Effect of Clinical Traineeship on the Emotional Dimensions (Valence and Arousal) among Nurses Student

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Authors' contributions

Article Information

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ABSTRACT

Aim: This study examines the effect of clinical traineeship on the emotional dimensions (valence and arousal) among nurses student.
Methods: Two groups were recruited. The first group consisting of the students who did not start the clinical traineeship. The second group composed of the students who finished their clinical traineeship. The images of the set 3 and the 11, which were taken from the International Affective Picture System (IAPS) constitute the emotional stimuli. The measurement of the emotional dimensions was carried out by the Self-Assessment Manikin (SAM).
Results: The study shows the negative correlation between valence and arousal among the two groups. Concerning neutral images and positive images, no significant difference was observed between the two groups in terms of the valence. The negative images were evaluated unpleasant by both groups with a valence significant difference.
Conclusion: The present study has a significant implication in nursing education. Indeed, the

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results showed that despite the clinical traineeship period, all negative images were assessed unpleasant. Hence, the need to reflect on innovative approaches to reduce the unpleasing responses. In this perspective, programming academic training sessions to familiarize students with negative situations and help them to manage their emotions could influence emotional responses in a clinical setting.

1. INTRODUCTION

"Emotions are action dispositions states of vigilant readiness that vary widely in reported effect, physiology, and behavior" [1]. It has a crucial role in human psychology and is strongly linked to cognition and behavior [2]. The emotional reactions are structured by two main motivational states: The defensive motivation and the appetitive motivation [3]. For that reason, emotional assessment is paramount.

To evaluate emotions, the Self-Assessment Manikin (SAM) has been used to measure the dimensions of pleasure, arousal and domination [4]. Of the same, the International Affective Picture System (IAPS) pronounced EYE-APS has been developed, based on the seminal work of Oskood and the work of Mehrabian and Russell [5]. The IAPS has been designed to provide an emotional stimulator for better control of experiments, to facilitate comparison of results between different studies, and to encourage and enable accurate replications [5]. The IAPS is designed to equip researchers who are interested in the emotion and the attention of standardized emotional stimuli [5]. It has been very successful in the research community. Indeed, this tool has been used in behavioral, social and neuroscientific studies [6].

Convinced to the importance of these tools, several studies have been carried out, many studies from America [1,4,5,7], and other studies have been conducted in various parts of the world: In France [8,9], in Brazil [10–12], in Germany [13], in China [14,15], in Korea [16], in Lithuania [17], in Belgique [18] and in Iran [19,20].

In the field of nursing, the clinical setting is an opportunity to create a connection between theory and practice. Previous studies have reported that nurses experience an emotional challenge [21–23] in the context of care. As well, the nurses student are faced with many serious emotional challenges [24,25]. In this sense, [26] states that nurses experience disgust and repulsion in their practice. This experience is due to the cadaverous, the sick, the disabled, the troubled bodies, the wounds, the vomiting and the excrement. Hence, the importance of studying the effect of clinical traineeship on the emotional dimensions among student nurses.

1.1 Study Population

The study population consisted of the sample of the volunteer students of the Higher Institute of Nursing Professions and Technics of Health, Morocco. Two groups were recruited: The first group consists of 70 students already benefiting of the clinical traineeship in hospitals (medical service, surgery department, resuscitation care, intensive care unit, and emergency care). The second group who has not started the clinical training consists of 50 students.

1.2 Ethical Aspect

The International affective picture system (IAPS) and the Self-Assessment Manikin (SAM) have been requested from the Center for the Study of Emotion and attention of the University of Florida. A permission to collect data on the level of the Higher Institute of Nursing Professions and Technics of Health was also requested. Participants were informed of the purpose of the research and signed a free and informed consent to participate in the study.

2. MATERIALS AND METHODS

2.1 The International Affective Image System (IAPS)

The IAPS is a database composed of a variety of images constituting an emotional stimulus [7]. There are negative images, positive images and neutral images (snake, mutilation, hospital, nature, family, desert, office, clock ...). The images are negative when the score valence is lower than four, neutral if score valence ranges

from four to six and positive when the score valence is greater than six [27].

