



Research Paper: Comparison of Cognitive Failure, Emotional Processing and Resilience in Female Students with and without Test Anxiety




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Abstract

This study investigated the comparison of cognitive failures, emotional processing and resilience among the female students with and without experiencing test anxiety. The present research is a causal-comparative study. The participants of study are 203 female students studying in tenth and eleventh grade of high school in Rasht in the academic year 2019-2020. Based on the analysis, 92 of the participants experienced test anxiety and 111 of them are without it. Cluster sampling with the cutoff point of 50 is employed for the selection of the participants. The participants completed Spielberger Test Anxiety Questionnaire, Cognitive Failures Questionnaire (CFQ), Emotional Processing Scale (EPS-25) and Connor-Davidson Psychological Resilience Scale Questionnaire (CD-RISC). The data are analyzed based on univariable analysis of variance. Results show that the students experiencing test anxiety obtain higher scores for cognitive failures; also, they have higher scores for emotional processing and lower scores for resilience than the students without test anxiety. These findings reveal that cognitive failures, emotional processing and resilience have fundamental a role in test anxiety.

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1. Introduction

Test anxiety is one of the issues with an unpleasant effect on educational achievement in students (Abdali, Golmohammadian & Rashidi, 2018). Around the world, test anxiety is shared among 25 to 40 percent of learners (Baghaei & Cassady, 2014). Test anxiety is a mental impairment that is specified by self-deprecation and doubt about one's abilities (Sarason, 1975). Students with higher levels of test anxiety usually get lower scores for exams (Sommer & Arendasy, 2016) and their responding patterns are different from the students with lower levels of test anxiety (Spoden, Fleischer & Frey, 2020). Three dimensions of test anxiety are behavioral, emotional and cognitive (Soysa & Weiss, 2014). Cognitive dimension consists of being worried about failure and people's judgement. Being nervous and sweating as a psychological reaction represent emotional and behavioral dimensions resulting in such behavior as constantly looking at the clock and pencil-taping (Trifoni & Shahini, 2011).

Anybody can be involved in anxiety, but cognitive and meta-cognitive patterns delineate its durability (Shahgholian, Azadfallah & Fathi ashtiani, 2012). Cognitive failures are related to anxiety (Wilkerson, Boals, & Taylor, 2012). Cognitive failure is a multidimensional variable that consists of failure in setting goals, failure in activating the schemas and failure in initiating actions (Wallace, Kass & Stanny, 2002). A person that is involved in cognitive failures is defined as an anxious and impulsive in character with low self-confidence (Markett, Reuter, Sindermann, & Montag, 2020). Some of the reasons of experiencing cognitive failures

are worrying, experiencing illness and doing multiple onerous duties. Cognitive failures result in several problems related to memory, distractibility, blunders and forgetting names (Yazdi, Darvizeh & Sheikh, 2015). According to Broadbent's (1984) filter model, the information will be accessed to be noticed based on its features; then, it will be sent for more processing, while other data are being blocked. During this process, anxiety causes attention bias. The cognitive component of anxiety consists of two dimensions: Attention bias and worry. It is hard for an anxious person to avoid cognitive failures (Jankowski & Bak, 2019). Jankowski and Bak (2019) display the association between anxiety and cognitive failures with mediating role of mindfulness. Carrigan and Barkus (2016) conclude that there is a strong association between stress and cognitive failures. Swanson's (2014) study reveals that participants with more cognitive failures have lower levels in academic achievement than participants with less cognitive failures. Broadbent's (1984) study illustrates that there is no significant relationship between great anxiety and daily cognitive failures. Birami and Pourfaraj Omran (2014) conclude that students with test anxiety have disordered metacognitive beliefs and they worry more than other students.

Another variable related to test anxiety is emotional processing the role of which in adapting to anxiety has been proved by a lot of evidence (Kring & Bachorowsky, 1999). Emotional processing is a process of absorbing and reducing the emotional or psychological disturbances to an extent that other experiences and behavior can continue without any problems. Rachman (2001) argues that if emotional experiences

get incompletely absorbed, there would be direct signs of a defect, such as the return of fear, maladaptive avoidance, unpleasant unwanted thoughts as well as indirect symptoms of inability to focus, restlessness, irritability. The controlling mechanisms of emotional experience and emotional expression include suppression, dissociation, avoidance, and lack of control. Over-avoidance or prolonged and severe inhibition of negative emotional experiences can prevent an individual from resolving the problem (Rachman, 2001, 1980). Emotional disturbances represent the disintegration of emotional processing components that interfere with the achievement of adaptive emotional functioning (Kring & Bachorowsky, 1999). In addition, students experience different emotions in educational situations. These Emotions are related to learning strategies and academic achievement. If a student assumes failing the exam is possible and uncontrollable, and considers the exam to be important because of its consequences in achieving career goals, he or she will be afraid of the exam and will become anxious (Pekrun, Frenzel, Goetz, & Perry, 2007). Individuals with test anxiety have mental obsessions and nervousness, too. They also focus more on activities that are not related to the assignments, so the retrieval of previous information is disrupted in them, ultimately causing problems in their individual performance (Malik, Akhter, Fatima, & Safder, 2013).

