ORIGINAL ARTICLE

Piercings and tattoos: psychopathological aspects

Antonio D'Ambrosio, Nicoletta Casillo, Valentina Martini

Seconda Università di Napoli, Dipartimento di Psichiatria, L.go Madonna delle Grazie, 80138 Napoli, Italy.

Correspondence to: Antonio D'Ambrosio, Seconda Università di Napoli, Dipartimento di Psichiatria, L.go Madonna delle Grazie, 80138 Napoli, Italy; e-mail: antonio.dambrosio@unina2.it

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Abstract

OBJECTIVES: Piercing and tattoos are promoted by fashion and the media and are becoming more and more popular, especially among young people. The number of young adults acquiring body modification has increased in recent years. Different studies showed a correlation between body modification and self-harm behaviors. The present study investigates the correlation between piercing and tattoo and different psychological and personality disorders. **METHODS:** The study involved 121 samples (age years 23.78 with 3.999 SD – standard deviation). From 121 involved samples, 60 (29 females, 31 males) had not body modifications, 25 have acquired tattoos (48 females, 21 males) and 36 have acquired piercing (24 females, 12 males). All subjects were evaluated using inventory auto somministration. The following tests were performed: Psychological General Well-Being Index (PGWBI), the Self-Harm Inventory (SHI), the Borderline Syndrome Index (BSI), the Dissociative Experience Scale (DES II), the Toronto Alexithymia Scale (TAS-20). Data were statistically analyzed by SPSS Tool using one way ANOVA for normally distributed samples, Chi-Square Test and Cross-Tabulation Test. **RESULTS:** The statistical analysis of acquired results showed a significant correlation between body modifications and psychological and personality disorder and psychopathologies. TAS-20 test results highlighted a significant difference between tattoo and piercing groups and control group (F=29.066; p=0.000). The tattoo group showed results closed to alexithymic values. The SHI test proved a significant difference between groups related to self-harm behaviors too (F=80.416; p=0.000). PGWBI results suggest a link between body modification and psychological goodness (F=19.522; p=0.000): precisely the body modifications affect negatively the psychological goodness. The ANOVA clearly shows a significant correlation between piercing and tattoo groups and psychological distress. As regards the dissociative disorder evaluation, while the DES II test results of all groups are within the healthy people common range; however the ANOVA highlights a significant trend towards dissociative disorder limit for piercing and tattoo groups. The ANOVA statistical evaluation of BSI test results provides evidence of borderline disorders on piercing group samples. The tattoo group lays on the test healthy range but the results show a significant higher mean value on the tattoo group compared with control group. Chi-square test, used to highlight all possible connections between analyzed variables, confirmed a significant correlation only between PGWBI results and number of tattoos and piercing and between gender and body modification type, tattoos prevail on male samples while piercing on female ones. **CONCLUSION:** The study successfully achieved the proposed objectives, proving statistically a correlation between body modifications and different forms and/or traits of psychological and personality disorders (i.e. borderline personality disorder).

Introduction

Tattoos and piercings have always been an universal popular body ornamentation practices. The body modifications are becoming one of the distinctive features characterizing the modern Western societies. The fashion industry and the media are surely very important factors affecting the popularity of tattoos and piercings, especially among young people (between 17 and 25 years old).

In our clinical experience, it was noted the majority of patients with body modifications were generally not in health.

Different studies, over the last ten years, highlighted that tattoos and piercings may indicate an internal malaise and may be a possible psychopathological index of diseases including self damaging behaviors.

