Chapter 10
The Role of Emotions in Art Evaluation

Chek Tien Tan and Sam Ferguson

Abstract Emotion is an important component in any evaluation of an artwork. Research into emotion is a growing field, and methods for evaluating emotions in artworks is an area where research is rapidly expanding. This chapter outlines the basic theories of emotion and develops an understanding of the state of the art in emotion evaluation for interactive digital art. The component process model of Scherer is discussed and then a number of examples of evaluation of emotion in interactive art are presented, including a closer look at video games as a form of interactive art.

10.1 Introduction

Emotions have a special place in human experience, as they are an important way that humans motivate themselves to interact with their environment and with the people around them. Emotions can obviously be triggered by sensual experiences: for instance, by seeing and hearing a baby crying. They can also be experienced after intellectually understanding a particular outcome: for instance, when you are overcharged on a restaurant bill, intense negative feelings might emerge resulting in a possible angry confrontation with the waiter. Emotions are, therefore, likely to be essential components of the understanding and experience of an artwork, and from that we propose that evaluation of art through emotions is likely to be a worthwhile endeavour.

C.T. Tan (✉)
Games Studio, Human Centred Design Technology and Creativity & Cognition Studios, School of Software, University of Technology, Sydney, Australia
e-mail: Chek@gamesstudio.org

S. Ferguson
Creativity and Cognition Studios, School of Software, Faculty of Engineering and Information Technology, University of Technology, Sydney, Ultimo, NSW, Australia
e-mail: Samuel.Ferguson@uts.edu.au

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The investigation of the relationship between art and emotion is not new, and researchers have focused on emotion, cognition and the art object in many contexts. One of the paradoxes in studying emotion and art is the level of emotion that is generated in any discussion of the relationship between emotion and art. However, many investigations of art and emotion (see Sect. 10.5 below) have found that expressed emotion can be recognised extremely rapidly, and that emotions can be encoded and then successfully communicated by artists.

Nevertheless, emotions cannot be expected to encapsulate art experiences entirely. It is common to hear a description of an artwork as an expression of the emotions of the artist, but similarly, many artworks may also *not* seek to communicate particular emotions; nor should we expect that there is some direct causal relationship between emotion expression and art quality. Viewing art may result in the experience of a wide variety of specific emotions, but also in many other types of experience, perhaps conscious contemplation or memory recall. And so emotion only provides one angle from which to view the evaluation of art, albeit an important one worth investigating.

Generally speaking, in emotion research there tends to be little disagreement about art being able to *express* particular emotions, but much more about whether art can *induce* authentic emotions in the audience members or participants. This distinction has particular methodological implications; evaluating whether a particular emotion is *expressed* by an artwork can be as simple as asking a participant if they can recognize the emotion being expressed. However, to assess whether an emotion has been induced, one has to define what it means to authentically experience an emotion, as distinct from recognising it in an artwork. Some researchers have used self-report methods to assess emotion induction compared to emotion expression (e.g. Evans and Schubert 2008), while others have used significant change in physiological signals as evidence of authentic emotion experience (Krumhansl 1997).

Research into emotions is limited, however, by the domain in which it is applied. Usually, researchers will attempt to use artworks as ‘stimuli’ to explore particular aspects of emotional responses to art. Little research focuses on the use of emotional responses to investigate art itself, or even whether the emotional responses seen in laboratory investigations (whether recognised or induced) extend into real-world or ecologically valid contexts. This may be due to technological problems. Many of the emotion response methods are based around either interrupting the audience to request responses to questions, or through complex electrical sensors requiring significant physical stability. However, it does seem that while the experience of art in an emotional sense may be understood to some extent by lab-based research, even simple replications of the complexity of real-world art presentation (for instance, the effect of social context), have uncovered significant modifying factors (Egermann et al. 2011).

This chapter hence aims to highlight the usefulness of evaluating art experiences and artworks from the perspective of emotions. The following section starts by introducing the role of emotions in art.

