Settings, sensors, and tasks: a comment on Assessing Emotional Experiences of Opera Spectators in Situ by Klaus R. Scherer, Stéphanie Trznadel, Bernardino Fantini, Eduardo Coutinho

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Acknowledgment: Stina Klein's and Rosalie Weigand's assistance is gratefully acknowledged.

DOI: 10.1037/aca0000253

In their present study, Scherer, Trznadel, Fantini, and Coutinho explore the aesthetic experience of opera spectators using a 12-item fuzzy emotion questionnaire. Hence, they make a contribution to the emerging endeavours to conduct empirical aesthetic studies in the field. Laboratory studies of aesthetic appreciation may, to some extent, be limited with respect to ecological validity. Investigating aesthetic appreciation in the context of its usual occurrence, and by association investigating aesthetic appreciation in a fully ecologically valid way is a desideratum of today's research (e.g., Brieber, Nadal, Leder, & Rosenberg, 2014; Hanich, Wagner, Shah, Jacobsen, & Menninghaus, 2014; Mitschke, Goller, & Leder, 2017; Nusbaum et al. (2014); Specker, Tinio, & van Elk, 2017; Tschacher et al., 2012; Wagner et al., 2016).

A three-dimensional classification

Attempting to classify (field) studies, across domains of aesthetic appreciation, spans up an, at least, three-dimensional space, constituted by factors such as settings, sensors, and tasks (see Figure 1). Studies come with trade-offs regarding ecological validity, plausibility of tasks, reactivity of measures, participatory versus non-participatory observation, and probably many more. In an ideal world, one might think, studies of aesthetic appreciation, such as attending an opera performance, would give participants solely the task of focusing on the performance in its usual stetting. An ideal study would not ask participants to perform additional verbal, numerical, figural or concrete ratings. It would not ask participants to repeatedly assess stimuli in experimentally equivalent trials, like excerpts from an opera, or film clips that are all instantiations of the same emotion-eliciting category, such as sad film clips. Rather, the task would only be the natural task under investigation. The same pertains to settings. Participants would be attending an opera in situ in an opera house. They would neither be in a lab, nor in an

MRI scanner. As the task, the setting would just be as natural. For such a situation to be possible, sensors would be necessary that can yield dependent measures which can be obtained unobtrusively and non-reactively in a non-participatory manner. A hidden video recording and, for instance, applying a facial action coding system (Ekman & Friesen, 1978) to these data in order to assess emotional reactions in participants is one exemplary implementation. Another aspect pertains to the method of observation. Clearly, one would want to have fully non-partaking observational methods. As in analogy to Heisenberg's Unschärferelation (1927), saliently presented and perceivable measuring operations may also affect participant's appreciation. Therefore, remote sensing as it can be done with eyetracking, pupillometry, measurement of skin temperature or other remote sensing might be desirable. One would differentiate between applied versus non applied sensors. Whereas only the latter would be truly remote sensing, as no measurement devices have to be attached to the participant's body. Such a continuous measure, for instance, would allow to plot the affective trajectory through the three-dimensional emotion space (Wundt, 1896) throughout an entire opera performance.

Insert Figure 1 about here

These ideas mark one outer corner in our classification room. The diametral opposite is, of course, marked by studies following the classic approach of psychophysical Experimental Aesthetics (Fechner, 1876): multiple instantiations of experimentally controlled stimuli are being

presented in the laboratory using specifically tailored tasks, maybe even employing large sensors like fMRI, MEG, or EEG.

Scherer et al.'s study, in my view, is pretty close to the former extreme: setting and task are natural, the imposed dual task (filling in a short checklist during interludes) is quite mild, and the sensor (the 12-item fuzzy emotion rating instrument betaGEMIAC) designed to be minimally reactive, as well as unobtrusive.

Exploring the three-dimensional space

In order to get an idea of what else has been done, let us take a look at a few exemplary studies considering the potential classification within the described three-dimensional space of settings, sensors, and tasks. Nusbaum et al. (2014) asked their participants to answer a short survey, concerning listening to music and their mood, multiple times a day. The survey was implemented through phone calls during their normal routine of a day, as a result musical experiences could be investigated in their natural setting. Viewing graffiti in their natural setting is a further way of a more unobtrusive research on aesthetics and was, for instance, conducted by Mitschke et al. (2017) using eyetracking with a following laboratory session.

