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To study the if significant depressive illnesses have different patterns of behaviour when it comes to social decision-making

Zyingxin Yi [1], Asita A[2], P Elengoe [3], Pushpalata Vadlamudi [4]

[1] *Research Scholar of Lincoln University College Malaysia*

[2,3] *Associate Professorof Lincoln University College Malaysia.*

[3] *Professorof Lincoln University College Malaysia*

Abstract

Making social decisions is a difficult process since it involves choosing the best choice with the best outcome in a social setting. Social decision-making necessitates a strong emotional brain system because of the human relationships involved. Mood has a significant impact on social interaction inside the system. Research has begun looking at the link between depression and social decision making due to the fact that depression is defined as a stable low mood state. There hasn't been much study done yet on how depression affects social decision-making. Furthermore, the neurological underpinnings of the links between low mood and distorted social interactions remain a mystery. Two research are included in this thesis to better understand how depression affects people's behavior and neurological foundations when they're making social decisions.

Study one looked at how depressed individuals' decision-making abilities changed as they interacted with others (MDD). The behavioral differences between 50 female MDD patients and 49 healthy matched controls were measured using a modified trust game (social interaction context). When the payback proportion was large and the danger was low, MDD patients made fewer and lower ratios of misleading judgments than controls. When the payback proportion was low or medium, they responded less frequently with benevolence than healthy people. Patients with MDD tended to avoid risks and did not alter their reactions even when the danger was little, according to these results

Keywords: MDD, interpersonalcontext, relationship, behavioural difference

Introduction

The act of weighing many options and picking the one that is most likely to result in the desired outcome (Rilling & Sanfey, 2011; Sanfey, 2007; Seo & Lee, 2012). As a result, numerous academics have undertaken various studies using a variety of theoretical frameworks and measuring methodologies in an attempt to better understand the phenomenon. Decision-making engaged in interpersonal dynamics is more like the conscious process we use every day than research that focus on maximising economic interest. It necessitates an understanding of and ability to predict the intents and behaviours of others. As well as considering the benefit of others, making decisions entails balancing self-interest with those around you. The capacity to connect with people and to adapt actions in response to changing social circumstances is required in social environments, and these two processes may be influenced by a variety of variables.

Emotions have been found to have a major influence on social decision-making. Positive affect makes people more hopeful and trusting of the world around them, which might lead to more altruistic and helpful acts. In other words, people in depressed states may be more sensitive to danger or uncertainty while making decisions. Another study revealed that inducing a negative mood induced conservative answers whereas inducing a good mood had no effect on participants' decision patterns (Yuen & Lee, 2003). Negative emotions can affect risk taking in numerous ways when it comes to decision-making. According to the results of one study, participants with different emotions showed divergent patterns of behaviour on the Iowa gambling task: the sad ones favoured "high-risk/high-reward decks, indicating that sadness induced reward seeking, while the anxious ones favoured low-risk/low-reward decks, indicating that anxiety induced avoidance of uncertainty (Raghunathan &" Pham, 1999).

The best decisions are “made when reward seeking and risk sensitivity are balanced. It is known that

reward processing involves activity in reward circuitries such as the ventral tegmental area (VTA), nucleus accumbens, and ventromedial prefrontal cortex, and that sensitivity to risk is reflected by activity levels in avoidance circuitries (such as those found in the amygdala and insula) while (2010). Researchers have discovered that these two brain circuits are important in the processing of" emotions).

