Prediction of depression symptoms based on personality traits and romantic relationships among students
Mehdi Dehestani1, Sara Ghanbarian Sharabiani1, Roghieh Nooripour2, Firuzeh Zanganeh3

Abstract
Depression is one of the most common mental disorders in modern societies which also including student populations. Etiology of depression is naturally very complicated matter. Some of the effective parameters that have recently gained scholars’ attention are personality traits including romantic relationships that can affect depression. The purpose of this study was to evaluate relationship between personality traits and romantic relationships with depression. Research population was students of Payam Noor University of Tehran that 50 married students and were selected by using random sampling method. Research instruments were Beck’s depression Inventory II (BDI-II), shortened revised NEO personality Inventory (NEO-FFI-60) and sternberg's triangular love scale. Data analysis showed that neuroticism component of personality traits as well as intimacy component of Sternberg’s love theory has significant relationship with depression. Moreover, this research showed that neuroticism and intimacy could predict depression symptoms by 37 percent and 10 percent respectively. In order to prevent depression in students, interventional actions are needed to provide more clear relationships based on personality traits.

Keywords: Depression, Personality Traits, Relationship, Students

Introduction
Youth are main capitals of each country. Entering to college is critical stage in their life which often accompanied by major changes in social and interpersonal relationships [1]. Today, students have significant roles in securing future of their countries because not only they will form major chunk of experts in all scientific fields, but also they will be main leaders in helping their countries and people toward their goals and general improvements [2].

Living away from home, separating from family, entering new environment, academic issues, competing with other students, future jobs, worrying about marriage and dorm life are among reasons behind these stresses. Stress in itself could lead to various physical and mental disorders. Depression is one of the main disorders and a psychological symptom which has been caused by stress [3]. In fact, depression is the most common mood and emotional disorder and psychological disease of our era; over 17 percent of people
would experience depression at least once in their lives. Each person regardless of own background would experience and feel pain of rejection and abandonment or grief of losing someone close in own way. Feelings of sadness and sorrow are belong to small category of emotions that rarely could be experienced collectively [4]; although, intensity of such sadness could reach level which could be diagnosed as depression. This disorder is synonymous with depressive mood, lack of enjoyment, abandoning friends and family, lack of motivation and lack of tolerance against failure, physiological symptoms such as lack of sexual desire, increased or decreased appetite and weight, reduced energy and premature tiredness, sleeping disorder and suicidal thoughts [5]. Depression is so common in modern societies that it has been called “common cold” of psychological disorders. Based on estimations provide by Global Burden of Diseases (GBD), episodic point-prevalence of depression is 1.9 percent and 3.2 percent for men and women respectively. 5.8 percent of men and 9.5 percent of women would experience at least one episode of depression in a 12 months period [6].

It’s fair to assume that no single parameter could demonstrate depression; in fact, depression is result of interaction between several elements and therefore, in order to understand its pathology perfectly, wide range of processes, mechanisms, and risk factors should be taken into account. The aforementioned issues as well as obvious importance of depression in one’s individual and social life would make investigation into parameters behind this disorder necessity [7].

Personality as individual’s internal organization of emotional, sensitive, cognitive, and conceptual systems would determine every person’s distinctive reaction toward surrounding environment that it also can be described as relatively constant pattern of enduring characteristics and behaviors which express one’s interests and it’s one of main parameters affecting depression. Personality in itself is shaped by internal elements (thoughts, values, and hereditary features) as well as external elements (visible behaviors) [8]. Since personal characteristics are deeply connected to one’s perception and interpretation of world and own subsequent reactions toward stressful incidents, it’s natural that some personal characteristics are more flexible than others [9].

By using factor analysis method, Costa and McCrae [quoted by 2] found out that five significant dimensions can be defined for individual differences in personality traits as; Neuroticism (N), Extraversion (E), Openness to experience (O), Agreeableness (A) and Conscientiousness (C) [10]. A research conducted by Sternberg, Beekman, Deeg & Kerkhof [10] revealed that depression has significant relationship with high levels of neuroticism while Tonna, De Panfilis, Provini & Marchesi [11] showed that among all personality trait of neuroticism has significant relationship with severe depression. In another study, Giannoni-Pastor et al [12] found out that some personality traits could increase depression and neuroticism is better predictor of depression in comparison to other personality traits.