Sheykholeslami, Bashshashi and Jafari (2019) find that there is a significant difference between the performance of the students with high test anxiety and low-test anxiety in emotional processing; the scores for emotional processing of students with high test anxiety are significantly lower

than the other group. Shahbaziyan Khonig and Hasani (2017) show that there is a positive relationship between the components of test anxiety and alexithymia with academic burnout. Zare and Solgi (2012) indicate that there is a positive relationship between anxiety and stress with maladaptive cognitive emotion regulation strategies. Heydarian and Norouzi (2014), Capaydin and Emmioglu (2009) and Schutz, DiStefano, Benson & Davis (2004) determine that emotion regulation strategies can significantly predict test anxiety. Burns (2004) stresses that students' anxiety affects their ability to comprehend and learn and it is related to emotional regulation skills.

There is another component named Resilience which can help human beings to adapt to problematic situations and constant stress in life; also, it enables humans to recover from major challenges that threaten their stability, survival, or development (Newman, 2005; Ma et al., 2019). Resilience is a part of positive psychology and one of the main psychological features related to academic achievement (Kristjansson, 2016); this refers to the human ability to adapt to pain and affliction caused by life troubles and stressors (Hoseini ghomi & Salimi, 2012). This component is targeting those people who can improve their function and overcome anxiety, despite²⁸ being exposed to severe stress and risk factors (Yu et al., 2011). Additionally, the students' success in unpleasant and stressful situations during school, a significant part of the pressures and anxieties of adolescence, is related to resilience (Isabakhsh, Seif & Dortaj 2018). In this way, students with high resilience can use their skills and abilities in exam sessions and show better academic

competence (Jenadeleh, Bassak Nejad, Yunesi & Sadatmand, 2018). Trigueros et al. (2020) find that students with high resilience experience less anxiety, when they do exams. Johnston-Wilder, Brindley & Dent (2014) illustrate that elementary and high school students with high-resilience can manage stressful situations more effectively and experience less test anxiety. Moreover, the findings of Jamshidi, Fadaei Moghadam, Ghorbani and Farhoush (2017), Andreea and Oprea (2014) and Yaghoobi and Bakhtiari (2016) demonstrate that there is a negative relationship between each of the components of resilience (goal orientation, negative affects tolerance, leadership and spiritual coping) and test anxiety.

According to the important role of test anxiety in academic performance, finding its effective factors seems necessary. More accurate knowledge in this area can help to develop better guidelines for overcoming test anxiety. Thus the aim of this study is to determine the differences between cognitive failures, emotional processing and resilience in students with and without test anxiety.

2. Method

This was causal-comparative research. The sample consists of 203 female students studying in tenth and eleventh grade of high school in the academic year 2019-2020 (111 students with test anxiety and 92 students without test anxiety) with the cutoff point of 50, were chosen out of 600 students in the city of Rasht in two steps:

Step1) Identification: By employing cluster sampling, 8 public schools in Rasht were selected out of the high schools of district 2; from each school, 3 classrooms were chosen (24 classes); then, out of each

class, 25 students were selected to complete the test anxiety questionnaire.

Step2) Final phase: By the cutoff point of 50, 92 students were chosen as the participants with test anxiety and 111 students without test anxiety chosen randomly as the comparison group. The following questionnaires are administered in the present study.

Test Anxiety Inventory: Spielberger's (2010) test anxiety inventory with 20 items describing reactions before, during and after the exam, evaluating any individual's difference in test anxiety, was used. Test anxiety inventory is a self-report instrument; the participants answer the items on 1 to 4 Likert scale from never to almost always. Cronbach's alpha value for this inventory was reported to be 0.94. In addition, Abolghasemi, Mehrabizadeh Honarmand, Najarian & Shekarkan (2004) calculated its Cronbach's alpha value, test-retest coefficient and split half reliability value as 0.92, 0.90, 0.92, respectively. The total association between this inventory and Sarason Test Anxiety Scale was calculated as 0.82 and 0.83 in men and women, respectively.

