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Multi-level emotions recognition among forensic sexual offenders: Preliminary results

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INTRODUCTION

Sexual Offenders (SO) exhibit deficits in socio-affective functioning (Thornton, 2002), such as emotions management and regulation (Gillespie et al., 2012; Stinson et al., 2016). Clinicians and researchers acknowledge the emotions, identifying and regulation, as a key component in sexual offending, as important as cognition alone (Gannon & Ward, 2017). Accurate emotions recognition is fundamental in appropriate social interactions (Fernández-Dols et al., 2017). Despite a growing body of literature, intensifying these last years (Hudson et al., 1995; Gery et al., 2009; Gillespie et al., 2015, 2021; Suchy et al., 2009; Wegryn et al., 2017), there is still little research on emotions recognition among SO. This paucity of literature is unexpected as emotions recognition has been theorized as the first step in the dynamic process of empathic behaviors (Marshall & Marshall, 2011; Marshall et al., 1995). Previous research on facial expressions of emotions yielded contradictory results (Tiberi et al., accepted), using diverse stimuli and methodology (e.g.: static mono-chromatic stimuli). In addition, to the authors knowledge, no study has yet been conducted on forensic SO inpatients.

Aim: Assessment of multi-level emotions (face, voice – prosody, voice – semantic and body posture) recognition competency among forensic SO inpatients, compared to forensic ‘Non-Sexual Offender’ inpatients (NSO) and ‘Non-Clinical Population’ (NCP).

METHOD

Participants

The sample is composed of 88 male participants, divided in three groups. The first two groups are forensic inpatients, interned in the High-Risk Security Forensic Hospital “*Les Marronniers*” (Belgium), under the Law for the internment of persons (2014). Based on their criminal records, they were either categorized into SO group ($n = 20$) if they committed at least one sexual infraction, or into NSO group ($n = 17$) if they did not. The NCP group is composed of men from the community ($n = 51$) through a call for participants published in some public places and on social networks.

No difference was found between SO and NSO on PANAS, UPPS-P and MC-SDS self-reports descriptive variables (Table 1). However, SO were significantly older ($p \leq .001$), less educated ($p \leq .001$), and exhibited lower score ($p \leq .001$) on Perseverance subscale than NCP. NSO were only less educated ($p \leq .001$) than NCP. Finally, on a criminal level, NSO committed more thefts ($p \leq .05$) and more threats ($p \leq .05$) than SO.

Instruments



Psychiatric Assessment

- *Mini International Neuropsychiatric Interview* – MINI (Sheehan et al., 1998)
- *Structured Clinical Interview for DSM-IV Axis I Disorders* – SCID-II (First et al., 1997)

Anamnesis



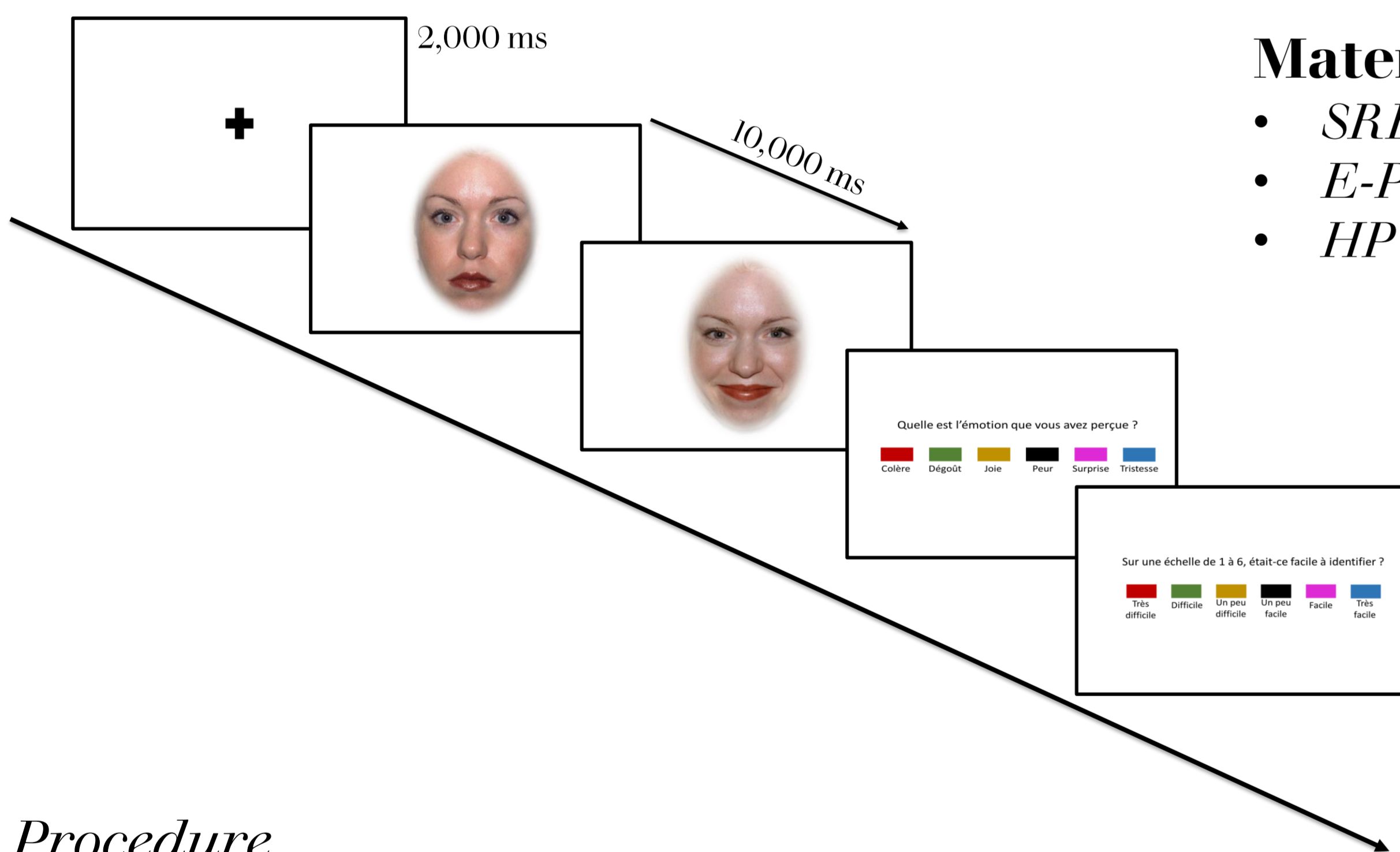
Self-Reports (SRs)

