lot easier when I am not depressed.