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## Mixed segmentation

*Combining audience segmentation, psychophysiology and textual content analysis. Mixed methodological research of triangulation and parallelization in a multivariate design*

Hansen, Allan Grutt; Bonde, Anders; Aagaard, Morten

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By Allan Grutt Hansen, Anders Bonde and Morten Aagaard

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# 1. Introduction

Empirical investigations of audience response on the basis of audio-visual media communication (e.g. films and TV commercials) have frequently been subject to cognitive-psychological oriented effect studies in the scholarly fields of media, marketing and consumer studies. The vast majority of the studies include questionnaire surveys using closed-ended and ordinal scale questionnaires with multiple items and multiple response categories for evaluating emotion, mood, associational meaning and attitude (cf. Likert, 1932; Osgood et al., 1957; Lang, 1980). Other, but fewer studies complement questionnaires with psychophysiology and affective computing as, for instance heart rate, facial muscle activity or electromyography (EMG), electroencephalography (EEG) and galvanic skin response (GSR) monitoring though the use of such data sources is a growing area of interest. There are at least two obvious reasons for the latter. To begin with, it is a well-documented fact that there is seldom a one-to-one correspondence between what people say they are feeling and what their bodies tell us they are feeling. Secondly, while the costs and effort expenses of conducting questionnaire surveys have remained unchanged, instruments for psychophysiological measures have become more accessible due to accelerating advancements in the development of new products, resulting in continuous purchase price reductions.

However, one thing is to combine cognitive and psychophysiological response data in media-reception research; another thing is to understand relations between responses and textual content of the stimuli that elicit them. Moreover, categorising audiences into segments on the basis of personal attributes, values, skills, beliefs, interests and lifestyles might constitute an influential condition parameter when analyzing the responses. Yet, in empirical media-effect studies, audience responses to audio-visual media products are rarely, if ever, associated with textual analysis and audience segmentation in a unified research design. Nevertheless, such kind of combination seems important, even crucial, for brand marketers and media-planning agencies aiming to deliver targeted and personalised communication. Thus, in the present study, we intend to fill this gap by proposing a conceptual framework of research methodology in which textual analyses of audio-visual stimuli are combined with GSR monitoring of test subjects, attributable to arousal due to the stimuli, and audience segmentation. More specifically we aim to set forth and demonstrate how textual content and self-assessments of living preferences and personality traits might have explanatory value regarding the variability of GSR values. Similarly we might be able to redefine, modify or improve our understanding



of the target groups by correlating the results with Index Danmark/ Gallup; a syndicated media and marketing information system, continuously gathering sociographic oriented data, such as media and brand/product consumption as well as lifestyle, behaviour, social demographics, interests, activities and viewpoints (Kantar Gallup, 2017).<sup>1</sup> We will explain this correlation in the following paragraphs.

## **Considerations of arousal, GSR and segmentation**

There are compelling reasons for incorporating GSR monitoring and other kinds of psychophysiological measures into media reception research (Ravaja, 2004). To begin with, they might offer information about subconscious emotional responses and also emotions that are “complementary, or even contradictory to that provided by self-report or observation” (p. 195). Moreover, they can be performed continuously in real-time and they are independent of memory and language abilities. In that sense they ensure a certain level of objectivity and precision, which makes them attractive (pp. 195-196). Having said so, it is important to keep in mind that psychophysiological measures cannot stand alone. Even when being seen as measures of the intensity of an affective or emotional experience they do not reveal anything about the quality of the experience, and therefore must be aligned with other kinds of measures, such as annotations of stimuli and survey or observational data.

Today, the amount of literature covering the topic of psychophysiology, including GSR monitoring in communication and media research, has increased considerably and it has been followed by the use of various measures of attention and emotion as well as tests of theory-based predictions regarding the role of attentional and emotional factors in message processing. Here, we shall mention only a few examples. According to Duffy (1957), the psychological significance of the concept of ‘arousal’ or ‘activation’ diminishes the distinction between motives and emotion, and justifies the conception of a responsive or unresponsive individual on behalf of the responsive or unresponsive segments of behaviour.

In a study of fear and autonomic arousal (Geer, 1966), 32 female subjects that were pre-classified as having either high or low fear of spiders were shown seven black and white pictures of ‘neutral’ animals (e.g., a horse, a rabbit and a cow) followed by three test pictures. As for the latter, half of the subjects (equally divided among high-fear and low-fear subjects) were shown pictures of spiders, while the other half were shown pictures of snakes. The results revealed that the spider pictures not only yielded higher GSRs among high-fear subjects but also longer durations of high GSRs.

In a more recent study of neurophysiological responses to advertising stimuli by means of EEG, EMG, and GSR measures, Ohme et al. (2009) tested the cognitive and behavioural impact of two almost identical versions of a TV commercial for a skin-care product. The versions differed in the way in which a female model was presented (the model's face only vs. the entire body and gestures). Results yielded that the model's gestures seemed to enlarge the effectiveness of the commercial.

Such differences may be caused by differences between individuals. In the 1990s in Denmark, sociographic segmentation emerged as a model that could explain consumer choice and instruct communicators, marketers and producers how to design media messages that would appeal to a targeted audience. However, in the past decade this way of thinking came under increasing criticism by sociologists who argued that contemporary consumers are 'reflexive', joining each other in fragmented groupings, the so-called 'neo-tribes' (Maffesoli, 1996), characterized as "communities of feeling" (Hetherington, 1998, p. 50), and therefore often make their choices across hitherto known patterns of consumer behaviour. Accordingly, some consumer-behaviour researchers have pointed out that such kinds of generalisation models actually have little predictive power in relation to specific choices. Instead, sociographic segmentation might beneficially be complemented or substituted with a psychographic segmentation approach based on personality traits (Jantzen & Vetter, 2008). One should bear in mind, though, that psychographic segmentation does not so much predict what people will choose, but rather *how* they will do so. This 'how' is hypothetically explained as various kinds of intentionality, action orientation or goal directedness (Häusel, 2002, 2006). Yet, in any case the point is that psychographic segmentation may be seen as reasonably durable across time and settings and therefore highly useful to marketers.

In this study, when analyzing subjects' GSR values in conjunction with audio-visual stimuli, we have chosen to include both sociographic and psychographic segmentation as two separate explanatory factors; the former being represented by results from the subject's self-assessments of living preferences (the 'Gallup Compass' segmentation tool for public access) and syndicated data from Index Danmark/Gallup (cf. descriptions in Section 2), and the latter being represented by primary data from the subjects' self-assessments of personality. The reasoning is as follows: Given that there is a coupling between the Index Danmark/Gallup and the more small-scale Gallup Compass, the GSR results from the latter can be ascribed to a representative sample of the Danish population as guaranteed by

the Gallup marketing/brand index database. As a consequence, we might be able to better understand new audience segments.

In Section 2, we offer a more definite account of the data-collection methods used for the study, including their underlying theoretical concepts and premises. After that, in Section 3, we describe the stimuli and map out their textual contents and the GSR responses they have triggered. Having established these fundamentals, we proceed in Section 4 to account for the results. Here, we outline a tabulation plan that guides the subsequent presentation of results and the consecutive data correlation. Subsequently, in the summary, we suggest ascribing the combination of sociographic and psychographic audience segments in terms of GSR response to the syndicated data from Index Danmark/Gallup. Finally, in Section 5, we put our study into a broader theoretical perspective by discussing mixed-methodological research including method parallelization and method triangulation (cf. Junk, 2011) and how to integrate the two methodologies in the same study.

## **2. Data sources**

### **Overall experimental procedure and design**

99 students from Communication & Digital Media at Aalborg University participated fully in the study, as part of a prescribed fourth-semester course in information-technological data collection and recording methods.<sup>2</sup> The gender distribution was 59 females and 40 males and the typical age was early- to mid-twenties for both sexes. The study, which took place at the educational institution during March and April 2013, consisted of a number of phases and tasks in which the students were involved. To begin with, each student drew a unique participant number out of a bag and was told to keep it secret in order to maintain anonymity.<sup>3</sup> Secondly, the students completed two electronic self-assessment surveys (both using single-response variables), on the basis of which they were categorized according to living preferences and personality traits respectively. Thirdly, as a necessary provision for participating in the psychophysiological test, the students were asked to sign a letter of consent to confirm that they had been properly informed about the procedures and objectives of the test and had agreed to its terms and conditions. Fourthly, to carry out the test, the students were scheduled in groups of three to participate in one of two parallel sessions, either on March 7 (from morning until noon) or on March 8 (from noon until late afternoon), thus resulting in a total of four test sessions with roughly equal numbers of participants (cf. Figure 1).<sup>4</sup> When entering the test room, the students were instructed how to wear a sensor armband, and when settled, they were seated on chairs (placed between the projected image in front of them and the projector and two loudspeakers behind them) to watch an 11-minute compilation of six videos.<sup>5</sup>

### **Galvanic skin response**

In carrying out the psychophysiological tests, we used a Sense Wear armband developed by the former health-technology company Body Media (cf. Figure 2). The armband tracks the user's galvanic skin response (GSR) together with skin temperature, heat flux (near-body temperature), as well as steps and motion (via a 3-axis accelerometer). We will, however, focus solely on GSR variations, which is a measure of the electrical conductivity of the skin's varying moisture levels (i.e. sweat glands' activity). Being induced by an activation of the sympathetic nervous system, GSR offers an exact quantitative description of the state of the body, which can be seen as a measure of arousal; that is, the state of physiological and psychological 'awareness'. Thus, given that the students were seated

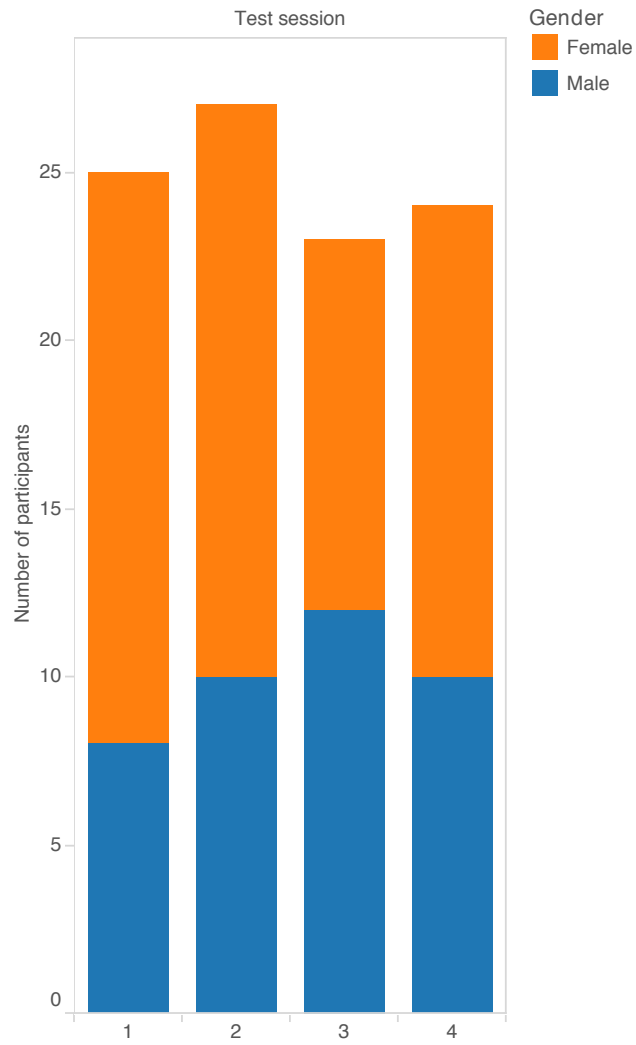


Figure 1. Number of participants broken down by test session and gender.



Figure 2. SenseWear armband.

and watching the videos, the GSR values may indicate shifting states of affect, mood or emotion caused by the content of the videos.

## **Index Danmark/Gallup**

In Denmark, the research company Kantar Gallup carries out 37,000 computer-assisted telephone interview a year as a representative sample of the Danish population aged above 12 years. It is a base index of Danes' demography, geography and readership of daily and Sunday newspapers, local-papers, local-TV viewing, exposure to cinema and outdoor commercials, etc. Of the 37,000 respondents selected randomly, 24,000 respondents also receive a self-assessment questionnaire. It is a marketing/brand index of the Danes' activities, interests and attitudes as regards transport, readership of weekly magazines and periodicals, shopping, travel, sports, household consumption, finance/insurance, internet usage, short term and long durable goods consumption, brand awareness, business-to-business decision competence, etc. Additionally, Kantar Gallup administer the Danish TV-meter system, which logs all TV viewing in 1,000 selected households, comprising about 2,200 people. The selection is based on a survey of the Danes' TV-viewing habits through personal interviews of 10,000 households on a yearly basis.

Most of the data collection in the Index Danmark/Gallup is based on a single-source principle, which means that the same respondents answer all questions. The only part of the information in Index Danmark/Gallup not being based on single-source data is the TV-meter base. These data are ascribed from the TV-meter base to the Index Danmark/Gallup, given that there are a number of common questions in the linked databases. Indeed, since TV-meter respondents fill out same questions as respondents in the base index, the same target-group definitions are used.<sup>6</sup>

## **Self-assessments of living preferences**

As a preparatory step the students were instructed to complete a so-called 'Gallup Compass' questionnaire, which is an integrated part of a commercial online-segmentation tool launched in 1996 by Gallup (now Kantar Gallup) in Denmark, Norway and Sweden.<sup>7</sup> Inspired by Bourdieu's work on cultural distinction (Bourdieu, 1979), and the notion that "traditional demographic and socio-economic criteria have increasingly lost their significance to citizens' choices and actions" (Bille et al., 2005, p. 321), the compass attempts to provide a nuanced understanding of consumer attitudes, values, beliefs, interests and lifestyles. Like the Index Danmark/Gallup, the Gallup Compass segmentation is based on a single-source principle, though the questionnaire has been 'minimized' through discriminant analysis

(Klecka, 1980) to the most distinct questions. Thus, data from the Gallup Compass segmentation and the Index Danmark/Gallup are linked by the common issues regarding activities, interests and attitudes stated by subjects, which by a factor analysis form the sociographic segments in exactly the same way in both databases.

