

Depression in Men and Women: Relative Rank, Interpersonal Dependency, and Risk-Taking

Gayle Brewer and Nicola Olive

The Social Rank Theory of depression (Price, Sloman, Gardner, Gilbert & Rohde, 1994) conceptualizes depression as a response to recognition that defeat will occur. This response reduces the risk of injury or death and further loss of valued resources, thus serving an important adaptive function. In the current study, men ($N = 63$) and women ($N = 154$) aged 18-35 completed an online questionnaire assessing depression, anxiety, social comparison, interpersonal dependency, and risk taking. Consistent with Social Rank Theory, depression levels were associated with a self-reported fall in social rank and a desire for a rise in rank. Furthermore, interpersonal dependency predicted depression for both men and women after controlling for anxiety and relative rank change and depression levels predicted a reduced willingness to engage in risky behavior.

Keywords: depression, social rank, interpersonal dependency; risk taking

Introduction

In several species, individuals compete for resources and social rank (Moosa & Ud-Dean, 2011). Ritualistic agonistic encounters often determine the winners and losers of these competitions and form the basis for relationships in the wider social hierarchy (Kaufmann, 1983). Accurate assessment of current social position (Fournier, 2009), assisted through social comparisons with others (Buunk, & Brenninkmeijer, 2000), allows individuals to predict the threat posed by potential competitors and the likelihood of success or defeat. Whilst the importance of the physical ability to retain resources (Resource Holding Potential, Parker, 1974) may have decreased during evolutionary history, prestige and the attributes valued by society (Social Attention Holding Potential, Gilbert, 1992) continue to provide access to valued resources (Gilbert, 1997). Therefore human competition extends beyond physical resource control, with individuals competing to be viewed as attractive and competent (Gilbert, 1992, 1997).

The Social Rank Theory of depression or Social Competition Hypothesis (Price, Sloman, Gardner, Gilbert & Rohde, 1994) conceptualizes depression as a response to recognition that defeat will occur during social competition. This behavioral response reduces the risk of injury or death and further loss of valued resources, serving an important adaptive function. The response was originally termed the yielding subroutine of ritual agonistic behavior (Price, 1967) and later renamed the Involuntary Subordinate Strategy (Price et al., 1994) or the Involuntary Defeat Strategy (Sloman, 2000). It is argued that the submissive depressive state inhibits aggressive behavior towards rivals signaling that the individual is unable to compete and no longer a threat, promotes acceptance of the new position and reduces the likelihood of injury (Allan & Gilbert, 1997; Gilbert, 2000; Price, et al., 1994; Sloman, Price, Gilbert & Gardner, 1994). In this context, submission also facilitates group stability and cohesion (Gilbert, 1989). The current study investigates the relationship between social rank and depression, whether the need for social or emotional support from others (interpersonal dependency) contributes to the depressive response. The study further investigates the relationship between depression and risk-taking which may also serve an adaptive function.

If the submissive behavior is effective (i.e. terminates competition) then the strategy should be 'switched off'. However, in the event that the individual does not come to terms with their social position, feels trapped, or does not receive support from others, some individuals are

unable to 'switch off' the yielding behavior and the strategy remains active (Gilbert, 2001). Therefore depression can be conceptualized as the maladaptive consequence of prolonged use of short term adaptive defense mechanisms. The hypothesis is consistent with the physical, psychological and behavioral aspects of depression (Sloman et al., 1994). In particular, those with depression view themselves as defeated and inferior to others (Beck, Rush, Shaw & Emery, 1979; Gilbert, Gilbert & Irons, 2004). In addition, depressive symptomology is related to social rank (Troop & Baker, 2008; Sturman & Mongrain, 2005) and life events involving a loss of status (Farmer, & McGuffin, 2003; Gilbert & Allen, 1998). The association between depressive behavior, rank and submission is evident in a range of species (Lorenz, 1963; Price, 1989; Price & Sloman, 1987).