10.2 What Are Emotions?

The idea of trying to define emotions is a notoriously thorny issue. Although the study of emotions is one of the oldest research areas in psychology, human emotions is a complicated concept with no lack of scholars in constant pursuit of redefining it in a multitude of ways. For instance, in 1981, Kleinginna and Kleinginna (1981) reported over a 100 emotion theories. It would therefore be overly ambitious for us to try to define emotions in full here. Instead, this section aims to provide an overview of the popular theories that have evolved till today, as a background for our discussions on modern emotion research in art.

Starting from classical theories of emotion, the James-Lange theory (developed independently by William James in 1884 and Carl Lange in 1885) states that physiological arousal precede emotions (Cannon 1927). James and Lange stated that a person would first experience a physiological change (i.e. a bodily reaction like sweating or smiling), which then instigates the nervous system so that the brain generates an emotion felt by that person. Later in the 1920s, Cannon and Bard showed evidence that challenged the fundamental notions in the James-Lange Theory, claiming that emotions are instead felt first, followed by physiological responses (Cannon 1927). This led to the Cannon-Bard theory: i.e. emotions are derived from subcortical centres, a theory that eventually replaced the James-Lange theory. Following the work by Cannon and Bard, Stanley Schachter and Jerome Singer (1962) went on to show that emotion is a function of both cognitive factors and physiological arousal. They proposed that a person uses contextual information from the immediate situation in order to qualify the physiological arousal. This became the Schachter-Singer theory, alternatively known as the two-factor theory of emotion (Schachter and Singer 1962).

In more recent times, Izard (1977) proposed the emotion triad: comprising subjective feelings, physiological activation and motor expressions. This triad became the foundation for several other prominent works which includes Scherer's component process model (1984), which added the cognitive appraisal and behavioural tendency components to the triad, as well as Lazarus (1991) who added the conative component (i.e. a mix of behavioural tendency and motor expression).

Far from being idiosyncratic experiences of individuals, society heavily regulates emotional experiences, through the use of taboos, prohibitions, and other group-based methods of control. Indeed, emotional responses in audiences can be predicted so easily that they are used by artists to enhance emotional responses between different modalities, for instance a musical soundtrack to a horror film. Furthermore, particular emotion responses are expected in many social situations: e.g., at a wedding this might mean happiness or perhaps sadness, but not boredom or disgust. These expected responses serve among other things to characterise the individual's relationship with the goals of the social group. Similarly, art or music will be present at many weddings, for instance, and is often socially required to express particular emotions, in the same way as the guests are. These examples point to the possible role of art in heightening and modifying emotions for social contexts.

At this point it is also worth pointing out the difference between emotions and moods, which sometimes causes confusion. Emotions are characterised by a short timespan, high intensity, and consequentiality; an emotion usually happens because something has occurred, or causes the person to do something. By contrast a mood is often a longer experience, of minutes or hours in duration, of less intensity, and does not usually directly cause something specific to occur.

Regardless of the vast number of works that continue to be generated after Izard's work, it seems apparent that emotion is a multi-part concept consisting of components that cover both subjective and objective responses. The notion of "componential theories of emotion" is thus increasingly prevalent in a lot of modern emotion studies. The next section (Sect. 10.4) hence discusses Scherer's component process model in detail, and describes some common approaches to evaluate its various components.

10.3 Evaluating Emotions

From the discussion in previous sections, it can be seen that detecting and analysing emotions is certainly non-trivial. One major problem is the enormous number of emotion theories to choose from before anyone embarks on evaluating anything. As mentioned previously, most state of the art emotion theories seem to revolve around concepts from Scherer's component process model, and its comprehensiveness means that many objective and subjective aspects of emotion are covered. The component process model also appears to have been shown to explain most emotional phenomena, with Scherer's (1984) paper cited over a 1,000 times.

The component process model describes an emotion as:

> an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems in response to the evaluation of an external or internal stimulus event as relevant to major concerns of the organism (Scherer 1987).

