Emotional Memory and Emotional Intelligence of Individuals Diagnosed with Anti-Social Personality Disorder: Experimental Pretest-Posttest Design

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Abstract

Background: Aim of current study is to compare Emotional Memory (EM) and Emotional Intelligence (EI) between two groups of healthy people and individuals diagnosed with Antisocial Personality Disorder (ASPD).

Materials and Methods: Current study is an experimental pretest-posttest study with case-group and control group, which was conducted between 2014-2015 at Zare Psychiatric hospital (Sari, Mazandaran Province, Iran). Statistical Society of this study was chosen via convenient sampling method; our sample was consisted of 80 individuals (men and women) that were divided into two groups of 40 healthy and 40 patients with APD. Subsequently, they answered to SCID-II (Structured Clinical Interview For DSM Disorders), Baron EQ-I (Emotional Quotient Inventory), WMS (Wechsler Memory Scale) and they looked at Picture Slides (Story). In order to analyze the findings of current study, Kolmogorov-Smirnov test, multiple covariance analysis (MANCOVA) and independent t-test were used.

Results: The findings showed that antisocial patients demonstrated lower score EM and EI.

Conclusion: Emotional memory of ASPD individuals tends to be less than normal individuals. Furthermore, emotional intelligence of healthy individuals are higher that ASPD patients. It appears plausible that ASPD individuals tend to suffer in remembering their emotions due to their inability to retrieve emotional memories.

Keywords: Antisocial Personality Disorder, emotional memory, emotional intelligence

1. Introduction

The Antisocial Personality Disorder (ASPD) is defined by a *pervasive pattern* of disregard for the rights of other people that often manifests as hostility and/or aggression. Deceit and manipulation are also central features.

In most cases hostile-aggressive and deceitful behaviors may first appear during *childhood*.

- These children may hurt or torment animals or people.

- They may engage in hostile acts such as bullying or intimidating others.

- They may have a reckless disregard for property such as setting fires.

- They often engage in deceit, theft, and other serious violations of standard rules of conduct.

    ◦ When this is the case, Conduct Disorder (a juvenile form of Antisocial Personality Disorder) may be an appropriate diagnosis.

    ◦ Conduct Disorder is often considered the precursor to an Antisocial Personality Disorder.

Apart from *careless disrespect for others*, they often *put themselves in hazardous or unsafe circumstances.*

They habitually act on impulsive desires without contemplating the consequences. This difficulty with impulse control *leads to problematic function in various contexts such as employment, relationships, legal difficulties, and*

education.

ASPD individuals classically do not experience authentic regret or guilt with respect to harm they cause others. *Nonetheless, they can become quite expert at feigning guilt,* when the situation calls for it (such in legal settings).

ASPD individuals *take little to no responsibility* for their actions and they scarcely think about the consequences of their actions. Actually, they will often project their own responsibility and share of action on their victims, or they will reference their actions and consequences as fate or cosmic task. The hostile features of this personality disorder make it stand out among other personality disorders as individuals with this disorder take a unique toll on society (American Psychiatric Association, 2013). The term Psychopathy is speculated as a disorder of personality and emotional deficits whilst antisocial personality disorder (ASPD) diagnosis is primarily behaviorally based. While ASPD and psychopathy are akin and are highly comorbid with each other, they are not synonymous. ASPD has been well studied in community samples with estimates of its lifetime prevalence ranging from 1-4% of the general population. In contrast, psychopathy is almost exclusively examined in criminal settings so that its prevalence in the general population has been deduced by psychopathic traits rather than disorder (1%). Differences in etiology and comorbidity with each other and other psychiatric disorders of these two disorders are also evident. The current article will briefly review the epidemiology, etiology, and comorbidity of ASPD and psychopathy, focusing predominately on research completed in community and clinical populations (Werner, Few, & Bucholz, 2015). This disorder is more prevalent among individuals with lower socioeconomic status (SES). According to DSM-V, Antisocial personality disorder is characterized by a long-standing pattern of a disregard for other people's rights, often crossing the line and violating those rights. It usually begins in childhood or as a teen and continues into their adult lives. Antisocial individuals lack empathy (is unwilling to recognize or identify with the feelings and needs of others) and they cannot maintain genuine intimacy (Association, 2013). As this disorder lasts lifelong, now days it can be noticed much more than before and a lot of individuals tend to suffer from this disorder. With the psychopath, there is an absence of emotional connection and true empathetic feeling. The psychopath simply isn't capable of trusting and depending on another individual. To sit with them and assess them, it's as if you're talking with someone who's part ice. Though they engage in sex (and other trappings of relationships), their experience of sex is vastly different from their non-psychopathic peers (Shirtcliff et al., 2009). There are various causes for this disorder; however, it appears that one of the prominent causes is weak and tension in memory specially event-related memory and emotional memory.