Several factors may increase the risk of depression. In particular, higher levels of interpersonal dependency (i.e. the need for social and emotional support from others) and sociotropy (particularly the need to please others) increase the likelihood of depression and negative mood (Besser & Priel, 2011; Gilbert, Allan & Trent, 1995; Loas, Verrier, Gayant, & Guelfi, 1998). The greater interpersonal dependency of women (Sananthara, Gardner, Prescott, & Kendler, 2003) and relative autonomy of men (McBride & Bagby, 2006) may in part contribute to the greater prevalence of depression amongst women. This difference in prevalence (Nesse, 2000) occurs cross culturally (Murakumi, 2002) and remains when controlling potential measurement bias (Van de Velde, Bracke, Levacue & Mevleman, 2010). The current study investigates the influence of interpersonal dependency on depression levels.

Depression also influences the willingness to engage in risky behavior. However, the relationship between depression and risk taking may differ for men and women. Men tend to respond to depression, stress and low mood with increased competition and risk taking (Angst, et al., 2002; Lighthall, Mather, & Gorlick, 2009), whilst similar behavior performed by women may be more likely to incur ostracism from the social group and threaten the social support received (Benenson, Hodgson, Heath & Welck, 2008). This is consistent with the greater male willingness to take risks in a range of contexts (Pawlowski, Rajinder, & Dunbar, 2008; Wang, Kruger, & Wilke, 2009; Zuckerman & Kuhlman, 2009). The current study investigates the influence of depression on risk taking separately for men and women.

The current study investigates the relationships between depression and self-reported social rank change in men and women, with particular emphasis on interpersonal dependency

and risk taking. We hypothesize that: (1) Depressed men and women will have experienced a fall in social rank, reflected by a self-reported decrease from previous to current rank, and desire a higher social rank than currently held; (2) Interpersonal dependency will (after controlling for anxiety and relative rank change) predict depression levels; (3) Depression will predict an increased willingness to engage in risk behavior for men and a reduced willingness to engage in risky behavior for women.

Method

Participants

Men and women aged 18-35 years were recruited online via social networking sites and research websites. Participants reporting grief were omitted from the sample due to shared symptomology with depression (Weisfeld & Wendorf, 2000). The final sample included 63 men ($M_{age} = 23.52$, $SD = 4.44$) and 154 women ($M_{age} = 23.77$, $SD = 4.76$). All men and the majority (93.5%) of women were White British. Participants were most likely to be single (men: 57.1%; women: 35.1%), followed by dating (men: 20.6%; women: 29.9%), cohabiting (men: 15.9%; women: 21.4%) and married (men: 6.3%; women: 13.6%) at the time of the study. The majority of male (82.5%) and female (81.8%) participants were heterosexual.

Measures

Questionnaires assessing depression, anxiety, social comparison, interpersonal dependency and risk taking were completed online.

Depression was measured using the CES-D (Radloff, 1977). Participants respond to 20 items relating to how often they have experienced a range of symptoms such as low mood and sleep disturbance during the previous week ($0 = rarely or none of the time$ to $3 = most or all of the time$). Anxiety was measured using the DASS-21 (Lovibond & Lovibond, 1995) subscale containing 7 items measuring symptoms of anxiety experienced in the previous week such as feelings of inappropriate fear ($0 = did not apply to me at all$ to $3 = applied to me very much or most of the time$). The depression ($\alpha = .94$) and anxiety ($\alpha = .83$) scales each demonstrated acceptable reliability.

The original Social Comparison Scale (Allen & Gilbert, 1995) was adapted to include current, previous and desired social comparisons. Specific timeframes were not specified and participants responded to ‘currently’ ‘used to’ and ‘would like to’ feel scales. Participants responded to 33 bipolar constructs (11 constructs per timeframe) on a 10 point scale and the

current ($\alpha = .94$), previous ($\alpha = .92$) and desired ($\alpha = .84$) scales each demonstrated acceptable reliability. Relative rank change (current rank minus previous rank) and desired rise in rank (desired rank minus current rank) were then calculated.