These five organismic subsystems are namely:

Monitor, which keeps track of internal state and organism-environment interaction
Information processing, which serves to evaluate objects and events
Support, which regulates the system
Executive, which serves to prepare and direct action
Action, which communicates reaction and behavioural intention

The term **component** in the component process model refers to a component in an emotion episode, and represents the respective states of the subsystems listed above, namely (1) Subjective Feelings; (2) Cognitive Appraisal; (3) Physiological Arousal; (4) Motor Expressions; and (5) Behavioural Tendencies.

The term **process** refers to the coordinated changes of these components over time. The following subsections will discuss how each component can be measured and analysed.

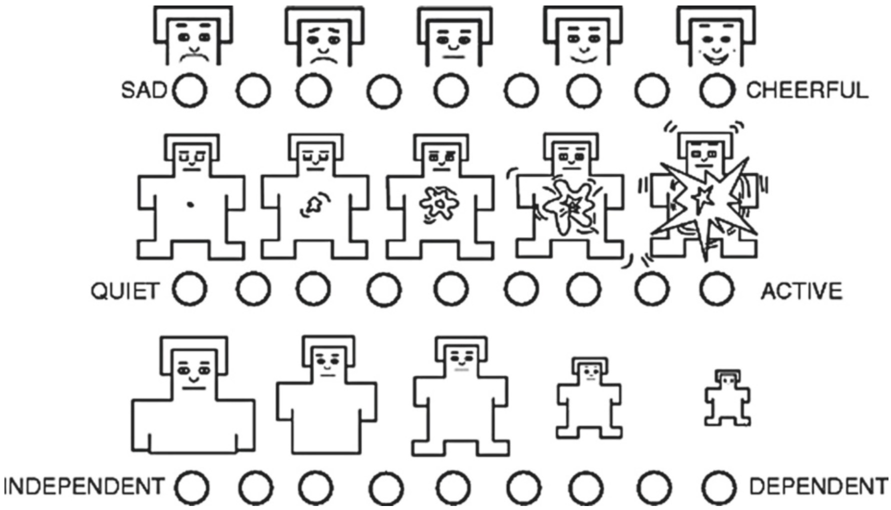

Fig. 10.1 The Self-Assessment Manikin (*SAM*) scale (Lang 1980) (Seen here in an adapted version from Schifferstein et al. (2011). With kind permission from Springer Science + Business Media: Schifferstein et al. (2011), Figure 2, p. 58)

10.3.1 Subjective Feelings

As the name implies, this component is subjective, hence self-reporting approaches dominate the exploration of this component. Extracting emotion data from think-aloud sessions (Lewis 1982) and structured or unstructured interviews is sometimes used but employment of more structured aids like the Self-Assessment-Manikin (SAM) scale (Lang 1980) or the Affect Grid (Russell et al. 1989) have been shown to be useful in getting richer and more consistent emotion data from experiments.

The SAM scale (as shown in Fig. 10.1) consists of three rows of manikins (i.e. abstract representative drawings of facial expressions) each with five manikins from low to high intensity. Each row of manikins represents an emotion dimension, namely valence, activation (or arousal) and control (or dominance). Participants are required to choose an intensity level from each of the three rows.

The affect grid (Russell et al. 1989) is a single-scaled questionnaire with a 9 by 9 matrix with eight adjectives (*Stress*, *Unpleasant Feelings*, *Depression*, *Sleepiness*, *Relaxation*, *Pleasant Feelings*, *Excitement* and *High Arousal*) around it describing the different emotions. The adjectives are similarly arranged by valence and activation. Participants are simply required to choose a single member in the matrix. Both the SAM and affect grid scales are non-verbal and hence reduce the cultural effects of verbalizing emotions.