On accessing the Gallup Compass questionnaire, one is asked to consider a number of statements about society and politics, refugees and developing countries, personal habits and feelings, consumption and purchases, as well as media, and to indicate on 6-point Likert scales to what extent one agrees or disagrees with the statements (cf. Appendix 1). The selection of statements are based on a discriminant analysis that has been employed to produce a short-form version of the self-assessment questionnaire that is distributed annually to 24,000 Danes (see above).<sup>8</sup> Like many other sociographic systems of audience and consumer segmentation, the Gallup Compass is structured in two dimensions, each described through bipolar categories;<sup>9</sup> that is, the modern versus the traditional and the individually oriented versus the socially oriented, resulting in a total of nine population segments; four straight segments, four combined segments, and a neutral (or 'centre') segment with the latter being reserved for those respondents who cannot be unequivocally

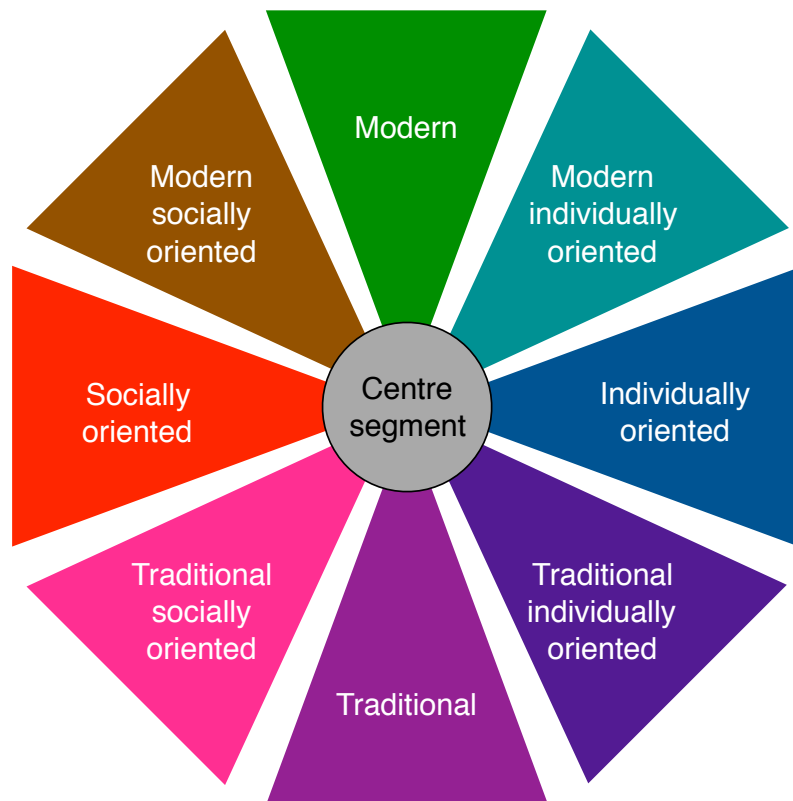


Figure 3. The Gallup Compass segmentation.

placed in any of the other segments (cf. Figure 3). The segmentation and its foundation have been described thoroughly by Hansen (1998, pp. 190-191) and Bille et al. (2005, pp. 323-332) as well as by Gallup itself,<sup>10</sup> for which reason we will in the following provide only a brief summary description.

As can be seen in Figure 3, each segment has its contrast in another segment except for the centre segment. While people in the modern segment (green colour) are generally younger and well-provided males (below 40 years), with long working days and focusing on career and luxury, the traditional segment (violet colour) is characterized by elderly people having traditional family values with an emphasis on home chores. As for the second dimension, there is an essential disparity between, on the one hand, the individually oriented (primarily younger aged, males and Jutlanders) with limited interest in socio-economic and political conditions (blue colour) and, on the other hand, the socially oriented segment (red colour) consisting of political and ethical consumers valuing health, ecology and humanity. When comparing the combined segments, we may find similar opposing or disparate characteristics, such as the modern individually oriented (blue-green colour); typically younger self-employed with entrepreneurial activities, as opposed to the traditional socially oriented (pink colour) with preference for the welfare society and a widespread lack of confidence in information technology. And finally the traditional individually oriented 'do-it yourself people' (blue-violet colour); typically pensioners loving their country, as opposed to the modern socially oriented academics (brown colour) who engage in cultural life and society with great idealism.

When completing the questionnaire, respondents are grouped on the basis of a two-step factor analysis in one of the eight segments, or in the centre segment. However, given that the responses are stored and processed electronically by Kantar Gallup, thus leaving no opportunity for us to correlate data collection and analysis with participating students, the students were asked to remember their segmental groupings for use in the second self-assessment survey centred upon personality traits (cf. the following section). In the subsequent analysis of those results, it turned out that all nine segments were represented, more or less frequently, among the participants.

## **Self-assessments of personality**

This survey, also a questionnaire of statements meant for audience segmentation, was originally developed by Häusel (2002, pp. 243-245). According to Häusel, segmentation can be used as a tool for 'limbic mapping' of managers, leaders and companies as well as target groups or consumers on the basis of emotions and motives;



two concepts representing a pair of twins in the human brain (2006, pp. 28-29). Although being a matter for affective neuroscience and psychology, respectively, these concepts are closely interrelated, given that emotions are goal-directed and therefore motivated, while motives are associated with feelings and consequently with physiological measures, such as facial electromyography (p. 28). “Together they form the motivational basis for action”, as put by Kangaslahti and Kangaslahti (1997, p. 8) and are, therefore, fundamental to the understanding of target groups.

Drawing on literature on motive and emotion systems in the human brain, including Panksepp’s (1998) theory on the hormonal foundation for the emotions, Häusel distinguishes between three defining forces, the so-called ‘Big 3’ (2006, p. 30): *dominance*, *stimulation* and *balance*. Secondly, analogous to the combined segments in the Gallup Compass, mixtures are formulated resulting in three supplementary endeavours; i.e., *discipline* or *control* combining dominance and balance, *fantasy* or *pleasure* combining balance and stimulation, and *adventure* or *thrill* combining stimulation and dominance (p. 42). Further, when taking a closer look at the six traits one might perceive two overall themes related in a dichotomous way: *Stability* in the form of security against punishment, and *spontaneity* that is focused on reward, and while the former may be characterised as pessimistic and conservative, the latter is oppositely optimistic and innovative (Jantzen & Vetner, 2008, pp. 14-15).<sup>11</sup>

Premising that the relative prominence of the Big 3 is a decisive factor with regard to attitude and behaviour, Häusel identifies six fundamental ‘limbic prototypes’ corresponding to the six personality traits. These are labelled as follows: The performer, the disciplinarian or controller, the keeper, the open-minded,<sup>12</sup> the hedonist or creator, and the adventurer or pioneer (2002, pp. 71-72; 2006, pp. 95-99), and each trait is defined by a combination of approximate percentage values in the domains of the Big 3. Like the above description of the sociographic segments (Gallup Compass), we will provide an overview of the six prototypes and their characteristics while the relation between, on the one hand, traits and limbic prototypes as conceived by Häusel (2002, pp. 247-250), and on the other hand, the thematic dichotomy between stability and spontaneity is illustrated in Figure 4.

The keepers are primarily oriented towards balance (2002, p. 133) and are characterised by a need for control as well as a concern for details combined with a tendency for pessimism and stress. They tend to be anxious, cautious and not very receptive to new things. Being typical regular customers with rather steady consumption and shopping habits, they remain loyal to a product for a very long time, and brands serve a purpose of safety and trust (2006, pp. 95-96).

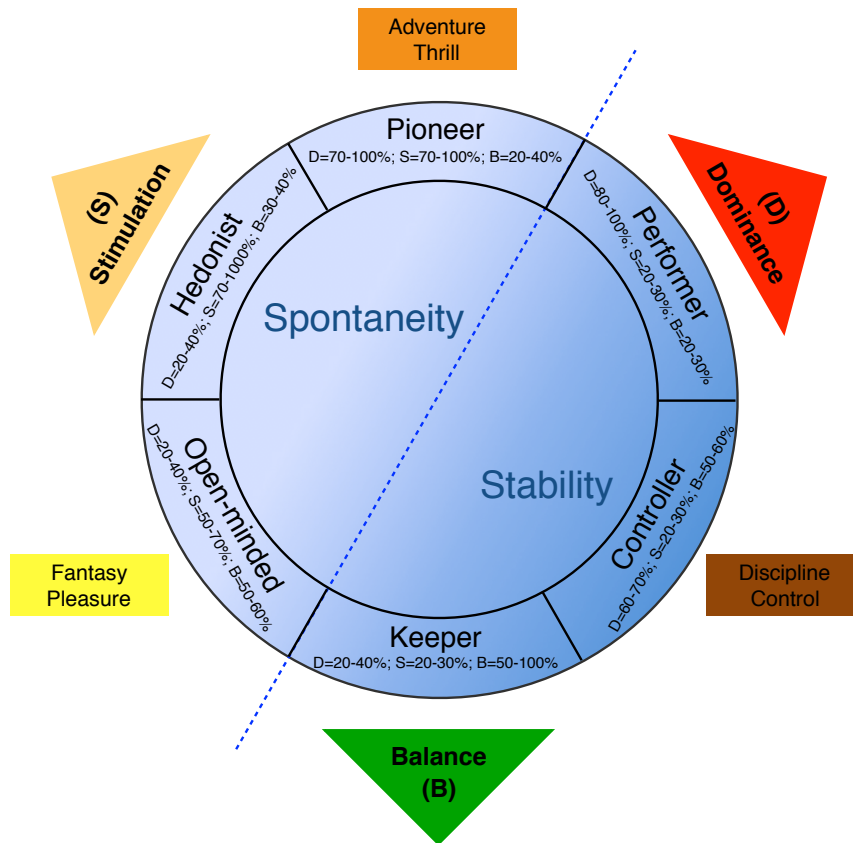


Figure 4. Personality traits, limbic prototypes and themes.

While the keepers are characterised by an often suspicious-pessimistic attitude, the open-minded have a more optimistic view. They are sociable and like visiting events and getting to know new people, but they also cherish the family. Women dominate this group, and they are concerned about quality and the preservation of natural resources, though not be at the expense of pleasure. Actually, they like to indulge themselves with sensual wellness products as well as new food experiences (2006, p. 96-97).

The hedonists are primarily focused on being rewarded with extravagant products and unusual experiences through which they can express themselves as individuals. They are typically interested in the latest trends and newest products, and they tend to see opportunities around them to help them fulfil their objectives, while also ignoring potential obstacles or risks. Being impulsive buyers, they prefer fashion and exotic new flavours or products, and health issues are not of concern to them (2006, p. 97).

As distinct from the self-indulgence of the hedonists, the pioneers take up a fighter's stance when trying to fulfil their need for thrill and excitement in life. Thus, they tend to practice sports, such as mountain biking, snowboarding and free climbing. They are rebel-

lious and are focused on convention-breaking activities. In that way, they are not loyal to specific brands or products. Health matters do not interest them as they prefer a life with risks. They are not interested in quality. Products must enhance their performance. Moreover, they don't need advice, but seek information on their own via the Internet (2006, pp. 97-98).

The performers are highly oriented towards cultural dominance, given that they seek to demonstrate greatness, cleverness and high status through choice of products and comestibles, such as expensive wines, clothes and luxury watches (2006, p. 98). They are characterised by a rather uncompromising style of leadership, attaching great importance to consistency, clarity and assertiveness as well as career, power, status, responsibility and challenge (2002, pp. 132-133). Also, they emphasize the importance of technical perfection and classic and functional fashion style. However, they do not avoid discounts when it comes to low-involvement convenience goods that can be used unnoticed. In general, the higher the status and prestige of a product, the less important the price becomes (2006, p. 98).

Finally, the controllers, like the keepers, are affected by a need for balance and predictability of the future, and as such they are predominantly guided by pessimism and mistrust. They are neither particularly fond of changes and surprises, nor pleasure and thrills. Being economically minded, they purchase only what they need and typically not without having compared prices beforehand. They tend to reject everything superfluous; no frills (2006, p. 99).

In addition to the six limbic prototypes, Häusel pinpoints four extra profiles of which three are characterised by having roughly equal values of the Big 3 (cf. Figure 5). These are the whimsical and inconstant eccentrics permanently seeking high tension, the steady phlegmatics who are difficult either to upset or to motivate, and the harmonizers ('the golden middle') for whom there are no extremes (2002, pp. 250-251).<sup>13</sup> The fourth and last profile, which is described as "the ideal leader" (p. 247), bears resemblance to the performer prototype by virtue of the predominant orientation towards dominance (80-90%) in combination with the low to moderate orientation towards stimulation (30-50%) and balance (40-50%). In the present study we have decided to include this profile when analyzing the results of the self-assessments.