Another parameter which could have role in depression is romantic relationships. Love as experience that affects human’s heart and soul takes its victims every day, either hidden or in plain sight. Sometimes, specific attitudes toward romantic relationships lead young people to irrational love. Preventive, nervous, and selfish loves could lead to depression, masochism, addiction, suicide, prostitution, and drastic changes in relationships. It can even regard to greater lengths and lead to violent and inhuman actions such as acid throwing and murder [13].

Sternberg’s Triangular Theory of Love is one of the most important and sought after theories regarding love and its various kinds quoted by 14. Sternberg has described love through three general components (or angles): intimacy which includes feelings of closeness, making interpersonal relationship, and attachment; passion which encompasses...
drives connected to both Liverance and sexual attraction; and commitment which includes decision to remain with another (in short term), and made plans with that others to prolong and maintain relationship (in the long term) [15].

Sternberg and Barnes [quoted by 8] believed that these components are not necessarily balanced in all relationships. Some of them might be stronger in comparison to others; some may be created quickly and also diminish rapidly while others take time to be built and last much longer. According to Sternberg, success in love is highly depends on our abilities to change these components harmonically and accordingly. Now question is that do these love components have role in depression or not? Komura[16] showed in his study that gradual commitment has positive relationship with positive affections while positive affections has negative relationship with depression; on the other hand, evasive commitment has direct relationship with negative affection and in turn, negative affection has significant positive relationship with depression.

Although there is few researches about quality of romantic relationships and depression in adolescence, substantial body of literature regarding those associations in adulthood. One of the most prevalent findings in the adult literature is that depression and depressive symptoms are associated with greater levels of conflict in relationship and less use of constructive tactics to resolve conflict [17]. Depression is associated with more negative verbal and nonverbal interactions, fewer positive interactions, more coercive problem-solving tactics [18], and less adaptive behavior during problem-solving discussions [19]. Depression is also associated with less satisfaction [20], less support [21], less relationship security [22]and higher rates of divorce in adults’ romantic relationships [23]. Also what is known suggests that higher levels of romantic involvement are associated concurrently with higher levels of depressive symptoms in adolescence [24]. Joyner and Udry [25] also demonstrated that adolescents were more likely to report increment in depressive symptoms over a year if they became romantically involved during that time.

The purpose of this study is to evaluate relationship between personality traits and romantic connections with symptoms of depression.

**Method**

This research is a cross-sectional study. Research population included students of Payam Noor University of Tehran that 50 married students were selected by using random sampling method.

Inclusion criteria in study were: being married, being university's student, lack of substance abuse.

Exclusion criteria in study were: being single, lack of cooperation to respond scales, use of drug.

Beck’s Depression Inventory II (BDI-II) has 21 items similar to its earlier version, and like its counterpart, participant should rate each item from 0 to 3 which indicates severity of depression. Total range of this inventory is 0 to 63. Scores of 0 to 13 indicate minor depression, scores of 14 to 19 shows moderate depression, and scores of 29 to 63 indicates severe depression [26]. The localized Iranian version of this inventory has been reported by Cronbach’s alpha coefficient of 0.91, split-half correlational coefficient of 0.89, and reliability coefficient of 0.94 for a one week period [26]. Shortened Revised NEO Personality Inventory (NEO-FFI-60) has 60 items (12 per domain) intended to measure 5 big personality traits. Cronbach’s alpha coefficient of 0.85, 0.72, 0.68, 0.69, and 0.79 has been reported for neuroticism, extraversion and openness to experience, agreeableness, and conscientiousness [27]. In Iranian sources coefficients are reported 0.79, 0.79, 0.80, 0.75, and 0.83. Reported reliability coefficients are 0.83, 0.87, 0.73, 0.79, and 0.85. Correlation coefficient of personality traits are reported to be between 0.56 and 0.87 quoted by 28. Short form of NEO-FFI is designed to provide a concise scale of big five personality traits. Its rating is based on five options Likert scale.
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The reliability of this scale after two weeks period has been reported between 0.86 and 0.90 for five dimensions while internal correlation of traits has been reported between 0.68 and 0.86 [29].