10.3.2 Cognitive Appraisal

The cognitive appraisal component of the component process model aims to account for the fact that an exact same situation can induce different emotions in different people based on how a person interprets the situation. Scherer states that cognitive appraisals have five dimensions, namely intrinsic pleasantness, novelty, goal conduciveness, coping potential and norm/self compatibility. Intrinsic pleasantness captures how likely a stimulus event would trigger a positive or negative emotion. Novelty relates to how familiar the participant is with the particular stimulus. Goal conduciveness expresses how favourable the stimulus is with regards to the participant's goals and needs at that moment. Coping potential describes how much control the participant has over the stimulus. Norm/self compatibility establishes how close the stimulus matches the participant's standards.

To measure cognitive appraisal, the think-aloud method (Lewis 1982) is again commonly used whereby the appraisal dimensions can be extracted by performing a thorough qualitative analysis. Video-cued recall, in which the participant verbalizes their thoughts whilst viewing a recorded video of themselves in the activity, can also be used to reduce the intrusiveness of verbalizing during the activity (Bentley et al. 2003; Costello et al. 2005). For a more structured quantitative method, the Geneva Appraisal Questionnaire[1] can be used, which has been developed by Scherer based on the five dimensions previously mentioned.

10.3.3 Physiological Arousal

Physiological signals commonly include electrodermal activity (EDA), electrocardiogram (ECG), and pupillometry. EDA, also known as skin conductance level (SCL), measures the amount of sweat produced and is widely known to produce reliable measures for arousal. EDA is widely used due to its ease of use and minimal intrusiveness to the activity. ECG measures the heart rate and is similarly reliable for predicting arousal, as well as mental workload. There are some studies in using ECG to predict valence, but is generally still unreliable for this purpose. EDA and ECG are generally obtained via attachment of electrode sensors on the respective skin regions known to exhibit each signal with the highest magnitude.

Pupillometry measures pupil dilations (in the eye) is very similar to ECG with strong correlations between the size of the pupil and arousal as well as mental workload. However, reliably detecting pupil dilations without the effects of lighting is a huge challenge in natural environments. This is true for other physiological sensors as well, as EDA and ECG are very sensitive to movement at the physical sensing locations. These sensors are usually only viable in controlled laboratory settings.

[1] http://www.affective-sciences.org/system/files/webpage/GAQ_English.pdf

10.3.4 Motor Expressions

The motor expression component is related to physiological responses but appertain to muscle activity. It primarily involves facial expressions, gestures and speech. For facial expressions, Ekman might hold the throne for devising some of the most influential systems for analysing expressions. The Facial Action Coding System (FACS) (Ekman et al. 2002) is a widely used basis for both human coding and automatic facial expression detection in video. FACS labels 46 action units (AUs) that can be combined to represent almost any human facial expression. However, usage of FACS needs intensive training for human coders, and automated systems are still far from robust enough to detect even half of the AUs (Baltrusaitis et al. 2011; McDuff et al. 2011).

The alternative to FACS coding is electromyography (EMG), which measures spontaneous muscle activity. Capturing the major zygomaticus (near the cheek) and corrugator supercilii (near the eyebrow) muscles have been well known to reliably denote valence. The hardware to measure EMG is very similar to the electrode-based sensors used for EDA and ECG: hence it suffers from the same deployment restrictions and drawbacks, but otherwise allows for a very precise and reliable capture of facial expressions.

Although less studied, characteristics of speech have been shown to correlate well with emotions as well (Banse and Scherer 1996). Speed, intensity, melody and loudness are all possible dimensions of speech that can be used to infer emotions.

10.3.5 Behavioural Tendencies

The behavioural tendencies component captures the readiness of a person to react in a certain way to a certain stimulus. Measuring behavioural tendencies often mean trying to benchmark a person's habitual performance. Common methods include recording the task times and counting number of successes/errors, as well as questionnaires that query intentions of use. Nevertheless these approaches have reliability problems (Sears and Jacko 2008).

In terms of objective approaches, Partala and Surakka (2004) have shown that EMG can also be used to infer behavioural data. They showed that higher success rates and goal conduciveness were related to low activation of the corrugator supercilii muscle.