In the document titled "International Affective Picture System (IAPS): Affective ratings of pictures and instruction manual" [5].There are 1530 pictures divided into 20 sets destined for adult among subjects (male and female). For Children, there are 240 pictures. The information mentioned is Description, number order Slide, Valence Mean (SD), Arousal Mean (SD), Dominance Mean (SD), picture set. The values

of the three dimensions (valence, arousal, dominance) were obtained using SAM.

The sets used in this study are: Set 3 includes 60 images of which 9 are erotic, set 11 includes 56 including 5 erotic pictures. For cultural reasons, erotic images were not used in the experiment.

The images used were grouped into three varieties. 24 negative images, 44 neutral images and 34 positive images.

Set 3
1120	1300	1310	1390	1590	1710	1720	1740	1750	2160	2220	2230	2340	2520
2530	2540	2600	3010	3160	3170	3220	3230	3250	4100	5200	5220	5870	5890
5900	5920	5940	5950	6000	6150	7100	7130	7190	7320	7550	7560	7570	7580
7620	7820	7830	8160	8200	8500	9090	9250	9270					

Set 11
1052	1101	1121	1303	1313	1340	1616	1945	2058	2141	2208	2209	2214	2216
2271	2304	2352,1	2372	2385	2485	2495	2514	2515	2518	2575	2900,1	3015	
3168	3181	3301	3550,2	5455	5779	5971	6213	6250,2	6570,2	6836	6838	7096	7184
7220	7289	7545	7595	7705	8116	8232	9156	9584	9594				

2.2 The Self-Assessment Manikin (SAM)

SAM is a visual (non-verbal) tool that determines different dimensional dimensions (pleasure, arousal and dominance) in response to an emotional stimulus [28]. It is a relatively easy method [5].

Paper-and-pencil version of SAM is composed of three panels. Top panel for measuring valence ranging from happy to unhappy. The middle panel corresponds to the degree of arousal ranging from excited to relaxed. Bottom panel Corresponds to the dominance dimension ranging from controlled to in-control [28].

To evaluate stimuli with SAM, different adjectives have been assigned. Concerning valence dimension, the adjectives corresponding to happy are happy, pleased, satisfied, contented, and hopeful. Those corresponding to unhappy are: unhappy, annoyed, unsatisfied, melancholic, despaired, and bored. Regarding arousal dimension, it ranges from excited (stimulated, excited, frenzied, jittery, wide-awake, aroused) to calm (relaxed, calm, sluggish, dull, sleepy, unaroused). About dominance, it ranges from controlled (controlled, influenced, cared-for, awed, submissive, guided) to control (influential, in control, important, dominant, autonomous) [5]. All the adjectives explaining the different dimensions have been validated [9].
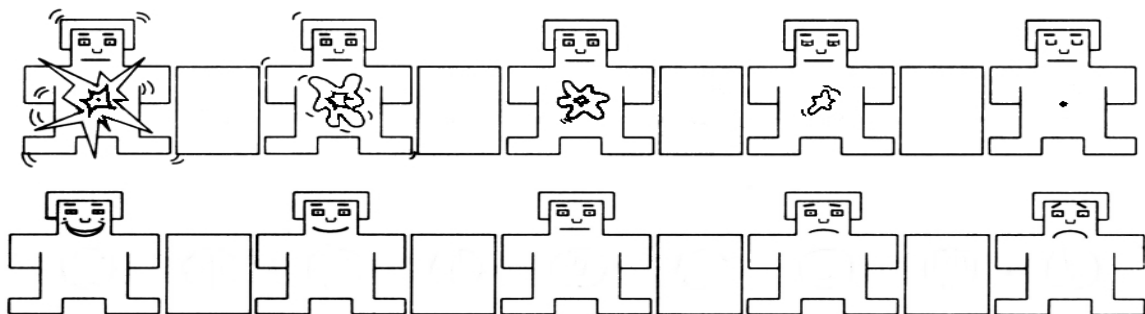

Fig. 1. The self-assessment manikin (SAM) to rate dimensions of valence (top panel) arousal (bottom panel) [29]

For each dimension of the SAM, the participant can tick one mannequin among the five or check between two {Citation} successive mannequins. Scoring scale ranges from one to nine.