Braithwaite *et al* (2001) found that subjects with body modifications (e.g. tattoos) were united by abuse of marijuana and alcohol and by excessive consumption of drugs, antidepressants and sedatives, providing evidence of the relationship between tattooing /piercings and harmful behaviors. Sean *et al* (2002), in an experiment with 552 subjects, showed a relationship between body modifications and risk behaviors, especially among teenage girls. Roberts and Ryan (2002), studying a large group of adolescents, identified the relationship (especially in late adolescence) between tattoos and subjects living conditions (i.e. higher frequency of socio-economic disadvantage, parents lower educational level, higher use of substances, more violent behaviors in tattooed subjects). Stephens (2003), examining risk behaviors in 550 subjects with tattoos (21 year old adolescents) enlisted in the U.S. Navy and the Air Force, found out that tattooed individuals were more likely to abuse alcohol, smoke, drugs and to drive under alcohol influence. Brooks *et al* (2003), in a study of 210 adolescents at Children's Hospital in Boston, confirmed the same above relationship underlining a greater tendency to adopt risk behaviors. Suris *et al* (2007) studied a group of 7548 students aged 16–22 years and confirmed the relationship between the piercing practice and deviant behaviors. In particular, the study highlighted that less satisfied with body image women were more predisposed to abuse harmful substances (smoking, cannabis), to unprotected sex, suicide attempts and had mostly the temperamental trait "*sensation seeking*". In subjects with multiple piercings there was a higher frequency of harmful behavior and, especially in males, a higher percentage of suicide attempts. The study by Zanetti *et al* (2008) found a relationship between body modifications and self-harm behaviors (e.g. widespread use of tobacco, alcohol and low calorie diets in the female gender) in a meaningful percentage of high school students. Walsh and Rosen (1988) defined four categories of *Self-mutilation* and the first category included ear piercing, nail biting, small tattoos and cosmetic surgery. Self-harming individuals appear to have higher rates of the following psychological problems (Simeon & Hollander 2001; Zlotnick *et al* 1996, 1999): high levels of dissociation, borderline personality disorder, substance abuse disorders, post-raumatic stress disorders.

All the above mentioned studies were focused on proving link between body modifications and harmful behaviors. In borderline personality disorders, one of the nine diagnostic criteria is the "self mutilating behaviors" (DSM IV TR). Self-injurious behaviors were linked with the individual history of childhood maltreatment and alexithymia mediates this relationship (Paivio & McCulloch 2004).

The main objective of the present study is to prove a relationship between body modifications and psychopathologies and personality disorders using an appropriate tests battery.

Methodology

Study was based on a group of 148 students (aged between 16–30 years, 64 men and 57 women), recruited, with questionnaire, in tattoo centers or in internet specific blogs. All the participants come from the region Campania, except for the 3% of the students coming from other Italian regions. Only 121 of the 148 subjects completed the proposed questionnaires. The examined group included students from colleges, universities and workers.

Of the 121 recruited subjects, 60 did not have any body modifications, 25 had tattoos and 36 had body piercings. All subjects completed the self-administered questionnaires anonymously. The following questionnaires were administrated: questionnaire for the assessment of the general psychological well-being (PGWBI), the Self-Harm Inventory (SHI), the Borderline Syndrome Index (BSI), the Dissociative Experience Scale (DES II) and the Toronto Alexithymia Scale (TAS-20).

The PGWBI provides a measure of subjective well-being or distress related to emotional or affective area, assesses the quality of life, measuring the balance between positive and negative emotional and affective states, and assesses the psychological distress of the subject. The SHI assesses the presence of harmful behavior (toxic substances or alcohol abuse) and self-injuries. The BSI is a self-assessment scale, used as a screening tool for assessing symptoms of borderline personality disorders. The DES II is a self-assessment scale measuring the level and type of dissociative experience. The TAS-20 is a self-assessment questionnaire measuring alexithymia.

The results statistical analysis was performed by using SPSS Statistic Toolbox Tool Release 17. The independent variables of the experimental design were the following groups: a) without body modifications (Not BMs), b) with tattoos (tattoo), c) with piercings (Piercing). The dependent variables were the results of various self-administered questionnaires.

Tab. 1. ANOVA results.