Although this section is primarily concerned with Scherer's component process model, it should be noted that this should not imply a call for more emotion studies to be based only on this model. Instead, what this section aims to do is to use the categories provided by the component process model as representatives of what the various common important components required of evaluating emotions. The component process model is undoubtedly highly influential, but fundamentally it simply represents an attempt to capture emotion processes as comprehensively as possible. As can be seen there are many emotion aspects that can be investigated, and may be useful depending on the criteria being evaluated – each of these components can be the basis for developing an emotion criterion that may perhaps uncover some aspect of an artwork.

10.4 Evaluating Emotions in Interactive Art

In interactive art forms, evaluating emotion becomes even more challenging, primarily due to the fact that data collection and analysis becomes harder as user responses are disrupted by the apparatus necessary for physiological measurement. Hence there is a need for investigations on new methods of evaluating emotions in interactive art.

Research in this area is sparse, and many of the studies involve evaluation of video games. Video games represent a type of art that falls into a large number of genres that cater to the tastes of the general public, with a profile broadly mirroring that of cinema, but with the added element of a high degree of interactivity. Much of the new interactive sensor and display technology is often based in research undertaken by game console manufacturers (e.g. The Kinect sensor). They are highly time-critical interactive art forms, with a great deal happening at every moment in time for a player. Game designers carefully craft each and every encounter in the game so as to create a high level of immersion, engagement and ultimately flow experience (Csikszentmihalyi 1990) for the player. It is notable that engagement, a factor commonly discussed for evaluating interactive art, is also extremely important in gaming, with most game designs aiming to engage a player over periods of 20–30 h and upwards. Playtesting – the evaluation of game designs with users while they are under development – is a crucial stage in the fine-tuning of games before they are released for sale.

In the context of this book, the evaluation of interactive musical systems in a museum space in Chap. 12 ("In the Wild: Evaluating Collaborative Interactive Musical Experiences in Public Settings"), by Bengler and Bryan-Kinns (2014) is not dissimilar to evaluation using a playtesting system for interactive gaming. The obvious difference in their case is that the final audience was present and evaluation was carried out within the presentation of the work, instead of being part of a pre-release session. Evaluation in their case included a questionnaire regarding the feelings that the interactive instrument engendered in the audience, in response to some probe statements about the interface.

Several studies have attempted to push the state-of-the-art in collecting, analysing, and using emotional data in evaluating games, and these will be detailed below.

10.4.1 Emotion Evaluation Research

Evaluation based on emotional qualities has wide research interest within the field of interactive games. Yannakakis and Togelius (2011) created a large computational framework to evaluate player experiences in order to procedurally generate content in games. In their affect sensing system, they combined subjective self-reports, objective physiological responses, and gameplay metrics to create a hybrid model of player experience. This model is then used to automatically generate content in the game, tailored to each player. They have implemented and evaluated this framework in various example games and showed that the framework was highly feasible. However, the challenge lies in the complexity of choosing appropriate combinations of self-reporting methods, physiological signals and gameplay metrics when a different activity needs to be evaluated. Nevertheless, an important conclusion is that a hybrid of these three metrics is highly effective in capturing emotional states. In a way, this method also reinforces the conceptual basis underlying the component process model.

Hazlett (2006), on the other hand, focused solely on investigating whether facial EMG was a good measure of emotional valence in gameplay. He collected facial EMG responses for 13 boys playing a car racing game and compared them with a video review. He found that the zygomaticus muscle, which controls smiling, was significantly greater during positive events, and that the corrugator muscle, which controls frowning, was significantly greater during negative events. Another conclusion was also that EMG is still reliable during high intensity interactions with a high mental load. This showed that facial EMG is highly feasible for detecting emotional valence, and in turn that this dimension of emotion can be captured for analysis without reliance on self-report techniques.

Canossa et al. (2010) devised a system for detecting frustration whilst playing games. Frustration is a derived emotion, which is commonly associated with high arousal and negative valence, and the delicate balance of frustration can make or break the flow of gameplay in many modern video games making it a crucial parameter to evaluate. In their work, they combined direct player observations and data mining of gameplay metrics within a computational model in order to detect frustration. They have shown that this method is successful in the specific third-person shooter game they have employed it on, but make no claims outside of that game. They also cautioned that the intervention of a human expert is generally necessary in order to properly evaluate their automatically captured data.