2.3 Conduct of the Experiment

The experiment was carried out taking into account the Lang and al instructions [5]. Among others, the experimental sessions were conducted in a room under similar lighting conditions. Participants were warmly welcomed, well installed and were informed about the purpose of the study. They have read the informed consent to participle in the study. They also completed a personal information sheet: age, gender ... Subjects were run in groups ranging in size from 8 to 25 according to their availability. The stages of the experiment were explained by the presentation of three images before moving to experimental evaluation [5].

The slides, each containing a single image, were presented at a rate of 6 s per image. Just after, the participant filled on the SAM (Fig. 1), degree of pleasure, arousal [5].

Images that were subject to stimuli are taken from the IAPS are: Set 3 includes 60 images of which 9 are erotic, set 11 includes 56 including 5 erotic pictures. For cultural reasons, erotic images were not used in the experiment.

2.4 Statistical Analysis

For each image of the set 3 and set 11, the values of valence and arousal were represented by mean and standard deviation. The Pearson bivariate correlation (quantitative variables and normal distribution) between valence and arousal was carried out between the two groups. Student test were used to compare the means of valence of the different types of images between the groups of the study. A value of $p < 0,05$ was considered significant for all statistical analyzes.

3. RESULTS

The first group consists of 43 females (52%) and 27 males (48%). The average age of this first group is 20, 66 ± 0, 70. The second group composed of 24 male (48%) and 26 females (52%) with average age of 18,28 ± 0,64.

Fig. 2a and Fig. 2b show distribution of values of the valence and arousal affective dimension. We notice that the almost all of neutral images has a valence value between four and six, which indicates that they are evaluated as neutral, both by the group before clinical traineeship than by the group after clinical traineeship. Among neutral images evaluated unpleasant, we quote leopard, lava, volcano (Fig. 2b and Fig. 2d). We also note that the majority of positive images have a higher valence than six and have been evaluated as pleasant by the two subject groups of the study except owl which has been evaluated as unpleasant (Fig. 2b and Fig. 2d). The all-negative images were evaluated unpleasant (Fig. 2a).

The Pearson bivariate correlational study shows a negative correlation between valence and arousal in the among group before clinical traineeship ($p < 0.01$, $r = - 0.618$) and among group after clinical traineeship ($p < 0.01$, $r = - 0, 532$). Regarding negative images, they have all been rated as unpleasant (valence < 4).
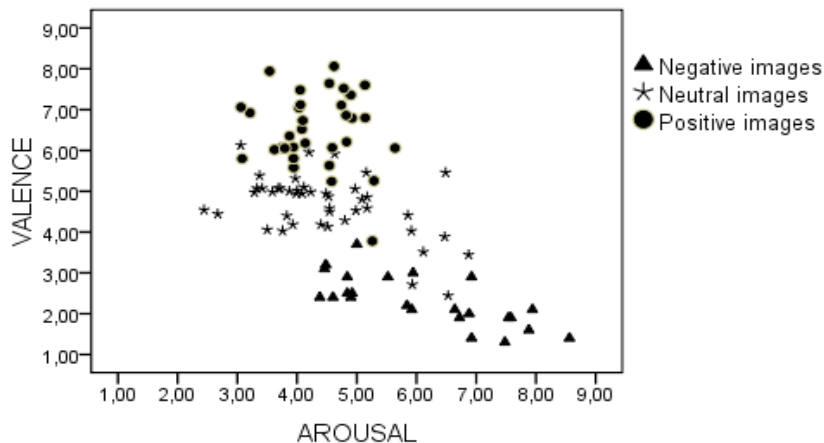

