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Comparison of the expected outcome of the mastectomy with perceived treatment outcomes based on self-efficacy in women with breast cancer

Abstract

Aim: In the Present study the expected outcome of the mastectomy compared with perceived treatment outcomes based on self-efficacy in women with breast cancer. Method: In the current study, 300 female patients with breast cancer were studied before and after mastectomy using the general self-efficacy scale and expectancy outcome incongruence. Results: The finding yielded that there was significant difference between patients with the high and low self-efficacy based on the expectation of the result of surgery and perceived outcome of surgery. Similarly there is significant difference between the level of disease progression based on the expectation of the surgery outcome and perceived outcome of surgery. In addition, there was significant difference between breast tumor size based on the expected outcome of surgical treatment and perceived outcome of surgery. There was significant difference between elderly and non-elderly women self-efficacy. Conclusions: Results show the higher level of self-efficacy can be useful in establishing primary social adjustment but lead to underestimate the negative effects of surgery.

Keywords: self-efficacy, expectancy of outcome of treatment, breast cancer

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Introduction

In many countries, the increased incidence of breast cancer and its mortality have created serious concerns. Breast cancer is the most common non-skin cancer and the second leading cause of cancer death among women.[1–6] The incidence of breast cancer in the United States has been doubled in the past 60 years (National Breast Cancer Organization, Donald et al.,[7] Breast cancer is the most common cancer among women in Iran. One in seven women is estimated to develop breast cancer during her lifetime, whose rate will further increase with the age.[1–3] Breast Cancer is one of the major causes of death in women in both developed and developing countries. Age of breast cancer onset in Iran is 10 years lower, while the maximum age of incidence of cancer is 50 years and over in the world.

There are different treatments for breast cancer, including surgery, radiotherapy, adjuvant therapy (hormone therapy and chemotherapy) and ovariectomy.[8–21] Surgical treatment may be done as protective breast surgery, removal of lymph nodes and the breast (mastectomy) (Iranian Journal of Breast Diseases, 1389). Mastectomy refers to the complete removal of the breast tissue, which includes the breast skin with the nipple and areola (the circular area around the breast).[2] The life of the person and those around her, upon being informed about breast cancer diagnosis, can be changed to the extent that it is difficult to adapt to these changes because it will impact on different aspects of one's life and will create anxieties and fears. Although thinking about mastectomy surgery can horrify many patients, a better understanding of what to expect before, during, and after surgery can greatly reduce their fear.[2–22]

Patient satisfaction with the surgical outcome becomes operational, given the agreement between expected and perceived outcomes of surgery.[23] The perceived outcome of surgery, in fact, is what is perceived from the post-surgery result by the person. Like the surgery of any other organ of the body, mastectomy is followed by consequences that can manifest themselves in many medical, psychological and social aspects.[23]

From the psychological view, the perceived outcomes of surgery in women with breast cancer include negative impacts on women's feelings, a person's mental image of her physical appearance, sexual desire and feeling, everyday communication and family life of the person.[10] To predict psychological consequences, a special attention should be paid to the expectations of the person before surgery. The expectation that patients have about the treatment outcomes before surgery will be a predictor of subsequent psychological stress so that the higher expected surgical outcome before surgery, the greater psychological stress experienced by the person. In fact, this expectation shows the level of anxiety that can directly increase the psychological consequences [15]. In addition, in the international classification of functioning,[11] there are unique personal factors affecting the personal ability of breast cancer patients, one of which is self-efficacy, i.e. the ability to manage individual situations.[7]

According to cognitive-social theory, individuals with high levels of self-efficacy are confident in their ability to perform and manage tasks. In fact, such people choose more the challenging goals and focus on the movements rather than obstacles. Self-efficacy is clearly associated with the qualification and the future behavior of individuals.[20]