- *Positive And Negative Affect Scales* – PANAS (Gaudreau et al., 2006)
- *Marlowe-Crowne Social Desirability Scale* – MC-SDS (Crowne & Marlowe, 1960)
- *Urgency, Premeditation, Perseverance, Sensation seeking, Positive Urgency* – UPPS-P (Billeux et al., 2012)



Multi-level emotion recognition tasks

- *NimStim Set of Facial Expressions* (Tottenham et al., 2009); 87 stimuli extracted, morphed, dynamized in 10sec videos
- *Geneva Multimodal Emotion Protocol* (Bänziger et al., 2011); 48 stimuli extracted
- *EMOTAIX Scenarii, synthesized by Acapela-Group*; 48 stimuli created
- *Bochum Emotional Stimulus Set* (Thoma et al., 2015); 48 stimuli extracted



Material

- *SRBOX - RB-730 (Cedrus)*
- *E-Prime 2.0* (Schneider et al., 2002)
- *HP ZBook15 (15.6 inches; 1920*1080; 60 Hz)*



Procedure

Voluntary forensic inpatients selection was undertaken in accordance with their psychologist, based on the following inclusion criteria: a) inpatients aged between 18 to 65 years old, b) whose mother tongue is French and c) with sufficient cognitive competencies and with a stable mental state to realize such tasks. Two sessions (min.) were organized with forensic inpatients. The first was conducted in the patient respective Care Unit to present the research, to sign consent sheet, and to complete the anamnesis and SRs (MC-SDS and UPPS-P). The second (and third if necessary) session was conducted in a research room, to complete the PANAS, followed by the emotions recognition tasks. A session duration was between 1h and 2h (pauses included), based on inpatients cognitive ability and tiredness.

For the NCP participants, one session was organized inside a research room at UMONS. A session duration was about 2h (pauses included). NCP participants received a 10€ Amazon gift card after the session completion.

Data Analysis

Descriptive analyses were performed to describe the samples. In the absence of data normality, we carried out Kruskal-Wallis's H analyses (Table 2), followed with post-hoc Mann-Whitney's U analyses (Bonferroni correction; $p \leq .016$) for 2x2 groups comparisons.

RESULTS

Table 1 – Descriptive statistics of the three groups

	SO			NSO			NCP			K-W H
	n	M	SD	n	M	SD	n	M	SD	
Age	20	47.49	13.59	17	40.66	11.18	51	34.29	14.17	14.51***
Years of education	20	4.20	5.09	17	6.71	4.69	51	15.37	2.74	58.50***
PANAS										
<i>PANAS - PA</i>	19	33.05	5.70	17	28.47	7.43	51	31.49	5.11	3.00
<i>PANAS - NA</i>	19	13.05	2.53	17	14.59	5.52	51	14.32	4.84	0.09
MC-SDS	20	19.60	4.25	17	18.24	3.54	51	17.61	4.68	2.25
UPPS-P	19	39.68	10.40	17	42.94	9.16	51	44.65	8.78	4.53
<i>(Negative) Urgency</i>	19	9.47	2.85	17	9.29	3.18	51	8.31	2.96	3.23
<i>Premeditation</i>	19	7.00	2.96	17	7.18	1.84	51	7.12	2.76	0.29
<i>Perseverance</i>	19	5.11	1.69	17	5.71	1.79	51	7.31	2.81	12.43**
<i>Sensation (seeking)</i>	19	9.16	4.31	17	10.94	3.66	51	11.43	2.97	4.21
<i>Positive (urgency)</i>	19	8.95	4.02	17	9.82	3.48	51	10.47	2.45	2.06