The Interpersonal Dependency Inventory (Hirschfeld, Klerman, Gough, Barrett & Chodoff, 1977) contains 48 items measuring emotional reliance on others (18 items), lack of social confidence (16 items) and an assertion of autonomy (14 items) each rated on a 4 point scale ($1 = \textit{not characteristic of me}$ to $4 = \textit{very characteristic of me}$). Consistent with Nuns and Loas (2005) interpersonal dependency was calculated as emotional reliance and lack of social confidence minus assertion of autonomy. Reliabilities of the emotional reliance, lack of social confidence and assertion of autonomy scales were $\alpha = .84$, $\alpha = .56$ and $\alpha = .78$ respectively. Overall reliability of the Interpersonal Dependency Inventory was $\alpha = .81$. The Domain Specific Risk Taking (Adult) Scale (Blais & Weber, 2006) measured willingness to engage in social, financial, recreational, ethical and health risks. Participants rated the likelihood of engaging in each activity on a 7 point scale ($1 = \textit{extremely unlikely}$ to $7 = \textit{extremely likely}$). Reliabilities for social, financial, recreational, ethical and health risk taking were $\alpha = .63$, $\alpha = .76$, $\alpha = .81$, $\alpha = .72$ and $\alpha = .60$ respectively.

Results

Depression and social rank

Depression levels were significantly correlated with a self-reported fall in social rank i.e. current minus previous rank ($r = -.47, p < .001$; $r = -.57, p < .001$) and desired rise in rank i.e. desired rank minus current rank ($r = .64, p < .001$; $r = .66, p < .001$) for men and women respectively. Therefore, consistent with hypothesis 1, higher depression levels were associated with a fall in social rank and a desire for a rise in social rank.

Depression, anxiety, relative rank change and interpersonal dependency

Hierarchical stepwise regressions were performed (separately for men and women) to investigate hypothesis 2. Depression and anxiety are often comorbid therefore anxiety was entered at step 1 as a control variable. Anxiety was a significant predictor explaining 36% and 48% of the variance in depression in men ($\beta = .60, t = 5.84, p < .01$) and women ($\beta = .69, t = 11.85, p < .01$) respectively. Relative rank change was entered at step 2, predicting 11% of depression variance for both men ($\beta = .35, t = -3.59, p < .01$) and women ($\beta = -.36, t = -6.50, p < .001$). At step 3 interpersonal dependency was entered, emerging as a significant predictor of

depression in men ($\beta = .21, t = 2.17, p < .05$) and women ($\beta = .23, t = 4.30, p < .001$), explaining 4% of further depression variance for both sexes. These data are shown in Tables 1 and 2.

Therefore, anxiety, a fall in relative social rank and interpersonal dependency predict depression in both men and women.

Table 1. Summary of Step-Wise Regression Analysis for Variables Predicting Depression in Men

Variable	β	t	p
Step 1			
Anxiety	.60	5.84	<.001
Step 2			
Anxiety	.51	5.29	<.001
Relative Rank Change	.35	-3.59	.001
Step 3			
Anxiety	.44	4.41	<.001
Relative Rank Change	-.33	-3.44	.001
Interpersonal Dependency	.21	2.17	.03

Table 2. Summary of Step-Wise Regression Analysis for Variables Predicting Depression in Women

Variable	β	t	p
Step 1			
Anxiety	.69	11.85	<.001
Step 2			
Anxiety	.56	10.09	<.001
Relative Rank Change	-.36	-6.50	<.001
Step 3			
Anxiety	.47	8.36	<.001
Relative Rank Change	-.38	-7.25	<.001
Interpersonal Dependency	.23	4.30	<.001

Depression and risk taking

Regressions were conducted (separately for men and women) to investigate the impact of depression levels on willingness to engage in risky behavior (hypothesis 3). Depression predicted willingness to engage in recreational risks for both men ($\beta = -.26, t = -2.12, p < .05$) and women ($\beta = -.19, t = -2.41, p < .05$). Men and women with higher levels of depression were less willing to engage in recreational risks. Depression did not predict willingness to engage in social ($\beta = -.10, t = -.79, p > .05$; $\beta = .14, t = -1.70, p > .05$), financial ($\beta = .07, t = .53, p > .05$; $\beta = -.16, t = -2.01, p > .05$), health risks ($\beta = .04, t = .31, p > .05$; $\beta = .10, t = 1.26, p > .05$) or ethical risks ($\beta = .05, t = .41, p > .05$; $\beta = .13, t = 1.57, p > .05$) for men or women respectively. Although the reduced willingness of women with higher levels of depression to engage in risky behavior was consistent with initial predictions, the similar finding for male participants was inconsistent with the original hypothesis.