Emotional memory is memory consisted of physiological responses that individual experience in specific moment. This physiological response may be responses such as hypertension, more perspiration, muscle tension, anxiety, fear or even happiness (Cabeza, 2006). Ledoux (2002) considers emotional memory as prime core and personal history throughout life, which emotional data recorded in it and it may be assessed sometimes. According to literatures, ASPD individuals lack ability of comprehending and retrieving emotions such as anger, sadness, fear and happiness. Endel Tulving (1972) coined concept of episodic memory and drew a line between knowing and retrieving the memories. Episodic memory is memory, which refers to specific event, and accompanied emotions, which was happened and experienced in the past (Joseph, 2002). A little number of studies have been conducted with respect to this area of topic up to now.'

Barbara Gawda (2013) concluded that ASPD individuals can not express their emotions easily. In this sense, she assessed ASPD patients in a research named Special Emotional Words. Statistical pool of her study, consisted of 60 ASPD prisoners, 40 prisoners without ASPD and 60 normal individuals without antisocial tendencies. These individuals explained different circumstances such as love, disgust and anxiety by looking at different pictures. Though, ASPD individuals narrated the stories with more verbiage and with boosted emotional sensitivity but intensity of these words were inappropriate. Linguistic properties of this narrative were consistent with elevated level of psychological problems and lacking emotional reaction (7).

Emotional Intelligence (EI) involves the individual abilities to perceive, understand and manage emotions in order to cope with changes in internal and external environment (Perna, Menotti, Borriello, Cavedini, Bellodi, & Caldirola, 2010). Role of EI have been discussed with respect to psychopathologies of various disorders such as panic, internet addiction and etc (Perna et al., 2010; Hasan & Salar, 2012). We couldn't find any similar study with respect to EI among ASPD patients.

According to R. James R. Blair (2013) noticed that psychopathic individuals maintain more memory deficiencies with respect to memory comparing to normal individuals. Furthermore, results were demonstrative of the fact that memory deficiencies among psychopathic individuals may be due to neural pathways of prefrontal-limbic region (R. Blair, 2013).

Barbara Gowda's (2013) studies showed that female psychopaths show more emotional regulation comparing to

normal women. This can be demonstrative of a relationship between emotional sensitivity, symptoms and psychopathic behaviors (Gawda, 2013).

It appears plausible that psychopathic individuals tend to have emotional deficiencies that lead to lack in social interactions and emotional expression among psychopathic individuals. These individuals report few psychopathologies and this make hard to assess their cognition and emotional alterations (Gawda, 2013). Noting that these emotions can play a substantial role with respect to memory processing, hence psychopaths lack comprehending emotional experiences and they are indifference regarding trust and kindness of others and subsequently they commit irresponsible/impulsive/aggressive behaviors.

Emotional memory (EM) and Emotional Intelligence (EI) of ASPD patients are among factors, which can be named in terms of pathogenesis or severing the symptoms of this disorder. Hence, according to substantial roles of EM and EI in personal and social interactions we conducted this research in order to compare ER and ERM antisocial patients and healthy individuals.

2. Materials and Methods

Current study is experimental pretest-posttest design with control group. In this study we aimed to compare ER and ERM of antisocial patients and healthy individuals and specific narrative considered as independent variable and retrieving memory considered as dependent variables. In this study, researcher aimed to assess varied emotions and level of retrieving the memories among antisocial and healthy individuals. This study was conducted between 2014-2015 at psychiatric ward of Zare hospital (Sari, Mazandaran Province, Iran). Statistical Society of this study was specified via convenient sampling method and it was consisted of 80 individuals (men and women) in a age range between 20-40 years old that were divided into two groups of 40 healthy and 40 patients with ASPD.

2.1 Inclusion Criteria

[1] Having enough educational adequacy in order to comprehend tests and materials during study and age range between 20-40 years old.

[2] ASPD was confirmed via SCID-II (Structured Clinical Interview regarding DSM Disorders)

[3] Psychiatrist assessed case group in order to rule out psychosis, mood disorder, OCD, concussion and seizure. Furthermore, it was confirmed that individuals are not under pharmacologic treatment. Subsequently, control grouped was paired with case group with respect to age and education.

2.2 Procedure

In order to conduct this study, we referred to private/public psychiatric institutes in east region of Mazandaran province and antisocial patients who maintained inclusion criteria of this study were chosen. After confirming with institute and acquiring consent forms, SCID-II (Structured Clinical Interview For DSM Disorders), EQ-I (Emotional Quotient Inventory), WMS (Wechsler Memory Scale) and picture slides (story) were handed out to patients and they were asked to assess them carefully and answer accordingly. Data were analyzed via MANCOVA and ANOVA and independent t-test.