Fig. 2a. Distribution of mean values for the valence and arousal affective dimension of group before clinical traineeship
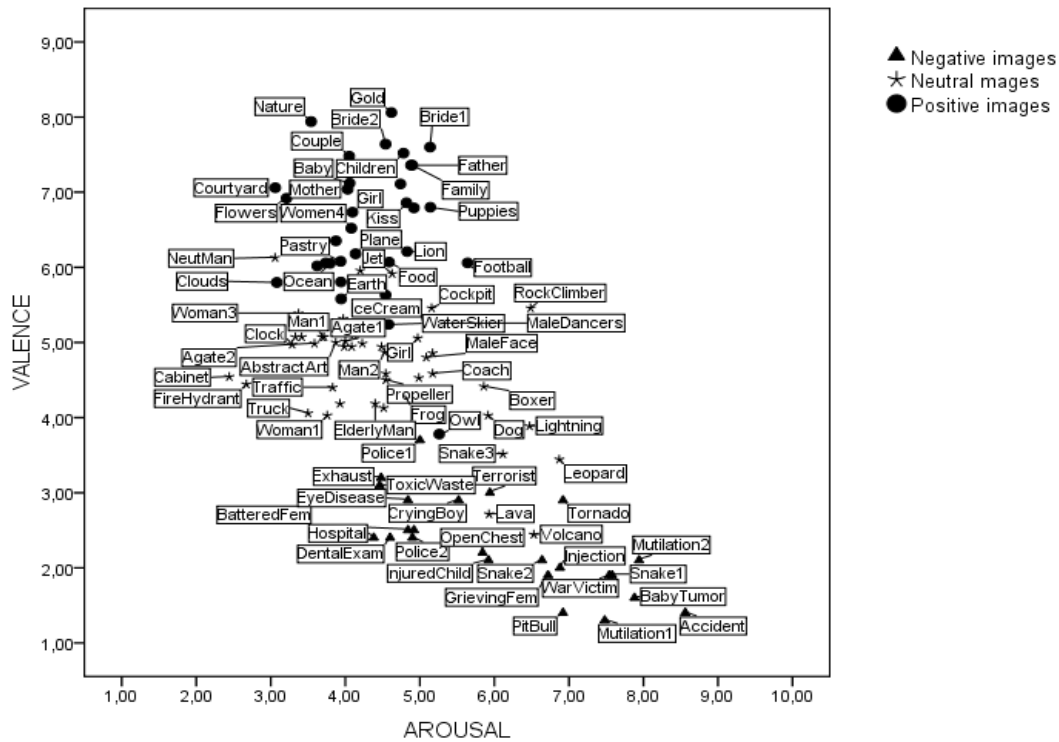
Fig. 2b. Distribution of mean values for the valence and arousal affective dimension of group before clinical traineeship with name images
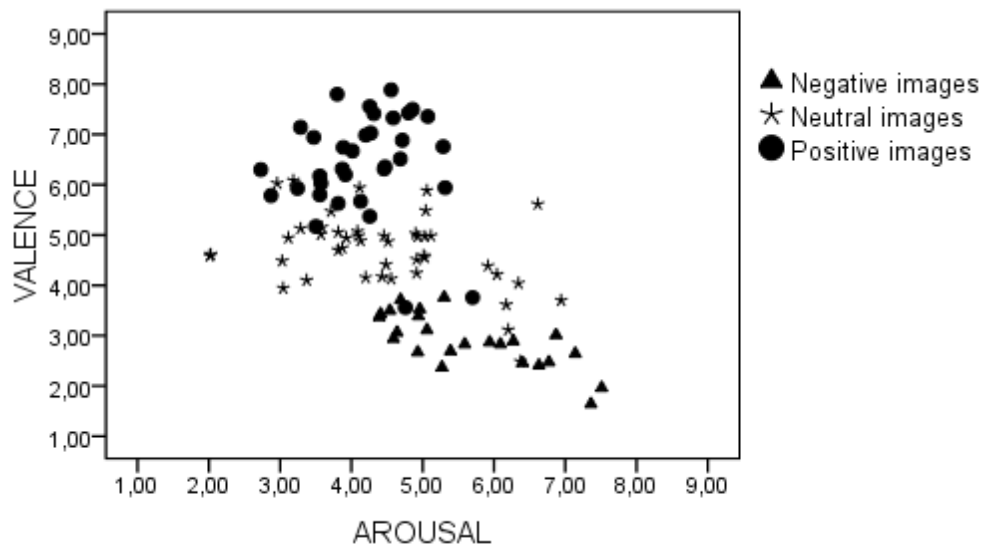

Fig. 2c. Distribution of mean values for the valence and arousal affective dimension of group after clinical traineeship

Fig. 3 shows the comparison of average valences of the different type images. For neutral images, the average valence is 4,67 ± 0,75 among group before clinical traineeship and 4,70 ± 0,73 among group after clinical traineeship.

