This study introduces the Children’s Scales of Pleasure and Arousal as instruments to enable children to provide subjective and descriptive judgments along the major dimensions of affect. Children (N = 160, 3 to 11 years), and an adult comparison group (N = 20), used the scales to indicate the levels of pleasure or arousal they perceived in stylized drawings of facial expressions. All age groups used the Pleasure and Arousal Scale reliably and accurately. The Children’s Scales of Pleasure and Arousal provide a reliable and useful measure of children’s judgments of these two dimensions of emotional facial expressions.

Introduction

The question addressed in the present article was how to measure the dimensions of pleasure and arousal in a format that young children could use. Pre-literate children cannot make any kind of written response. Thus, if children are to report their current affective state, or make judgments regarding any kind of emotional stimuli, an age-appropriate response format is required. The Children’s Scales of Pleasure and Arousal (CSPA) were designed to record judgments on the bipolar scales of pleasure and arousal about single instances of affect (e.g. the feeling expressed by a single facial expression or word).

The CSPA were used in a study of 4- and 5-year-olds. Russell and Paris (1994) asked children to use the scales to rate complex emotions (jealous, worried, ashamed, calm, proud, grateful). The children’s scores from the Pleasure Scale and the Arousal Scale were strongly correlated (p < .01) with adults’ ratings of pleasure (r = .96 for 4-year-olds; r = .97 for 5-year-olds,) and of arousal (r = .93 and .87, respectively) for these emotions. These results offer preliminary support for the validity of the CSPA.

Our intent in the current studies was to examine the CSPA with new stimuli, different emotions, and with slightly younger and much older children (3- to 11-years). We asked children (3- to 11-years) to judge stylized drawings of faces using either the Pleasure or the Arousal Scale, and compared these ratings to ratings of the same stimuli by adults.

Method

Participants. There were 160 participants in total. There were 20 children in each of seven age groups: 3, 4, 5, 6, 7, 8 (including 9), 10 (including11) years at last
birthday, enrolled in preschools and public elementary schools, plus 20 university-aged adults. All the participants were proficient in English.

**Procedure**

The experimenter first spent several hours getting to know the children before beginning the study. The child was then randomly assigned to either the Pleasure or the Arousal Scale, and taught how to use that scale. (The Pleasure and Arousal Scales are available upon request.)

### Pleasure Scale

![Pleasure Scale Image]

- very very bad
- a little bad
- normal
- a little good
- very very good

### Arousal Scale

![Arousal Scale Image]

- very very sleepy
- a little sleepy
- normal
- wide awake
- very very wide awake

The experimenter then showed the child each stylized face, one at a time in random order, and pointed out that they each felt differently. The experimenter then picked up the drawings and presented them again, individually in a new random order.

For the pleasure scale, the experimenter asked whether “...this person feels okay inside or bad inside.” If the participant indicated that the person felt bad inside, the experimenter asked if the person felt “a little bad or very very bad”, and when the participant indicated that the person felt good inside the experimenter asked if they felt “just okay, a little good, or very very good.”

For the arousal scale, the experimenter asked whether “...this person is sleepy or awake.” If the participant indicated that the person was sleepy, the experimenter asked, “Do they feel a little sleepy, or very very sleepy?” If the participant indicated that the person was awake, the experimenter asked, “Do they feel normal, a wide awake, or very very wide awake?”

Adult participants, who were also tested individually, were randomly assigned to either the pleasure or the arousal scale. They were shown the scale, and each box was verbally labeled. The labels were reviewed until the participant demonstrated that he or she knew each one.
Results

The purpose of Study 1 was to test whether the CSPA could be used by young children to indicate the levels of pleasure or arousal they perceived in the stylized drawings of facial expressions seen in Figure 1. The stylized faces were designed to represent varying levels of pleasure and arousal.

University students (N=30) had rated the ten faces with the Affect Grid (Russell, Weiss, & Mendelsohn, 1989), a scale of pleasure and arousal designed for adults. Means were used to place the faces in Figure 1. Lack of correlation between pleasure and arousal indicated that these two scales are independent ($r = .03$, $p = .97$). Split-half reliability was high for pleasure ($r = .98$, $p < .001$) and for arousal scores ($r = .94$, $p < .001$). The question was how closely children match these criterial scores.