Sternberg’s Triangular Love Scale which has been designed by Sternberg [30] and has 45 items intended to measure 3 elements of intimacy, passion, and commitment. 15 items have been devoted to each component, each rated based on a 9-point Likert scale (never to absolutely). Arabi, Elahifar & Dehghani [31] calculated reliability of this inventory and three components of intimacy, passion, and commitment using Cronbach’s alpha method and reported them as 0.92, 0.89, 0.89, and 0.81 respectively.

Ethical considerations participate in study were as follows: 1) Participants were free at any time without penalty for participation or leaving their cooperation in the study. 2) The questionnaires were distributed by the researchers. 3) Sufficient arguments for the necessity of this study have been presented. 4) Privacy and confidentiality has been described to all participants. No population of people was excluded from research or unfairly burdened unless there is overwhelming reason to do so. Participants paid NO cost for this research.

Pearson’s correlation coefficient as well as stepwise regression was used to analyze data with SPSS-19

Results

In this study, age of participants was ranged between 22 and 35. Most participants had a bachelor’s degree. Table 1 has summarized descriptive statistics of this research.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism</td>
<td>18.98</td>
<td>5.96</td>
</tr>
<tr>
<td>Extraversion</td>
<td>32.16</td>
<td>5.23</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>28.36</td>
<td>4.25</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>30.3</td>
<td>5.7</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>35.48</td>
<td>5.72</td>
</tr>
<tr>
<td>Intimacy</td>
<td>117.3</td>
<td>9.38</td>
</tr>
<tr>
<td>Passion</td>
<td>107.46</td>
<td>12.82</td>
</tr>
<tr>
<td>Commitment</td>
<td>127.52</td>
<td>6.77</td>
</tr>
<tr>
<td>Depression</td>
<td>11.78</td>
<td>7.34</td>
</tr>
</tbody>
</table>

Table 1 Mean and standard deviation of personality traits, love components, and depression scores

<table>
<thead>
<tr>
<th>Variables</th>
<th>Depression</th>
<th>Emotional symptoms</th>
<th>Cognitive symptoms</th>
<th>Physical symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism</td>
<td>0.51**</td>
<td>0.48</td>
<td>0.21</td>
<td>0.57**</td>
</tr>
<tr>
<td>Extraversion</td>
<td>-0.19</td>
<td>-0.20</td>
<td>0.18</td>
<td>0.09</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>-0.12</td>
<td>-0.08</td>
<td>0.006</td>
<td>-0.25</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.03</td>
<td>-0.002</td>
<td>-0.18</td>
<td>-0.10</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-0.09</td>
<td>-0.03</td>
<td>-0.11</td>
<td>-0.15</td>
</tr>
<tr>
<td>Intimacy</td>
<td>-0.38**</td>
<td>-0.18</td>
<td>-0.40**</td>
<td>-0.25</td>
</tr>
<tr>
<td>Passion</td>
<td>-0.04</td>
<td>-0.12</td>
<td>-0.23</td>
<td>-0.04</td>
</tr>
<tr>
<td>Commitment</td>
<td>-0.16</td>
<td>-0.02</td>
<td>-0.26</td>
<td>-0.16</td>
</tr>
</tbody>
</table>

As Table 2, among personality traits; neuroticism has significant relationship with depression total score (r=0.51), symptoms of emotional depression (r=0.48), and symptoms of physical depression (r=0.57) (p ≤ 0.01). No such relationship was found between other
personality traits and depression elements. Moreover, only intimacy dimension of love components has significant relationship with depression total score (r=0.38) and symptoms of cognitive depression(r=0.40) (p≤ 0.01).

Stepwise regression analysis was used to evaluate significance of predictions of depression symptoms based on personality traits and love components. The results are summarized in Tables 2, 3 and 5.