Using an approach, that would hardly be feasible with opera, has been employed in the domain of theatrical performance. Wagner and colleagues (2016) have disguised a study on the aesthetic modulation of anger in a theatrical performance setting. This, of course, requires to not tell viewers before-hand that they are actually participants in a scientific study. Of course, in this study, the stimuli have been tailored to the mission.

Some studies have at least tried to assess the effect of the experimental parameters selected. In an effort to be able to generalize over various film clips in the sense of sadness, Hanich and colleagues (2014) selected film clips that were used in a scenario approach to elicit sadness in spectators and investigate the emotional state of being moved. The comparison of setting the study in a university lecture hall as compared to a cinema showed substantially the same results. Again, stimuli and tasks were tailored to the question of the study, and sensors like self-report questionnaires have been used, but the possible effect of setting has been somewhat controlled for.

In contrast to settings, the effects of different sensors or tasks appear to be somewhat more difficult to assess. Listening to poetry while sitting in a pleasant quiet room on the couch may be considered a valid, natural setting for the reception of poetry (Wassiliwizky, Koelsch, Wagner, Jacobsen, & Menninghaus, 2017) or watching movies (Wassiliwizky, Jacobsen, Heinrich, Schneiderbauer, & Menninghaus, 2017). Also using adequate recordings of poems are valid stimuli. When it comes to asking participants to rate emotional aspects of their experience, as well as equipping them with psychophysiological sensors, is what limits the potential ecological validity of the study. It is very hard to assess the potential reactivity of the sensors applied and the tasks given to participants.

Scherer et al. stress the importance of lyrics for the elicitation of emotion by music. A previous study established this phenomenon empirically (Brattico et al., 2011), thus, can be used to nicely demonstrate the classification of different studies in the three-dimensional space of settings, sensors, and tasks. Scherer and colleagues (this issue) used opera in situ as the natural stimulus and asked the participants to attend solely to the staging of an opera, while giving only a

rather small task additionally. By contrast, Brattico et al. (2011) varied music with and without lyrics eliciting happy and sad emotion in participants, which were situated in an MRI scanner in a lab, quite a large sensor; accordingly, the stimuli and tasks were designed quite specifically to the question of the study. So, this leads to the study being classified in the off realm of our three dimensional space where lots of sensors, highly specific tasks in a somewhat unusual setting are being used. Brattico et al.'s study (2011) revealed important effects, it cannot, however, demonstrate that these (exact) effects would also occur in an ecologically valid setting, with no sensors, and no task other than appreciating music.

Ideally, using a multi-method approach of field and laboratory studies, studies replicate each other and results converge, whenever possible. Scherer et al. provide an important point of reference, in this realm of settings, sensors, and tasks.

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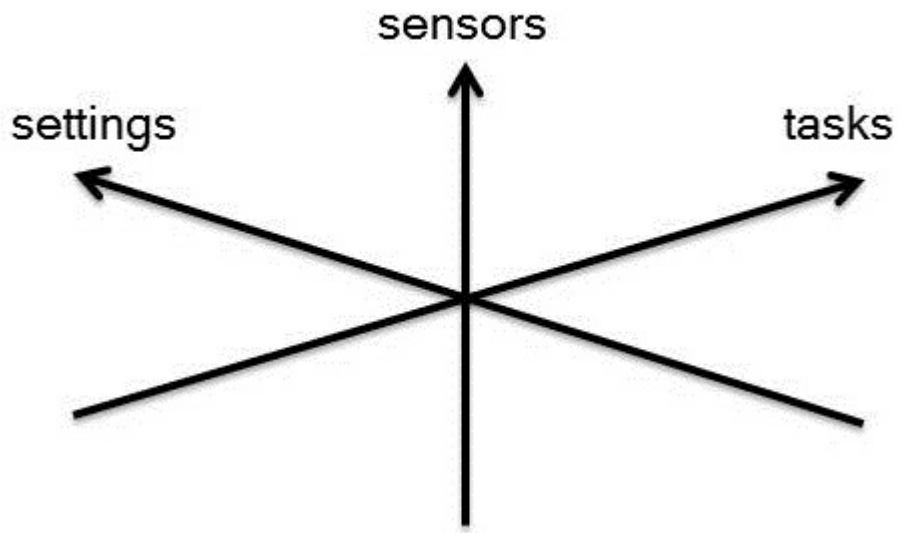
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