Cognitive Failures Questionnaire (CFQ): Participants responded to Broadbent et al (1982) cognitive failures questionnaire with 25 items of five-point Likert scale (from never to always). The components are distractibility, memory related failures, blunders and forgetting names. Cronbach's alpha and internal consistency coefficient of this questionnaire were reported to be 0.91 and 0.4, respectively. The correlation coefficients of the subscales of Adult Behavior Checklist were reported to be in the range of 0.52 to 0.76 (Wallace et al,

2002). In Iran setting, Cronbach's alpha of this questionnaire was calculated as 0.84; moreover, the face validity of this questionnaire was confirmed by several psychologists and linguists (Abolghasemi & Kiamarsi, 2009; Yazdi et al., 2015).

The Emotional Processing Scale (EPS-25): Baker's et al. (2010) Emotional Processing Scale is a 25-item self-report scale for measuring emotional processing styles. Each item is graded on a five-point Likert scale (from strongly disagree to strongly agree). This scale has 5 factors (Suppression, Impoverished emotional experience, Controllability of emotions, Signs of unprocessed emotions and Avoidance of emotional triggers). The psychometric properties of the revised version are particularly promising in terms of detecting differences between the group experiencing test anxiety and the group without test anxiety. The value of Cronbach's alpha and test-retest coefficient of this scale were reported to be 0.92 and 0.79, respectively. In order to determine the validity, this scale was correlated with emotion regulation scale. The results demonstrated that there was a significant and negative correlation between these two scales ($r = -.52$) (Sheykhholeslami et al., 2019). In Keshavarz Afshar et al.'s (2018) study, the reliability of this scale was calculated as 0.95 using Cronbach's alpha coefficient. In the present study, Cronbach's alpha coefficient value of this scale was 0.70.

Connor and Davidson Resilience Scale (CD-RISC): This scale, designed by Connor and Davidson, (2003) measures psychological resilience. It has 25 items and 4 subscales including goal orientation, negative emotion tolerance, spirituality and leadership. A five-point Likert scale (0- not

at all true to 4- true nearly all the time) was in the response items. The range of the score in this scale is 0 to 100; the higher the score, the greater resilience would be. The results of the preliminary study regarding the psychometric properties of this scale in the normal and ill participants confirmed its reliability and validity (Connor & Davidson, 2003). The internal consistency reliability coefficient was 0.89. This scale was translated and validated by Mohammadi (2005) in Iran with a Cronbach's alpha coefficient value of 0.87. The content validity index of the Persian version of the Connor-Davidson Resilience Scale was also calculated as 0.98 (Ahangarzadeh et al., 2015).

The researcher chose high schools in Rasht to carry out the research; for conducting the present study, a comprehensive explanation was given to the participants. After negotiating the agreement, the students received the questionnaires. We asked them to answer the questions carefully and completely. It took about 20 minutes for each student to complete the questionnaires. Then on the basis of cutoff point (50), 92 students were chosen as the group experiencing test anxiety and 111 students were chosen as the group without test anxiety. Afterward, students of two groups completed the Cognitive Failure Questionnaire, the Emotional Processing Scale and Connor and Davidson Resilience Scale. Finally, the collected data were analyzed based on univariate variance analysis.

3. Results

The participants experiencing test anxiety (group 2), 32.6% (30 students) were in the eleventh grade and 67.4 (62 students) were in the twelfth grade. The participants without test anxiety (group 1), 33.4% (36

students) were in the second grade and 67.6% (75 students) were in the third grade.

Table 1 illustrate the descriptive indicators of the variables of the present study.

Table 1
Descriptive indicators of the studied variables

Variable Statistical indicators	Components	Group 1		Group 2	
		M	SD	M	SD
Cognitive failures	Distractibility	18.89	4.32	24.84	4.87
	Memory	13.95	3.78	18.12	3.86
	Blunders	15.14	4.17	19.93	4.62
	Forgetting names	3.60	1.34	5.05	1.73
Emotional processing	Suppression Impoverished emotional experience	11.97	4.40	14.63	4.90
	Controllability of emotions	14.42	2.70	15.91	3.08
	Signs of Unprocessed emotions	24.02	2.40	25.13	2.66
	Avoidance	12.79	3.54	15.27	3.69
Resilience	goal orientation	17.56	4.17	18.46	3.64
	negative affect tolerance	33.84	4.91	29.50	6.58
	Leadership	34.04	4.94	29.07	5.27
	Spirituality	13.84	2.71	11.72	2.50
		9.03	1.38	7.90	1.56

Based on Table 1, among the two groups experiencing cognitive failures, distractibility and forgetting names had the most and the least mean, respectively. As far as Emotional processing is concerned, the components of controllability of emotions had the highest and suppression had the lowest mean in both groups. Additionally, among resilience components in both groups, spirituality had the least mean; the highest means belonged to the negative affect tolerance in group 1 and goal orientation in group 2.