Discussion

The current study investigated the relationships between depression and social rank in men and women, with particular emphasis on reactions to a loss of social status, reliance on interpersonal relationships and risk taking. Higher depression levels were associated a self-reported fall in social rank and a greater desire for a rise in rank. These findings are consistent with hypothesis 1, the Social Rank Theory of Depression and the assertion that depression is a response to defeat (Price, et al, 1994).

As predicted by hypothesis 2, interpersonal dependency predicted depression levels (after controlling for anxiety and relative rank change) in both men and women. These findings are consistent with previous research indicating that higher level of interpersonal dependency increases the likelihood of depression (Loas, et al., 1998; McBride & Bagby, 2006). Consistent with hypothesis 3, women with higher levels of depression were less willing to engage in recreational risky behavior. Contrary to original predictions, men displayed a similar pattern and did not increase their risky behavior as previously reported (Angst, et al., 2002). The findings suggest that when depressed, withdrawal from risky activities may be adaptive for both men and women. Further research investigating responses to depressed mood and specific risk types is advised.

The current study was limited by reliance on self-report cross sectional data. Though self-reports are frequently used within depression research, concordance between clinical and self-

report depression scales may vary between depression phases (Senra & Polaino, 1993). Consequently some symptoms may be more accurately assessed through self-report or clinician ratings (Cuijpers, Li, Hofmann, & Andersson, 2010) and future research employing both self-report and clinician ratings is recommended. Likewise, self-reported data such as perceptions of current and previous social rank may be influenced by current mood and longitudinal research should be conducted.

Furthermore, the present study was limited to a British sample. Future research should consider differences between individualist and collectivist cultures (Hofstede, 1980), with regard to competition, responses to likely defeat, interpersonal relationships and risk taking. Research indicating that culture shapes responses to dominant or subordinate stimuli (Freeman, Rule, Adams & Ambady, 2009) and sensitivity to social events (Tafarodi & Smith, 2001) highlight the importance of caution when generalizing findings to other cultures. Researchers should therefore consider the moderating role of culture (Abu-Kaf & Priel, 2008) and factors such as personality which may influence responses to loss of social rank and risk of depression (Verkerk, Denollet, Van Heck, Can Son & Pop, 2005).

To conclude, depression is associated with a self-reported fall in relative rank position and a desire for a rise in social rank. Interpersonal dependency predicts depression levels after controlling for anxiety and relative rank change. Depression levels predicted willingness to engage in recreational risky behavior. These findings have important implications for therapeutic interventions (Sloman, 2008; Sloman, et al., 1994). Furthermore, wider understanding of the adaptive nature of depression may serve to reduce the stigma associated with the condition (Peluso & Blay, 2009).

References

Abu-Kaf, S., & Priel, B. (2008). Dependent and self-critical vulnerabilities to depression in two different cultural contexts. *Personality and Individual Differences, 44*, 689-700.

Allan, S., & Gilbert, P. (1995). A Social Comparison Scale: Psychometric properties and relationship to psychopathology. *Personality and Individual Differences, 19*, 293-299.

Allan, S., & Gilbert, P. (1997). Submissive behaviour and psychopathology. *British Journal of Clinical Psychology, 36*, 467-488.

- Angst, J., Gamma, A., Gastpar, M., Lépine, J. P., Mendlewicz, J., & Tylee, A. (2002). Gender differences in depression: Epidemiological findings from the European DEPRES I and II studies. *European Archives of Psychiatry and Clinical Neuroscience*, 252, 201-209.
- Beck, A.T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.
- Benenson, J. F., Hodgson, L., Heath, S., & Welch, P. J. (2008). Human sexual differences in the use of social ostracism as a competitive tactic. *International Journal of Primatology*, 29, 1019-1035.
- Besser, A., & Priel, B. (2011). Dependency, self-criticism and negative affect responses following imaginary rejection and failure threats: Meaning-making processes as moderators or mediators. *Psychiatry*, 74, 31-40.
- Blais, A-R., & Weber, E.U. (2006). A Domain Specific Risk-Taking (DOSPERT) Scale for Adult Populations. *Judgement and Decision Making*, 1, 33-47.
- Buunk, B. P., & Brenninkmeijer, V. (2000). *Social comparison processes among depressed individuals: Evidence for the evolutionary perspective on involuntary subordinate strategies*. In L. Sloman, & P. Gilbert. (Eds.), *Subordination and defeat An evolutionary approach to mood disorders and their therapy* (pp147-164). Mahwah, NJ: Erlbaum.
- Cuijpers, P., Li, J., Hofmann, S. G., & Andersson, G. (2010). Self-reported versus clinician-rated symptoms of depression as outcome measures in psychotherapy research on depression: A meta-analysis. *Clinical Psychology Review*, 30, 768-778.
- Farmer, A. E., & McGuffin, P. (2003). Humiliation, loss and other types of life events and difficulties: A comparison of depressed subjects, healthy controls and their siblings. *Psychological Medicine*, 33, 1169-1175.
- Fournier, M. A. (2009). Adolescent hierarchy formation and the Social Competition Theory of depression. *Journal of Social and Clinical Psychology*, 28, 1144-1172.
- Freeman, J. B., Rule, N. O., Adams, R. B., & Ambady, N. (2009). *NeuroImage*, 47, 353-359.
- Gilbert, P. (1989). *Human nature and suffering*. Hove: Erlbaum.
- Gilbert, P. (1992). *Depression: The evolution of powerlessness*. Hove: Erlbaum.
- Gilbert, P. (1997). The evolution of social attractiveness and its role in shame, humiliation, guilt and therapy. *British Journal of Medical Psychology*, 70, 113-147.