2.3 Tools

- **Structured Clinical Interview for DSM-IV (SCID-I):** The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) is a diagnostic exam used to determine DSM-IV Axis I disorders (major mental disorders). The SCID-II is a diagnostic exam used to determine Axis II disorders (personality disorders) (9). In order to confirm reliability First and Colleagues (1997) chose 29 outpatients from cocaine/opioids dependent patients and via pretest-posttest design, they estimated Kappa coefficient as 84% for ADSP (Basic rate was 15%) (10). In Iran, The SCID was translated into Persian in a multi-stage process to ensure a satisfactory cross-cultural equivalent (Vandad et al., 2007).

- **Baron Emotional Intelligence (EQ-i):** In brief, the EQ-i contains 133 items in the form of short sentences and employs a 5-point response scale with a textual response format ranging from "very seldom or not true of me" (1) to "very often true of me or true of me" (5). A list of the inventory's items is found in the instrument's technical manual (Bar-On, 1997b). The EQ-i is suitable for individuals 17 years of age and older and takes approximately 40 minutes to complete.

The individual's responses render a total EQ score and scores on the following 5 composite scales that comprise 15 subscale scores: Intrapersonal (comprising Self-Regard, Emotional Self-Awareness, Assertiveness, Independence, and Self-Actualization); Interpersonal (comprising Empathy, Social Responsibility, and Interpersonal Relationship); Stress Management (comprising Stress Tolerance and Impulse Control); Adaptability (comprising

Reality-Testing, Flexibility, and Problem-Solving); and General Mood (comprising Optimism and Happiness). A brief description of these emotional-social intelligence competencies, skills and facilitators measured by the 15 subscales is found in the Appendix as was previously mentioned. Results from normalization are demonstrative of appropriate validity and reliability (Bar-On, 2006).

- **Short Story:** Researcher made this narrative and it was consisted of all emotional elements such as emotions (sadness, anger, fear and happiness), names and numbers. Participants were asked to elucidate the story, which was earlier told by our researcher. Total time of reading a story to participants and having them explain what they heard was 15 minutes. Reliability and validity of test was assessed via test-retest method in two weeks interval.

With respect to ethical consideration, we followed declaration of helinski regulations and following considerations were made: 1. Confidentiality of participants' information 2. Written consent forms were acquired 3. Participants can exit the study, anytime they wish to.

3. Results

Statistical Society of this study was specified via convenient sampling method and it was consisted of 80 individuals (men and women) in a age range between 20-40 years old that were divided into two groups of 40 healthy and 40 patients with ASPD. According to Table-No1, descriptive statistics of our study's sample ages are as mentioned below:

Table 1. Descriptive Data of Statistical Sample

Variable	Group	Mean	Median	Mode	SD	Minimum	Maximum
Age	Control Group	28.68	29.0	30	4.80	21	39
	Case Group	32.90	32	30	4.34	25	40

Table 2. Descriptive Statistics of Educational Status

Group	Educational Status	Frequency	Percentage
Control Group	Primary	1	2.5
	High school Diploma	10	25.0
	Post-Diploma	1	2.5
	Bachelor Degree	17	42.5
	Master Degree	11	27.5
	Total	40	100.0
Case Group	Educational Status	5	12.8
	Primary	22	56.4
	High school Diploma	4	10.3
	Post-Diploma	8	20.5
	Bachelor Degree	39	100.0

Furthermore, in order to assess normal distribution of data in current study we used Kolmogorov-Smirnov test. Results are demonstrative of normal distributive of data in current study and considering levels of significance that are higher than 0.05 we used parametric tests.

In order to compare IQ and EM among normal and ASPD individuals, we chose 40 normal individuals as control group and 39 ASPD individuals as case group and we assessed their IQ and it's various dimensions via Wechsler IQ test. Additionally, we compared their EM via Emotional Memory Inventory. Noting that different dimensions of Wechsler test maintain correlation with each other, we used MANCOVA and independent T-test. In order to assess impact of one or various independent variables on one dependent variable we used T-test and ANOVA. In times, we had more than one dependent variable and noting the correlation between them, we used MANCOVA.

1st Hypothesis: There is meaningful difference between EM healthy individuals and ASPD patients. In order to assess first hypothesis, we used covariance test; results can be observed in Table 3:

Table 3. Descriptive Data of 1st Hypothesis

Group	Mean	Std. Deviation	N
Healthy	82.7750	6.12890	40
ASPD	47.3333	5.58350	39
Total	65.2785	18.76094	79

According to Table 3, in healthy group mean and SD score of Wechsler score is 82/77 AND 6/12 respectively; in ASPD group mean and SD score is 47/33 and 5/58 respectively.

Since, similarity of variances is a premise with respect to using ANCOVA; with respect to Table 4, variance regarding memory variable is homogenous in both groups.

Table 4. Similarity of Variance Test between Groups

F	df1	df2	Sig.
1.020	1	77	.316

Data regarding ANCOVA results with respect to Memory variable in both groups can be observed in Table 5.