In a study by Lam et al.,[15] on women with breast cancer, theoretical and experimental evidence showed that cancer patients with high self-efficacy can find a better consistency after surgery and subsequently experience less negative psychological consequences. According to the findings of this study, such women after mastectomy tend to underestimate the negative consequences of surgery on their appearance. Therefore, the increased self-efficacy increases the expected outcome of surgery, and then may give rise to psychological problems. In a study by Mary & Dana[13] yielded that the acceptance of mastectomy results in women with breast cancer could be improved by fostering self-efficacy. In a longitudinal study conducted in 2007 on Chinese women with breast cancer, researchers found that cancer patients with high self-efficacy tend to have better adaptation. In fact, it was found that high self-efficacy enables individuals to take control over their lives.[15]

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The self-efficacy and expected outcome of the surgery, of course, are not predictor of improved family relationships and the enjoyment of social activities. Although self-efficacy improves relationships outside the family, it has both positive and negative effects on their self-concept. High self-efficacy enables individuals to increase and maintain control over their lives when faced with difficult problems.[16] In certain circumstances, such as illness, people may estimate that their ability to overcome the problems is more or less than normal, which can have adverse effects. Self-efficacy improves one's self-image and relationships with friends. But at the same time, it may interfere with body image and one's appearance and decrease sexual desire, by raising the expected outcome of surgery.[14]

Although self-efficacy has been proposed as a key of mental resource in coping with chronic physical illnesses, this structure has received little attention among those involved with breast cancer. On the other hand, the expected outcome of surgery means the surgery outcome predicted by the person, which can be estimated to be less or greater than the feeling of expectation and can lead to a positive or negative experience on the adaptation or non-adaptation with the outcomes of surgery.

Therefore, with this study, we saw the need to compare the expected outcome of mastectomy and the perceived outcome of surgery based on the level of self-efficacy in women with breast cancer and answer these questions: Is there a significant difference between those with high and low self-efficacy, based on the expected outcome of the surgery and the perceived outcome of surgery? Is there a significant difference between the level of disease progression, based on the expected outcome of the surgery and the perceived outcome of surgery? Is there a significant difference between breast tumor size, marital status, employment status and education, based on the expected outcome of the surgery and the perceived outcome of surgery? Is there a significant difference between the levels of self-efficacy in elderly and non-elderly women?

Methods

Participants

The sample was 300 subjects were selected from female breast cancer patients admitted to the Cancer Institute of Tehran University of Medical Sciences who are to undergo mastectomy. The age range of the participants in this study was 28-88 years (M=60). In addition, they included 251 married (83.7%), 18 divorced (6%) and 31 widowed (10.3%) women, respectively. In terms of education level, there were 107 patients (35.7%) possessing cycle degree, 111 patients (37%) with high school diploma and 82 patients (27.3%) with academic higher education. In addition, they included 180 housekeepers (60%), 49 employees (16.3%), and 71 retired employees (23.7%).

Procedure

The following criteria were considered for inclusion in the study: 1- Having the ability to read and write; 2- being a candidate for mastectomy; and 3- having consent to participate to participate in this study. The exclusion criteria of the study, however, were: 1- history of surgery on the breast tissue; 2- According to their own statements, they have a history of mental illness; 3- They concurrently have another metastatic disease; and 4- They have language and mental difficulties. For data collection, researchers received ethics approval from a university-based ethics board and a hospital research committee. Written consent forms were provided to patients, and they were notified verbally that their participation was voluntary and they

were free to stop their research participation whenever they wished for data gathering, the two "generalized self-efficacy Scale" and " scale of expectation of surgery results before mastectomy" were provided for and completed by subjects. Two weeks after surgery, "scale of the perceived outcome of surgery" was given to each patient. In this study, the variables of the perceived outcome of surgery and the expected outcome of breast cancer surgery before mastectomy were considered as the dependent variables and the self-efficacy as the independent variable.