		Sum of Squares	df	Mean Square	F	Siq.
TA-20 NUMERIC RESULT	Between Groups	6109.140	2	3054.570	29.066	0.000
	Within Groups	12400.546	118	105.089		
	Total	18509.686	120			
SELF-HARM NUMERIC RESULT	Between Groups	1183.026	2	591.513	80.416	0.000
	Within Groups	867.966	118	7.356		
	Total	2050.992	120			
DES-II TEST NUMERIC RESULT	Between Groups	1705.302	2	852.651	16.634	0.000
	Within Groups	6048.644	118	51.260		
	Total	7753.946	120			
BSI-510 TEST NUMERIC RESULT	Between Groups	6461.913	2	3230.957	44.515	0.000
	Within Groups	8564.649	118	72.582		
	Total	15026.562	120			
PGWBI TOTAL RESULT	Between Groups	16307.618	2	8153.809	19.522	0.000
	Within Groups	49284.382	118	417.664		
	Total	65592.000	120			

The following statistical tests were applied:

- the ANOVA one-way in order to prove that the different groups are not equal relatively to the assigned test results and consequently a correlation exists between body modifications and investigated psychopathologies;
- the Pearson Chi-Square to verify the existence of a correlation between the gender and piercings/tattoos groups;
- Chi-square Cross Tabulation Correlation tests to verify the relationships between self-administered questionnaires.

Results

Considering the piercings and tattoos groups, the average number of body modifications was 3.23±2.30, with a maximum of 9 piercings or 11 tattoos on a single subject. The Figure 1 shows the sample classification with respect to the gender and belonging group: No body modifications, Tattoo and Piercing (X^2=15.27, p=0.000). It was confirmed a correlation between gender and body modifications: the tattoos were prevalent in men and the piercings in women.

In Figure 2, the mean and standard deviation for every test results and for the three groups (No Body Modifications, Tattoo and Piercing) are showed. The test results difference among the three groups, highlighted in Figure 2, was confirmed by the ANOVA test. As showed in Table 1, ANOVA results indicated that the null hypothesis (the three groups are equivalent relatively to the test results for every single performed test) was rejected (Sig. <0.05). It means that the difference between groups for every investigated psychopathology was statically significant.

On the TAS-20 Test (F=29.06, p=0.000), the tattooed subjects obtained an average result of 55.12 (±9.85) similar to patients with alexithymic tendence (50/60) and similar to ones with piercings (mean of 54.47±11.37), while the average score of the control case was 40.53 (±9.696).

Significant differences emerged regarding self-injurious behavior: on the SHI test (F=80.416, p=0.000) the average of results in subjects with tattoos was 6.64 (±3.06), and in subjects with piercings was 7.39(±3.98); these results confirmed the tendency to self harm behaviors in both the groups, considering the subjects without Body Modifications scored only 0.85 (±1.219).

The results of the BSI (p=0.000) showed a borderline positive trend in subjects with piercing (20.56±10.23) while people with tattoos (19.16±12.24) were positioned in the threshold considered healthier but having average scores higher than patients without Body Modifications (5.40±4.702).

It was found that Body Modifications affects the psychological well-being: results of PGWBI (F=19.52, p=0.000) showed that the control group mean and standard deviation (81.95±17.41) were not within the range of distress. People with piercings and tattoos were placed, instead, respectively, in the range of severe distress (57.03±22.11) and moderate distress (61.76±23.37).

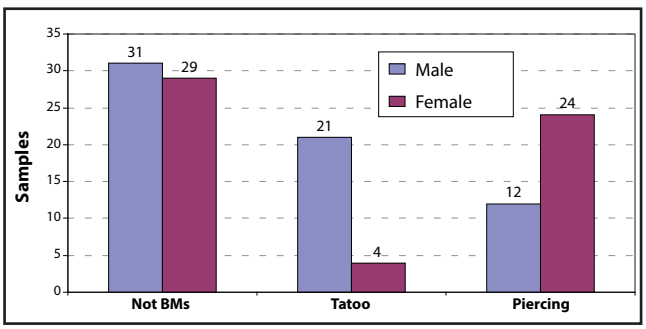

Fig. 1. Gender and body modifications (No Body Modifications; Tattoo; Piercing).