Table 5. ANCOVA results of Memory variable in both groups

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	24966.292[a]	4	6241.573	185.673	.000
Intercept	2870.488	1	2870.488	85.391	.000
Group	19402.447	1	19402.447	577.179	.000
Age	49.041	1	49.041	1.459	.231
Education	10.738	1	10.738	.319	.574
Gender	137.522	1	137.522	4.091	.047
Error	2487.582	74	33.616		
Total	364095.000	79			
Corrected Total	27453.873	78			

After modulating impact of variables (age, gender, educational status) and with respect to F (577/17) and significance less than 0/05, we can confidently postulate that memory variable tend vary in significant level between two groups of Healthy and ASPD individuals; memory level is conspicuously higher among healthy group.

2nd Hypothesis: There is meaningful difference between EI of healthy individuals and ASPD patients. In order to assess first hypothesis, we used covariance test; results can be observed in Table 6:

Table 6. Descriptive data of 2nd Hyothesis

Group	Mean	Std. Deviation	N
Health	349.0250	27.51455	40
ASPD	268.8158	26.89605	38
Total	309.9487	48.57205	78

According to Table 3, in healthy group mean and SD score of EI is 349/02 AND 27/52 respectively; in ASPD group mean and SD score is 268/81 and 26/89 respectively.

Since, similarity of variances is a premise with respect to using ANCOVA; with respect to Table 7, variance regarding EI variable is homogenous in both groups.

Table 7. Similarity of Variance Test between groups

F	df1	df2	Sig.
3.064	1	76	.084

Data regarding ANCOVA results with respect to EI variable in both groups can be observed in Table 8:

Table 8. ANCOVA results of EI variable in both groups

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	126292.525[a]	4	31573.131	41.627	.000
Intercept	96855.090	1	96855.090	127.696	.000
Group	105315.518	1	105315.518	138.850	.000
Age	14.994	1	14.994	.020	.889
Education	796.942	1	796.942	1.051	.309
Gender	49.042	1	49.042	.065	.800
Error	55369.270	73	758.483		
Total	7674982.000	78			
Corrected Total	181661.795	77			

a. R Squared = .695 (Adjusted R Squared = .679)

After modulating impact of variables (age, gender, educational status) and with respect to F (138/85) and significance less than 0/05, we can confidently postulate that EI variable tend vary in significant level between two groups of Healthy and ASPD individuals; EI level is conspicuously higher among healthy group.

After assessment of 1st and 2nd hypotheses as main objectives of current study, we are going to assess and look at secondary hypotheses of current study.

3rd Hypothesis: There is meaningful difference between IQ of healthy individuals and ASPD patients. In order to assess first hypothesis, we used covariance test; results can be observed in Table 9.

Table 9. Descriptive Data of IQ between two groups

Group	Mean	Std. Deviation	N
Healthy	120.7500	6.85659	40
ASPD	77.0256	6.79585	39
Total	99.1646	23.02197	79

According to Table 9, in healthy group mean and SD score of IQ is 120/75 AND 6/85 respectively; in ASPD group mean and SD score is 77/02 and 6/79 respectively.

Since, similarity of variances is a premise with respect to using ANCOVA; with respect to Table 10, variance regarding memory variable is homogenous in both groups.

Table 10. Similarity of Variance Test between two groups

F	df1	df2	Sig.
1.313	1	77	.255

Data regarding ANCOVA results with respect to IQ variable in both groups can be observed in Table 11.

Table 11. ANCOVA result with respect to IQ between groups

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	37868.362[a]	4	9467.090	201.747	.000
Intercept	8099.104	1	8099.104	172.594	.000
Group	30033.489	1	30033.489	640.023	.000
Age	28.656	1	28.656	.611	.437
Education	1.251	1	1.251	.027	.871
Gender	89.795	1	89.795	1.914	.171
Error	3472.499	74	46.926		
Total	818196.000	79			
Corrected Total	41340.861	78			

a. R Squared = .916 (Adjusted R Squared = .911)

After modulating impact of variables (age, gender, educational status) and with respect to F (640/02) and significance less than 0/05, we can confidently postulate that IQ variable tend vary in significant level between two groups of Healthy and ASPD individuals; IQ level is conspicuously higher among healthy group.

4th Hypothesis: With respect to Degree of Personal/General Information, Time and Place orientation, Working memory, Auditory memory, Numerical memory, Visual memory, Associative memory there is a meaningful difference between ASPD and Healthy groups.   Detailed data can be observed in Table 12.