Measures

Generalized Self-efficacy Scale (GSES)

It was prepared by Jerusalem & Schwarzer[20] in Germany and is available in 33 languages. This scale was created to assess a general sense of perceived self-efficacy with the aim of predicting coping with daily hassles as well as adaptation after experiencing all kinds of stressful life events. This scale is also designed for the general adult population. Persons under 12years should not be tested, and the time required to answer the test is four minutes on average. In total, the scale contains 10 items, each of which refers to the ability of an individual to cope successfully with the problems and implies an internal-stable attribution of success. Depending on their current mood and feeling, the subjects should specify whether or not the options are correct on a 5degree Likert scale, from "it is not correct at all" (1 point) to "it is quite correct" (4 points).

This scale can be applied to patients before and after surgery, to assess changes in quality of life. It could also be used in studies involving patients with chronic pain or those in rehabilitation programs. The Cronbach's alpha coefficients were reported in different countries as follows: 0.88 in Canada, 0.81 in Costa Rica, 0.81 in Germany, 0.88 in Great Britain, 0.82 in France, 0.84 in Iran, 0.84 in Spain, 0.85 in Korea, 0.79 in Indonesia, and 0.75 in India. The obtained coefficients indicate the internal reliability of the scale's choices among various people of the world. Schwarzer & Jerusalem[20] obtained internal consistency coefficients of Generalized Self-efficacy Scale for Germany (0.84), Costa Rica and Spain (0.81), and China (0.91). In Iran, the coefficients of internal consistency of this scale were 0.82. Criterion-related validity of the scale has been documented in numerous correlation studies, which has a positive correlation coefficient with favorable emotions, dispositional optimism, and work satisfaction, and has a negative correlation coefficient with depression, anxiety, stress, burnout, and health problems. In terms of power of the test, the scale has been used internationally with success for two decades, with a wide range of applications. It would be predictors of adaptation after life changes. It is also a good indicator of the quality of life in all its stages.

Expectancy-Outcome Incongruence Scale (EOIS): it is designed in two phases of "expectation" (E) and "outcome"(O), which are performed before and after mastectomy, respectively. The answers to the test were on a 5degree Likert scale (not at all, very little, somewhat, almost a lot, quite a lot). This scale has 12 questions. In the study by Lam et al.,[14] the overall reliability of this test is reported to be 0.78 using the Cronbach's alpha coefficient. Research results indicate the desired reliability and validity of the test. Total score on the interpretation of outcomes (O) is subtracted from the total score on the interpretation of expectations (E). If the result is a negative number, it indicates that the outcome will be perceived less than the feeling of expectation. Therefore, it is likely to lead to despair. In contrast, if the score obtained is positive, the outcome will be perceived better

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than the feeling of expectation and makes a positive experience of the comfort, interest, surprise and satisfaction.

Data screening and cleaning

Missing data were less than 5% of the dataset. Thus, list wise deletion with no imputation of data was used in the present analyses. The assumption of normality was checked and skew was evident in the scales, but not on the total score. Because the sample was almost large, no transformations were performed.

Results

Multivariate analysis of variance test (MANOVA) was used to test the effect of the self-efficacy on the expected outcome of surgery and the perceived outcome of surgery. The results of the Wilks' lambda test (F (2-297) =206.83, P<0.001, η2=0.58) showed the statistically significant difference in expected outcome of surgery and the perceived outcome of surgery according to the self-efficacy levels.

Based on the results of multivariate analysis of variance to examine the effect of high and low self-efficacy in Table 1, it can be said that a statistically significant difference was found between those with high and low self-efficacy based on the expected outcome of surgery (F (2-298)=404.56, P< .001, η2= .58), and those with high and low self-efficacy based on the perceived outcome of surgery (F (2-298)=126.51, P< .001, , η2= .30).

The results of the study on the effect of the variable of disease progression rate using Wilks' lambda test on the expected outcome of surgery and the perceived outcome of surgery indicate a significant effect of self-efficacy (F (4-592)=83.29, P<0.001, η2=0.36). A multivariate analysis of variance test was used to examine the effect of the disease progression rate in each position of the expected outcome of surgery and the perceived outcome of surgery. Also based on the results of multivariate analysis of variance to examine the effect of disease progression in Table 2, it can be said say that a statistically significant difference was found between the disease progression rates of individuals based on the expected outcome of surgery (F (2-297) =69.35, P<0.001), and between the rates of disease progression based on the perceived outcome of surgery (F (2-297) =177.52, P<0.001).