Regarding dissociative experiences, examined through the DES II (F=16.634, p=0.000), although the results attested to the threshold as healthy, significant differences versus those without body modification was noticed (7.75±6.39).

Further analyses were performed in order to verify the correlation between the number of tattoos or piercings and the age of the candidates. The test results showed that there was no relationship between them (X^2=0.02; p=0358) and the only significant link was evident between the parameter of PGWBI general health and number of tattoos and piercings (Pearson =–0.321; p<0.011).

In Table 2 the statistically significant cross-correlations among all test performed are shown.

An inverse correlation was found:

- between BSI, the six parameters of PGWBI and PGWBI global,
- between SHI and PGWBI with its parameters with the exception of anxiety,
- between TAS-20 and PGWBI with its parameters,
- between TAS-20 and the BSI and SHI.

The DES II was correlated with all parameters of PGWBI with exception for PGWBI anxiety. Another inverse correlation was found between overall parameters of PGWBI and number of tattoos / piercings.

- A linear correlation was found:
- between SHI and BSI or SHI and PGWBI anxiety;
- between BSI and DES II;
- between DES II and the TAS-20, SHI, anxiety of PGWBI.

Finally, the results, obtained by analyzing the risk behaviors of subjects, showed that 99% of tattooed samples abused alcohol, 92% often drived recklessly, 90% made use of drugs, 45% had sexual interactions different from the usual while 35% of subjects had occasional reports; 25% and 26% of the subjects, respectively, prevented the healing of their wounds and neglected therapeutic prescriptions, while 33% showed self-injurious practices. In the group of people with piercings (n=36) 70% made use of substances and 95% of alcohol, 53% drive recklessly. The percentage highlighted concerning self-injurious practices, 48% and 49% respectively, prevented the healing of their wounds and neglected therapeutic prescriptions and 45% have abused drugs.

Discussion

The study effectively highlighted the positive correlation between patients with piercings and tattoos and indices of psychiatric disorders. Several psychopathological areas were examined: borderline personality