Table 12. Descriptive of Statistics of Memory dimensions

	Group	Gender	Mean	Std. Deviation	N
Personal/General Information	Health	Male	5.20	.768	20
		Female	5.25	.639	20
		Total	5.23	.698	40
	ASPD	Male	4.60	.503	20
		Female	4.79	.535	19
		Total	4.69	.521	39
	Total	Male	4.90	.709	40
		Female	5.03	.628	39
		Total	4.96	.669	79
Time and Place orientation	Health	Male	5.65	.489	20
		Female	5.40	.503	20
		Total	5.53	.506	40
	ASPD	Male	4.40	.681	20
		Female	4.58	.607	19
		Total	4.49	.644	39
	Total	Male	5.03	.862	40
		Female	5.00	.688	39
		Total	5.01	.776	79
Working Memory	Health	Male	7.80	1.673	20
		Female	9.95	2.819	20
		Total	8.88	2.534	40
	ASPD	Male	7.95	3.000	20
		Female	8.16	1.864	19

		Total	8.05	2.481	39
		Male	7.88	2.399	40
	Total	Female	9.08	2.538	39
		Total	8.47	2.526	79
		Male	18.10	2.469	20
	Health	Female	18.70	2.055	20
		Total	18.40	2.262	40
		Male	6.15	1.268	20
Auditory Memory	ASPD	Female	6.58	1.644	19
		Total	6.36	1.460	39
		Male	12.13	6.354	40
	Total	Female	12.79	6.408	39
		Total	12.46	6.348	79
		Male	11.85	1.496	20
	Health	Female	11.95	1.701	20
		Total	11.90	1.582	40
		Male	8.10	1.483	20
Numerical Memory	ASPD	Female	7.37	.955	19
		Total	7.74	1.292	39
		Male	9.98	2.402	40
	Total	Female	9.72	2.695	39
		Total	9.85	2.537	79
		Male	13.15	1.954	20
	Health	Female	13.55	1.191	20
		Total	13.35	1.610	40
		Male	8.60	1.789	20
Visual Memory	ASPD	Female	9.05	1.649	19
		Total	8.82	1.715	39
		Male	10.88	2.954	40
	Total	Female	11.36	2.680	39
		Total	11.11	2.815	79
		Male	19.3000	.86450	20
	Health	Female	19.7000	1.75019	20
		Total	19.5000	1.37747	40
		Male	6.9000	2.86356	20
Associative Memory	ASPD	Female	7.4737	2.63246	19
		Total	7.1795	2.73257	39
		Male	13.1000	6.61699	40
	Total	Female	13.7436	6.56834	39
		Total	13.4177	6.55863	79

According to Table 12, there is meaningful difference with respect to memory sub-types' mean score of Healthy and ASPD groups; it worth mentioning that mean score of memory sub-types is conspicuously higher in healthy group.

According to results of MANCOVA, age is considered as interfering variable in current model. With respect to F (0/657) and Significance more than 0/05, it appears plausible that age doesn't impact EM sub-types. Furthermore, educational level is considered as interfering variable in current model. With respect to F(1/52) and Significance more than 0/05, it appears plausible that educational level doesn't have impact EM sub-types; variable (ASPD and Healthy individuals) entered this study as constant variables, noting F (19/80) and Significance less than 0/05, it appears plausible that these variables (ASPD and Healthy individuals) do have impact on EM sub-types. Finally, gender variable was entered this study as constant variable; noting F (0/627) and Significance more than 0/05, it appears plausible that gender doesn't impact EM sub-types.

6th Hypothesis: With respect to Impact of narrative and visual inducing (Happiness, Fear, Sadness, Neutral, Semantic, Names, Numerical, Colors and Emotions) there is a meaningful difference between ASPD and Healthy groups. Detailed data can be observed in Table 13.

Table 13. Descriptive statistics with respect to narrative and visually inducing slides

	Group	Gender	Mean	Std. Deviation	N
Happiness	Healthy	Male	2.6842	.88523	19
		Female	2.8947	.80930	19
		Total	2.7895	.84335	38
	ASPD	Male	.5000	.51299	20
		Female	.7368	.73349	19
		Total	.6154	.63310	39
	Total	Male	1.5641	1.31379	39
		Female	1.8158	1.33265	38
		Total	1.6883	1.32048	77
Fear	Healthy	Male	3.3684	.83070	19
		Female	3.8947	.87526	19
		Total	3.6316	.88290	38
	ASPD	Male	.7500	.55012	20
		Female	.6842	.67104	19
		Total	.7179	.60475	39
	Total	Male	2.0256	1.49538	39
		Female	2.2895	1.79952	38
		Total	2.1558	1.64689	77
Anger	Healthy	Male	2.3158	.82007	19
		Female	2.2632	1.04574	19
		Total	2.2895	.92730	38
	ASPD	Male	2.0000	.00000	20
		Female	2.2105	.41885	19
		Total	2.1026	.30735	39
	Total	Male	2.1538	.58663	39
		Female	2.2368	.78617	38
		Total	2.1948	.68899	77
Sadness	Healthy	Male	2.3158	.58239	19
		Female	1.9474	.77986	19
		Total	2.1316	.70408	38
	ASPD	Male	.4000	.50262	20
		Female	.0526	.22942	19
		Total	.2308	.42683	39
	Total	Male	1.3333	1.10818	39
		Female	1.0000	1.11501	38
		Total	1.1688	1.11689	77