Gilbert, P. (2000). *Varieties of submissive behavior as forms of social defense: Their evolution and role in depression*. In L. Sloman, & P. Gilbert (Eds.), *Subordination and defeat: An evolutionary approach to mood disorders and their therapy* (pp 3-48). Mahwah, NJ: Erlbaum.

Gilbert, P. (2001). Depression and stress: A biopsychosocial exploration of evolved functions and mechanisms. *Stress: The International Journal of the Biology of Stress*, 4, 121-135.

Gilbert, P., & Allan, S. (1998). The role of defeat and entrapment (arrested flight) in depression: An exploration of an evolutionary view. *Psychological Medicine*, 28, 584-597.

Gilbert, P., Allan, S. & Trent, D. R. (1995). Involuntary subordination or dependency as key dimensions of depressive vulnerability? *Journal of Clinical Psychology*, 51, 740-752.

Gilbert, P., Gilbert, J., & Irons, C. (2004). Life events, entrapments and arrested anger in depression. *Journal of Affective Disorders*, 79, 149-160.

Hirschfeld, R. M. A., Klerman, G. L., Gough, H. G., Barrett, J., Korchin, S. J., & Chodoff, P. (1977). A measure of interpersonal dependency. *Journal of Personality Assessment*, 41, 610-618.

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.

Kaufmann, J. H. (1983). On the definitions and functions of dominance and territoriality. *Biological Reviews*, 58, 1-20.

Lighthall, N. R., Mather, M., & Gorlick, M. A. (2009). Acute stress increases sex differences in risk seeking in the balloon analogue risk task. *PLoS ONE*, 4, e6002.

Loas, G., Verrier, A., Gayant, C., & Guelfi, J. D. (1998). Depression and dependency: Distinct or overlapping constructs. *Journal of Affective Disorders*, 47, 81-85.

Lorenz, K. (1963). *On aggression*. London: Methuen.

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety and Stress Scales*. (2nd ed.). Sydney, Psychology Foundation.

McBride, C., & Bagby, R. M. (2006). Rumination and interpersonal dependency: Explaining women's vulnerability to depression. *Canadian Psychology*, 47, 184-194.

Moosa, M. M., & Ud-Dean, S. M. M. (2011). The role of dominance hierarchy in the evolution of social species. *Journal for the Theory of Social Behaviour*, 41, 203-208.

Murakumi, J. (2002). Gender and depression: Explaining the different rates of depression between men and women. *Perspectives in Psychology*, 27-34.

Nesse, R. M. (2000). Is depression an adaptation? *Archives of General Psychiatry*, 57, 14-20.

Nuns, N., & Loas, G. (2005). Interpersonal dependency in suicide attempters. *Psychopathology*, 38, 140-143.

Parker, G. A. (1974). Assessment strategy and the evolution of fighting behaviour. *Journal of Theoretical Biology*, 47, 223-243.

Pawlowski, B., Rajinder, A., & Dunbar, R. I. M. (2008). Sex differences in everyday risk-taking behavior in humans. *Evolutionary Psychology*, 6, 29-42.

