Poster Face Sheet

- All persons listed must have agreed to be on this submission.
- For each author listed, this counts as one of his/her two (maximum) submissions.

Format: ☐ Poster ☒ Electronic Poster

Indicate Review Panel Choice: 3 (1st) 2 (2nd)

TITLE: 130 characters maximum (including letters, spaces, and punctuation marks):

BioBeAMS: A multimedia system for assessment of attachment organizations and ECG during the Strange Situation

Insert three keywords and their number codes from those listed on page 4.

Keyword: Attachment **Code #:** 18

Keyword: Physiological Correlates **Code #:** 193

Keyword: Measurement **Code #:** 153

Author(s): *Last Name, First Name*

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3rd	ZHANJIAN, LI	UNIVERSITY OF AVEIRO, PORTUGAL
4th	NEVES, LUCIA	UNIVERSITY OF MINHO, PORTUGAL
5th	COSTA, OVIDIO	CENTER OF SPORTS MEDICINE, PORTUGAL
6th	CUNHA, JOAO PAULO	UNIVERSITY OF AVEIRO:PORTUGAL

Designate one presenting author and one corresponding author from the authors listed above (may be same person) :

Presenting Author: SOARES, ISABEL

Corresponding Author: SOARES, ISABEL

Submission of this form implies submitter's agreement to make the presentation as scheduled. No changes in author, time, title, or format may be requested.

A Participant Identification Form must be submitted for each person listed on this page!

BioBeAMS: A multimedia system for assessment of attachment organizations and ECG during the Strange Situation

In light of John Bowlby's attachment theory and making efforts to supersede "the divorce from biology", researchers show a growing interest in the study of the relations between attachment organizations and physiological processes (e.g. Donovan & Leavitt, 1985; Dozier & Kobak, 1992; Goldsmith & Harman, 1994; Gunnar, 1986; Gunnar, Mangelsdorf, Larson & Hertsgaard, 1989; Izard, Porges, Simons, Haynes, et al, 1991; Spangler & Grossmann, 1993, Sroufe & Waters, 1977).

Within attachment research, the Ainsworth's Strange Situation (Ainsworth & Wittig, 1969) is a well-known procedure to assess the quality of infant-mother at the end of the first-year of life, yielding a classification in terms of distinct organizations: a secure ("B"), an insecure-avoidant (A) and an insecure-ambivalent ("C"). Recently, Main & Solomon (1990) identified a "disorganized-disoriented" group ("D") as an additional attachment status.

In order to empirically explore the relations between attachment organizations and physiological processes at the Strange Situation, it is necessary to collect and to analyze data in a synchronous way.

Recent advances in multimedia technology offer the possibility to use digital procedures in psycho-physiological assessments. Based on these recent technological achievements, we developed a full digital multimedia system, named BioBeAMS - Bio-Behavioral Attachment Multimedia System - that enables the synchronous collection of full color video and audio information and ECG signals during the Strange Situation procedure. A camcorder is used for collecting video and audio information. It is connected to a digital video acquisition board plugged into a PC computer bus. This board enables the digital acquisition of video and audio data to the PC hard disk at up to 30 frames per second with a compression rate up to 20:1 provided by a dedicated video processor corresponding to a throughput of 800 Mb/hour approximately. The bio-

signals are acquired by portable units attached to the subjects that send the digitized signals to the PC through standard serial ports. These units are specially designed to implement all the necessary protection for electrical insulation and are resistant to defibrillator actuators.

BioBeAMS, as a full digital system, permits multimedia reviewing and editing procedures. Fig. 1 shows an aspect of the human-machine interface of the system while working.

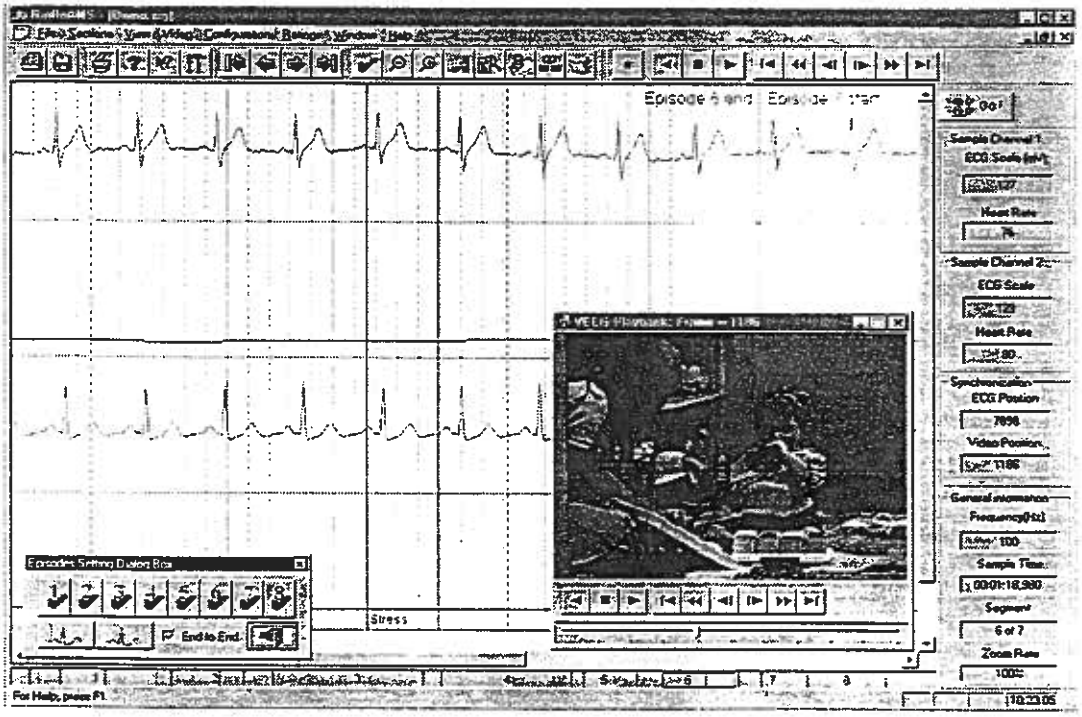

Fig. 1: Main Human-Machine Interface of BioBeAMS

After the integrated acquisition of video and bio-signals from the mother and the child in the Strange Situation, the researcher can visualize in real-time ("play mode") all the information in a synchronous way. He/she can have the video displayed in a window and the corresponding bio-signal will be displayed on another window, where a dynamic cursor shows the bio-signal sample that corresponds to the video frame played at that moment. The researcher can then stop, watch frame by frame, set episode's boundaries, add event labels or write notes to the scene being analyzed, using the mouse which is a very convenient way for users. All this editing information is synchronously saved. The researcher can also analyze the different parts of the

procedure classified in a certain way, jump from one episode to another and watch just the part of the procedure where a specific event was marked. BioBeAMS provides also four different score sheet facility for rating, one for the final result and three for individual raters, which allows several raters to evaluate the instance or the episode independently. It also provides the serviced for processing the results, e.g., grouping the cases, saving to file and exporting to MS Excel™.

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