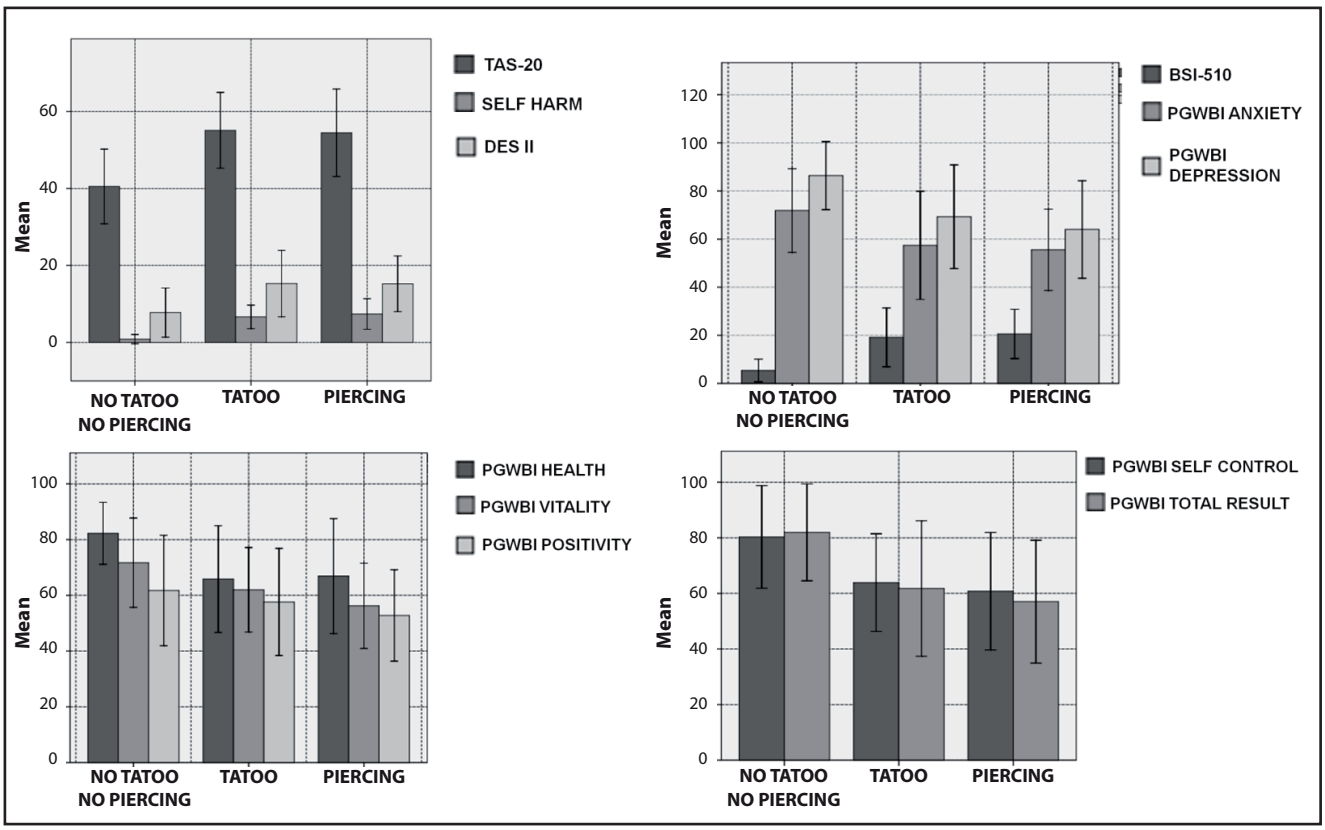

Fig. 2. Charts showing the means and standard deviations of test results for the three groups of samples (No Body Modifications, Tattoo and Piercing).

disorder, presence of self-injurious behavior in dissociative disorder, state of alexithimia and well-being.

The results on borderline personality (BSI), self-injurious behavior (SHI), marked distress (PGWBI) and trend alexithymia (TAS-20) were within the range of pathological values. The score related to the dissociativity (DES II), although remained within the normal range, highlighted in the patients with piercings and tattoos higher values than ones in the control group.

The above results are consistent with the conclusions in the study of Zanetti *et al* (2008) who argued that individuals with bodily changes express more often self-injurious behavior and show a higher incidence of self-aggressive behavior, of eating disorders and of alcoholism.

Moreover, in subjects with piercing there is a greater presence and severity of self-injurious behaviors than in subjects without body modification and in subjects with tattoos, as assessed with SHI (7.39±3.98). It proves that in subjects with piercings there is a more controversial relationship with their bodily experience and a higher sensation seeking. The gathered results are in line with ones of the survey by Stirn *et al* (2006) showing that individuals with body modifications have a negative quality of life, reduced social interaction and a common attitude to research new sensations (e.g. substance abuse). The presence of the "sensation seeking" temperamental trait in subjects with body modification was also reported by Roberti *et al* (2004). Besides, examining the psychological well-being and distress, the group with piercings showed more marked distress conditions highlighting a weak psychological well-being.

The above results are in line with Deschesnes *et al* (2006) study, indicating that people with tattoos and piercings showed noticeable distress conditions. Moreover, the results obtained by the questionnaires in the present study (SHI, the BSI and TAS-20) shows piercings and tattoos practice, in addition to an aesthetic purpose, is linked to emotional distress and to the need of using the body to express concern, discomfort, anger, loneliness. However, in spite of the study of Armstrong *et al* (2004) and Pozgain *et al* (2004), it was not possible to confirm a diagnosis but only a significant trend of personality disorders in subjects with piercings.

Subjects with piercings or tattoos showed a high frequency of deviant behaviors such as drug use, alcohol abuse, reckless driving, preventing wounds from healing, health deterioration, unusual sexual practices and desire to self harm. The study indicated that people with tattoos are characterized by the use of substances, alcohol abuse, reckless driving, unusual sex while people with piercings seem to be more engaged in preventing wounds from healing, worse health conditions, drugs abuse and self-harm.