Regarding the positive images, the average valence is 6, 51 ± 0.88 among group before clinical traineeship and 6.51 ± 0.94 among the group after clinical traineeship. No significant difference was observed.

Concerning negative images, the average among group before clinical traineeship is 2,33 ± 0,62 and the average among the group after clinical traineeship is 2, 90 ± 0,53. The difference is significant (p < 0,01).

Since there is a significant difference between the two groups in terms of negative images mean valence, valence comparisons were made between the two groups for each image.
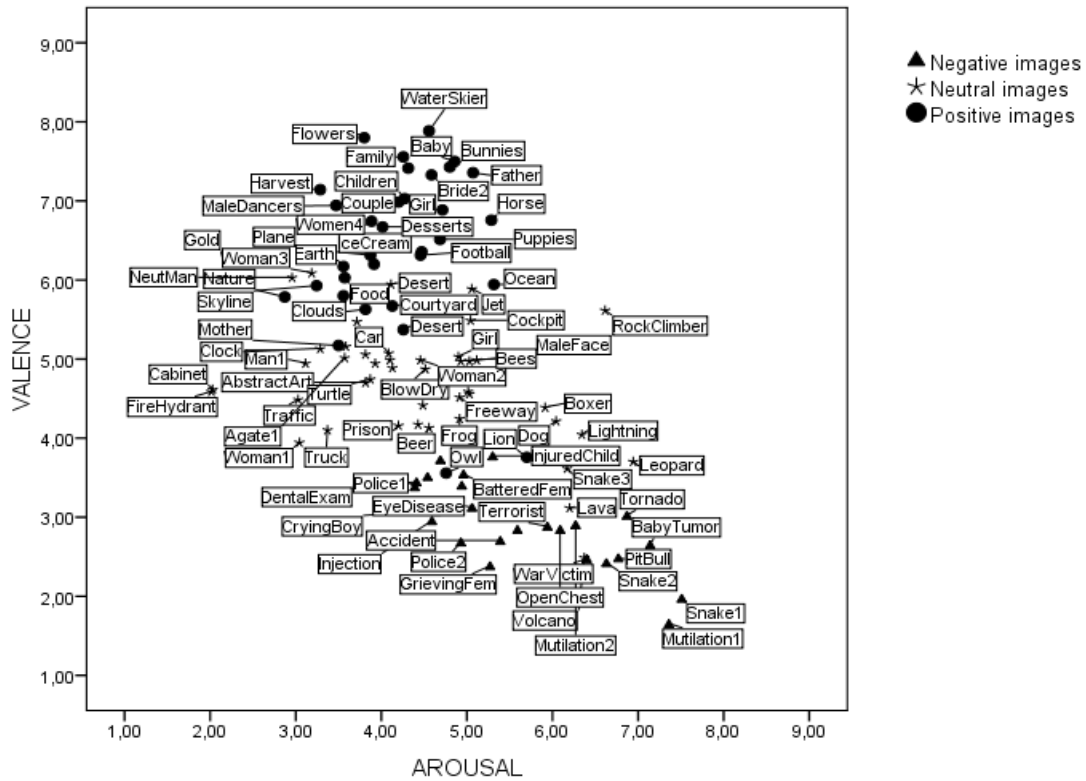