Neutral	Healthy	Male	2.2105	.53530	19
		Female	2.5789	.69248	19
		Total	2.3947	.63839	38
	ASPD	Male	1.1500	1.03999	20
		Female	1.0000	.81650	19
		Total	1.0769	.92863	39
	Total	Male	1.6667	.98230	39
		Female	1.7895	1.09441	38
		Total	1.7273	1.03411	77
Semantic	Healthy	Male	1.3684	1.16479	19
		Female	1.2105	.91766	19
		Total	1.2895	1.03735	38
	ASPD	Male	1.0500	.82558	20
		Female	.3684	.49559	19
		Total	.7179	.75911	39
	Total	Male	1.2051	1.00471	39
		Female	.7895	.84335	38
		Total	1.0000	.94591	77
Names	Healthy	Male	3.0000	.00000	19
		Female	2.8947	.31530	19
		Total	2.9474	.22629	38
	ASPD	Male	1.6000	.82078	20
		Female	1.8421	.95819	19
		Total	1.7179	.88700	39
	Total	Male	2.2821	.91619	39
		Female	2.3684	.88290	38
		Total	2.3247	.89504	77
Numerical	Healthy	Male	3.2632	.73349	19
		Female	3.2105	.78733	19
		Total	3.2368	.75101	38
	ASPD	Male	1.2500	.55012	20
		Female	1.2632	.80568	19
		Total	1.2564	.67738	39
	Total	Male	2.2308	1.20222	39
		Female	2.2368	1.26136	38
		Total	2.2338	1.22363	77
Colour	Healthy	Male	2.2632	.87191	19
		Female	1.9474	.84811	19
		Total	2.1053	.86335	38
	ASPD	Male	.0000	.00000	20
		Female	.0000	.00000	19
		Total	.0000	.00000	39
	Total	Male	1.1026	1.29361	39
		Female	.9737	1.15048	38
		Total	1.0390	1.21873	77
motionsE	Healthy	Male	8.7895	.91766	19
		Female	9.4737	2.73594	19
		Total	9.1316	2.04240	38
	ASPD	Male	1.6500	.74516	20
		Female	1.1053	.80930	19

	Total	1.3846	.81484	39
Total	Male	5.1282	3.70760	39
	Female	5.2895	4.68412	38
	Total	5.2078	4.19065	77

According to Table 13, there is meaningful difference with respect to narrative and visually inducing slides sub-types mean score of Healthy and ASPD groups; it worth mentioning that mean score of aforementioned sub-types is conspicuously higher in healthy group.

According to MANCOVA results, age is considered as interfering variable in current model. With respect to F (0/113) and Significance more than 0/05, it appears plausible that age doesn't impact narrative and visually inducing slides sub-types. Furthermore, educational level is considered as interfering variable in current model. With respect to F(0/14) and Significance more than 0/05, it appears plausible that educational level doesn't have impact narrative and visually inducing slides sub-types; variable (ASPD and Healthy individuals) entered this study as constant variables, noting F (126/30) and Significance less than 0/05, it appears plausible that these variables (ASPD and Healthy individuals) do have impact on narrative and visually inducing slides sub-types. Finally, gender variable was entered this study as constant variable; noting F (2/048) and Significance more than 0/05, it appears plausible that gender doesn't impact narrative and visually inducing slides sub-types.

4. Discussion

Aim of this study was to compare EM and EI between people with ASPD and normal individuals. Results are demonstrative of meaningful difference between foregoing groups with respect to EM and EI. In current study we thoroughly analyzed and discussed sub-types of EI and EM among ASPD individuals. We couldn't find any similar study, with such a comprehensive outcome.

According to results of current study, there is conspicuous difference between ASPD individuals and normal people with respect to EM and EI. In a study conducted by Perna and Colleagues (2010), they studied EM of patients with panic disorders, and they concluded that these patients tend to have lower score of EM in comparing to healthy individuals and they associated lower score of EM to hyper function of amygdala among panic patients (Perna, Menotti, Borriello, Cavedini, Bellodi, & Caldirola, 2010). In another study conducted by Khoshakhlagh and Colleagues (2012), they studied EM and Mental disorders among Internet addict individuals, they concluded that these individuals suffer from higher level of depression and anxiety and lower level of EM (Hasan & Salar, 2012). In aforementioned EM was discussed with respect to mostly axis one disorders, however in current study we discussed ASPD as axis-II disorder.

