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Sex Differences on Depression Self-Rating Scale in Two Populations: Research Report

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Abstract: The self-report of depressive symptoms of high school adolescents from two populations were compared. The study aims to find out whether or not; 1) there are significant sex differences between two communities and 2) with regard to the same-sex, there are significant differences between two communities. Nine hundred and twenty eight adolescents from London and 2012 adolescents from six cities from Iran were requested to fill in the Depression Self-Rating Scale (DSRS). The results showed that significant differences between two sexes in each population. All girls had higher mean scores on all items on DSRS than boys. With regard to the same-sex, significant differences were found between either female or male populations in two communities. The research showed that female adolescents from Iran were significantly experienced more depressive symptoms than the Londoners. Similar results were repeated for the male groups. In conclusion, female adolescents are vulnerable to life stressors and tend to experience more negative feedback and interpretations than boys. Moreover, social roles and limitations, particularly for Iranian adolescents, may influence female adolescents to demonstrate depression symptoms.

Key words: Depression, DSRS, adolescents, Iran, UK

INTRODUCTION

The concept of depression in childhood is one that causes controversy (Birleson, 1980). The definition of depression remains subjective because of the absence of clear markers or natural thresholds in symptoms distribution. However, the clarification of depressive concept in adult psychiatry is well documented and refers to a set of operational criteria for depressive illness, which help to establish the rating scales to measure mood states (Piccinelli and Wilkinson, 2000).

The transition to adolescence indicated that adolescence period associated with increased vulnerability and it is more stressful developmental period for girls than boys (Prinstein *et al.*, 2005; Cyranowski *et al.*, 2000; Hankin and Abramson, 2001; Rudolph and Hammen, 1999). Depressive symptoms increase between the ages of 12 and 13. In late adolescence, girls are more at risk to experience depression symptoms than boys (Hankin *et al.*, 1998; Logsdon, 2004).

Psychological theories attempt to provide a suitable explanation for the emergence of gender differences in depression in adolescence. For example, cognitive approach suggests that a combination of attributional style and life stressors is an important predictor for adolescent depression.

In a similar line, studies showed that adolescent girls are more likely to experience encode, as well as negative interpretation of life than boys which may put them in a grater vulnerability to depression (Hankin and Abrahamson, 2001).

In addition, interpersonal theories support that girl adolescents in this transitional period perceived more interpersonal stress and challenges (Rudolph and Hammen, 1999; Prinstein *et al.* 2005). They are more sensitive to other opinions and negative feedback may lead them to depression. In addition, girls extremely concern their physical appearance and body and will become depress provided that they are not satisfied with their bodies (Hetherington and Stoppard, 2002; Logsdon, 2004). In contradict to these studies few of them

indicated no significant differences between two genders (Masten *et al.*, 2003).

Studies conducted by Cyranowski *et al.* (2000) and Rudolph (2002) indicated that girls tend to have a stronger relations and greater affiliative in adolescence than boys. They like to create a strong intimacy, emotional support and feeling more secure in their relationships, particularly in adolescence (Furman and Buhrmester, 1992). This orientation place the girls in more vulnerability conditions and in turn they are more possible to experience negative interpersonal stress and negative affect as compare with boys (Benenson and Christakos, 2003; Rudolph *et al.*, 2001).

Research regarding parents-child relationships revealed that perceived parental rejection was associated with a wide range of psychological problems including depression in adolescents. Parental rejection can lead adolescents to negative evaluated by them which, in turn, can make them vulnerable to depression (Akse *et al.*, 2004; Buehler and Gerard, 2002; Chang *et al.*, 2003; Nolan *et al.*, 2003). However, Feinberg *et al.* (2000) showed that adolescent girls, when feeling rejected, are more engaged in personal relationships and this condition make them more depressed than boys.

It seems that female adolescents require greater social support for their psychological health. Research concerning self-report showed that low social support from peer group may predict adolescence depression, especially in girls. In addition, based on socio-demographic variables and data collected across different countries and cultural groups, it appears that social roles, cultural influences and social conditions contribute to occurrence in depression rates (Stice *et al.*, 2004; Piccinelli and Wilkinson, 2000).

The main hypothesis of the present study is to explore whether or not there is sex differences on depression psychological factors reported by self-report questionnaire. We hypothesize that female adolescents are more vulnerable to report depression symptoms than male adolescents.

