

KDEF and AKDEF

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1. About KDEF

The Karolinska Directed Emotional Faces (KDEF) is a set of totally 4900 pictures of human facial expressions of emotion. The material was developed in 1998 by Daniel Lundqvist, Anders Flykt and Professor Arne Öhman at Karolinska Institutet, Department of Clinical Neuroscience, Section of Psychology, Stockholm, Sweden.

The material was originally developed to be used for psychological and medical research purposes. More specifically material was made to be particularly suitable for perception, attention, emotion, memory and backward masking experiments. Hence, particular attention was for instance paid to create a soft, even light, shooting expressions in multiple angles, use of uniform T-shirt colors, and use of a grid to center participants face during shooting, and positioning of eyes and mouths in fixed image coordinates during scanning.

The set contains 70 individuals, each displaying 7 different emotional expressions, each expression being photographed (twice) from 5 different angles.
For more info, see Details, below.

2. About AKDEF

The Averaged Karolinska Directed Emotional Faces (AKDEF) is a set of totally 70 pictures of averaged human facial expressions. The material was developed in 1998 by Daniel Lundqvist and Jan-Eric Litton at Karolinska Institutet, Department of Clinical Neuroscience, Section of Psychology, Stockholm, Sweden.

The material contains an averaged female and an averaged male displaying 7 different emotional expressions. Each expression is viewed from 5 different angles. The AKDEF material was made by using the complete KDEF material. The pictures in KDEF was first converted from 32 bit RGB color to 8 bit greyscale. They were then sorted into 70 different stacks (7 emotions * 5 angles * male/female), so that for example all 70 pictures (35 individuals * 2 series) of happy females in full left profile were in one stack. Average pictures were then calculated for each stack.

The material was originally developed to be used for psychological and medical research purposes. More specifically material was made to be particularly suitable for perception, attention, and emotion experiments.

3. Terms of use

The KDEF and AKDEF stimuli may be used without charge for non-commercial research purposes only. All and any (re-)distribution and publishing without the

written consent of the copyright holders is forbidden. Copyright holder is Karolinska Institutet, Department of Clinical Neuroscience, Section of Psychology, Stockholm, Sweden.

4. How to refer to KDEF and AKDEF

The Karolinska Directed Emotional Faces

Lundqvist, D., Flykt, A., & Öhman, A. (1998). The Karolinska Directed Emotional Faces - KDEF, CD ROM from Department of Clinical Neuroscience, Psychology section, Karolinska Institutet, ISBN 91-630-7164-9.

The Averaged Karolinska Directed Emotional Faces

Lundqvist, D., & Litton, J. E. (1998). The Averaged Karolinska Directed Emotional Faces - AKDEF, CD ROM from Department of Clinical Neuroscience, Psychology section, Karolinska Institutet, ISBN 91-630-7164-9.

5. Detailed info about KDEF

The Karolinska Directed Emotional Faces

Date

Created in 1998

Subjects

Population: 70 amateur actors, 35 females and 35 males.

Selection criteria's: Age between 20 and 30 years of age. No beards, mustaches, earrings or eyeglasses, and preferably no visible make-up during photo-session.

Method

All subjects received written instructions in advance. These instructions entailed a description of the seven different expressions that they were to pose during the photo session. The subject was asked to rehearse the different expressions for 1 hour before coming to the photo session. It was emphasized that the subject should try to evoke the emotion that was to be expressed, and - while maintaining a way of expressing the emotion that felt natural to them - try to make the expression strong and clear.

All subjects wore gray T-shirts. They were seated at a distance of approximately three meters from the camera. The absolute distance was adapted for each subject by adjusting the camera position until the subject's eyes and mouth were at specific, pre-defined vertical and horizontal positions on the camera's grid screen.

The lights were set to cast a soft indirect light evenly distributed at both sides of the face. After a session of rehearsal, the subjects were shot in one expression at the time until all seven expressions had been shot (series one). The subjects were the shot once again in all expressions and angles (series two).

Equipment

Camera: Pentax LX.

Lens: Pentax original 135 mm.

Extra: Grid screen.

Film: Kodak 320 T.

Lights: 3 * 500 W lamps.

Digitizing

Hardware: Macintosh 8500/120, Polaroid Sprintsan 35.

Software: Adobe Photoshop 4.

Settings: Positives (36 * 24 mm) were scanned in RGB color, in 625 dpi resolution.

Extra: Each picture was adjusted to a digital grid. Once again, vertical and horizontal position of eyes and mouth were adjusted to specific positions on the grid, and then cropped to a size of 562 pixels width and 762 pixels height.

Details

Copyright: Karolinska Institutet, Department of Clinical Neuroscience, Psychology section, Stockholm, Sweden.

Participants: 70 (35 males and 35 females).

Age: m 25 years, ranging from 20 to 30 years.

Expressions: 7 (neutral, happy, angry, afraid, disgusted, sad, surprised).

Angles: 5 (-90, -45, 0, +45, +90 degrees: i.e. full left profile, half left profile, straight, half right profile, full right profile).

Sessions: 2.

Number of pictures: 4900.

Size: 562 * 762 pixels.

Resolution: 72*72 dpi.

Colors: 16.7 million (32 bit).

Size inflated: 1.6 Mb.

Size compressed: approximately 122 kb (ranging from 85 to 158 kb).

File format: JPEG.

Compression quality: 94 %.

Codes:

Example: AF01ANFL.JPG

Letter 1: Session

A = series one

B = series two

Letter 2: Gender

F = female

M = male

Letter 3 & 4: Identity number

01 - 35

Letter 5 & 6: Expression

AF = afraid

AN = angry

DI = disgusted

HA = happy

NE = neutral

SA = sad

SU = surprised

Letter 7 & 8: Angle

FL = full left profile

HL = half left profile

S = straight

HR = half right profile

FR = full right profile

Extension: Picture format

JPG = jpeg (Joint Photographic Experts Group)

6. Contacts

Questions about KDEF or AKDEF may be directed to Daniel Lundqvist - daniel.lundqvist@ki.se

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