In the domain of educational games, Conati (2002) attempted to detect emotional states of players in a Mathematics game they have developed. Their emotional states are primarily based on the OCC cognitive theory of emotion (Ortony et al. 1990) that consists of 22 emotions classified according to valence and situational appraisals, in which they chose six emotions for their study. In their work, they created a complex affective model using a dynamic decision network that incorporates personality, goals, bodily expressions and physiological data in order to obtain probabilities for the emotional states. They then used these values in a pedagogical agent that attempts to dynamically affect gameplay based on the emotions gathered. The major shortcoming of this work is that there are no formal evaluations performed.

In non-game related work, research did not seem to study emotion primarily as an evaluation tool. Instead, researchers/artists explored the use of affective interfaces to elicit emotional responses as part of the interactive artworks themselves (Vogt et al. 2009; Gonsalves et al. 2009; Iacobini et al. 2010). For example, (Gonsalves et al. 2009; Iacobini et al. 2010) investigated the use of automatic facial expression recognition to evaluate emotions. They created an art installation called

Chameleon that involves the use of emotional video portraits that responded according to the emotions detected by the expression system. The emotions are classified based on Ekman's six basic emotions (Ekman et al. 1992). They analysed interviews with participants who experienced the interaction and results showed that the system managed to create a variety of emotional experiences, ranging from empathy to intimacy. Bialoskorski et al. (2009) created an interactive art system called 'Mood Swings' that attempted to use the emotional state of the audience as an input to the changing parameters of the colours presented by the artwork, which in turn are expected to influence the emotional state of the audience. They used the physical movements of the audience as a proxy for their emotional state, associating valence and arousal to the physical smoothness and velocity of movements, respectively.

Vogt et al. (2009) studied the use of the state of the audience's spoken voice as a cue to the emotional state of the audience, in a series of interactive artworks discussed. Emotional data is extracted by analysing acoustic features such as pitch, energy, pauses, spectral and cepstral information, and then using this data in real-time classifier systems.

Finally, Höök, Sengers and Anderson (2003) investigated and evaluated the effectiveness of an affective interface, 'The Influencing Machine', through a set of interviews of various groups of users of the machine. Their participants reported that they had been 'influenced' by it, and therefore that it was capable of eliciting emotions.

10.4.2 Automated Facial Expressions Analysis in Games

In the first author's own work (Tan et al. 2012), an attempt to use facial expression recognition for evaluating user experiences of games is presented. This work focuses on the motor expressions component of the component process model, as it is relatively less studied. However, their aim was to find out whether automatically captured facial expressions from video can be used effectively for inferring video gaming experiences. The motivation behind this method, other than it being under-evaluated, is that facial expressions are timely, continuous and minimally disruptive. Compared to other objective approaches like physiological measures, facial expression analysis allows for more authentic play experiences and enables data collection in non-laboratory settings. Motion detection game consoles like Microsoft's Kinect[2] and Nintendo's3DS[3] implicitly incorporate video feeds into gameplay, but for other games, webcams are also relatively prevalent in most computing devices nowadays. This means that this type of analysis does not require significant intervention in terms of apparatus or experimental design.

A pilot study was conducted with users interacting with two video games, namely Portal 2 by Valve[4] and Draw My Thing by OMGPOP.[5] Twelve participants played

[2] http://www.xbox.com/en-US/kinect/

[3] http://www.nintendo.com/3ds

[4] http://www.thinkwithportals.com

[5] http://www.omgpop.com/games/drawmything

Fig. 10.2 Screenshot of the Facial Expression Recognizer when a participant played Portal 2. The *white curved lines* on the face automatically track the facial expressions of the participant and the expression intensities are shown on the *top-left*. The actual game screen is also shown in the *top-left* sub-screen

the two games one after the other in a room by themselves, with a webcam capturing their facial expressions.