Fig. 2d. Distribution of mean values for the valence and arousal affective dimension of group after clinical traineeship with name images
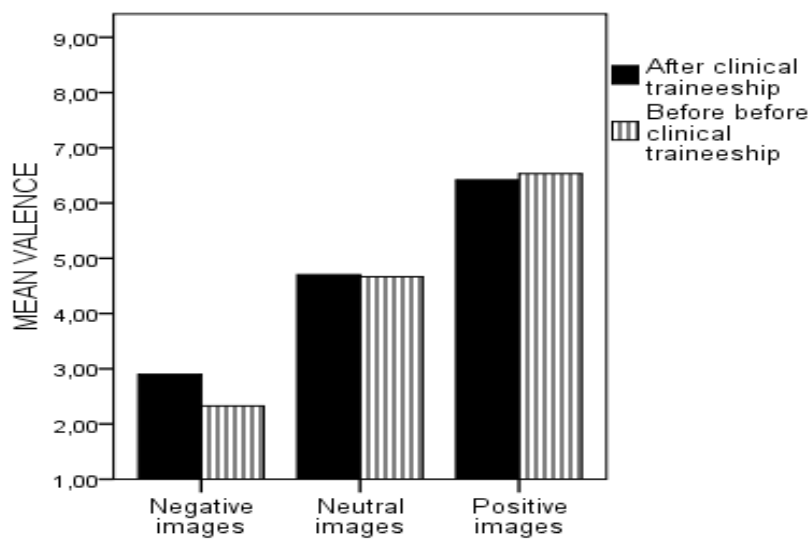

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Fig. 3. Mean valence of negative images, neutralimages and positive images among group after clinical traineeship and group before clinical traineeship

The Table 1 shows that the valence of each negative image is less than four (unpleasant) with the significant difference between the two groups for the majority of images (Snake1, Pit Bull, Mutilation1, Eye Disease, War Victim, Dental, Exam, Injection, $p < 0,01$), (Baby Tumor, Hospital, Dying Man, Exhaust, Toxic Waste, Crying Boy, Accident, Mutilation2, Battered Fem, Injured Child, $p < 0,05$). The Table 2 shows that there is no significant difference between females and males ($p > 0,05$).

Table 1. Mean valence (and SD) of images negatives among group before clinical traineeship and group after clinical traineeship

Images	Mean valence before clinical traineeship (±SD)	Mean valence after clinical traineeship (±SD)	P value
Snake1	1,96 (0,82)	2,98 (0,74)	*<0,01*
Pit Bull	2,47 (0,50)	1,64 (0,48)	*<0,01*
Mutilation1	1,64 (0,64)	2,44 (0,50)	*<0,01*
Eye Disease	3,11 (0,81)	2,54 (0,50)	*<0,01*
Baby Tumor	2,64 (1,26)	2,26 (0,85)	*<0,05*
Hospital	3,71(1,28)	3,26 (1,29)	*<0,05*
Dying Man	2,83 (0,99)	1,92 (0,75)	*<0,05*
Open Chest	2,83 (0,99)	3,12 (0,82)	*>0,05*
Exhaust	3,5 (1,13)	2,1 (1,05)	*<0,05*
War Victim	2,46 (0,93)	1,9 (0,81)	*<0,01*
Toxic Waste	3,39 (0,84)	2,92 (0,78)	*<0,05*
Snake2	2,41 (1,15)	1,42 (1,58)	*>0,05*
Grieving Fem	2,37 (0,94)	2,12 (0,77)	*>0,05*
Crying Boy	3,06 (1,01)	2,56 (0,50)	*<0,05*
Accident	2,69 (0,94)	2,16 (0,77)	*<0,05*
Mutilation2	2,89 (0,77)	2,98 (0,82)	*<0,05*
Battered Fem	3,53 (0,50)	3,08 (0,8)	*<0,05*
Injured Child	3,76 (0,43)	3,7 (0,65)	*<0,05*
Tornado	3,01 (0,88)	2,48 (1,22)	*>0,05*
Terrorist	2,87 (0,80)	2,46 (1,16)	*>0,05*
Police1	3,37 (0,49)	2,04 (0,83)	*>0,05*
Police2	2,67 (1,18)	2,26 (0,85)	*<0,05*
Dental Exam	3,43 (0,50)	5,84 (0,79)	*<0,01*
Injection	2,94 (0,85)	3,52 (0,50)	*<0,01*