Table 1 Multivariate analysis of variance test to examine the effect of self-efficacy on the expected outcome of surgery and the perceived outcome of surgery

Partial Eta Squared	p. value	F	Degrees of Freedom	Standard Deviation	Average	Source of Change	Dependent Variable
0/30	0/001	126/51	1-298	9/82	42/64	Low Self-Efficacy	The Perceived Outcome of Surgery
				12/80	27/80	High Self-Efficacy	
0/58	0/001	404/56	1-298	8/67	25/33	Low Self-Efficacy	The Expected Outcome of Surgery
				8/96	45/82	High Self-Efficacy	

Table 2 Multivariate analysis of variance test to examine the effect of disease progression rate on the expected outcome of surgery and the perceived outcome of surgery

Effect Size	Significance Level	F	Degrees of Freedom	Dependent Variable	Standard Deviation	Average	Disease Progression Rate
0/31	0/001	177/52	2-297	The perceived outcome of surgery	8/20	21/29	First Degree
					13/00	36/86	Second Degree
					9/97	42/56	Third Degree
0/55	0/001	69/35	2-297	The expected outcome of surgery	6/54	49/49	First Degree
					11/08	37/77	Second Degree
					6/83	21/74	Third Degree

Table 3 Multivariate analysis of variance test to examine the effect of tumor size on the expected outcome of surgery and the perceived outcome of surgery

Effect Size	Significance Level	F	Degrees of Freedom	Dependent Variable	Standard Deviation	Average	Tumor Size
0/30	0/001	125/880	1-298	The Perceived Outcome of Surgery	10/84	41/60	Large
					12/17	26/65	Small
0/44	0/001	235/394	1-298	The Expected Outcome of Surgery	10/63	27/87	Large
					9/40	45/96	Small

Table 4 Independent t-test to examine the significant difference between the levels of self-efficacy in elderly and non-elderly women

Effect Size	Significance Level	Degrees of Freedom	t	Average Deference	Standard Deviation	Average	Index Group
1/46	0/047	298	1/99	2/91	12/90	58/79	Non-Elderly Women
					12/40	61/71	Elderly Women

Bonferroni post hoc test results indicate that there is a significant difference between the mean rates of disease progression in terms of the expected outcome of surgery and the perceived outcome of surgery (P<0.01). In other words, the disease progression rates one, two and three had the highest value of the expected outcome of surgery before mastectomy, respectively; and the disease progression rates three, two and one showed the maximum value of the perceived outcome of surgery after mastectomy, respectively.

The results of the study on the effect of breast tumor size using Wilks' lambda test on the expected outcome of surgery and the perceived outcome of surgery indicate a significant effect of self-

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efficacy (F (2-297)=129.464, P<0.001, η2=0.46). A multivariate analysis of variance test was used to examine the effect of the variable of tumor size in each position of the expected outcome of surgery and the perceived outcome of surgery.

Based on the results of multivariate analysis of variance to examine the effect of tumor size in Table 3, it can be said that a statistically significant difference was found between breast tumor size based on the expected outcome of surgery (F (1-298)=235.394, P<0.001)), and between breast tumor size based on the perceived outcome of surgery (F (1-298)=125.880, P<0.001). T-test was used to examine the significant difference between the levels of self-efficacy in elderly and non-elderly women.

As is shown in Table 4 & 5, the mean scores of self-efficacy in elderly women are higher than those in the non-elderly women, and the results of t-test at a significance level of 0.01 refer to the significant difference between the two groups.