MATERIALS AND METHODS

Two populations of adolescents were tested and compared to each other for the study. The first population comprised adolescents form London (1996) and the other from six main cities (including Tehran, Shiraz, Tabriz, Mashhad, Esfehan and Ahwaz) in Iran (1998). All adolescents were at school studying in grade 7 to 9.

Population 1: Sample included adolescents from mainstream schools (3 girls' schools and 2 boys' schools) from south part of London. The questionnaires were

completed in year 1995. From these schools, 928 (636 girls and 292 boys) students were agree to participate in the study and filled in the questionnaire.

Population 2: Sample included adolescents from six main cities including Shiraz, Tabriz, Esfehan, Mashhad, Ahwaz and Tehran. Two thousand and twelve student (1084 girls and 928 boys) participated in the study.

After participants had been recruited, the students of the schools informed consent statements were distributed to the students at the data collection and those wishing to participate were instructed to sign the statement and return it before receiving test materials. In addition, the aim of the study was described.

The DSRS is an 18-item self-report inventory standardized for children between 8 to 14 years of age (Charman, 1994; Ivarson et al., 1994; Firth and Chaplin, 1987). The Depression Self-Rating Scale for children was developed by Birleson (1981) and found to differentiate normal form depressed, hospitalized children. The scale was established to measure moderate to severe depression in childhood (Asarnow and Carlson, 1985; Birleson, 1981; Birleson et al., 1987).

The wording in DSRS are easily understand and might use in their language commonly. Children are likely to be better reporters of symptoms related to private or internal experience. The children were asked to indicate whether or not each statement applied to them during past week and there were three categories of no/never, sometimes or most of the time. Responses were made on a 3-point scale rating from 0 (never) to 2 (most of the time). The content validity scored in the direction of the disturbance 0, 1 or 2. The content of the validity and reliability of scale are stable (Birleson *et al.*, 1987; Firth and Chaplin, 1987).

Several studies showed high correlation between DSRS and Children's Depression Inventory (CDI) (Kovacs, 1983, 1986; Charman, 1994) and supported the usefulness of DSRS as screening tools for depressive symptoms in children and adolescents (Robertson *et al.*, 2006; Fundudis *et al.*, 1991; Ivarson *et al.*, 1994). The scale is conducted with different populations in different countries that confirm the validity of the scale (McDermott and Palmer, 2002; Robertson *et al.*, 2006; Thienkura *et al.*, 2006).

The Farsi version of DSRS was developed by Tagavi and Mazidi (2005). They reported the test retest reliability coefficient of the DSRS in 4 weeks interval for girls and boys were 0.74 and 0.72, respectively. The total reliability of the scale was 0.75. The internal consistency of the DSRS for girls and boys were 0.82 and 0.77, respectively. The total internal consistency was 0.81. Tagavi and Mazidi (2005) showed high correlation (r = 0.72) between DSRS and Farsi version of the Children's Depression

Scale (CDS-A) (short form) (Najarian, 1993). With respect to the gender, the correlations between the two scales were found 0.79 for girls and 0.61 for boys. In conclusion, the study by Tagavi and Mazidi (2005) supported the validity and reliability of the DSRS to be used for both clinical and mainstream Iranian adolescent population.

Using a cut off point of 13, it correctly classified rather more of the children than did CDI. A cut off point of 15 gave a moderate specificity of 77%, a lower sensivity of 67% and a misclassification rate of 24%. The predictive value of a score under 15 is high (97%). There was no relationship between DSRS and sex or age through total score was significantly related to a diagnosis of depression. A DSRS of 15 or over was six times more likely to be associated with a depression diagnosis than a DSRS of less 15 (Birleson *et al.*, 1987).

RESULTS

In order to find the differences between the two sexes in London population, t-test was conducted and the results showed significant differences between male and female adolescent groups. As Table 1 indicated the adolescent girls from London population (M=11.02, SD = 5.05) attained higher mean scores than boy adolescent group (M=9.71, SD = 4.34) (p<0.001) on total scores in Birleson. Regarding to the items' scale, results showed significant differences between male and female groups on items 3 (feel like crying), 4 (like to go out to play), 6 (tummy aches), 7 (lots of energy), 11 (being good at things) and 16 (easily cheered up) (p<0.001, except for item 7 which was p=0.003). On all mentioned items, girl adolescent group had higher mean scores than boy

Table 1: Analysis by t-test between girl and boy groups on DSRS (London population)