Originally, the questionnaire consisted of 45 statements arranged according to the Big 3, though we chose to modify it in two ways (cf. Appendix 2). To begin with, the statements were arranged in random order and their explicit alignment with the defining forces of

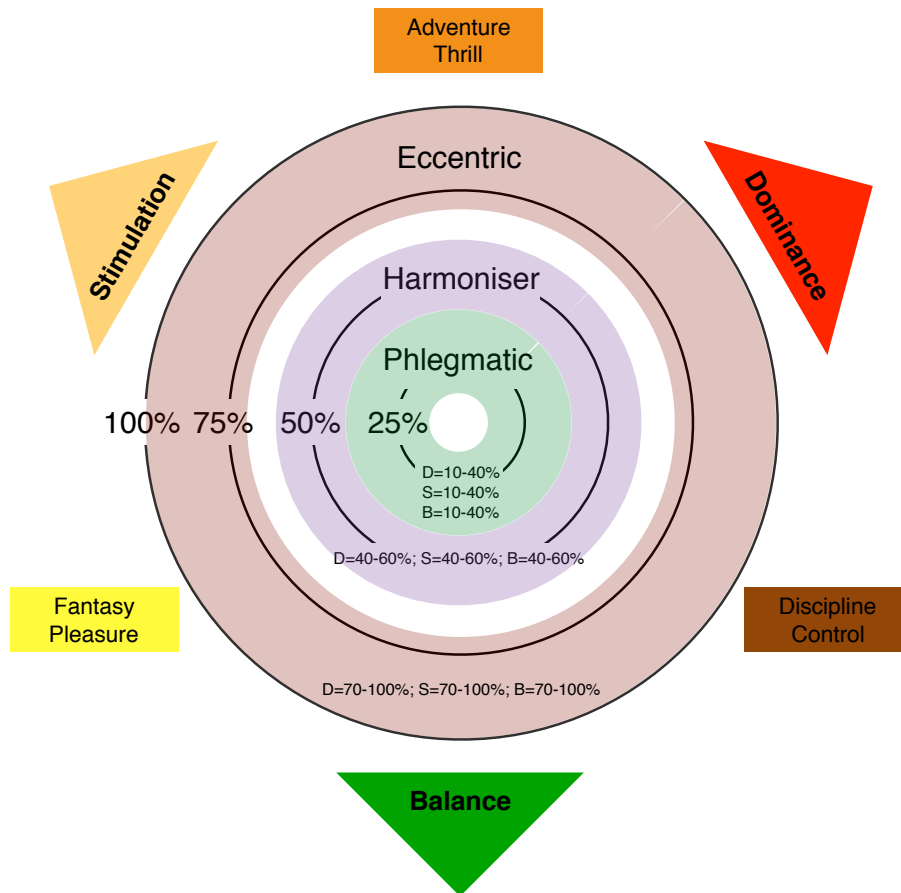


Figure 5. Limbic prototypes having equal values of the Big 3.

doinance, stimulation and balance (for a description, see the section below) were removed, thus disguising the logic of segmentation. Secondly, the ‘yes’ checks were substituted with 6-point Likert scales, thus stepping up the number of answer possibilities similar to the Gallup Compass questionnaire. Each student’s answer was analyzed by aligning the resulting percentage rates of the Big 3 with the percentage rates defining the six limbic prototypes and four extra profiles (cf. Figures 4 and 5). Unfortunately, the percentage definitions were not fully covered when combining the calculated values, and a number of students did not emerge as any of the ten prototypes or profiles. These students have been segmented by gradually extending the intervals within each personality dimension simultaneously. For that reason, we reduced the mathematical demands by significantly extending the intervals for the limbic prototypes. The extension of the intervals was 0.9, and the average interval size was 3.2. Finally, we ended up having eight out of ten prototypes represented among the participants (excluding hedonists and phlegmatics).



### 3. Textual content

The stimuli chosen for the study were six videos or video clips with durations between 19 seconds and 3.05 minutes; all of them found on the file-sharing website YouTube. Four of the videos were commercials – one of them a flashmob commercial, while the remaining two videos include an action-film trailer and a video blog. The videos and video clips are listed below in Table 1.<sup>14</sup>

**Table 1. The six videos and video clips.**

Designation	Duration	Short description
1 T-Mobile, 'Welcome Back'	3'05" (Full video)	Flashmob video for T-Mobile International AG (a segment of the German telecommunications company, Deutsche Telekom), recorded at Heathrow Airport (London).
2 DeWalt	0'35" (Full video)	Commercial for DeWalt (an American power-tools brand), showing how tough the company's tools are.
3 John West Foods	0'19" (Video clip)	Commercial for John West Foods (a British seafood company producing canned salmon and tune), showing the company's efforts to deliver quality food.
4 Toyota	0'22" (Video clip)	Malaysian commercial for Toyota (a Japanese automotive manufacturer), showing the robustness of the car.
5 Tetsuo II	2' 24" (Video clip)	Film trailer for Shinya Tsukamoto's horror and science-fiction movie, <i>Tetsuo II Body Hammer</i> (1992)
6 Ginger	1'02" (Video clip)	Video blog titled 'Gingers do have souls!'

The criteria for the selection of the videos were as follows

1. They should be capable of invoking arousal as well as, affective and cognitive response to a sufficient high degree, potentially resulting in sweat-glands variations that are measurable.
2. They should represent a variety of emotions, such as compassion, laughter, happiness, sorrow, horror and anger.
3. They should not be vulgar and should not offend the test persons.

To prevent biasing the results due to the particular order of succession, the six videos were compiled (by using Adobe Premiere) in four combinations, corresponding to the number of test sessions. The four film versions were just under 11 minutes each, including about one minute of dark screen at the beginning and again at the end. Between

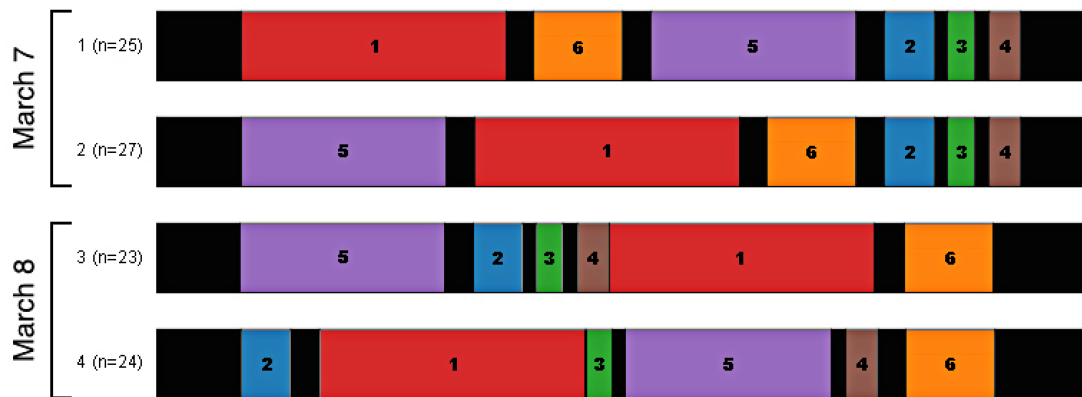


Figure 6. Four different test sessions.

the videos there were about 10 or 20 seconds of dark screen, except in two instances in test sessions 3 and 4, respectively (cf. Figure 6).

We will now give an account of the textual elements of the six videos. Inspired by the procedure of Bullerjahn and Gldenring (1994, 103-105), we provide in Appendices 3-8 editing transcripts of the videos by charting the content and style (including scene description and camera viewpoint) contained within the audio-visual materials, thus dividing each video into a number of ‘events’. However, given the genre diversity of the videos, the division criteria are not rigorous (e.g., when using narrative theory), but rather eclectic, since they are not only based on visual shots but also on speech, sound effects, musical sound and texted messages. For instance, whereas the content of the T-Mobile flash mob is defined by different songs, the sectionalisation of the Ginger video is guided by the level of speech volume and camera distance. It depends, really, on when ‘something new’, ‘interesting’ or ‘surprising’ happens.

## The T-Mobile flashmob

In 2009, the German mobile-phone company T-Mobile launched a campaign in Great Britain, titled ‘Life’s for Sharing’, which included a number of flashmob videos featuring ordinary people being in ordinary places in London while experiencing extraordinary situations. Examples are 200 dancers at Liverpool Street station making people dancing (15<sup>th</sup> January 2009), a public sing-along arrangement at Trafalgar Square in London with 13.500 people singing Karaoke (30<sup>th</sup> April 2009); and finally, as chosen for our research, a live a cappella choir performance at Terminal 5 in Heathrow Airport, featuring 300 singers and dancers who simulate or interact with travelers while singing a medley of eight popular songs about traveling and coming home (27<sup>th</sup> October 2010). We provide a detailed feature annotation in Appendix 3.

## **The three short TV commercials**

Compared to the T-Mobile flash mob, the DeWalt, John West Food and Toyota commercials are considerably shorter, even when summed up and put together, and as such, they are examples of run-of the mill type commercials adjusted to advertising breaks in or between TV programmes. The commercials each present a narrative using supernatural exaggeration to demonstrate the power and attractiveness of the advertised product (the DeWalt and Toyota commercials, respectively) or the devotion of the company to quality (the John West Food commercial). The features of the three commercials are annotated in Appendices 4-6.

## **Movie trailer for ‘Tetsuo II Body Hammer’**

Tetsuo II Body Hammer (hereafter labelled ‘Tetsuo II’) is a Japanese horror and science-fiction movie about a salaryman who becomes a living weapon after a violent gang of skinheads have kidnapped his son. The gang also succeed in capturing him and start making experiments on him, which result in severe bodily mutations. The content and style of the trailer is annotated in Appendix 7.

## **Video blog by an American teenager nicknamed ‘Ginger’**

The video *Gingers do have souls!* featuring a monologue by the YouTuber ‘CopperCab’ who passionately expresses his frustrations of the bullying of red-haired people, seems to have had a considerable historical effect on various social-media platforms since it was uploaded on YouTube in January 2010. Being a response to a 2005 episode (‘Ginger Kids’) of the popular American animated TV series *South Park*, in which one of the main characters Cartman ironically describes red-haired people as having no souls, the Ginger video gave rise to numerous remixes and mash-ups. In Appendix 8, there is a detailed description of the video clip.





## 4. Results

Due to the large amount of data and numerous ways to combine dimensions and measures, we have chosen the data-analytics software Tableau for making data-visualizations, which has been highly beneficial.<sup>15</sup> The low work costs of cross-tabulating dimensions and measures encouraged us to create a large number of visualizations to ensure a thorough understanding of the mutual correlations of the data variables. Furthermore, and most importantly, Tableau provides the capability for publishing data in a dynamic fashion; that is, sharing the data with peers who can make analyses themselves by using various filtering options.<sup>16</sup>

### Data reading

When distributing the average GSR measures on the six videos and their constituting events (cf. Figure 7), one might observe that some videos (e.g., Tetsuo II) have resulted in lower GSR values than others (e.g., Ginger), but also, and perhaps more striking, that GSR level is gradually rising from one event to the next within a video, except in case of the DeWalt commercial in which the GSR level is lower in the second event than the first event. When distributing the data across the four test sessions, it becomes evident that GSR-average increase during the 11 minutes of video watching is not only effected by content, but also very likely by temperature rises inside the test room.<sup>17</sup> That means that the GSR average distributed on videos and events does not make up any significant depiction of audience arousal (i.e., how intense the content has been experienced). Instead, we have decided to focus on *variability* (in terms of standard deviation) to examine whether some videos or events have caused greater GSR fluctuations than others, and as such might be capable of inducing greater arousal. However, before we do that it is important to keep in mind that GSR fluctuation caused by varying content is a highly individual matter, seeing that GSR variability differs considerably between the participants, resulting in a number of ‘outliers’; that is, first and foremost participants 126 and 72, but these are not the only ones (cf. Figure 8).

The problem is, then, that such individualities will be invisible when including data from all 99 participants (or from any given segmental category) in the analysis of a specific video or event. In such case, an *average variability* of the chosen data set (differentiated by, e.g., test session, gender, video or segmentation) is calculated, and this value is hardly illustrative or relevant. Therefore, to take into account the individual differentiations, we provide box-and-whisker plots (Tukey, 1977, p. 39) for visualizing the results. A box-and-whisker

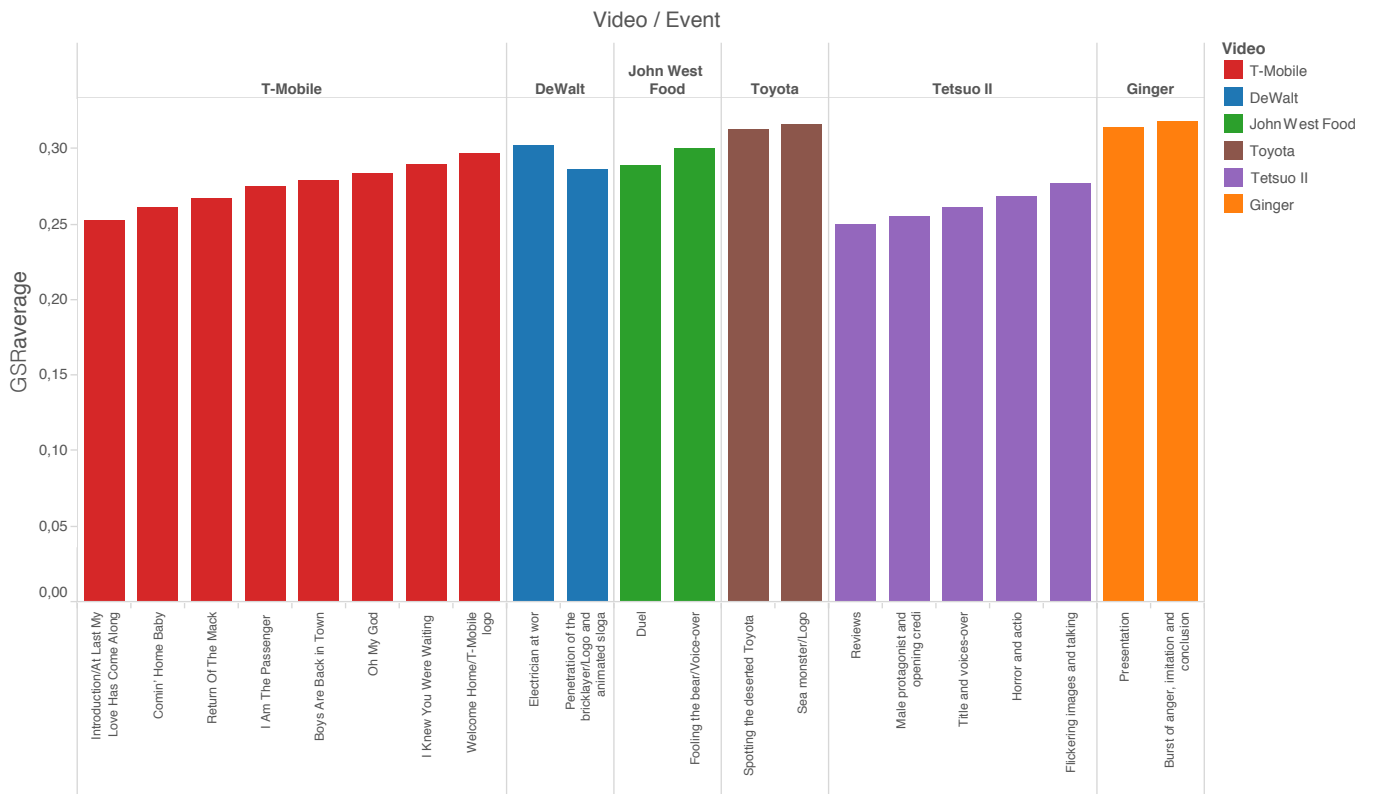


Figure 7. GSR-average distributed on content.