Before using univariate analysis of variance to implement statistical assumption, Box's M as well as Bartlett and

Levene's tests were run. According to Box's M test for emotional processing components ($P = 0.12$, $F = 1.42$, $M \text{ Box} = 22.01$), cognitive failures ($P = 0.31$, $F = 1.15$, $M \text{ Box} = 11.76$) and resilience ($P = 0.01$, $F = 2.20$, $M \text{ Box} = 22.57$); therefore, the condition of homogeneity of covariance matrices is properly approved. Based on Levene's test and its insignificance for the variables of cognitive failures, emotional processing and resilience, the condition of intergroup variances equality was approved ($P < 0.05$). In addition, due to the insignificance of the results of the Kolmogorov-Smirnov statistic, the distribution of scores was normal ($0.87 > ks > 0.25$).

Table 2

Results of univariate analysis of variance on the means of components of cognitive failures in students with and without test anxiety

Variable	SS	DF	MS	F	P	ETA	NP	OP
Distractibility	1789.21	1	1789.21	85.08	0.001	0.29	85.08	1
Memory	878.18	1	878.18	60.13	0.001	0.23	60.13	1
Blunders	1156.26	1	1156.26	60.09	0.001	0.23	60.09	1
Forgetting names	160.50	1	160.50	45.24	0.001	0.18	45.24	1

According to the results of univariate analysis of variance (Table 2), there was a difference in at least one of the components cognitive failures in students with and without test anxiety ($P < 0.01$, $Eta = 0.326$, $F = 23.95$). The Eta squared demonstrated that the amount of this difference was 0.326; thus 32.6% of the variance was related to the difference between two groups, which was due to the interaction of these components. The results in Table 2

Table 3

Results of univariate analysis of variance on the means of emotional processing components in students with and without test anxiety

Variable	SS	DF	MS	F	P	ETA	NP	OP
Suppression	357.01	1	357.01	16.55	0.001	0.07	16.55	0.98
Impoverished emotional experience	111.38	1	111.38	13.40	0.001	0.06	13.40	0.95
Controllability of emotions	62.37	1	62.37	9.77	0.001	0.04	9.77	0.87
Sings of unprocessed affect	312.11	1	312.11	23.86	0.001	0.10	23.86	0.99
Avoidance	40.70	1	40.70	2.61	0.10	0.01	2.61	0.36

Based on the data obtained from univariate analysis of variance, there was a difference in at least in one of the components of emotional processing in students with and without test anxiety ($P < 0.01$, $Eta = 0.145$, $F = 6.68$). The Eta squared verified that the amount of this difference was 0.145; therefore, 14.5% of the variance was related to the difference between groups that was due to the interaction of these components.

The results of Table 3 illustrated that the mean scores for suppressions,

expressed that the average scores for distractibility, memory, blunders and forgetting names were higher in students with test anxiety than students without test anxiety ($p < 0.01$).

Table 3 illustrate the results of univariate analysis of variance on the means of emotional processing components in students with and without test anxiety

impoverished emotional experience, controllability of emotions and sings of unprocessed affect in the participants experiencing test²anxiety were higher than the participants without test anxiety, but there was not a significant difference between the participants experiencing test anxiety and the ones without test anxiety in the avoidance component ($p < 0.01$).

Table 4 illustrate the results of univariate analysis of variance on the mean of resilience components in students with and without test anxiety

Table 4

Results of univariate analysis of variance on the mean of resilience components in students with and without test anxiety

Variable	SS	DF	MS	F	P	ETA	NP	OP
Goal orientation	949.23	1	949.23	28.79	0.001	0.12	28.79	1
Negative affect tolerance	1244.87	1	1244.87	47.92	0.001	0.19	47.92	1
Leadership	227.56	1	227.56	33.07	0.001	0.14	33.07	1
Spiritual confrontation	64.70	1	64.70	30.10	0.001	0.13	30.10	1

The results of univariate analysis of variance revealed that there was a difference in at least one of the components ($P < 0.01$, $\eta^2 = 0.232$, $F = 14.94$). The Eta squared established that the difference was 0.232; consequently, 23.2% of the variance was related to the difference between groups which was due to the interaction of these components.

Based on the results of [Table 4](#), the mean scores for the goal orientation, negative affect tolerance, leadership and spiritual confrontation were lower in the participants experiencing test anxiety than the participants without test anxiety ($p < 0.01$).