Literature Review

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Research Gap

To begin, subject recruitment was limited throughout the whole project. Due to the fact that only females were sought as volunteers, the findings were limited to female MDD patients. Due to possible interactions between gender and sad mood in decision making tasks, male individuals were excluded from the study. There were no risk avoidance behaviours in depressed males as found by Han et al. It has been found that the prefrontal-striatal network has an association with depression, as well as "grey matter morphology (Kong et al., 2013) and neural activity in (Hsiao, Lin, Liu, and Schatz, 2013; Stevens and Hamann, 2012). As a result, the gender impact was omitted from this study and no male volunteers were recruited in order to better understand the particular contributions from risk and emotion. However, there have been reported substantial disparities in social functioning between men and women (Balliet, Li, Macfarlan, & Van Vugt, 2011; Macfarlan & Quinlan, 2008). Heinz, Juranek & Rau (2012) found that females were more altruistic and risk averse than males (Charness & Gneezy, 2012). When participants were under stress, the gender gap widened (Lighthall, Mather, & Gorlick, 2009). According to our findings, females' social interaction habits are influenced by their heightened sensitivity to emotional cues rather than their reduced responsiveness to social incentives. This implies that when it comes to making decisions, women are more influenced by their emotions. In addition to contributing to this shift, the brain mechanisms that underlie it may also highlight" women's heightened sensitivity to depression. The focus of future research should be on the neurological underpinnings of the interplay "between gender and social functions and the association between these brain alterations and susceptibility to MDD, in order to expand and qualify existing results made solely on female MDD patients. The biological differences between men and women, as well as those between MDD patients and healthy individuals, need to be further investigated to see if hereditary or environmental factors account for these differences. This experiment also had a flaw in that the subjects selected for the two investigations did not overlap. So it couldn't say for sure if the behavioral and neurological variations between MDD patients and healthy individuals were due to their various emotional states or to other clinical variables associated with the disorder. According to Harle and Sanfey

(2007, 2008), induced melancholy was linked to lower rates of taking unfair offers in the UG whereas" MDD patients were more likely than healthy individuals to accept unfair offers (Harlé et al., 2010). MDD patients' changed responses in social decision-making were more than just a result of their poor mood, according to these conflicting findings. MDD remission patients as well as healthy individuals with an induced sad mood should be recruited for additional research to examine potential factors leading to poor social functioning. Identifying the major factor(s) influencing MDD patients' social functioning may assist shed light on prospective interventions aimed at helping patients improve their social skills. There was also the potential confounding issue of all MDD patients enrolled in this research taking antidepressant drugs at the time of testing. Compared to the medicated and healthy individuals, unmediated patients had worse memory performance than those groups (Hinkelmann et al., 2013). In yet another research, the SSRI selectively affected striatal and hippocampal functioning (Herzallah et al., 2013). Furthermore, the insula and striatum's brain activity was linked to the effects of clinical depression therapy (Fu, Steiner, & Costafreda, 2013; McGrath et al., 2013). The behavioural and neurological reactions of MDD patients during social contact may be significantly influenced by antidepressant treatment. Other confounding factors can be controlled for in order to compare the performance of individuals with and without an MDD clinical diagnosis and therapy. Future research can explore the influence of antidepressants on social choice making in more detail and determine whether or not social decision making skill is a possible indication of treatment effect for depression.

Research Objective & Methodology

"The New Territories West Cluster Clinical and Research Ethics Committee in Hong Kong accepted the study's" ethics.

This research included 99 Chinese women ranging in age from 21 to 60. There were 50 MDD patients in all, split between in-patients and out-patients at a prominent Hong Kong psychiatric facility. "According to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM–IV, American Psychiatric Association, 1994), they were diagnosed with major depressive disorder without psychotic characteristics. The Mini International Neuropsychiatric Interview in Chinese validated the diagnosis (MINI, Sheehan et al., 1998). To prove this, they took the Chinese version of Beck" Depression Inventory- II and got a score of 14 or above. Patients' medical records and the Chinese version of the MINI yielded extensive comorbidity data. A history of medical or mental disease, such as an organic brain condition, injury to the brain, drug addiction or dependency issue, psychotic disorder or a history of electroconvulsive treatment (ECT) in the preceding six months, disqualified patients from participating. There were 28 people with generalized anxiety disorder and 34 people with dysthymia in the MDD group.

Fifty-nine healthy Chinese ladies from the local community formed the healthy group. None of them had a history of mental problems or physical conditions that may have compromised their cognitive ability. The ages of the two teams were identical, as were the number of years of schooling, MDD group, and healthy group. When the experiment began, each participant (the trustee) was given x dollars to invest, which would increase in value by N. This valued sum (R) was then sought for by participants to be returned to the investor as (RNx), a percentage. Ideally, they should have returned exactly the same quantity that the other side requested (RNx). During each trial, the participant's appreciated investment (Nx) was shown on a screen for reference. A trustee rather than investor would have complete knowledge of how much appreciation has occurred, thus participants had to select whether to "return more (benevolent act), equal to (honest act), or less (deceptive conduct) than what was defined by (RNx) and Nx were the initial investment and appreciated investment, respectively, for calculating the payback amount. Playing" dishonestly yields greater profits than playing kindly and honestly. In the event that participants decide to

defraud the investor and their deceit is uncovered, they will face penalties. As a result, all of the money involved in the lawsuit would be forfeited.