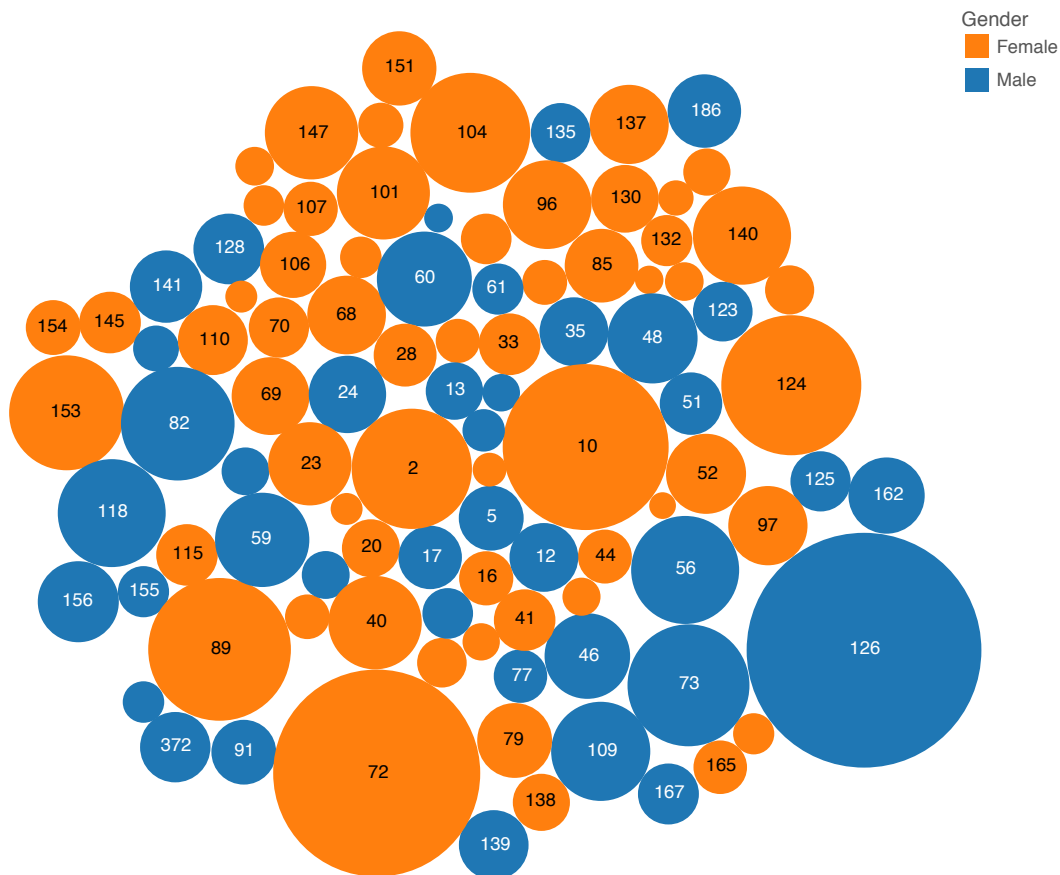


Figure 8. Packed-bubble chart displaying general GSR variability distributed on participants and broken down by gender.

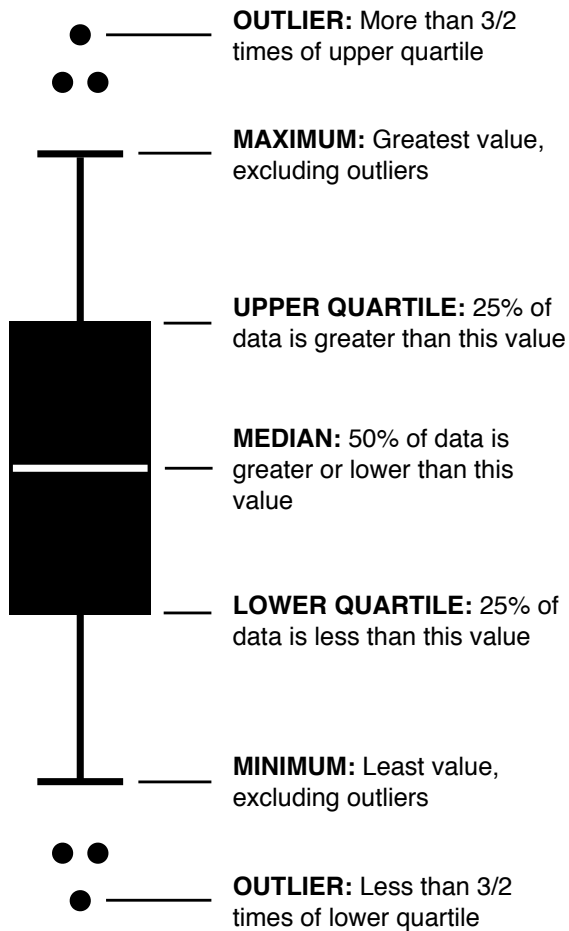


Figure 9. Box-and-whisker plot (Tukey, 1977).

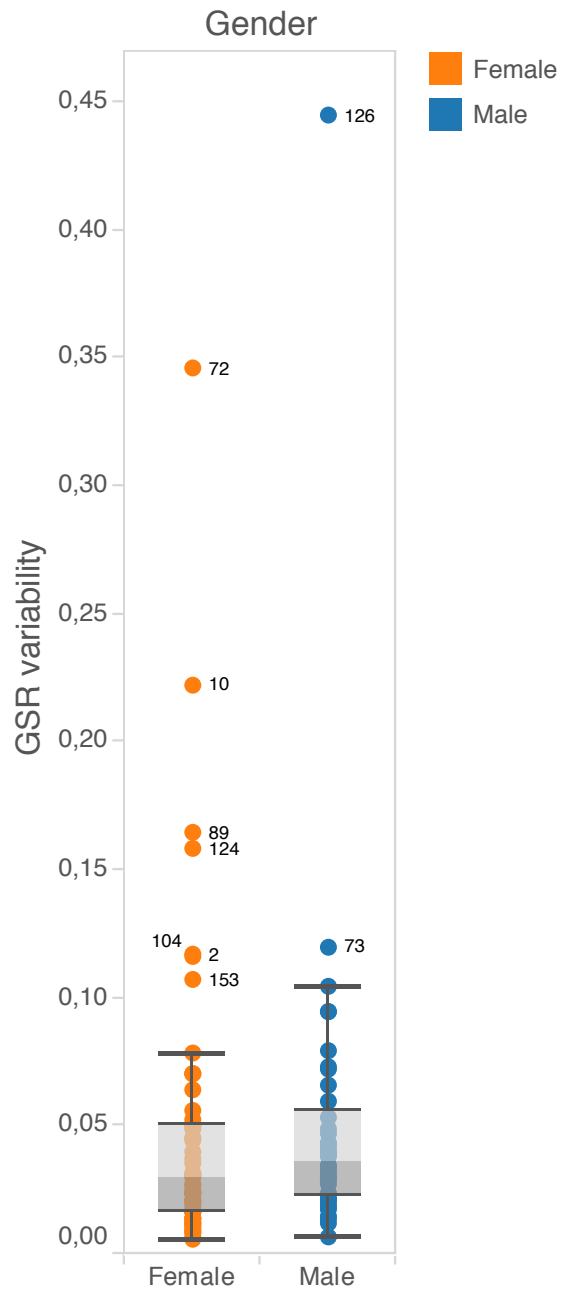


Figure 10. Box-and-whisker plot displaying general GSR variability distributed on participants and broken down by gender.

plot (cf. Figure 9) is a graphic way to display the distribution of a data set on a number line, thus showing at a glance both the typical values (i.e., the boxes) and the atypical values; the latter marked by the upper and lower whiskers (indicating 'minimum,' and 'maximum') as well as the individual points ('outliers') that extend vertically from the whiskers. That means that, while the median divides the number of participants into two equally large groups, characterized by having higher and lower GSR variability, respectively, the upper and lower quartiles indicate that half of all the values lie inside the typical range (i.e., the box area), and the other half lie outside (i.e., between the quartile and whisker). In other words, the upper and lower quartiles are the medians of the upper and lower halves of the sample, outliers not considered. As for the latter, they are special cases of higher and lower extremes departing from normality. Thus, when using box-and-whisker plots for displaying GSR variability distributed according to participants and broken down by gender (cf. Figure 10), it becomes evident that the male participants generally have a higher score than the female participants, and that ten participants (nos. 2, 10, 72, 73, 82, 89, 104, 124, 126 and 153) are to be considered as outliers. In addition, it is possible to observe in which way the spread of calculated variability values in the upper box (light grey) area exceeds the spread in the lower box (dark grey) area, but also that this is most apparent among females. In this way, box-and-whisker plots are well suited to find skews in the data when cross-tabulating explanatory variables (contents and segmentation) against the outcome variable (GSR variability).

## **Data-tabulation plan**

In the following, we provide an overview of how the results are presented. Data for the participants' respective affiliations in segments of living preferences (sociographic or compass segments) and personality traits (psychographic segments or limbic prototypes) will be aligned (or cross-tabulated) while preserving knowledge of each participant's GSR recordings attributable to the six videos. What we want to know from the analysis is how major fluctuations or variabilities in GSR values (as calculated in terms of standard deviation) are distributed on content and segmentation. If there are any correlations between compass segmentation and limbic prototype on the one hand, and high GSR variability on the other, we will try to identify new target segments. Hence, as a first step, we outline and comment on the calculated GSR-variability values as distributed on videos (cf. Figure 11), compass segments (cf. Figure 12) and limbic prototypes (cf. Figure 13). In addition, due to the multiple ways of combining and filtering data, we also provide a web-based dynamic

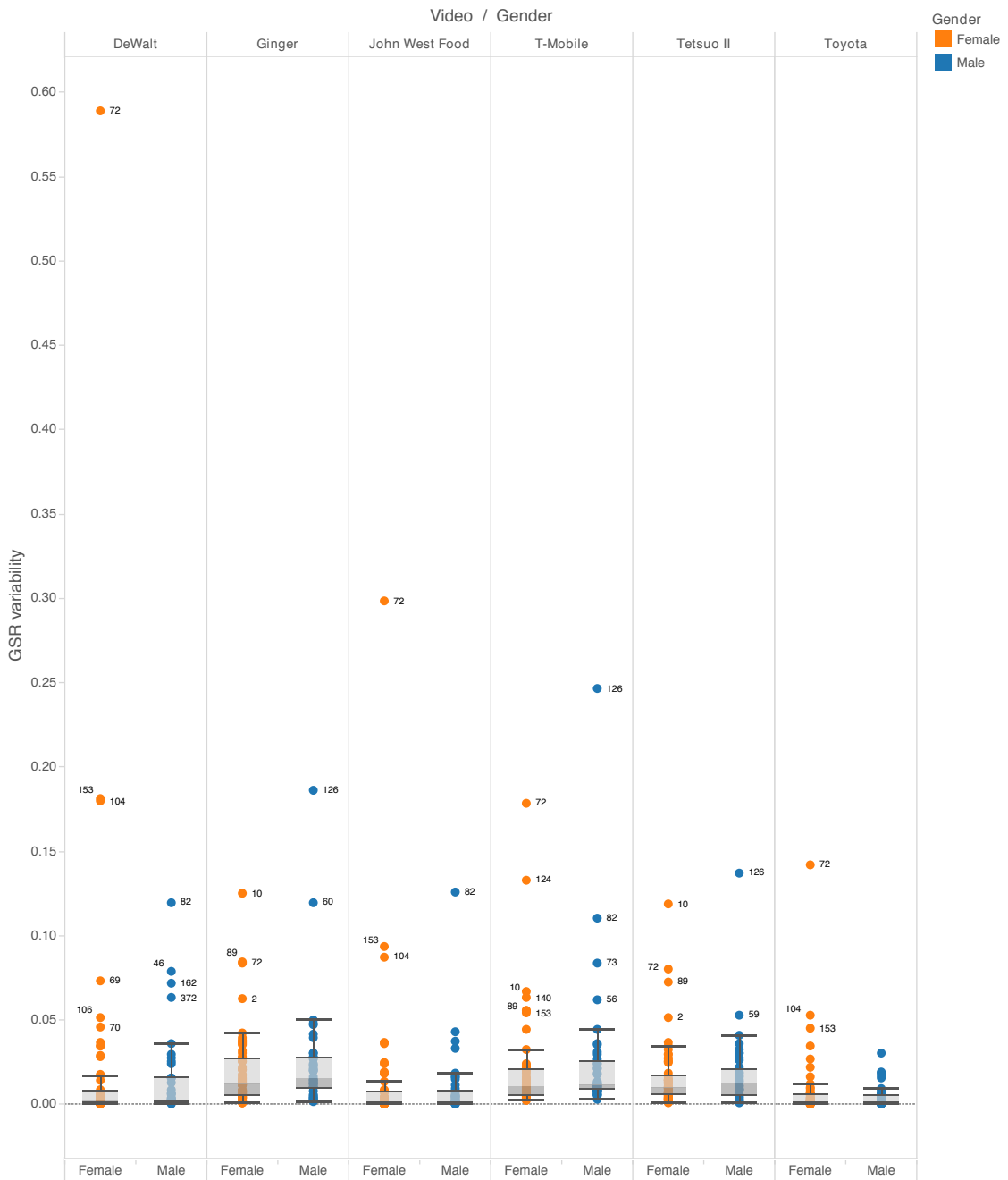


Figure 11. GSR variability distributed on videos and broken down by gender.

visualization platform as a supplement to the figures in the text. Accordingly, when clicking on the caption to Figure 11 (linking to Tableau Public), segmentational particularities can be examined by the two filtering options 'Compass segmentation' and 'Limbic prototype' at the right-hand side. Similar dynamic URLs can be approached via the captions to Figures 12 and 13, each displaying segmentational distributions with the filtering options 'Video' and 'Event'. All the visualizations are broken down by gender.