Table 2. Mean valence (and SD) of images negatives among males and females

Image	Mean valence male (±SD)	Mean valence female (±SD)	P value
Snake1	2,33 (0,93)	2,42 (0,95)	*>0,05*
Pit Bull	2,12 (0,65)	2,13 (0,64)	*>0,05*
Mutilation1	2,00 (0,66)	1,96 (0,74)	*>0,05*
Eye Disease	2,92 (0,66)	2,84 (0,82)	*>0,05*
Baby Tumor	2,35(1,07)	2,58 (1,16)	*>0,05*
Hospital	3,45 (1,33)	3,58 (1,28)	*>0,05*
Dying Man	2,33 (0,97)	2,54 (1,02)	*>0,05*
Open Chest	2,9 (0,94)	2,99 (0,93)	*>0,05*
Exhaust	2,96 (1,22)	2,88 (1,36)	*>0,05*
War Victim	2,16 (0,88)	2,28 (0,95)	*>0,05*
Toxic Waste	3,14 (0,87)	3,23 (0,83)	*>0,05*
Snake2	2,14 (1,76)	1,9 1 (0,13)	*>0,05*
Grieving Fem	2,12 (0,91)	2,38 (0,84)	*>0,05*
Crying Boy	2,69 (0,84)	2,97 (0,87)	*>0,05*
Accident	2,51 (0,90)	2,43 (0,92)	*>0,05*
Mutilation2	2,88 (0,82)	2,96 (0,78)	*>0,05*
Battered Fem	3,43 (0,70)	3,28 (0,66)	*>0,05*

Image	Mean valence male (±SD)	Mean valence female (±SD)	*P value*
Injured Child	3,75 (0,59)	3,72 (0,48)	*>0,05*
Tornado	2,76 (1,09)	2,81 (1,05)	*>0,05*
Terrorist	2,57 (1,01)	2,8 0 (,96)	*>0,05*
Police1	2,78 (0,88)	2,84 (0,96)	*>0,05*
Police2	2,51 (1,05)	2,49 (1,09)	*>0,05*
Dental Exam	4,51 (1,43)	4,38 (1,3)	*>0,05*
Injection	3,25 (0,80)	3,13 (0,77)	*>0,05*

4. DISCUSSION

The aim of this study was to describe the effect of clinical traineeship on the bidimensional emotional evaluation (valence, arousal) by presenting images of the IAPS to two groups of nurses student. The first group consisting of the students who did not start the clinical traineeship. The second group composed of the students who finished their clinical traineeship.

The results show that, the two groups of studies reproduced the positive and the neutral characters of the images except some images. At the same, the unpleasant character was reproduced for the all negative images, among others (Eye Disease Injection, Hospital…). Nevertheless, the study showed a significant difference between the group before clinical traineeship and the group after clinical traineeship in terms of the valence. This finding is different from Paes et all results which revealed no significant difference between a group of nurses and a social group when evaluating negative images from IAPS (11).

This significant difference could be due to the situations in the clinical setting, in which students encounter negative situations, especially in the intensive care unit and emergency departments. Also, other biological and sociocultural factors could be involved [30].

The correlational study between valence and arousal in both groups showed a negative correlation, which is a reminder the study of (10). In addition, in the all figures presenting bidimensional space (valence/arousal) boomerang graphic was obtained for the two groups (after clinical traineeship, before clinical traineeship). This graphic aspect has been reported by [29,31].

The result of rating negative images leads to questioning to the effect of the unpleasing on the cognition and the behaviour. In fact, previous studies have already been interested to the relationship between emotion, cognition, and behavior [32], and to the impact of emotion on perception, attention, memory, and decision-making [33]. Furthermore, [3] suggest, that emotion responses, affect action, attention and social communication.

5. CONCLUSION

The present study have a significant implication in nursing education. Indeed, the results showed that despite the clinical traineeship period, all negative images were assessed unpleasant. Hence, the need to reflect on innovative approaches to reduce the unpleasing responses. In this perspective, programming academic training sessions to familiarize students with negative situations and help them to manage their emotions could influence emotional responses in a clinical setting.

6. IMPACT STATEMENT

This study deals with an important topic. Indeed, it is related to the preparation of nurses student to confront emotional situations during the internship in a clinical environment. This could facilitate their professional integration and contribute to the quality of care.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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