Peluso, E. T. P., & Blay, S. L. (2009). Public stigma in relation to individuals with depression. *Journal of Affective Disorders*, 115, 201-206.

Price, J. (1967). The dominance hierarchy and the evolution of mental illness. *Lancet*, 7502, 243-246.

Price, J. S. (1989). *The effect of social stress on the behaviour and physiology of monkeys*. K. Davison & A. Kerr (Eds.) In *Contemporary themes in psychiatry* (pp459-466). London: Gaskell Press.

Price, J. S., & Sloman, L. (1987). Depression as yielding behavior: An animal model based on Schjelderup-Ebbe's pecking order. *Ethology and Sociobiology*, 8, 85S-98S.

Price, J., Sloman, L., Gardner, R., Gilbert, P., & Rohde, P. (1994). The social competition hypothesis of depression. *British Journal of Psychiatry*, 164, 309-135.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401.

Sananthara, V. A., Gardner, C. O., Prescott, C. A., & Kendler, K. S. (2003). Interpersonal dependence and major depression: Aetiological inter-relationship and gender differences. *Psychological Medicine*, 33, 927-931.

Senra, C., & Polaino, A. (1993). Concordance between clinical and self-report depression scales during the acute phase and after treatment. *Journal of Affective Disorders*, 27, 13-20.

Sloman, L. (2000). *How the involuntary defeat strategy relates to depression*. In L. Sloman, & P. Gilbert. (Eds.), *Subordination and defeat: An evolutionary approach to mood disorders and their therapy* (pp 49-67). Mahwah, NJ: Erlbaum.

- Sloman, L. (2008). A new comprehensive evolutionary model of depression and anxiety. *Journal of Affective Disorders, 106*, 219-228.
- Sloman, L., Price, J., Gilbert, P., & Gardner, R. (1994). Adaptive function of depression: Psychotherapeutic implications. *American Journal of Psychotherapy, 48*, 401-416.
- Smoski, M. J., Lynch, T. R., Rosenthal, M. Z., Cheavens, J. S., Chapman, A. L., & Krishnan, R. R. (2008). Decision-making and risk aversion among depressive adults. *Journal of Behavior Therapy and Experimental Psychiatry, 39*, 567-576.
- Sturman, E. D., & Mongrain, M. (2005). Self-criticism and major depression: An evolutionary perspective. *British Journal of Clinical Psychology, 44*, 505-519.
- Swardfager, W., Herrmann, N., Dowlati, Y., Oh, P. I., Kiss, A., & Lanctôt, K. L. (2008). Relationship between cardiopulmonary fitness and depressive symptoms in cardiac rehabilitation patients with coronary artery disease. *Journal of Rehabilitation Medicine, 40*, 213-218.
- Tafarodi, R. W., & Smith, A. J. (2001). Individualism-collectivism and depressive sensitivity to life events: The case of Malaysian sojourners. *International Journal of Intercultural Relations, 25*, 73-88.
- Troop, N. A., & Baker, A. H. (2008). The specificity of social rank in eating disorder versus depressive symptoms. *Eating Disorders, 16*, 331-341.
- Van de Velde, S., Bracke, P., Levecque, K., & Meuleman, B. (2010). Gender differences in depression in 25 European countries after eliminating measurement bias in the CESD 8. *Social Science Research, 39*, 396-404.
- Verkerk, G. J. M., Denollet, J., Van Heck, G. L., Van Son, M. J. M., Pop, V. J. M. (2005). Personality factors as determinants of depression in postpartum women: A prospective 1-year follow-up study. *Psychosomatic Medicine, 67*, 632-637.
- Wang, X. T., Kruger, D. J., & Wilke, A. (2009). Life history variables and risk-taking propensity. *Evolution and Human Behavior, 30*, 77-84.
- Weisfeld, G. E., & Wendorf, C. A. (2000). *The involuntary defeat strategy and discrete emotions theory*. In L. Sloman, & P. Gilbert (Eds.), *Subordination and defeat: An evolutionary approach to mood disorders and their therapy* (pp 125-150). Mahwah, NJ: Erlbaum.
- Zuckerman M., & Kuhlman, D.M. (2000). Personality and risk taking: Common biosocial factors. *Journal of Personality, 68*, 1000-1029.