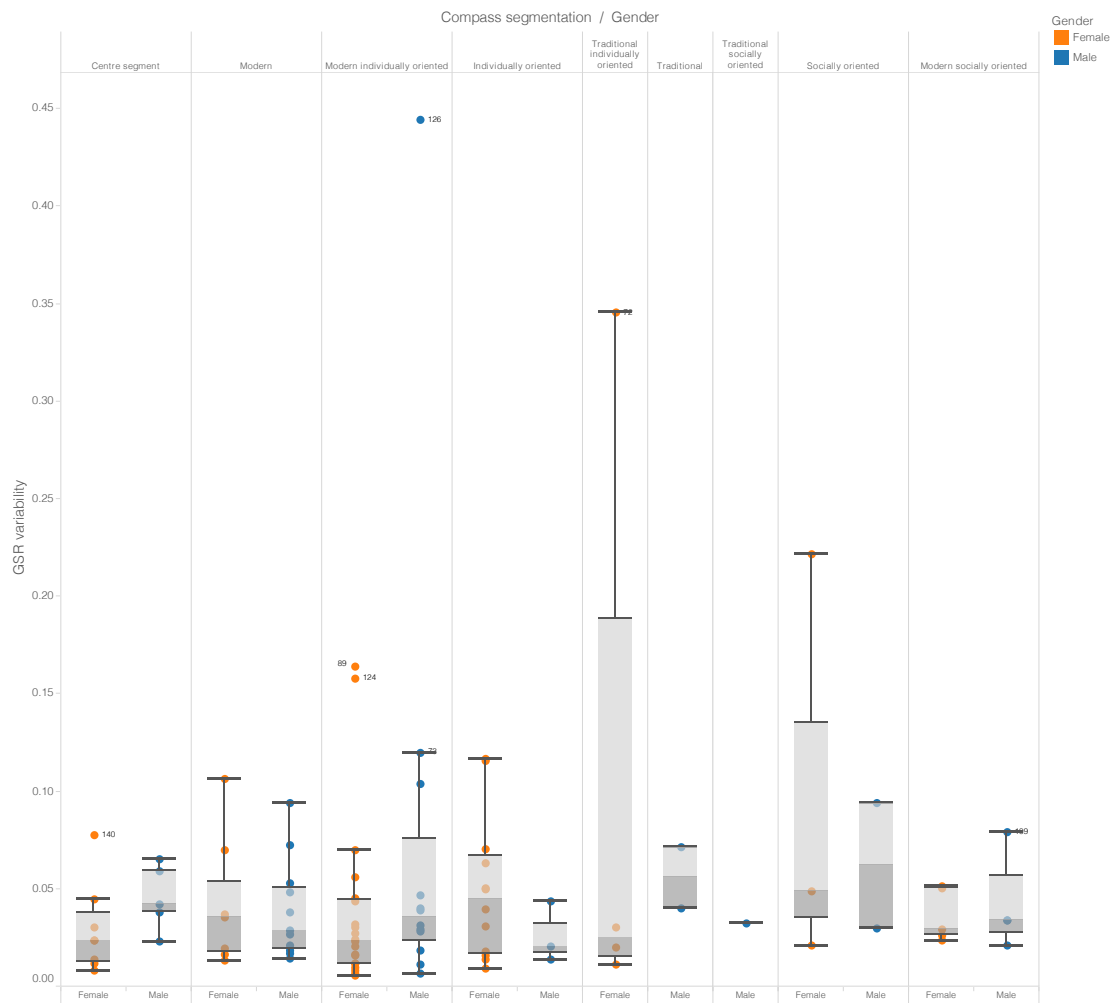


Figure 12. GSR variability distributed on compass segmentation and broken down by gender.

Having presented the basic data distributions, we proceed by taking a step deeper into data analysis by cross-tabulating selected compass segments and limbic prototypes with reference to the six videos (cf. Figure 14), as well as to events in particular videos (cf. Figure 15). The reason is to reveal any significant correspondence between segmentation composites, type of content and audience response. Finally, in a turning point from the stepwise procedure as mentioned above, we go further into the significance of content by accentuating the events in the videos having caused the highest GSR variability (cf. Figures 16-17). On this basis, we put forward some suggestions, explaining why some creative elements and compositions cause greater effects than others.

## Videos, compass segmentation and limbic prototypes

The results of the six videos can be compared and related to each other by displaying the inter-quartile data range and outliers

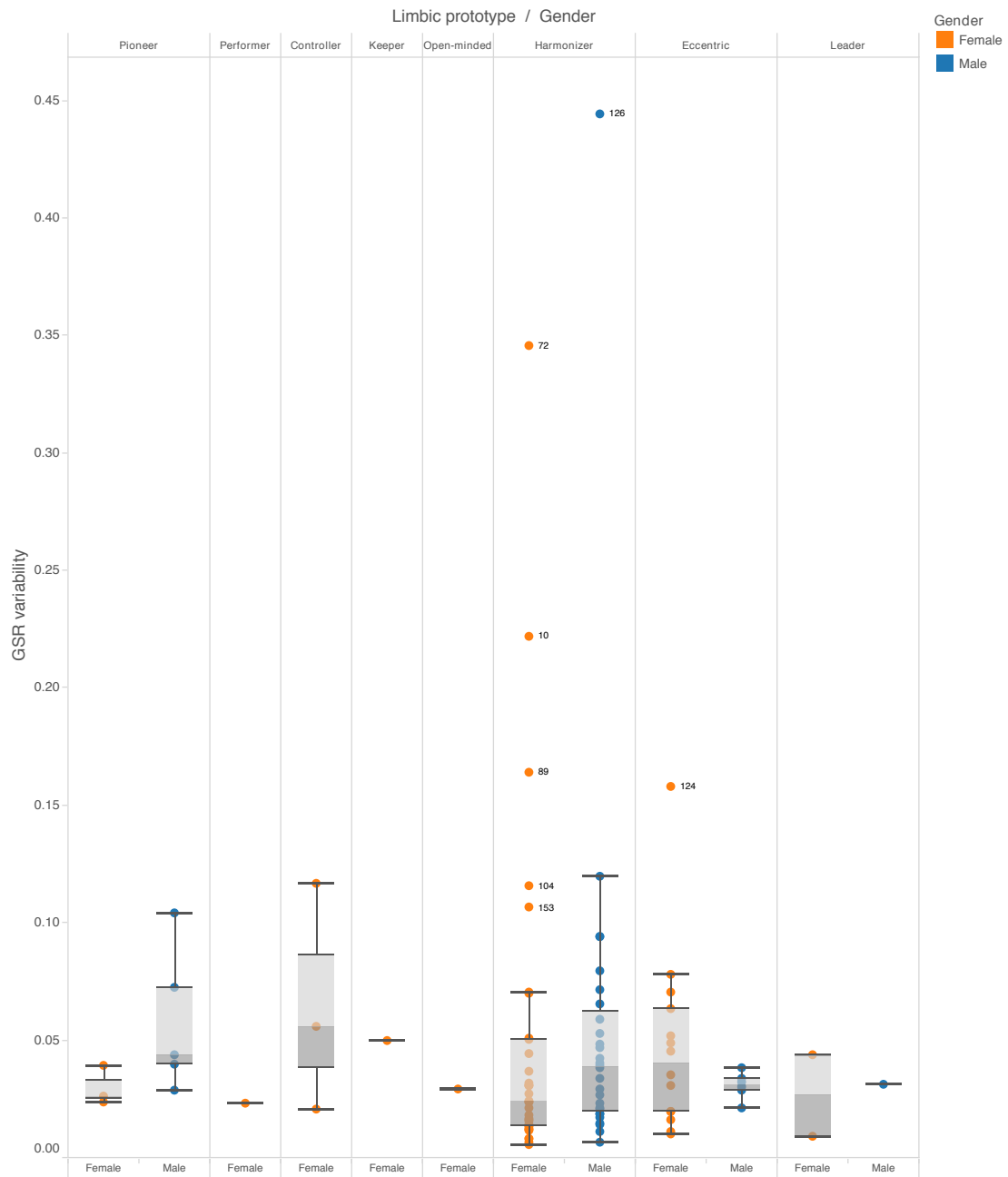


Figure 13. GSR variability distributed on limbic prototypes and broken down by gender.

in terms of GSR variability (cf. Figure 11). Similar comparisons can be made across the nine compass segments (cf. Figure 12) and the eight limbic prototypes that were represented (cf. Figure 13). When distributing GSR variability into the six videos (cf. Figure 11), we find that, as far as arousal is concerned, the most effective video is Ginger, succeeded by T-Mobile, Tetsuo II, DeWalt, John West Food and Toyota. Moreover, when comparing gender differences, the videos have generally caused greater fluctuations among the



male participants, except for Toyota. However, as for the segmentational distributions (cf. Figures 12 and 13), we find a more diverse balance between males and females. Leaving aside the socially oriented women and men who have been more responsive than the other segments (except for the traditional individually oriented women), the most responsive male group is the modern individually oriented, the centre segment and the modern, whereas the most responsive females are the traditional individually oriented and the individually oriented. Put more simply, participants having the greatest responses tend to be individually oriented if they are women and modern if they are men.

Compared to the compass segmentation, the distribution of participants across limbic prototypes (cf. Figure 13) is rather skewed, with the paramount majority categorized as harmonizer (63%), eccentric (20%) and pioneer (8%), while the remaining 9 percent (almost only females) are divided between the controller, keeper, leader, open-minded and performer categories. Such circumstances limit the scope of what can be concluded from the results. Still, we might point out that, as for women, and leaving out the controllers which number only three participants, eccentrics are the most responsive group followed by the harmonizers and the pioneers, while the opposite seems to hold true with regard to the male participants.

## **Cross-tabulations**

Considering both genders together, the results in general show that the socially oriented and the harmonizers are some of the most responsive groups in terms of GSR variability. Accordingly, we might concentrate on these two groups by comparing the results from various filtering configurations, more specifically the formation of union, intersection and difference sets, thus making the box-and-whisker plots even more exploratory. However, one should bear in mind that while the harmonizer group include as many as 62 participants, the socially oriented numbers only five participants, and even fewer (3 participants) are categorized as both socially oriented and harmonizers (the intersection set). Naturally, this weakens the comparability of the four sets because, as one may notice in the dashboard shown in Figure 14, the upper quadrants feature both typical and atypical data unlike the lower quadrants, in which the data are too sparse to make such a distinction. It appears that the three most substantial videos, Ginger, T-Mobile and Tetsuo II have caused the greatest fluctuations, but the results are fairly similar when including all the participants (i.e., not only the harmonizers and socially oriented). Still, the dashboard visualization may serve as a general illustration to show how descriptive data analysis can be supported.

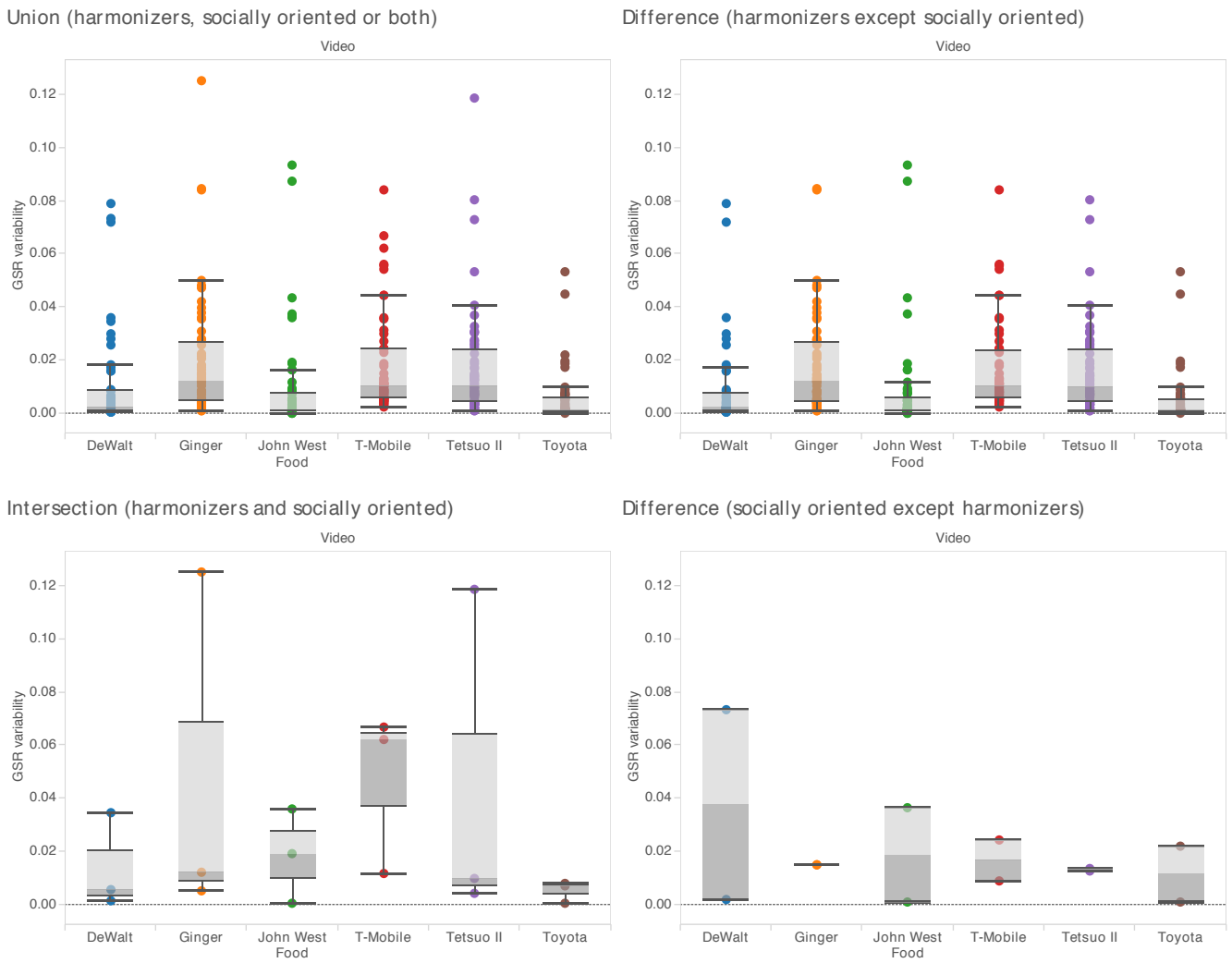


Figure 14. Cross tabulating harmonizers and socially oriented and broken down by videos.<sup>18</sup>

When focusing exclusively on Ginger, T-Mobile and Tetsuo II, we might advantageously go deeper, examining whether particular events in the videos have caused greater GSR fluctuations than others. Accordingly, the dashboard visualization above, displaying the union and intersection sets of the socially oriented and harmonizer groups as well as the complementary difference sets, can be enhanced with further detail specifications, as illustrated in Figure 15.