In another study conducted by Dolan and Fullam (2004), they studied Theory of mind (ToM) and mentalizing among ASPD individuals; they concluded that problematic function with respect to mentalizing ability in ASPD are shrewd and minimal. Regarding majority of lawbreakers with ASPD and psychopathy ToM abilities are relatively undamaged and may have an adaptive function in maintaining a criminal lifestyle. Their findings suggest the key deficits tend to be related to to their lack of concern about the influence and adverse consequences on potential victims. The findings cautiously additionally postulate that ASPDs with neurotic features may be more impaired in mentalizing ability than their low anxious psychopathic counterparts (Dolan & Fullam, 2004). Some other studies discussed ASPD from neuropsychological point of view, they concluded that ASPD individuals tend to suffer from cognitive and behavioral problems due to tampered function in DLPFC and VMPFC area of the brain (Dolan & Park, 2002). In another study conducted by Karestan and Koenen (2008), they studied Genetic Influences on the Overlap between Low IQ and Antisocial Behavior in Young Children; they concluded that Low IQ was associated with antisocial behavior at age 5 years and anticipated comparatively higher antisocial behavior scores at age 7 years when antisocial behavior at age 5 years was controlled. This link was dramatically boosted among boys than among girls. Genetic influences mutual to both phenotypes explained 100% of the low IQ–antisocial behavior relation in boys. Findings suggest that specific candidate genes and neurobiological processes should be tested in relation to both phenotypes (Karestan, Koenen, Terrie, Fruhling, & Alan, 2008). As we can see various clinicians and scientists have assessed various aspects of ASPD individuals function, but current study stands out, because it meticulously assess EM and EI subtypes of these individuals. In another study conducted by Snow and Thurber (1997), the assess Cognitive imbalance and antisocial personality characteristics. As same as our study the used Wechsler test, but they also used (MMPI-2). They resulted that ASPD individuals maintain intellectual functioning that's is elevated in the performance area in comparison to verbal IQ (Snow & Thurber, 1997). In a study conducted by Gowda (First, Spitzer, Gibbon, &Williams, 1997), she aimed to assess of syntax of narratives created by persons diagnosed with antisocial personality; results show the differences between the

antisocial inmates, non-antisocial inmates, and controls. In their emotional narratives, the antisocial individuals used more repetitions, pauses and negations. These linguistic characteristics are attributed to high activity, psychopathy and emotionality of persons diagnosed with ASPD (Gawda, 2010). Again Gowda in 2013, aimed to assess specific emotional lexicons in narratives created by individuals with ASPD to examine the hypothesis that individuals with ASPD exhibit deficiencies in emotional language. She concluded that individuals with ASPD incorporated additional words describing emotions and elevated levels of emotional intensity, the valence of these words was unfitting. The linguistic characteristics of these stories were linked to high levels of psychopathy and low emotional reactivity (R. Blair, 2013).

In another study conducted by Bagcioglu and Colleagues (2014), the conducted a unique comparative research between male antisocial personality disorders with or without adult attention deficit hyperactivity disorder. Results of aforementioned study postulate that Study of complex social cognitive abilities in adults with ADHD and violent behaviors is lacking. This study is the first, investigating the differences according to social cognition cues in violent individual that revealed no significance within pure antisocial individuals and antisocial individuals with ADHD (Bagcioglu et al., 2014). According to various literatures, ASPD share ties with another common personality disorder named Borderline personality disorder (BPD). Peter and Colleagues (2013), EI among BPD individuals and they concluded that BPD is associated with emotion understanding deficits, whereas temporary severity of BPD is associated with emotion regulation deficits (Peter, Schuurmans, Vingerhoets, Smeets, Verkoeijen, & Arntz, 2013). Finally Copestake and Colleagues (2013), studied EI in psychopathy and their results somehow contradicted results of current study; they postulated that there was a negative relationship between self-report EI and ability EI. In relation to psychopathy, the results did not support the hypotheses of a general deficit in EI. While the results relating different facets of psychopathy to different aspects of EI were complex, there was some evidence that some aspects of psychopathy were positively related to the unique variance related to EI once IQ was partialled out (Copestake, Gray, & Snowden, 2013).

As we can see various scholars did approach concept of ASPD EI and EM by various tools and outcome, however none of them could draw out detailed results with respect to EI and EM of ASPD individuals. Results of current study can be used in order to facilitate proper therapeutic approach in order to influence all subtypes of EM and EI among ASPD individuals, hopefully with boosting these drawbacks, we would push these individuals back to proper function in society.

Authors' Contributions

MBM and JS conceived and designed the evaluation. MBM collected and interpreted the clinical data and drafted the manuscript. MGH Participated in conducting statistical evaluation. All authors read and approved the final manuscript. This paper derived and inspired from master dissertation thesis no: 20820701932104.