Figure 10.2 shows the screen capture of our system analysing a participant in real-time. For this pilot study, three common expressions out of the six basic emotions (Ekman et al. 1992) were automatically classified, namely joy, surprise, and anger, with an additional neutral expression as the baseline. After playing, participants filled in the Game Experience Questionnaire (Nacke 2009) and were briefly interviewed at the end of the session.

In our findings, strong correlations were found when comparing the automatically captured expressions with the self-reported experiences, as well as with a visual inspection of the videos. Another interesting observation was the difference in the expression variances between the two games being played, with Portal 2 showing a higher variance. This implies that the automatically recorded expressions might have captured the different qualities between different game genres.

When performing a visual inspection of the videos, an obvious physical limitation of the system was also found: a number of participants placed their hands on their faces during play. A participant also had a lot of empty readings when a significant portion of his/her face went out of view. Fortunately, these occurrences were rare in this study.

Overall, participants felt that the presence of the facial expression detection system was generally not obtrusive to their experiences. At the end of each session, the participants were asked about whether aspects of the experimental setup affected their play. Responses were generally positive although some did express a small amount of discomfort. For example, one participant said “Forgot all about the video recording!!!” whilst another said “Not really - only when I switched between games, or was waiting for a game.” This shows that the video-based approach was largely unobtrusive to the interactive gaming experiences of the participants.

Apart from video games, other forms of interactive artworks also generally require participants to be actively involved in doing something. This mental load takes the attention away from the recording device and so the presence of the device would not be as intrusive as participants simply viewing a traditional art gallery for example.

10.4.3 Discussion

As can be seen, the topic of evaluating interactive experiences in terms of emotion is not yet well-established one. There are no “standard” procedures to follow nor evaluation “best practices”. Researchers are still struggling to figure out what works best in different types of interactive art. On the flip side, it also means that this is an exciting area that many potential discoveries can be made. However, as researchers elucidate and develop more of an understanding of the ways in which emotional responses function, and as more and more technical methods for obtaining data about emotion become commonplace, more opportunities for meaningful evaluation of interactive digital art are presented.

This is a more difficult problem than that of a typical HCI research process, where particular computer interaction goals can be articulated in terms of completion or performance, and various methods and measures can be devised to assess the degree to which the goal is met. The challenge for research is to articulate the connection between the evaluation objective and the emotion evaluation technique employed. Emotion data can be obtained in such a myriad of ways that understanding the context for the evaluation is crucial to the choice of method. As seen above, methods range from highly intrusive, physiological methods, to methods that intrude only insofar as a camera intrudes, to self-report methods are only undertaken after the artefact has been experienced.

The further challenge is the employment of the data that is created from any evaluation. The emotion model presented here, Scherer’s component process model, actually incorporates a number of theories of emotion into one larger integrative system. The challenge for practitioners is how to operationalise this knowledge in an evaluation context. The example from Tan’s work given here, facial expression recognition, shows that information about emotion can be automatically captured during playtesting, and that they correlate well with the self-reported experience. If an emotion goal for the evaluation of an artefact can be articulated, such a system can be used to evaluate the level to which that goal is achieved.

10.5 Conclusions

This chapter has discussed the role of emotion in the experience of art. It has introduced some theories of emotion including Scherer’s componential approach, and has discussed defining characteristics of emotion research. It has also demonstrated some important ways of characterising emotion using different measurement or response methods. Finally, it discussed several state-of-the-art works in evaluating emotions for interactive art.

In general, it can be seen that evaluating emotions is highly complex and involved, requiring the conceptual integration of a variety of different approaches and factors. Each activity, whether it is viewing art in an art gallery, listening to an orchestra, or playing a video game, involves a major investment in terms of evaluating which methods are appropriate for the task at hand. The resulting method is usually a mix of both qualitative and quantitative methods, involving both subjective and objective measures. Though complex, including emotions in the evaluation of experiences of art is a valuable task that can greatly enhance the understanding of these experiences.

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