Apparently, the burst-of-anger event in Ginger has triggered GSR fluctuations that are significantly greater than the presentation scene, as well as in every other scene or event in T-Mobile and Tetsuo II. This implies that the sudden emotional outburst has had a certain affective impact on the participants, thus indicating an increased level of arousal. Aside from that, the flickering-images-and-talking event in Tetsuo II and the 'Welcome Home' finalization

in T-Mobile have resulted in some fluctuation increases, which also seem explainable by their emotional contents. Indeed, whereas the former event differentiates from the previous scenes in Tetsuo II by its intensive depiction of fear and despair (the talking part), the latter represents the culmination of heart-warmth, watery-eye laughter and joy among the crowd in the airport terminal.

## **Summary of the interim results**

The segmentation of the test population is multiple, seeing that several segmental categories were identifiable from the premise of greatest GSR variability. The analysis of such a relatively large number of categories has been based on too small a population size, which makes it problematic, if not impossible to generalize the results. Nevertheless, there seem to be some correlations between (1) living preferences (compass segmentation) and gender, (2) personality traits (limbic prototype) and gender, as well as (3) correlations between living preferences and personality traits. More specifically, it appears that the most responsive groups tend to be modern male pioneers and individually oriented female eccentrics, but when considering both genders together we have identified the socially oriented and the harmonizers as the most responsive groups, which might together constitute a composite target segment among early-to-late twenties men and women.

In the following, instead of showing and analyzing data correlations across segments and gender as distributed on the videos and their content, we will account for the GSR fluctuations to which the events have given rise among *the total number of participants*. The reason for this analytical turning point is as follows: We pretend for a moment, that the videos were intended for media planning purposes in a campaign strategy and we will therefore analyze their effects on different target groups. Here, we have the choice of either *post-evaluating* the videos after the campaign according to the segmental groups who have responded most to the videos, and thereby prioritize and identify a composite target segment for future campaigns, which is similar to what we have done so far; or *pre-evaluating* the creative content of the videos before the campaign to test whether some events in each video will perform better than other events, and thereby prioritize and identify potential target segments for an upcoming campaign. Depending on choice of content according to a given media strategy in the media planning process, the respective characteristics of gender, living preference and personality trait will be considered as potential target segments.

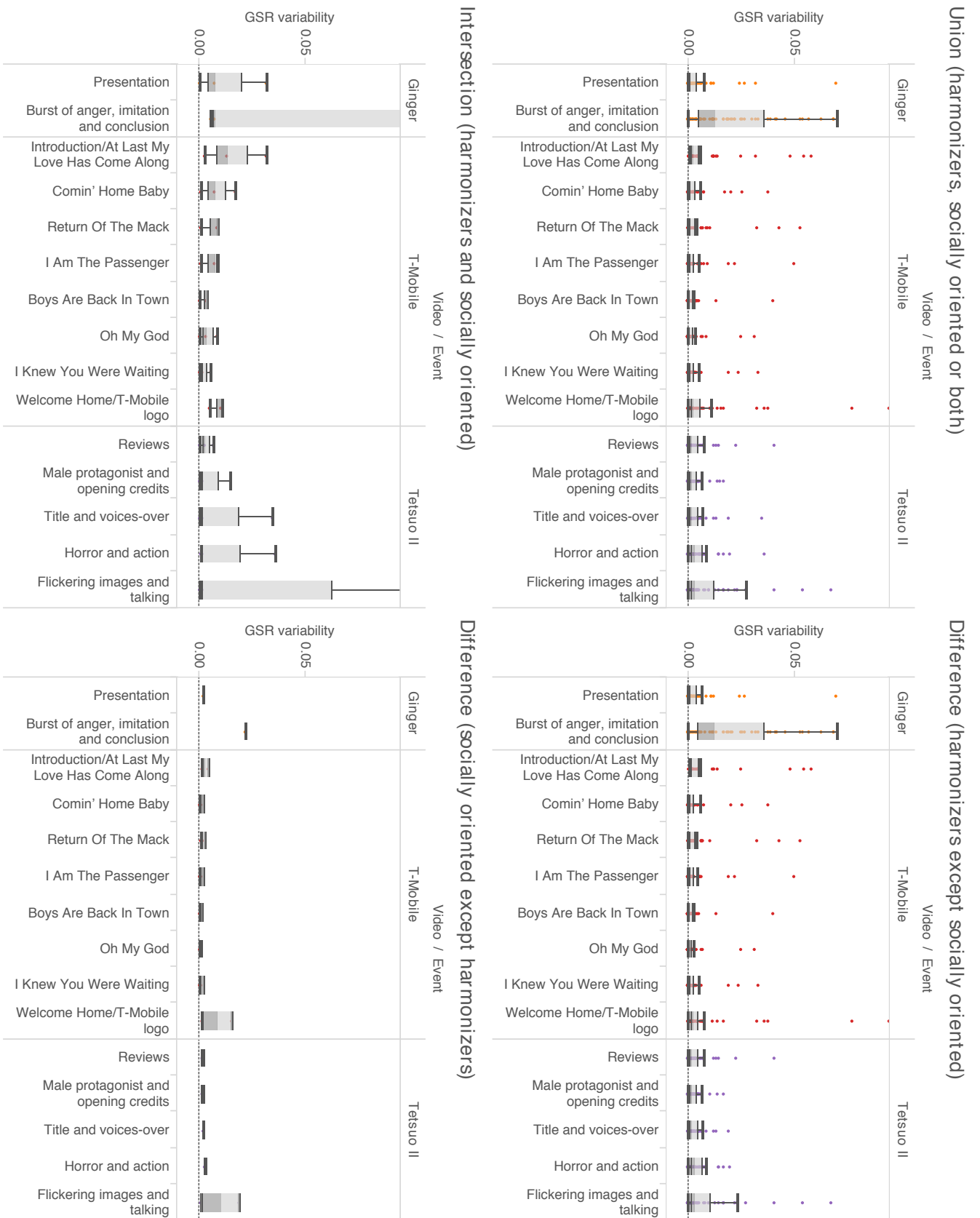


Figure 15. Cross tabulating harmonizers and socially oriented and broken down by events in three videos.<sup>19</sup>

## Continuing data results

Beginning with the Ginger video and the three short TV commercials, all characterized by having two constituent parts (i.e., an exposition and a dramatic or spectacular event before the cut-off or closing logo), the second parts generally tend to induce significantly greater GSR fluctuations than the first parts. This result, being similar irrespective of segmentation and gender, is hardly surprising and very much convergent with the assumption that affective media content that causes emotional responses (e.g., anxiety, fright or shock) leads to increased psychophysiological arousal patterns. However, in the case of the DeWalt commercial, we find a noteworthy exception. Apparently the penetration-of-the-bricklayer scene has not resulted in any GSR-variability increases. On the contrary, however, variability is reduced. An explanation might be found in the diverse sequential contexts of which this particular video has

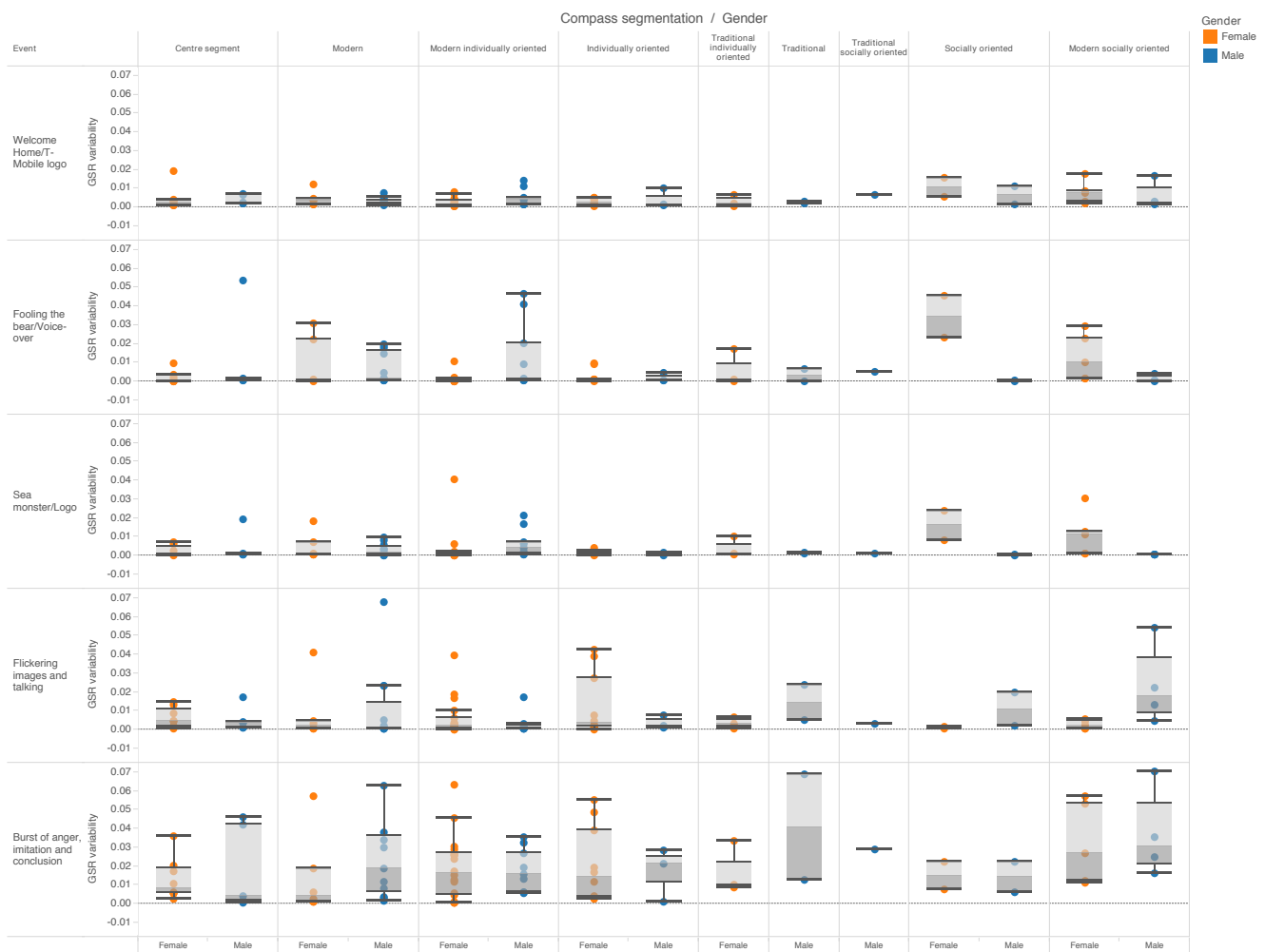


Figure 16. Five arousing events distributed on compass segmentation and broken down by gender.

been arranged. For instance, in test session 4, it is presented as the first video in line (cf. Figure 6); and when filtering the data according to test sessions, it appears that the results of session 4 deviate extensively from the results of the other sessions. Here, the level of GSR variability in the introductory scene ('Electrician at work') significantly exceeds that in the penetration scene. Thus, there is reason to believe that the increased GSR variability at the beginning of session 4 might have been caused by confusing factors not assessed in the study (e.g., mental overload, confusion or insecurity about what to expect).<sup>20</sup> Another explanation might have to do with the fact that, in session 2, the electrician-at-work scene followed from the arousal-evoking burst-of-anger scene in Ginger. Nevertheless, the general view of the arousing quality in the concluding parts remains unchallenged. This is also apparent in Tetsuo II, where the flickering-images-and-talking event (before the cutting-

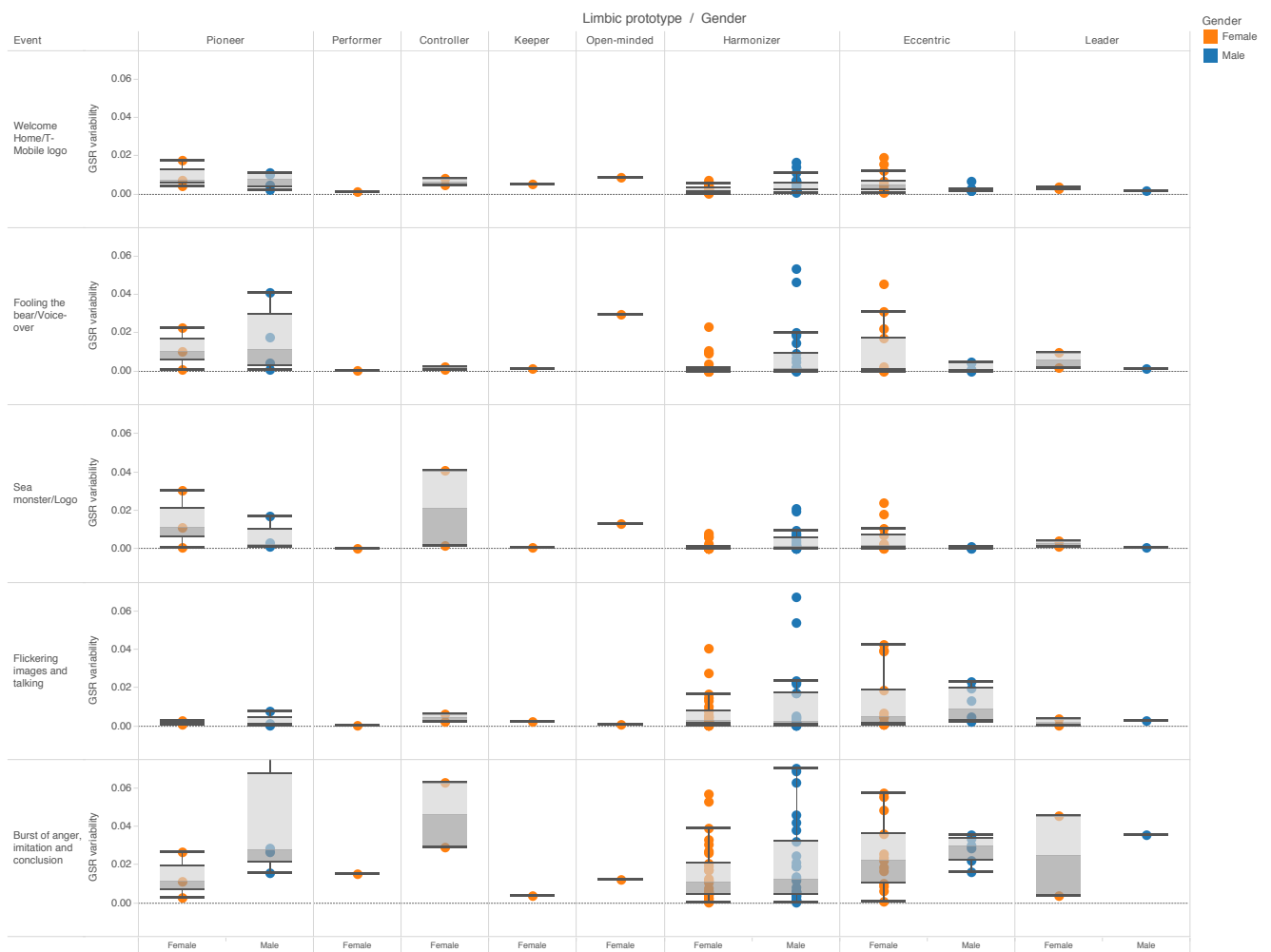


Figure 17. Five arousing events distributed on limbic prototypes and broken down by gender.