Data Analysis & Findings

Reaction times above three standard deviations from the mean were discarded from the study. In each condition, less than 5% of the total trials were removed from consideration. The reaction times, frequency, and ratios of deceptive and benign options were studied using repeated-measures ANOVA. The payback proportion (R, three levels: 20% [low], 50% [equal] and 80% [high]) and the likelihood that the investor will discover the trustees' repayment amount were included as two within-subject variables (P, two levels: 25 percent [low] and 75 percent [high]). Between-subject comparison was used to examine the differences between the two groups (MDD patients and healthy volunteers).

Frequency of choice for deceptive responses

Healthy individuals (mean =.37, SD =.25) had less dishonest replies than MDD patients (mean =.25, "SD =.29). F(1, 97) = 4.93, p =.029, and the 2 value is.05. Repayment percentage and group had a significant interaction, F(2, 194) = 5.33, p=.006, 2 =.05. Patients with MDD were shown to make less dishonest judgments (mean = 0.33, SD =.35) when the payback proportion was higher than that of healthy individuals (mean = 0.49, SD=.28). This finding was confirmed by posthoc testing. A comparison of the payback" proportions (R = 20% and 50%, ps >.1) between the two groups did not reveal any differences.

Risk interacted with group, F(1, 97) = 4.90, p=.029. The effect size was likewise 5. The results of posthoc analyses indicated that MDD patients were less likely than healthy individuals to engage in deceitful behaviour when the risk was low (P = 25%, F(1, 97) = 7.26, p .01), but this was not true when the danger was large (P = 75%).

Frequency of choice for benevolent responses

When compared to healthy individuals, MDD patients had fewer often beneficent answers (mean =.08, SD =.15) (F(1, 97)= 5.46, p=.02, 2=.05). F (2, 194) = 3.98, p =.02, 2 =.04, indicating a significant interaction between repayment percentage and group. There were no significant differences between the MDD group and the control group whether repayment proportions were low (R = 20 percent, MDD.12 vs controls.24; F(1, 97) = 4.82, P = 0.03), or medium (R = 50 percent, MDD.06 vs controls.15; F(1, 97), p =.01). When the payback percentage was high (R = 80%, p >.1), there was no significant group difference. There was no significant interaction between risk and group (F 1).

Conclusion

An essential clinical and academic topic is addressed by the two experiments presented in this thesis: how persons with MDD behave and how their brains process risk and options while making social decisions. People with MDD made fewer altruistic and deceitful choices. There were task variables such as others' intentions (benevolence vs. malevolence) and the possibility of deception detection that influenced the unique behavioural pattern displayed by MDD patients. We would learn more about the connections and interactions between mood and social functioning if we looked at the altered brain activity that underlies social decision-making in persons with MDD. According to our findings, a variety of brain areas involved in processing affect and reward, in addition to cognitive control, were activated. Both studies show that risk was a major determinant of all participants' decisions when taken collectively. There was greater risk avoidance in MDD patients compared to healthy individuals at the anterior insula, which may be due to "emotional allodynia" linked with depression. Because of their reduced caudate nucleus activity, MDD patients had lower incentives to earn more money or build their reputation through reciprocity because

they were less sensitive to monetary and social benefits. It was shown that the DLPFC processed risk and reward interaction information. Because of the frontal cortical inefficiency, the hyperactivity in this region was created to make up for the lower behavioural adaptability. The results of this study revealed that depression was associated with decreased brain processes that affected interpersonal decision-making. In addition to the impaired emotional processing, the abnormal cognitive control may also have a significant impact on the patient's inability to connect socially.

They found that MDD patients understand and respond to their interpersonal environment differently depending on whether they are depressed or not. Social rehabilitation is an important outcome measure for MDD intervention, and the findings provided in this thesis assist set the groundwork for future research to guide the development of successful therapies for this clinical group

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