Discussion

Self-efficacy is the foundation of Bandura's social cognitive theory,[11,12] and is important for the promotion of positive youth development. Despite growing research literature on self-efficacy in children and adolescents, the vast majority of this research has been based on North American and European samples (e.g, Muris, 2001, 2002; Suldo & Shaffer, 2007). Whether this research generalizes to children and adolescents in the majority world has not been well established. Beyond issues of literal translation of surveys, it is important to consider whether constructs are meaningful and useful across cultures and nations. The SEQ-C is a well-established and important index of self-efficacy. It was developed to provide a measure of adolescents` beliefs about their social, academic, and emotional competence (Muris, 2001, 2002). Although the English and Dutch editions of this survey have shown good psychometric properties, no similar psychometric investigations of the SEQ-C in the Persian language have been published to date. Nationally, within Iran, this is also an important issue because of the need to better investigate the life situations and development of contemporary urban Iranian adolescents.

This study was aimed to compare the expected outcome of mastectomy and the perceived outcome of surgery based on the level of self-efficacy in women with breast cancer. The research findings showed a significant difference between those with high and low self-efficacy, based on the expected outcome of surgery and the perceived outcome of surgery; that is, those women with high self-efficacy who had earned high scores on the expected outcome of mastectomy gave more importance to sexuality and had a better relationship with friends. However, as they had high expectations of surgery, they underestimated the negative consequences of surgery on their appearance and subsequently experienced many problems, because it could disrupt their psychological adaptation after mastectomy.

On the other hand, women with low self-efficacy who had obtained low scores on the expected outcome of surgery had better and higher perceived outcomes of surgery.

This finding can be explained by one of the following factors:

a. Patients' awareness of breast cancer diagnosis can adversely affect their adaptation to subsequent problems of the disease, quality of their lives and their personal ability, so that sometimes people do not return to the performance levels before diagnosis.[13]

b. The research findings show that the variability of self-efficacy is different in diverse tasks.[8] As part of social learning theory, self-efficacy, which includes the following three areas and shows the ability of the individuals in personal situations, can be affected by various conditions:[24–30]

 i. Having knowledge about a task and the necessary skills to do it:

 ii. Ensuring that one has the individual ability, which can motivate him/her to do the task;

 iii. Ensuring that one has the individual ability to perform a task or behavior successfully.

As a unique individual factor, self-efficacy can affect the individual performance of breast cancer patients. However, the discrepancy between the expected outcome of surgery and the perceived outcome of surgery can lead to several psychological problems.[8]

Then, we examined the effect of disease progression rates on the expected outcome of surgery and the perceived outcome of surgery. It was found that the women who are in the first stage and the third stage in terms of disease progression rates have high and low expectations of the surgical outcome. The findings of this study were consistent with the results of the study by Lam et al.,[15] They also found that there was a significant relationship between the disease progression rate on the expected outcome of surgery and the perceived outcome of surgery.

This finding can be explained by one of the following factors:

c. As the expectation that patients have about the treatment outcomes before surgery will be a predictor of subsequent psychological stress,[15] women in the first rate of disease progression may underestimate the negative consequences of surgery due to the high expected outcome of surgery and finally have a better understanding of the outcomes of the surgery due to the disease progression and the reduced expectation of the surgical outcome.

Furthermore, research findings showed no significant difference between breast tumor size, based on the expected outcome of surgery and the perceived outcome of surgery.

This finding can be explained by one of the following factors:

d. When the tumor is small in size, it is expected by the patient that the negative consequence of mastectomy will be negligible, leading to an increased expectation of the surgical outcome, while she may be faced with many negative consequences after surgery. The discrepancy between the expected and the perceived outcome of surgery can have detrimental effects on the psychological adaptation of the patient.

Another finding of the study was that there is a significant difference between the levels of self-efficacy in elderly and non-elderly women. Consistent with these results, the study of Lam et al.[15] also showed that women with the self-efficacy scores higher than average were older.

The study by Rogers et al.,[19] in which self-efficacy was examined in women with breast cancer, also showed higher self-efficacy in elderly women.