off) resulted in greater GSR fluctuations than the preceding events, and the same goes for the 'Welcome Home' finalization in the T-Mobile flashmob. However, underneath this general pattern there are a number of differences within the compass segmentation as well as among the limbic prototypes. In the following analysis of the arousing conclusions in the five videos (DeWalt not included), we will interpret and discuss these differences.<sup>21</sup>

In Figures 16 and 17, GSR variability within the five events are distributed on compass segments and limbic prototypes, respectively. Hence, the box-and-whisker plots should be compared horizontally, that is, between segmental categories and gender and not (vertically) between events in question.<sup>22</sup> One may notice the diversity between the various segmental categories with regard to how the single variability values are distributed around the median and within and out of the quartile range. In some cases, the values are very similar (typically within a range of 0.005), whereas in other cases the value distribution is much more skewed with many low values and fewer high values, which results in a relatively high upper-quartile range. And in still other cases — given the segmental categories comprising only one or two participants, such as the traditional and traditional socially oriented — the value distribution is quite even.

Now, when comparing median values across the segmental categories, there appear to be some patterns. To begin with, the compass segmentation (cf. Figure 16) shows that indications of high arousal (i.e., high variability) are most prominent among *socially oriented and modern socially oriented females* in the case of the 'Welcome Home', fooling-the-bear and sea-monster events, and *modern socially oriented males* in the case of the flickering-images-and-talking event as well as the burst-of-anger event. And with regard to the *males'* responses of the 'Welcome Home', fooling-the-bear and sea-monster events, we find the highest values among *modern and modern individually oriented*. Accordingly, we might conclude that the first three events in Figure 16 have had the greatest impact on 'modern men' and 'socially oriented women'. Finally, in the case of the fooling-the-bear, flickering-images-and-talking and burst-of-anger events, the values among *traditional males* are also high, but this segmental category numbers only two participants, which makes the results rather tentative.

As for the limbic prototypes (cf. Figure 17), we are faced with another general pattern. Firstly, while all the events have had a relatively high impact on *male harmonizers*, their *female* counterparts have been less responsive and are surpassed by the *female pioneers and eccentrics* as well as the *female leaders and control-*

lers.<sup>23</sup> Secondly, we may identify a division between the ‘Welcome Home’, fooling-the-bear and sea-monster events, on the one hand, and the flickering-images-and-talking and burst-of-anger events on the other, and which seem to have affected the *male pioneers* and *male eccentrics*, respectively.

## Summary

When examining GSR variability as distributed on the six videos (as in a post-campaign evaluation), we found that the most arousal-evoking videos were the three substantial ones (Ginger, T-Mobile and Tetsuo II), while the three short TV commercials (DeWalt, John West Foods and Toyota) were less effective (cf. Figures 11 and 14). We also found that the male participants generally were more responsive than the female participants regardless of video stimulus. Moreover, it appeared that, the most responsive females tend towards individuality and eccentricity, while their male counterparts tend to incline towards modernity and pioneering spirit. However, when considering both genders together, the results showed in general that the socially oriented and the harmonizers were the most responsive segmental categories.

As for the final part of the analysis (i.e., the pre-campaign evaluation), we identified a general pattern of concluding events being more arousing than the preceding events (due to considerably higher GSR fluctuations). More specifically, in the matter of the ‘Welcome Home’ event (T-Mobile), the fooling-the-bear event (John West Foods) and the sea-monster event (Toyota), the high-variability values were associated with masculine modernity and pioneering spirit as well as feminine sociality and pioneering spirit. Additionally, the flickering-images-and-talking event (Tetsuo II) and the burst-of-anger event (Ginger) have predominantly affected both eccentric males and eccentric females, but also socially oriented males. We also noticed that the order in which the videos were presented seems to be important.

When targeting audiences in the pre-evaluation campaign context compared to targeting audiences in the post-evaluation campaign context, we will be able to compose more precise target groups according to living preferences and personality traits and to the level of multiple events content. Here we note that it is more rational to analyze GSR arousals of single content events when targeting an audience. The creative elements due to the content of the events apply more to the precision of exposure of a target group than the video as a whole.

We might now be able to redefine, modify or improve our understanding of new sociographic and psychographic target groups



ascribed to the syndicated data, such as media and brand/product consumption as well as lifestyle, behaviour, social demographics, interests, activities and viewpoints in Index Danmark/Gallup. Some of the most common data run in Index Danmark/Gallup are cross tables, frequency tables, target group descriptions etc. For media planning purposes it is single media assessments, the media plan assessments, double coverage runs and optimization that are among the most commons. If we consider testing the GSR measurements on a larger representative sample of the Danish population among the 24,000 respondents in Index Danmark/Gallup by also asking the Häusel questions to the entire sample, just as the sociographic questions are asked to the entire sample, we would be able to evaluate numerous opportunities in gathering information regarding individual media and media groups. This would include information from the common data runs based on the Index Danmark/Gallup. Applied to the preparation of marketing plans and strategies, information systems with media/marketing data and demographic information would make it a useful tool that would enable advertisers, media and advertising and media specialists to strengthen the planning and monitoring of campaigns. There is still a huge task ahead of us to track commercials in relation to experience and learn from the GSR responses depending on living preference and personality traits as well as depending on the single source entrance of data in the Index Danmark/Gallup.

Predicting the motivational behaviour of target groups is very complicated, if not impossible, and studies of hierarchical effects in media planning have often stranded on guesses of the extent to which target groups have been exposed to a message. It is a well-founded assumption that the clearer and stronger media planners can counterpart the predispositions of a target group, the more success they will achieve. However, it would be insufficient only to think of predispositions as solid, well-defined entities that are measurable and describable through statistics based on subjects' responses, without combining them with other explanatory factors. Not only are predispositions more or less subconscious, and subjects tend to defend themselves against intrusion into privacy through repressions and blockages. Predispositions also depend on context as, for instance, the mood of the subjects (Martin, 2000, pp. 171-172; 2001, p. 149). Therefore, self-assessments should be interpreted with caution; or even better, be supplemented with other methods such as GSR measurements in order to test for converging evidence.

## 5. Perspectives

### Designing mixed-methodological research

Mixed-methods research emerged from a new independent paradigm in social and human sciences that built on the mixed-method validity problem (Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 1998) of the design choice of methods combined in a parallel, sequential embedded or prioritized design integration (Creswell & Plano Clark, 2011; Plowright, 2011; Tashakkori & Teddlie, 2010). Scientifically, we do not yet know much about how mixed-methods research integrates theory, methodology, analysis and interpretation. The point here is how to move between sub-studies. However, it is important constantly to share internal consistency, quality and professional standards. Quality assessment (Carmines & Zeller, 1979) is still open in terms of validity of the study on the link to the entire mixed-methods research project from problem formulation to the theory applied to the data collection method and the conclusion (Campbell & Fiske, 1959; Denzin, 1978).

There are several research traditions following the framework of Bourdieu et al. (1991) by incorporating multiple methods, and where a strong methodological and theoretical approach forms the basis for the use of the methods. The difference between the methods are much less important compared to the overall study results and the actual use of multiple methods. The difference between positivism (objective structure) and phenomenology (subjective experience) is crucial. This assumption has the explicit epistemological basic view that knowledge of social reality, which may be located between the objective structure and subjective experience, must be obtained from social practices through the researcher's own analytical and reflective capacity and experience (Frederiksen, 2013). It is the integral theory that in a mixed-methods relationship provides guidelines for selecting the study subject, methodology and data. The theoretical assumptions and arguments thus relate to the different empirical parts of the mixed-methods research project in an integrated design.

Design integration of empirical parts can proceed in parallel, sequentially, embedded or prioritized (Tashakkori & Teddlie, 2010; Creswell & Plano Clark, 2011; Plowright, 2011) in relation to the overall theory of the already associated empirical prior knowledge. When using a parallel design, the methods are employed independently of each other. A sequential design is characterized by the use of the results from one study to prepare the next study. In an embedded design, the methods are employed simultaneously on the same population. And a priority design is used, when weighted analysis of

discrete datasets serve as one coherent analysis. In overall terms, design integration in mixed-methods research projects is the creation of tangible relationships between separate parts (Moran-Ellis et al., 2006), where the parts are not united and become a new entity, but rather are being bridged across the gap.

## **Methodological triangulation**

Methodological triangulation is often used in studies in the social sciences and follows the geometry principle of triangulation; i.e. that you can define a third unknown point from the directions of two known points. The purpose is to increase the validity in the total mixed-methods research project in the way that the different methods are used to compensate mutually for the weaknesses of each other. The resistance to using methodological triangulation in mixed-methods research is noticeable among a number of methods purists (Lincoln & Guba, 1985; Smith & Heshusius, 1986; Guba, 1990; Blaikie, 1991). Within mixed-methods research (Jick, 1979; Gelbort & Winer, 1985; Duffy, 1987; Morell & Tan, 2009; Torrance, 2012), methodological triangulation seems intuitively the right way to increase the validity of the total mixed-methods research project. Several methods and studies increase the strength of scientific statements that are otherwise used when separate analyses of the same phenomenon are examined from several angles. Methodological triangulation has been scientifically illustrated by a number of methodological mixed-methods research scientists (Flick, 1992; Moran-Ellis et al., 2006; Hammersley, 2008) over the last 30 years. This type of mixed-methods research is based only on design integration as a particular point of integration in the process, and in the use of qualitative and quantitative methods and is highly dependent on the a priori theory and post data integration through a stable study subject. In the following presentation of method combinations, an integrated typology will be presented.

## **Method parallelization and triangulation in the present study**

According to Junk (2011), there are two essential types or “logics” (p. 87) of method combination, which have to be differentiated very carefully; that is, *triangulation* and *parallelization*. Further, on another classification level, one should distinguish between method of data generation (or data collection) and method of data analysis, each representing subtypes of triangulation and parallelization. In triangulation, “[t]wo or more methods converge in the measurement of the score of one explanatory factor forming a triangle” (p. 88); that is a “vertical logic” (ibid.) in which a single phenomenon is studied

concurrently through various methods (e.g., both quantitative and qualitative) with the aim “to increase the quality of measurement and the validity and reliability of the research” (p. 89). An example could be inter-group comparisons of emotional responses to one and the same stimulus, using free induction and multiple choice, respectively and thus aggregating heterogeneous collection of data. With ‘parallelization’, the research design is multivariate and the logic of combining methods is horizontal. Here, methods are used consecutively in which “the point of reference is not one explanatory factor but rather the research design as a whole in a sequential logic across various explanatory factors” (p. 90). That means that the methods gather information on different phenomena (or empirical objects), while complementing each other in order to “provide an answer to complex research questions” (ibid.).

Clearly, our conceptual research design belongs to parallelization, seeing that we combine data collection via self-assessments and physiological recording, as well as data analysis by using statistical tools and content analysis. Moreover, apart from the empirical objects *made* on the basis of data collection, the study includes a number of *found* empirical objects (Jensen, 2002, p. 257); i.e. a carefully chosen set of audio-visual stimuli, together representing yet another explanatory factor. Inspired by Junk’s typological overview and figurative illustrations, we have exemplified in Figure 18 the multivariate design with the relations between made or found explanatory factors referring to data collection as well as data analysis and interpretation.

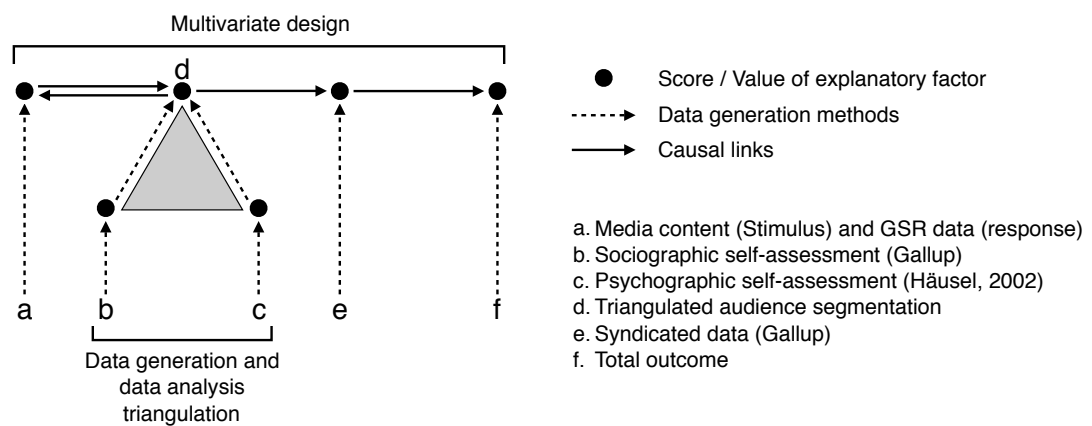


Figure 18. Method parallelization and triangulation in the present study.