4. Discussion

The present study investigated the comparison of cognitive failures, emotional processing and resilience in female students with and without test anxiety. Results showed that students with high test anxiety had higher scores for distractibility, memory problems, blunders and forgetting names than students with lower test anxiety. Our experiments corroborate previous results ([Jankowski & Bak, 2019](#); [Carrigan & Barkus, 2016](#); [Birami et al., 2014](#)). However, these findings refute previous results reported in the literature ([Broadbent, 1984](#)). On the basis of results, anxiety increases the negative cognitions which in turn would disturb the information

processing, resulting in some problems in student's cognitive processes ([Shahgholian et al., 2012](#)). Anxious students experienced physiological symptoms of anxiety, fear of failure and people's judgement. These participants concentrated on negative thoughts and predictions (like bad scores); as a result, their concentration on important stimulus decreased which resulted in distractibility. A distracted student could not process the questions of exam correctly, forgetting the pieces of information which in turn resulted in making problems for information retrieval. Therefore, students with test anxiety have higher scores for components of cognitive failures. That is to say, students could normally complete school tasks, but test anxiety did not let them use their potentials ([Yazdi et al., 2015](#)). The worrying caused by test anxiety affects learning and memorizing information and leads to distractibility and other cognitive failures.

Results also revealed that the participants experiencing test anxiety had significantly higher scores than the participants without test anxiety in emotional processing components (excluding avoidance). Even though these results differ from some published studies ([Sheykholeslami et al., 2019](#)), they are consistent with those of ([Capaydin &](#)

Emmioglu, 2009; Heydarian & Norouzi, 2014; Schutz et al., 2004). Based on the findings, students experience different emotions in academic setting, if they think, failure in the next exam is uncontrollable, they will become anxious (Pekrun et al., 2007); moreover, test anxiety causes mental obsessions and impairment in previous information retrieval (Malik et al., 2013). As a result, the students became more vulnerable emotionally and could fail to control the unwanted emotions in the process of getting the desired results; as Rachman (2001, 1980) put it, uninvited thoughts and inability to concentrate, was symptoms of deficient absorption of emotional experiences. Therefore, it leads to two different assumptions: First, the impairment in emotional processing leading to deficiency in functioning which increases test anxiety. Second, we can consider this relationship to be twofold: Students' interpretation of their excitement and anxiety disrupts their emotional processing; thus, those with higher anxiety will have impaired emotional processing. In present study, the participants demonstrated more difference in the components of suppression and signs of unprocessed emotions. Suppression is one of the mechanisms that controls emotional experiences preventing the handling of negative emotional experiences (Rachman, 2001) and leaving anxiety unresolved. Due to the fact that anxious students were unable to process emotions, this disturbance could be applied to their higher levels of anxiety; therefore, if they learned to control their emotional processing, they would be able to control their own anxiety.

Regarding resilience, the results stressed that students with test anxiety scored lower for the resilience components.

This substantiates previous findings in the literature (Trigueros et al., 2020; Jamshidi et al., 2017; Johnston-Wilder, 2014; Yaghoubi & Bakhtiari, 2015). Based on the results, the participants with higher resilience and lower levels of test anxiety as well as the ones with better adjustment in the process of studying can use their abilities in exams session and display better academic competence (Jenadeleh et al., 2018). Students with resilience achieve higher levels of success and feel less stressed and less exhausted about school-related activities (Yaghoubi & Bakhtiari, 2016). According to the findings, academic success has always been one of the most important achievements of the students; however, the fear of failure would make them anxious. If students did not possess the necessary skills to manage these conditions, they would suffer from fatigue and burnout under stress. Since resilience has increased protective factors such as positive attitude and self-directedness and has reduced negative attitude and anxiety, it can also help people to alleviate levels of anxiety, ultimately leading to better performance in exams and generally in academic achievement.

One of the limitations of this study was using a cutoff point and other was lacking control over the effective variables (intelligence, social class and economic condition). The³⁴mono sexed participants (just female) was another limitation.

5. Conclusion

To sum up, the results of this study indicated a significant difference between the participants experiencing test anxiety and the ones without test anxiety in cognitive failures, emotional processing and resilience and representing determinant role of these variables in test anxiety. These

findings fulfilled pivotal roles in the area of psychopathology and prevention of test anxiety. Probably endeavoring toward decreasing the cognitive failures, improving the emotional processing and increasing the resilience could help therapy methods for decreasing test anxiety. Findings of this study indicated that counseling and educational programs should be designed to reduce the cognitive deficits and to improve emotional processing, while increasing resilience in students; such programs are expected to be effective in reducing students' test anxiety and representing their academic achievements.

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Conflict of interest

The authors declare that there is no conflict of interest.

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