These findings can be explained by one of the following factors:

e. Aging provides an experience for the person to deal with all kinds of stress, which in the future could help to boost confidence in dealing with stressful situations such as cancer diagnosis and treatment.[18]

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Table 5 Means, standard deviations, internal consistency coefficients, and mean inter-item correlations of USDI

L			CE			AM			USDI		
Normative Samples (N=359)											
Sample T	M	F	T	M	F	T	M	F	T	M	F
Mean 23.32	24.39	21.84	31.71	33.13	29.8	16.93	17.82	15.72	71.8	75.34	67.37
S.D. 7.41	7.63	6.85	11.22	10.63	11.74	6.65	6.8	6.25	21.47	21.26	20.94
α 0.88	0.88	0.87	0.92	0.9	0.94	0.87	0.85	0.89	0.94	0.94	0.95
Mr. 0.44	0.44	0.42	0.45	0.38	0.53	0.49	0.46	0.53	0.36	0.33	0.37
Clinical Samples (N=150)											
Sample T	M	F	T	M	F	T	M	F	T	M	F
Mean 26.92	26.73	27.08	39.59	40.43	38.9	20.24	20.69	19.56	87.33	88.49	86.35
S.D. 7.98	7.83	8.16	13.8	12.01	15.16	8.72	8.91	8.58	23.82	20.94	26.1
α 0.91	0.92	0.91	0.96	0.94	0.96	0.95	0.94	0.95	0.95	0.93	0.96
Mr. 0.54	0.55	0.53	0.61	0.53	0.67	0.71	0.71	0.73	0.38	0.31	0.44

Notes- T= Total sample, M=Male, F=Female, α = Cronbach`s alpha, Mr. = mean inter-item correlation.

Note. ** p < .01, Values for girls are inside the parenthesis, the right side of the table presents the correlations among the subscales for girls (above the diagonal) and for boys (below the diagonal).

Cancer incidence in old age seems to be more normal compared to younger age; so if cancer is diagnosed in old age, one may be better prepared to deal with it.[18] Finally, given the sum of the above topics and the objectives sought in the study, it can be said that self-efficacy can affect the expectations of breast cancer patients and the perceived outcome of surgery.

As self-reported instruments were used in this study, the individuals' answers might be influenced by their interests. In addition, this study focuses only on the impact of self-efficacy, whereas other studies have pointed to other factors such as family history of cancer, history of chemotherapy and social support that affect the expected outcome of surgery and the perceived outcome of surgery.

So to mitigate the negative consequences of mastectomy, further studies are suggested to be undertaken in the area of self-efficacy related to cancer, which is effective in the adaptation of individuals. In addition, it is recommended that support programs must be implemented for this group of patients so that they can have realistic expectations of the results of mastectomy.

Conclusion, study limitations, and future directions for research

The current study had several important limitations. This study included only 14-19year-old high school students. Therefore, caution should be exercised in any attempt to generalize these findings to other developmental periods, as well as to Iranian adolescents living in the countryside, as this study was conducted with adolescents living in a large urban city setting. The subsample of the test-retest was self-selection. To control for sequencing effects of arrangement of measures, with four measures in presents study within a complete counterbalancing measures, it requires 24 orders of arrangement, but we have incomplete counterbalancing with four conditions. Also, only self-report data were included in this study, and thus relationships between the study variables may have been distorted by shared method variance. Further, as this was a cross-sectional study, no causal relations should be inferred between self-efficacy and other study variables.

In spite of several limitations, a great deal of international research with imported survey instruments quickly goes forward without a careful evaluation of the psychometric properties of translated psychological instruments, including tests of an instrument's construct validity or in other words how the construct of interest patterns itself in a new culture and outside of original validation samples. The Persian edition of the SEQ-C is expected to find widespread use in various settings in Iran, other Persian-speaking countries, and among Persian-speaking individuals living in Western countries. This preliminary study may also encourage researchers to further examine the SEQ-C's psychometric properties and utility with adolescent clinical samples. Future research should investigate the efficiency of the SEQ-C as an outcome and screening tool in both clinical and general adolescent populations relative to other widely used instruments to establish the SEQ-C's utility.