<p>| Table 3 Stepwise regression analysis of depression symptoms based on personality traits and love components |</p>
<table>
<thead>
<tr>
<th>Model</th>
<th>Predictor variable</th>
<th>SS</th>
<th>df</th>
<th>Ms</th>
<th>F</th>
<th>P</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Neuroticism</td>
<td>Regression</td>
<td>677.16</td>
<td>1</td>
<td>677.16</td>
<td>40.9</td>
<td>0.0001</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>Remainder</td>
<td>1963.42</td>
<td>48</td>
<td>40.91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| Table 4 Coefficient of step-wise regression of depression symptoms based on personality traits and love components |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>B Coefficient</th>
<th>Standard error</th>
<th>Beta coefficient</th>
<th>t</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.06</td>
<td>3.05</td>
<td>-0.02</td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td>Neuroticism</td>
<td>0.62</td>
<td>0.15</td>
<td>0.51</td>
<td>4.07</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

As is evident from Table 3, predictions of depression symptoms based on personality traits and love components is only significant in neuroticism (p≤ 0.01, F=40.9). This variable predicts 37 percent of depression symptoms’ variances in married students (R²=0.37). The impact factor of neuroticism is 0.51 (B=0.51).

<p>| Table 5 Stepwise regression results of depression symptoms’ scores based on love components |</p>
<table>
<thead>
<tr>
<th>Model</th>
<th>Predictor variable</th>
<th>F</th>
<th>P</th>
<th>R</th>
<th>R²</th>
<th>B Coefficient</th>
<th>Beta Coefficient</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Intimacy</td>
<td>15.73</td>
<td>0.0001</td>
<td>0.31</td>
<td>0.10</td>
<td>-0.38</td>
<td>-0.31</td>
<td>-3.96</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

As is visible in Table 5, predictions of depression symptoms based on love components (intimacy, passion, and commitment) is only significant in case of intimacy (p≤ 0.01, F=15.73). This variable predicts 10 percent of depression symptoms’ variances (R²=0.10). The impact factor of intimacy is -0.31 (B= -0.31).

Based on regression analysis, stepwise regression equation to predict depression can be written as follows:

Y=-0.06+0.62(X1)+-0.31(X2)  
Y= depression symptoms  
X1= Neuroticism  
X2= Intimacy  

**Discussion**

The results of this study showed that among all personality traits, neuroticism can be good predictor of depression symptoms with high impact factor. In other words, increased neuroticism score would lead to increased depression. Sternberg & Sternberg [32] have also concluded that depression has a direct relationship with high levels of neuroticism. Tonna et al [11] have also showed that of all personality traits, neuroticism has significant relationship with severe depression. In another study, Giannoni-Pastor et al [12] found that some personality traits could have role in depression; they argued that neuroticism is better predictor in comparison to its other counterparts. Therefore, it could be concluded that results of this study are consistent in previous researches.

Various studies have revealed that people with high neuroticism would interpret trivial negative stimulants same as much severe negative pressures [33]. Based on findings of this research, neuroticism has a direct relationship with negative mood which is also
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in consistent in previous studies. Since high scores in neuroticism would mean emotional instabilities as well as negative feelings such as fear, sorrow, nervousness, anger, guilt, and hatred, people with high scores in this area, would express more tendency to impulsivity, aggression, and vulnerability. Moreover, people with high neuroticism have more potential to express anxiety in tight situations and often resort to emotional focused methods in such scenarios. On the contrary, people with high neuroticism scores generally use problem solving and therefore would experience less depression [34]. In fact, this element is built on negative and unfavorable emotional experiences and is consisted of negative qualities such as depression, anxiety, emotional instability, etc. Those who claim high scores in this element would be open to experiences such as mental disorders, illogical beliefs, inaccessible expectations, and contradicting negative responses. In fact, high scores of neuroticism could be warning sign of other possible psychological disorders very well [35]. The results of this study revealed that among three components of love, intimacy has a significant negative relationship with depression symptoms. Lakshmi & Pujam [36] showed that gradual commitment has positive relationship with positive affections while positive affections has negative relationship with depression; on the other hand, evasive commitment has a direct relationship with negative affection and, negative affection has significant positive relationship with depression. People who like to make intimate and close relationships and share their secrets have feeling for control of their lives; they also think of themselves as active persons, rarely feel alienated, and generally are quite comfortable in front of their friends, associates, and family [37]. Thus, it seems that these qualities are completely against symptoms and feelings such as isolation, lack of control over life, alienation, wrong interpretation of others’ behaviors, and other depression-related characteristics.