	Girls ($n = 6$,	Boys $(n = 1)$	292)		
	DSRS (Lor	ndon)	DSRS (Lo	ndon)		
Items	M	SD	M	SD	t-values	Sig
1- I looked forward to things as much as I used to.	0.62	0.54	0.60	0.56	0.515	0.607
2- I sleep very well.	0.50	0.61	0.51	0.57	-0.252	0.801
3- I feel like crying.	0.85	0.60	0.54	0.59	7.340	< 0.001
4- I like to go out to play.	1.02	0.73	0.61	0.60	8.496	< 0.001
5- I feel like running away.	0.42	0.62	0.40	0.61	0.569	0.569
6- I get tummy aches	1.04	0.57	0.82	0.57	5.521	< 0.001
7- I have lots of energy.	0.61	0.58	0.49	0.60	2.950	0.003
8- I enjoy my food.	0.38	0.53	0.32	0.50	1.643	0.101
9- I can stick up for myself.	0.51	0.60	0.54	0.63	-0.588	0.556
10- I think life isn't worth living.	0.42	0.64	0.39	0.63	0.679	0.497
11- I am good at things I do.	0.64	0.54	0.46	0.53	4.798	< 0.001
12- I enjoy things I do as much as I used to.	0.56	0.58	0.57	0.57	-0.276	0.782
13- I like talking with my family.	0.53	0.65	0.53	0.62	-0.114	0.909
14- I have horrible dreams.	0.59	0.64	0.54	0.59	1.115	0.265
15- I feel very lonely.	0.53	0.61	0.47	0.61	1.507	0.132
16- I am easily cheered up.	0.56	0.63	0.75	0.67	-4.124	< 0.001
17- I feel so sad I can hardly stand it.	0.42	0.61	0.42	0.58	0.129	0.897
18- I feel very bored.	0.93	0.59	0.92	0.65	0.356	0.722
Total	11.02	5.05	9.71	4.34	3.830	< 0.001

Table 2: Analysis by t-test between girl and boy groups on DSRS (Iran population)

	Girls (n = 1	084)	Boys (n = 9	928)		
<u>Items</u>	M	SD	M	SD	t-values	Sig
1- I looked forward to things as much as I used to.	0.63	0.69	0.47	0.62	5.607	< 0.001
2- I sleep very well.	0.66	0.65	0.60	0.58	2.063	0.039
3- I feel like crying.	1.19	0.71	0.72	0.71	14.774	< 0.001
4- I like to go out to play.	1.06	0.78	0.69	0.70	11.144	< 0.001
5- I feel like running away.	0.38	0.66	0.29	0.58	3.354	0.001
6- I get tummy aches	0.84	0.62	0.79	0.62	1.799	0.072
7- I have lots of energy.	0.70	0.64	0.55	0.61	5.408	< 0.001
8- I enjoy my food.	0.55	0.62	0.42	0.58	4.969	< 0.001
9- I can stick up for myself.	0.61	0.67	0.48	0.61	4.393	< 0.001
10- I think life isn't worth living.	0.73	0.80	0.56	0.74	4.868	< 0.001
11- I am good at things I do.	0.73	0.58	0.64	0.55	3.761	< 0.001
12- I enjoy things I do as much as I used to.	0.74	0.70	0.60	0.64	4.927	< 0.001
13- I like talking with my family.	0.54	0.71	0.46	0.61	2.695	0.007
14- I have horrible dreams.	0.81	0.70	0.66	0.68	4.791	< 0.001
15- I feel very lonely.	1.07	0.83	0.80	0.78	7.651	< 0.001
16- I am easily cheered up.	0.72	0.73	0.64	0.70	2.396	0.017
17- I feel so sad I can hardly stand it.	0.93	0.79	0.69	0.73	6.864	< 0.001
18- I feel very bored.	1.07	0.72	0.88	0.67	6.149	< 0.001
Total	13.96	6.15	10.93	4.82	12.171	< 0.001