**Pleasure Scale**

For the Pleasure Scale, mean pleasure for each stimulus for each age group is shown in the left panel of Figure 2. If all the participants, from 3s to adults, used the scale in an identical manner, then Figure 2 would show a series of parallel flat lines. Other than random noise, the data show approximately this result for all faces except number 6, which showed a near-significant (.06) decline with age.

![Figure 1. Adults’ mean ratings for ten stylized faces using the Affect Grid.](image-url)
Figure 2. Mean ratings of the stylized faces using the Pleasure Scale for each age group. For pleasure, the lines are essentially flat (no significant linear trend with age, alpha = .05) for all faces, except number 6, which showed a decreasing trend.

Reliability and accuracy of the mean ratings are shown by the correlations given in Table 1. Split-half reliability correlations within each age group ranged from .92 to .99 ($p < .001$). Mean pleasure ratings from any one age group correlated well with those from each other age (ranging from .89 to .99, $p \leq .001$, N=10, the number of stylized faces). They also correlated well with the mean pleasure ratings derived from the Affect Grid (ranging from .93 to .99, $p < .001$).

**Arousal Scale**

In contrast to the results with the Pleasure Scale, the results for arousal do not always show flat lines (Figure 3, right panel). Instead, younger children seemed to use the scale in a more dichotomous way. Thus, all three low arousal faces received extremely low ratings from the younger children, whereas adults gave more nuanced ratings. All the remaining faces received high arousal ratings, whereas adults made finer distinctions. The linear trend for face number 1 and 4 increased significantly with age ($p < .03$), and for face number 10, decreased significantly with age ($p = .02$).

Reliability and accuracy were shown by the correlations between age groups’ arousal ratings, which are shown in Table 2. Split-half reliability correlations ranged from .85 to .95, $p \leq .005$. Mean arousal ratings from any age group correlated with those from each of the other age groups (ranging from .74 to .98, $p < .02$, N=10). They also correlated well with the mean arousal ratings derived from the Affect Grid (ranging from .81 to .96, $p < .005$).

**Correlation between Pleasure and Arousal**
None of the correlations between the pleasure and arousal ratings were significant, ranging from -.18 to .33, \( p > .35 \), indicating that there was no systematic relationship between the two dimensions. These results supported our hypothesis that the two scales are independent: the children using different scales to provide different judgments.

**Figure 3.** Mean ratings of the stylized faces using the Arousal Scale for each age group. For arousal the lines are essentially flat (no significant linear trend with age, alpha = .05) for all faces, numbers 1, 4, and 10.

**Discussion**

Can children use the Children’s Scales of Pleasure and Arousal to make subjective and descriptive judgments about emotional stimuli? Even the youngest children (3 years) used the Scales to indicate the levels of pleasure and arousal they perceived in stylized faces. Correlations with pleasure and arousal ratings derived from the Affect Grid showed that ratings made with the Children’s Scales were accurate and reliable, and thus offer a nonverbal method by which children can respond to emotional stimuli.

The CSPA have potential practical and research applications for children in medical and counseling settings, as well as in research. In such cases, the use of the CSPA could offer a method for children to communicate information about emotions. For children requiring long-term care, for example, or in longitudinal research, the process of learning the Scales’ labels is brief enough, and, once mastered, they would enable children to convey information about their current and past states quickly and easily. In addition, the stylized faces used in Study 1 might also be useful for children in such settings. These faces, which show varying levels of pleasure and arousal, offer children a quick and simple method of indicating how they feel. They could also be used in an emergency situation, as training would be minimal.
References


To request the Children’s Scales of Pleasure and Arousal, or for further information, please contact Sherri Widen at:

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        140 Commonwealth Ave.
        Chestnut Hill, MA
        02467
Table 1

*Correlations Between Age Groups’ Mean Ratings of Pleasure for Stylized Faces in Study 1.*

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*Note.* Split-half correlations are on the diagonal.

*** $p \leq .001$
### Table 2

*Correlations Between Age Groups’ Mean Ratings of Arousal for Stylized Faces in Study 1.*

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*Note.* Split-half correlations are on the diagonal.

* *p < .05. ** *p ≤ .005. *** *p < .001.*