It can be said that interpersonal relationships have big influence over emergence, persistence, and treatment of depression. Horvath, Del Re, Flückiger & Symonds [38] believed that depression would evolve in interpersonal framework based on semiotic patterns, biologic vulnerability, or personality traits and a comprehensive analysis of this framework could be a great help in patients treatments regarding this disorder. Interpersonal disorders such as severe shyness, lack of attention to others’ needs, and lack of general social skills could lead to depression. Klerman and Weissman quoted by 39 stated that depressed people who had experienced improper interpersonal relationships during their childhood had never been accepted, and were not able to make close and lasting relationship with others, often have had such disorders. Thus, it could be concluded that lack of intimacy and close relationships, along with other parameters, could lead to depression. Based on results of this study and role of neuroticism and intimacy parameters in predicting depression symptoms, we recommend that more studies can be conducted on this matter in order to demonstrate more clear and comprehensive description and pattern.

On the other hand, romantic relationships would place the individual against positive and negative emotions and feelings which could be diverse in their range and effect. A lover whenever gains attention of own beloved would experience happiness and passion and could also succumb to feelings of sorrow and grief when faced own indifference or lack of attention; these contradicting and diverse feelings could be countless repeated and thus are very hard to manage in way that lover may not be able to control emotions and passions of romance. Moreover, when someone enters this romantic adventure, not only individual does not know true feelings regarding this love, but also he/she does not know feelings of own romantic interest regarding. On one hand, individual should become lover so own interest could discover and understand love, and on the other hand, should he become lover and this love does
not coming to fruition, and would experience highly negative feelings or romantic failure. Therefore, one has to walk a thin line in which while he/she would not allow oneself to completely fall for romance, this approach would not help interest to become sure of feelings and thus person would be trapped in state of purgatory and conflict which would eventually lead to emotional disorders and lack of power to control feelings and emotions. On the other hand, love is a very powerful emotion and brings a lot of joy and happiness and thus one would like to sustain such emotions to enjoy these feelings; but, lover could not always use these emotions in right way and instead of gaining control and management over them, emotions would reign over him/her and would lead individual. Therefore, a lover should also learn to manage and control own emotions or it should be taught to person so can use positive aspects and banish bad ones.

As lover is highly interested in maintaining romantic relationship and would do anything to protect it, that person is forced to show more tolerance regarding the contradicting opinions, emotions, and values as well as mistakes and misunderstandings; this could not be considered as positive aspect because although one should have tolerance to accept differences and contradictions, such differences could pose much bigger problems later if taken lightly as they could reduce one’s tolerance against mistakes and pave way for disagreements and argues. Therefore, it seems necessary that management and control of emotions as a pivotal dimension of love should be taught. Those few studies that have examined relationship qualities in adolescence have typically done as it relates to depressive symptoms [21] but results of this study are consistent with results of [21,23].

This study had some limitations which should be taken into account. Firstly, sample of this research was academic students, so results could not necessarily extend to general population and thus other similar studies on different normal and clinical samples is recommended. Secondly, longer studies seems to be necessary due to nature of subject and short period of study, in order to fully demonstrate and describe causal relationships of elements presented in this research.

**Conclusion**

In romantic process that could eventually lead to marriage, fundamental differences between lovers should not neglected as patience which would not last forever. Regarding symptoms that could be indications of one’s tendency toward love disease, families should be instructed so they could perform appropriate preventive actions in time.

**Contributions**

Study design: MD, SGh
Data collection and analysis: MD, SGh, RN
Manuscript preparation: MD, RN, RN

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**Conflict of Interest**

The authors declared that they have no competing interests.

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