Table 3: Analysis by t-test between girl's two populations on DSRS

	(London, r	1 = 636	(Iran, n = 1)	1084)		
Items	M	SD	M	SD	t-values	Sig
1- I looked forward to things as much as I used to.	0.62	0.540	0.63	0.695	-0.335	0.738
2- I sleep very well.	0.50	0.609	0.66	0.647	-4.996	< 0.001
3- I feel like crying.	0.85	0.595	1.19	0.713	-9.995	< 0.001
4- I like to go out to play.	1.02	0.732	1.06	0.781	-0.944	0.346
5- I feel like running away.	0.42	0.617	0.38	0.661	1.269	0.207
6- I get tummy aches	1.04	0.566	0.84	0.619	6.795	< 0.001
7- I have lots of energy.	0.61	0.584	0.70	0.642	-3.006	0.003
8- I enjoy my food.	0.38	0.527	0.55	0.618	-5.744	< 0.001
9- I can stick up for myself.	0.51	0.604	0.61	0.671	-2.921	0.004
10- I think life isn't worth living.	0.42	0.636	0.73	0.803	-8.206	< 0.001
11- I am good at things I do.	0.64	0.545	0.73	0.582	-3.189	0.001
12- I enjoy things I do as much as I used to.	0.56	0.583	0.74	0.698	-5.734	< 0.001
13- I like talking with my family.	0.53	0.649	0.54	0.710	-0.220	0.826
14- I have horrible dreams.	0.59	0.643	0.81	0.704	-6.371	< 0.001
15- I feel very lonely.	0.53	0.614	1.07	0.827	-14.351	< 0.001
16- I am easily cheered up.	0.56	0.630	0.72	0.726	-4.578	< 0.001
17- I feel so sad I can hardly stand it.	0.42	0.613	0.93	0.789	-13.684	< 0.001
18- I feel very bored.	0.93	0.589	1.07	0.722	-4.160	< 0.001
Total	11.02	5.048	13.96	6.152	-10.218	< 0.001

Table 4: Analysis by t-test between boy's two populations on DSRS

	(London, r	1 = 292	(Iran, $n = 9$	928)		
Items	M	SD	M	SD	t-values	Sig
1- I looked forward to things as much as I used to.	0.60	0.558	0.47	0.617	3.290	0.001
2- I sleep very well.	0.51	0.566	0.60	0.580	-2.339	0.019
3- I feel like crying.	0.54	0.594	0.72	0.706	-3.891	< 0.001
4- I like to go out to play.	0.61	0.598	0.69	0.696	-1.853	0.064
5- I feel like running away.	0.40	0.609	0.29	0.581	2.775	0.006
6- I get tummy aches	0.82	0.574	0.79	0.618	0.747	0.455
7- I have lots of energy.	0.49	0.595	0.55	0.605	-1.615	0.106
8- I enjoy my food.	0.32	0.497	0.42	0.580	-2.521	0.012
9- I can stick up for myself.	0.54	0.629	0.48	0.605	1.386	0.166
10- I think life isn't worth living.	0.39	0.631	0.56	0.739	-3.531	< 0.001
11- I am good at things I do.	0.46	0.533	0.64	0.554	-4.833	< 0.001
12- I enjoy things I do as much as I used to.	0.57	0.569	0.60	0.645	-0.694	0.488
13- I like talking with my family.	0.53	0.617	0.46	0.606	1.895	0.058
14- I have horrible dreams.	0.54	0.595	0.66	0.683	-2.655	0.008
15- I feel very lonely.	0.47	0.613	0.80	0.776	-6.673	< 0.001
16- I am easily cheered up.	0.75	0.669	0.64	0.704	2.267	0.024
17- I feel so sad I can hardly stand it.	0.42	0.584	0.69	0.730	5.808	< 0.001
18- I feel very bored.	0.92	0.646	0.88	0.673	0.814	0.416
Total	9.71	4.344	10.93	4.817	-3.859	< 0.001

adolescent group, except for the item 16 which boys attained higher mean scores.

Similar analysis was done for Iranian adolescent groups. As Table 2 shows, significant difference was found between two sexes on the total mean scores on DSRS. The female group attained higher mean scores (M = 13.96, SD = 6.15) than male group (M = 10.93, SD = 4.82). Regarding to cut off point on DSRS, it was found that the total mean scores for the female group were above the cut off point (> 13). With respect to the DSRS items, significant differences were found for all items between two groups, except for the item 6 (tummy aches, p = 0.07). On all items, the female group had higher mean scores than the male group.

In order to find whether or not there are significant differences between the group of girls in two population, t-test analyses administered and the results showed significant differences between the two female populations (Table 3). As Table 3 shows the girl

adolescents from Iran had significantly higher mean scores than the girl adolescents form London population (13.96 > 11.02, p<0.001). With respect to the DSRS items, significant differences were found between the two groups on most of the items. For Iranian girl adolescents, the highest mean scores was found for items 3 (feel like crying), 15 (feel very lonely), 18 (feel very bored) and 4 (like to go out to play), while for girl adolescent Londoners, the highest mean scores were found for items 6 (tummy aches), 4 (like to go out to play) and 18 (feel very bored). As data showed the Iranian population demonstrated more high emotional scores than the Londoners.