Deschesnes *et al* (2006), Stirn *et al* (2006), Suris *et al* (2007), Brooks *et al* (2003) confirmed the frequent use of substances and other unsafe behaviors in people with piercings and tattoos. Roberts *et al* (2002) have shown that tattooing were significantly associated with use of substances, unusual sex, violent attitudes and problems in school such as truancy. Even Stephens *et al* (2003) confirmed the presence of risky behaviors such as smoking, use of controlled substances, alcohol and reckless driving in the military with tattoos. The same results were obtained by Braithwaite *et al* (2001) on a prison population of 860 inmates with tattoos: marijuana and alcohol were the most commonly substances used by majority of the group, respectively by 62% and 54%. In

Tab. 2. Cross-tabulation test results. The table reports only the statistical significant cross-correlation among all test performed.

Test #1	Test #2	Pearson Corr.	Sig. (2-tailed)
BSI	DEPRESSION	–0.76	0.000
	PGWBI	–0.75	0.000
	SELF CONTROL	–0.72	0.000
	HEALTH	–0.7	0.000
	OES II	0.67	0.000
	VITALITY	–0.61	0.000
	ANXIETY	–0.59	0.000
	POSITIVITY	–0.47	0.000
DES II	TAS-20	0.58	0.000
	SHI	0.49	0.000
	HEALTH	–0.46	0.000
	SELF CONTROLL	–0.45	0.000
	PGWBI	–0.44	0.000
	DEPRESSION	–0.43	0.000
	VITALITY	–0.43	0.000
	ANXIETY	0.41	0.000
SELF	BSI	0.68	0.000
SHI	DEPRESSION	–0.61	0.000
	PGWBI	–0.6	0.000
	HEALTH	–0.56	0.000
	SELF CONTROL	–0.5	0.000
	ANXIETY	0.47	0.000
	VITALITY	–0.46	0.000
TAS20	POSITIVITY	–0.38	0.000
	BSI	–0.69	0.000
	PGWBI	–0.59	0.000
	DEPRESSION	–0.57	0.000
	SELF CONTROL	–0.56	0.000
	SHI	–0.54	0.000
	VITALITY	–0.54	0.000
	HEALTH	–0.48	0.000
	ANXIETY	–0.46	0.000

the study of Skegg *et al* (2007) attitude to unusual sexual in women with piercings was confirmed.

The study examined also the correlations between all variables in order to evaluate significant interactions between the different used tools (e.g. if an increase in the Self-Harm Inventory corresponded to an increase in earnings TAS-20). Results indicated that BSI, SHI, TAS-20 DES II scores increase while PGWBI scores decreases. It highlights how the aforementioned diseases cannot coexist with a psychological well-being state. Moreover, the correlation between general health parameters of PGWBI and number of body modifications confirmed that patients with multiple bodily changes had a lower level of health. The correlation between the SHI and BSI, or PGWBI anxiety, confirmed the risk of self-injurious conducts may stem from higher level of arousal in subjects with BPD. Therefore, careful evaluation of the reasons behind such practices is highly recommended.

Conclusions

The ANOVA clearly shows a significant relationship between piercing and tattoo groups and psychological distress. As regards dissociative disorder evaluation, the DES II test results, although remained within the healthy people common range, highlighted a significant trend towards dissociative disorders in the patients with piercings and tattoos.

BSI test results provided evidence that piercing and tattoo groups, although laying on the test healthy range, showed a significant higher mean value on the piercing group compared with the control group.

Cross-correlation test confirmed a significant relation between PGWBI score and the number of tattoos and piercings. Chi-square test showed a prevalence of tattoos on male group while of piercings on female one, proving a significant correlation between gender and body modification types.

The main objectives of the research were achieved and the results constitute a new baseline for further investigations on relationship between body modifications and underlying psychopathologies.

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