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Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

References

American Psychiatric Association. (2013). Personality Disorders. Retrieved 20th May, 2016, from http://www.dsm5.org/Documents/Personality%20Disorders%20Fact%20Sheet.pdf

Association, A. P. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed., DSM-V). American Psychiatry Publishing, 2013. https://doi.org/10.1176/appi.books.9780890425596

Bagcioglu, E., Isikli, H., Demirel, H., Sahin, E., Kandemir, E., Dursun, P., … Emul, M. (2014). *Facial emotion recognition in male antisocial personality disorders with or without adult attention deficit hyperactivity disorder*. PMID: 24656525 https://doi.org/10.1016/j.comppsych.2014.02.011

Bar-On, R. (2006). The Bar-On model of emotional-social intelligence (ESI). *Psicothema, 18*(supl.), 13-25.

Cabeza, K. S. L. a. R. (2006). *Cognitive neuroscience of emotional Memory* (pp. 54-55).

Copestake, S., Gray, N. S., & Snowden, R. J. (2013). *Emotional intelligence and psychopathy: a comparison of trait and ability measures*. PMID: 23527501 https://doi.org/10.1037/a0031746

Dolan, M., & Fullam, R. (2004). *Theory of mind and mentalizing ability in antisocial personality disorders with and without psychopathy*. Retrieved Feb, 2017, from https://www.ncbi.nlm.nih.gov/pubmed/15554579PMID: 15554579

Dolan, M., & Park, I. (2002). The neuropsychology of antisocial personality disorder. Retrieved Feb, 2017, from https://www.ncbi.nlm.nih.gov/pubmed/11989987. PMID: 11989987

First, M. B., Gibbon, M., Spitzer, R. L., Williams, J. B. W., & Benjamin, L. (1997). *Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II)*. Washington, DC: American Psychiatric Association

First, M. B., Spitzer, R. L., Gibbon, M., &Williams, J. B. W. (1997). *Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), Clinical Version*. Washington, DC: American Psychiatric Association

Gawda, B. (2010). *Syntax of emotional narratives of persons diagnosed with antisocial personality*. PMID: 19943191 https://doi.org/10.1007/s10936-009-9140-4

Gawda, B. (2013). The Emotional Lexicon of Individuals Diagnosed with Antisocial Personality Disorder. *Journal of Psycholinguistic Research, 42*(6), 571-580. https://doi.org/10.1007/s10936-012-9237-z

Hasan, K., & Salar, F. (2012). *The Relationship of Emotional Intelligence and Mental Disorders with Internet Addiction in Internet Users University Students*. Retrieved Nov, 2016, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3905545/

Joseph, E. LeDoux. (2002). *Emotion, memory and the brain*. Retrieved 20th May, 2016, from http://people.brandeis.edu/~teuber/emotion.pdf

Karestan, C., Koenen, A. C., Terrie, E. M., Fruhling, R., & Alan, T. (2008). Genetic Influences on the Overlap Between Low IQ and Antisocial Behavior in Young Children. Available: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2254220/. Last accessed Jan 2017. *J Abnorm Psychol., 115*(4), 787-797. https://doi.org/10.1037/0021-843X.115.4.787

Perna, G., Menotti, R., Borriello, G., Cavedini, P., Bellodi, L., & Caldirola, D. (2010). *Emotional intelligence in panic disorder*. Retrieved Nov, 2016, from https://www.ncbi.nlm.nih.gov/pubmed/21265440?dopt=AbstractPlus

Peter, M., Schuurmans, H., Vingerhoets, A. J., Smeets, G., Verkoeijen, P., & Arntz, A. (2013). *Borderline personality disorder and emotional intelligence*. Retrieved Feb, 2017, from https://www.ncbi.nlm.nih.gov/pubmed/23364117

R. Blair, R. J. (2013). Psychopathy: cognitive and neural dysfunction. *Dialogues in Clinical Neuroscience, 15*(2), 181-190.

Shirtcliff, E. A., et al. (2009). Neurobiology of empathy and callousness: implications for the development of antisocial behavior. *Behav Sci Law, 27*(2), p. 137-71. https://doi.org/10.1002/bsl.862

Snow, M., & Thurber, S. (1997). *Cognitive imbalance and antisocial personality characteristics.* Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/9169389. PMID: 9169389

Vandad, S., Seyed Mohammad, A., Mohammad Reza, M., Homayoun, A., Hossein, K., Yousef, S., Amir, S., & Zahra, S. (2007). Structured Clinical Interview for DSM-IV (SCID): Persian Translation and Cultural Adaptation. Retrieved 20th May, 2016, from http://webcache.googleusercontent.com/search?q=cache:pRrRYj8cwv0J:jps.tums.ac.ir/index.php/ijps/article/download/435/430+&cd=1&hl=en&ct=clnk&gl=ir

Werner, K. B., Few, L. R., & Bucholz, K. K. (2016). Epidemiology, Comorbidity, and Behavioral Genetics of Antisocial Personality Disorder and Psychopathy. *Psychiatr Ann., 45*(4), 195-199. https://doi.org/10.3928/00485713-20150401-08 PMID: 26594067

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