In order to test whether or not there are significant differences are between two male adolescent populations, similar analyses were conducted by t-test and the results indicated significant differences between the two groups (Table 4). The male adolescents from Iran had significantly higher total mean scores than the

Table 5: No. and percentage of depressed girl and boy adolescents in two populations

	London						Iran					
	Girls		Boys		Total		Girls		Boys		Total	
Cut off	F	%	F	%	F	%	F	%	F	%	F	%
0-13	454	71.4	238	81.5	692	74.6	546	50.4	627	71.7	1173	59.9
14 and more	182	28.6	54	18.5	236	25.4	538	49.6	247	28.3	785	40.1
0-15	525	82.5	260	89	785	84.6	670	61.8	728	83.3	1398	71.4
16 and more	111	17.5	32	11	143	15.4	414	38.2	146	16.7	560	28.6

maleadolescent Londoners. Similarly, significant differences were found between the two groups on most of DSRS items.

With respect to the cutoff point on DSRS, sample was grouped based on the two cutoff point's 13 and 15 (Table 5). Based on the cutoff point of 13, 236 (25.4%) of Londoner adolescents (28.6% girls and 18.5% boys) were above the cutoff point 13, while for Iranian sample 785 (40.1%) were above the cutoff point (49.6% girls and 28.3 boys). Based on the cutoff point of 15, data indicated that 15.4% of Londoners and 28.6% of Iranian adolescents were above the cutoff point 15. It appears that more adolescents from Iranian population were above the cutoff points as compare with Londoners population.

DISCUSSION

The main purpose of the present study is to examine whether or not there are gender differences between adolescents selected from two population samples, one from a west country (London) and the other from an east country (Iran) on depression by self-report questionnaire.

Many studies supported that transition to adolescence is crucial that the individual exposure with fundamentals changes without having proper skills and support (Prinstein *et al.*, 2005; Cyranowski *et al.*, 2000; Hankin and Abramson, 2001; Rudolph and Hammen, 1999; Hankin *et al.*, 1998; Logsdon, 2004). In a similar line, present findings demonstrated that both male and female adolescents have suffered from high emotional distress and experience a wide range of unhappiness feelings including loneliness, like to crying, talking with family and sadness.

The present findings were in agreement with the previous studies that confirm girl adolescents experience more depressive symptoms as compared with males. Several studies supported this female adolescents received more interpersonal stress, more sensitive to other opinions, more concern their physical appearance, need more support. In addition, they are more likely to create more negative feedback which, all, may lead them to demonstrate depression (Hankin and Abrahamson, 2001; Rudolph and Hammen, 1999; Prinstein *et al.*, 2005; Hetherington and Stoppard, 2002; Logsdon, 2004;

Masten et al., 2003; Cyranowski et al., 2000; Rudolph, 2002; Furman and Buhrmester, 1992; Benenson and Christakos, 2003; Rudolph et al., 2001).

In addition, it seems that perceived parental rejection may influence adolescent to experience depression and avoidant behavior (Chang *et al.*, 2003; Buehler and Gerard, 2002; Akse *et al.*, 2004). Female adolescents are more tend to keep their touch with their parents (talking with my family) and if this was not occurred they more likely to suffer from physical complaints as well as mental distress.

However, as studies showed that social roles and circumstances influence on prevalence of depression in the community (Stice et al., 2004; Piccinelli Wilkinson, 2000), it seems that social roles and circumstances may be responsible for high emotional experiences in female adolescents. With respect to more depressive symptoms in Iranian adolescents, particularly in girls, comparing with Londoner adolescents, it seems that the relative complete different cultures may be a better explanation for these significant differences. More precisely, different social roles and defined limitation for girls in two communities may cause for these differences. Overall, in eastern community female adolescents are more paid attention and controlled by parents and are not allowed to feel free in any social activities due to this attitude that young females are more vulnerable as compare with male ones. In addition, the lack of possibilities in the community for female activities may force females to have lower activities and chances for going out. Moreover, females are requested by religious recommendations to behave more modest and humidly than males. In contrast, in western community, the female adolescents more likely to feel free to express themselves in the community and more feel free to go out and stay away from their homes. These circumstances make female adolescents from eastern community to experience more depression symptoms as compared with female adolescents from western community.

In order to have a better understanding on emotional differences on sexes, we recommend future research focus on longitudinal studies to examine a pervasive environment and factors including family atmosphere, peer relationships, personality factors and social roles and conditions.

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