The current study prepared a Persian version of the multi-dimensional self-efficacy instrument in cross-cultural validation context and demonstrated promising psychometric qualities, both in terms of validity and reliability, prior to conducting other major research studies. While the continued use of the SEQ-C with Iranian adolescents is supported by the present study findings, more research is needed to further test the SEQ-C's dimensionality in Iranian adolescent boys and girls. Study results reported here indicated that Iranian researchers should use the SEQ-C with caution, if a main study focal point relates to gender and the studied aspects of self-efficacy. Gender may represent an important moderator variable in substantive descriptive analyses and intervention-outcome analyses, and such possibilities should be explored in future studies of self-efficacy in Iranian adolescent girls and boys.

If other future Iranian studies replicate our gender-related findings promising directions for additional research could include studies to describe possible sources of gender differences, such as early socialization experiences, or differential willingness to report high levels of self-efficacy among Iranian adolescent girls and boys. Other areas relevant to gender and contemporary Iranian adolescents' self-efficacy include adolescents' perceptions and experience with women's increased participation in higher education and other related occupational realms, as well as occupational opportunities and disappointments after school is completed.

Future research might also reveal what the potential differences in self-efficacy may mean in the lives of Iranian adolescent boys and girls, in practical terms. Thus, more dedicated multi-method and multi-disciplinary research in this area is warranted. The investigation of gender as moderator variable could contributes important outcomes in the future to test relationships between self-efficacy domains and psychological functioning outcomes. It also suggest a) examining other social cognitive constructs in relation to self-efficacy, including

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competencies, goals, and evaluative standards, in order to provide a more complete theoretical \framework within which to explain the motivational properties of self-efficacy and b) self-efficacy in adolescents study as a mediator or moderator of intervention change produced through relatively brief psycho-educational programs that target specific components of psychological concepts as output of self- efficacy like as risk reduction for child depression and anxiety or empowering academic achievements.

Gender differences

Table 2 presents the mean and standard deviations of the USDI and its sub-scales for males and females separately in both the Clinical and the Normative groups. In the Normative group, the male students scored significantly higher than the females on their total USDI scores t (355) =3.52, p< .001 . The male students in the Clinical group also scored slightly higher than the females on their total USDI scores; however, the difference did not reach a significant level t (148) = .21, p=.83, ns . In addition, a MANOVA was conducted to investigate the gender-based difference between males and females on the three USDI sub-scales (as dependent variables) with gender used as an independent variable in the analysis. The Box's M assumption of the homogeneity of variance-covariance matrices was violated in the Normative group, F Normative (6, 720162.8) =2.44, p<.05 , and F Clinical (6, 48408.35) =1.00, p= .42 .However, Box's M is considered a notoriously sensitive test, while MANOVA is robust to violations of its homogeneity of variance when the sample sizes are large. Gender also had a significant effect on the USDI sub-scales in the Normative sample: tellingsTraceF Normative(3,353) = 4.82,p<.01,∂Eta□d=.04;and Hotell □gsTraceF Normative(3,353)=4.82,p<.01,∂Eta□d=.04;andHotell □gs Trace F Clinical (3, 146) =.28, p= .84, ns, partial Eta squared=.01. This effect was observed univariately on the USDI sub-scales. In the Normative sample, the males scored significantly higher than the females on the L, CE, and AM sub-scales: F (1, 355) =10.54, p< .01 , F (1, 355) =7.82, p<.01, and [F (1, 355) =8.85, p< .01 , respectively. In the Clinical sample, there was no significant difference between males and females on the L, CE, and AM sub-scales: F (1, 148) = .12, p= .73, ns , F (1, 148) = .08, p= .78, ns , and F (1, 148) = .20, p= .66, ns , respectively.

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Conflicts of interest

Author declares there are no conflicts of interest.

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