Note: *PANAS - NA* = Negative Affect; *PANAS - PA* = Positive Affect; *K-W H* = Kruskal-Wallis H ; * $p \leq .05$; ** $p \leq .005$; *** $p \leq .001$

NSO (92.9%) exhibited more Mental Disorders [MD] (MINI) than SO (56.80%) ($p \leq .001$), and specifically more psychotic disorders (NSO = 55.7%; SO = 0.00%; $p \leq .05$). No difference was found between SO and NSO regarding Personality Disorders [PD] Clusters (SCID-II).

Table 2 – Comparisons (Kruskal-Wallis H) of emotional variables between the three groups

	SO			NSO			NCP			K-W H
	n	M	SD	n	M	SD	n	M	SD	
FEE										
RT Recognition (ms)	20	10944.16	4338.11	17	9692.74	3240.44	50	6455.09	1560.53	35.14**
Mean Recognition Accuracy	20	0.64	0.15	17	0.66	0.16	50	0.78	0.06	22.42**
RT Accuracy (ms)	20	3607.38	2707.47	17	3245.41	1227.60	50	1951.98	470.89	27.57**
Mean Difficulty	20	4.41	1.10	17	4.43	0.63	50	3.87	0.52	9.70*
RT Difficulty (ms)	20	3219.66	2610.14	17	2988.12	1909.83	50	2074.49	535.71	3.87
VEE – Prosody										
Mean Recognition Accuracy	20	0.41	0.13	17	0.43	0.12	51	0.66	0.08	49.94**
RT Accuracy (ms)	20	4688.47	3263.83	17	4117.10	1992.88	51	3388.40	1662.33	3.10
Mean Difficulty	20	3.62	1.50	17	3.87	0.82	51	3.49	0.58	1.60
RT Difficulty (ms)	20	2249.64	2081.60	17	2610.77	2503.88	51	1796.64	515.18	1.48
VEE – Semantic										
Mean Recognition Accuracy	20	0.68	0.21	17	0.69	0.19	51	0.93	0.06	46.81**
RT Accuracy (ms)	20	5324.56	3631.94	17	3103.58	1579.19	51	1698.58	903.61	19.68**
Mean Difficulty	20	4.37	1.11	17	4.49	0.85	51	5.19	0.67	13.19**
RT Difficulty (ms)	20	2198.27	1879.48	17	2128.08	1191.84	51	1446.93	585.76	6.56*
BEE										
RT Recognition (ms)	20	5325.17	3342.41	17	4006.28	1731.45	51	2936.51	1428.30	15.80**
Mean Recognition Accuracy	20	0.63	0.14	17	0.66	0.17	51	0.81	0.06	30.11**
RT Accuracy (ms)	20	3009.70	2225.83	17	2673.18	1114.51	51	1770.71	568.12	15.60**
Mean Difficulty	20	4.35	1.07	17	4.50	0.75	51	4.30	0.61	1.11
RT Difficulty (ms)	20	2032.14	1589.19	17	1889.30	1160.23	51	1574.10	478.69	0.53

Note: *FEE* = Facial Expressions of Emotions; *VEE* = Vocal Expressions of Emotions; *BEE* = Bodily Expressions of Emotions; *KW H* = Kruskal-Wallis H ; * $p \leq .05$; ** $p \leq .001$

The majority of 2x2 groups comparisons between SO and NCP, and between NSO and NCP were significant ($p \leq .016$), except for: ‘FEE – Mean Difficulty’ ($p = .04$), ‘VEE – Prosody Mean Recognition Accuracy’ ($p = .52$) and ‘VEE – Semantic RT Difficulty’ ($p = .14$). No significant difference was found between SO and NSO.

DISCUSSION

SO exhibit significant lower performances (e.g.: longer RT, lower mean recognition accuracy) than NCP, but unexpectedly not in comparison with NSO. These results tend to suggest that SO and NSO groups are more similar than expected, despite, for example, their psychopathological profile (psychosis).

Future perspectives are numerous. First, a deeper specific analysis (six basic emotions) will be undertaken to identify whether SO and/or NSO exhibit specific deficit in negative emotions, as hypothesized in the literature (Chapman et al., 2018). Second, a more precise analysis regarding the MD and PD could lead to a refined discrimination between these two groups, in line with RDoC framework (Insel, 2014). Third, the use of refined statistical indexes, sensitivity (d') and response bias (c) as retrieved in the Signal Detection Theory (Hautus et al., 2022), would be promising for a sharper analysis. Finally, the impact of supplementary stimuli variables as model ethnicity or model gender should be assessed through a Multivariate Analysis of Variance.

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