As can be seen, we have chosen two different self-assessment tests (b and c), in which the students were instructed to respond in the above-mentioned order of succession. The reason for choosing two kinds of self-assessment and not just one is that we wanted, as a

subordinate aim, to investigate empirically the relationship between segmentation of a sociological and psychological basis, or what may be termed 'sociographic' and 'psychographic' segmentation. Following Jantzen and Vetner (2008), the two kinds of segmentation differ significantly, seeing that sociographic segmentation "is said to be based on what people choose" (p. 4), whereas psychographic segmentation rather focuses on "what turns people in their choices and how they consequently make their choices" (p. 5). Thus, the latter kind might seem more elementary than the former; i.e. matters such as beliefs and living preference might depend on personality traits and not the other way around. In this study the resulting sociographic and psychographic segments have all been treated equally as independent variables in the parallelization process.<sup>24</sup>

Nevertheless, "[i]t might make sense to combine method parallelization and method triangulation within one research design", seeing that emphasizing a sequential logic across explanatory factors does not mean that the score of a single explanatory factor cannot be triangulated beforehand. Hence, combinations of the two logics are certainly possible." Junk (2011, p. 91), Method triangulation in our survey is based on generating sociographic and psychographic methods to aggregate data-analyses for the score of one explanatory factor; the triangulated audience segmentation. This typology includes two subtypes of method triangulation: Data-generation and data-analysis triangulation. The data-generation methods provide standardization for tapping into new data of triangulated sociographic and psychographic audiences and transforming this data into forms of segmentation that can be analyzed for use in the causal processes. By the causal relationships between the media content (stimulus) and the response (GSR) via the triangulated audience segmentation (sociographic and psychographic), the outcome, analyzed in a logical and controlled way became systematic and cross-tabulated comparisons of GSR scores in a multivariate design.

## **Integration forms**

The dominant epistemological position (Creswell & Plano Clark, 2011) for integration (Greene & Caracelli, 2003) of the two incompatible paradigms, became the American pragmatism (Greene, 2008) with the prevailing understanding of the design decision based on a specific research interest as the logical structure of a mixed-methods research project. To create operational links between the separated interpretivist and the positivist sections was emphasized more on a comprehensive research project than the individual parts (Poor Tinga et al., 2004, Hanson et al., 2005, Jang et al., 2008). The pragmatic mixed-methods design at the expense

of the more scientific theoretical justifications (Teddlie & Tashakkori, 2009) is adapted to the epistemological relationships (Creswell et al., 2008; Mertens, 2009; Feilzer, 2010) or methodological reasons (Flick, 1992; Moran-Ellis et al., 2006; Hammerley, 2008). The logical design decision is shielded for a more comprehensive understanding of mixed-methods research in methodology, analysis and interpretation (Brewer & Hunter, 2006). When the results of mixed-methods research from the logical design decision were not interpretive, they were not theory-building and conclusions were often only in summary form (Martinez et al., 2006; Sirin et al., 2008), i.e. design integration screened for integration theory. The latest research in mixed methods is therefore based on the methods themselves from an integration perspective, where a choice of methods can be justified by specific research interests and theories (Frederiksen, 2013), and where a research method depends on the specific empirical purposes. It all depends on the phenomena to be researched and how they are theoretically based.

There has not yet been any specific research on how to reconcile the individual datasets in part studies in an analysis and interpretation integration. The planning of the use of mixed-methods research; i.e. the research strategy, has had its focus on research design – and not as much on how the individual parts in a mixed-methods research project bond together into a whole using the theory, analysis and interpretation framework. Design integration is only one type of research practice in the use of mixed-methods research and is not the only research practice that creates syntheses between individual research styles. Different ways of combining methods arose for us in our form of how to combine integration forms in a parallel and triangulated design. An integration of integration forms was thus the argument for the current context of our mixed-methods research project in both a parallel and a triangulated design. Triangulation cannot measure a phenomenon more correctly (unique) than single individual measurements, but you can gain an enhanced understanding of the phenomenon by triangulation without necessarily understanding its uniqueness. The use of triangulation is now to understand the use of multiple forms of integration in order to obtain an enhanced understanding; an understanding fusion.

## Endnotes

1. Based on a yearly 24,000 respondent self-assessment survey, the index contains a representative sample of the Danish population.
2. The aim of the course was to give the students hands-on skills working with bio-sensors, knowledge in basic data analysis, and, more gener-

ally, to facilitate students' ability to use affective computing methods in media communication effect studies. The students served initially as trial subjects to check the effects of the videos on them, and subsequently as co-experimenters assisting three new trial subjects. Finally, after an intervening period of data aggregation and processing, the computed measures were presented to the students in the form of interactive data visualizations in Tableau (see note 15) through which the students did data-analysis assignments. At the same time, the data were generated for research purposes.

3. The students got their numbers, either at the introductory lecture, or at the seminar that followed later in the week.
4. However, as one might notice, the gender distribution in sessions 1 and 3 differ from the gender distribution in sessions 2 and 4. A box-and-whisker plot in which the number of male students in sessions 1 and 3 appears relatively low and high, respectively, illustrates the difference (cf. [https://public.tableau.com/profile/publish/Tableau\\_Analysis\\_0/Test-sessionandgenderdistribution#!/publish-confirm](https://public.tableau.com/profile/publish/Tableau_Analysis_0/Test-sessionandgenderdistribution#!/publish-confirm))
5. The total number of students following the course was considerably higher than 99, but several have been left out in the data material for different reasons. Some students had not completed one or both of the questionnaires before attending the test session, while others, who had completed the questionnaires, either did not show up at the test session or simply had forgotten their participant number.
6. The TV meter data are only generally ascribable to Index Danmark/Gallup, i.e., viewing figures for 14 selected timeslots.
7. The Gallup Compass analysis is hosted on the website <http://www.gallup.dk/kompas>
8. The analytical process is performed and managed by Gallup, and it is not possible to gain insight into the significance of individual questions in relation to the results of the analysis.
9. For a review of the similarities of various segmentation tools focusing on lifestyle and value dimensions for the explanation of consumer behaviour, see Hansen (1998).
10. The segmentation tool is explained (in Danish) on <http://www.gallup.dk/services/gallup-kompas>.
11. In a study on the relation between media entertainment and psychological audience segmentation on the basis of emotions and personality, Jantzen and Vetner (2008) synthesise theoretical models of Panksepp (1998), Häusel (2006) and Rolls (2005). While keeping the three defining forces in Häusel's model (dominance, stimulation and balance), they come up with three alternative characteristics of the mixtures. Thus, discipline/control, fantasy/pleasure and adventure/thrill are replaced by security, well-being and excitement, respectively (Jantzen & Vetner, 2008, p. 15).
12. The 'open-minded' or 'tolerant' personality (in German: 'Offene' or 'Toleranter') is also labelled by Häusel (2006, pp. 96-97) as 'Genießer'; that is, a person who knows how to enjoy life. However, such a description is almost synonymous with 'hedonist', which makes up another personality, and therefore, for the sake of clarity, we omit that label in our present account of Häusel's limbic prototypes.

13. Of the additional three personality profiles, only the latter, ‘the phlegmatic’ (in German: ‘gleichgültig-phlegmatisch’), is included by Häusel (2006).
14. The six videos (full versions) can be accessed via the following links: <https://www.youtube.com/watch?v=NzKak--aClg> (T-Mobile); <https://www.youtube.com/watch?v=IXdFsU4Gcfk> (DeWalt); <https://www.youtube.com/watch?v=CVS1UfCfxIU> (John West Foods); <https://www.youtube.com/watch?v=90otdOwAGVA> (Toyota); <https://www.youtube.com/watch?v=oklZZXpd3s0> (Tetsuo II); <https://www.youtube.com/watch?v=EY39fkmqKBM> (Ginger).
15. Tableau is a software company specializing in visual analytics. It is a quick way to cross-tabulate variables (drag and drop) making easily comprehensible visualizations of large datasets.
16. Data and graphics can be accessed by clicking on the ‘Download’ button in the lower right corner.
17. See, for instance, Bakker et al. (2011, p. 575) and Bouscein (2012, p. 43) for an account of the correlation between temperature and GSR values.
18. To aid clarity and comparability between the union, intersection and difference sets, the range in the y dimension is fixed, and extreme outliers (i.e., participants 72, 104, 126 and 153) are therefore not visible in the upper left and upper right quadrants in the dashboard visualization.
19. Like Figure 14 (cf. note 18), the y-dimension range in Figure 15 is fixed for comparability reasons.
20. Similarly, when filtering out session 1, in which the T-Mobile flashmob is first in line, the GSR variability during the first event exceeds the GSR variability during the succeeding events. This deviation is, however, only apparent among the male participants.
21. Here, it should be noted that we have omitted the 10 outliers (participants 2, 10, 72, 73, 82, 89, 104, 124, 126 and 153), since their influence on the respective segments would be disproportionately large.
22. At a first glance, a striking feature in Figures 16 and 17 might be that the burst-of-anger event has resulted in far greater GSR fluctuations than the other events regardless of segment. The central interest here is, however, nonetheless the segmentational in-between differences within a single event. (NB: Each figure can also be approached via the captions linking to URLs, through which users can access the exact values of the median, the upper and lower quartiles as well as the upper and lower whiskers.)
23. However, like the traditional males (cf. Figure 16), the numbers of controllers and female leaders are too sparse to draw any firm conclusions.
24. However, when completing the psychographic survey, the students’ a priori awareness of the sociographic segment in which they were categorized could have been a decisive factor that has affected the assessments, but its importance is difficult to estimate.





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# Appendices

## Appendix 1. Statements and answer categories in the Gallup Compass questionnaire.

<b>Statement</b>	<i>Completely agree</i>	<i>Agree</i>	<i>Almost agree</i>	<i>Almost disagree</i>	<i>Disagree</i>	<i>Completely disagree</i>
<b>Society and politics</b>						
Everything is changing too fast today.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The labour unions have too much power in Denmark.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One must accept a negative environmental impact, if the industry is to grow.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is too easy to get money from public assistance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It should be optional whether or not to join a labour union.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The man should be in charge at home.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If we do not take care, modern technology will overpower mankind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a big difference between rich and poor in today's society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am afraid that the traditional family values will completely disappear.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public expenditure on art and culture should be increased.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Denmark must do more for the weak and the elderly in society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The privatization of the public sector improves the efficiency and the level of service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A social-security system like the one in Denmark is a necessity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Denmark needs to be more open to the surrounding world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Denmark must take care of itself and not interfere so much into other countries' affairs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Money is a measure of how you are performing in relation to other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would rather pay less taxes and do more things myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Refugees and developing countries</b>						
Too little is done for refugees in Denmark.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The problems in Denmark have to be resolved before we give money to other countries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More refugees are welcomed to stay in my municipality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Personal habits, feelings and preferences</b>						
I am willing to spend a little extra to get a nice well-known trade mark.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try new things before my friends and acquaintances.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important for me to have success.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Modern technology and computers seems scary.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IT and modern technology give me many advantages in my everyday life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I end up taking most of the decisions when I am with other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel it is exhilarating to take a risk.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not comfortable with payment on the Internet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Globalization frightens me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am keen to indulge myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I love to spend money on myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I keep updated on my interests, no matter where I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I keep updated with news, no matter where I am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make an effort taking good care of my body and my appearance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Consumption and purchases</b>						
I often take advantage of weekly or daily discounts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to avoid products with added synthetic substances.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of reducing CO <sub>2</sub> emission in my consumption.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always buy environmentally friendly products if I can.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I go shopping in stores where I can get quality goods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer buying organic food if I can get it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always buy low-calorie products if I can get them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often buy products on the basis of advertisements.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good design means a lot to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing to pay extra for quality products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often buy luxury products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The way people are dressed tells much about how they are as persons.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Television, newspapers, magazines, etc.</b>						
It is the local weekly newspaper that keeps me best informed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can easily do without the daily newspaper.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to read a novel or a short story in a magazine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can easily do without watching television.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix 2. Statements and answer categories in the Häusel questionnaire.

<b>Statement</b>	<i>Completely agree</i>	<i>Agree</i>	<i>Almost agree</i>	<i>Almost disagree</i>	<i>Disagree</i>	<i>Completely disagree</i>
I can organize my time so that I finish my tasks on time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have clear goals and work hard to achieve them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the teams I am usually impatient because it goes too slowly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If necessary, I am willing to manipulate people in order to achieve my goal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I have set myself a goal, I will do my utmost to achieve it, even when meeting resistance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It annoys me when others are better than me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If something is a success, I'm not content with it for long, but will try to achieve more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I usually manage to convince others to go along with my ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to reach my goal through even a difficult task.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I force myself through against opposition.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When a group has made a decision, I always have a significant bearing on this.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For me, work is only interesting insofar as one can obtain a reputable position.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to me to decide myself how I do my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always have control over the situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I have success, I show it to the outside world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like having many people around me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would like to try diving in deep waters.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I choose the clothes that fit me, even if others find it crazy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often try new and foreign foods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I live a varied life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a very active person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get pleasure by occupying myself with theories or abstract ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My daily life is full of things that interest me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I do not have anything to do, I do not feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it would be fun to travel to the moon as an astronaut.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I knew I could accomplish new and unusual experiences through using some kind of drug, I would do it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like running the risk of trying something new.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I never spend my summer vacation the same place twice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I love it when my work goes really fast.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My desk is often in a state of sheer chaos.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try avoiding new and difficult situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I think of the future of the world, I sometimes worry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Horoscopes and soothsayers often foretell things correctly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I make a mistake, I immediately take responsibility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My family and my friends are the most important in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When choosing my goals, I'd rather be a little more cautious than take excessive risks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to be friendly and welcoming to all.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sense conflicts or disputes between colleagues faster than others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For me, both private and working life must, if possible, be in order.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working in a group, I leave the management to others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I go regularly to the doctor for examinations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am often strained and at the limit of my performance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It infuriates me when others are treated unfairly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Important decisions require good time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gardening and flower care is one of my favourite hobbies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



### Appendix 3. Transcript of the T-Mobile flash mob

<i>Event</i>	<i>Running time</i>	<i>Duration (secs.)</i>	<i>Scene description/Camera viewpoint</i>
1 Introduction/At Last My Love Has Come Along (Etta James)	0'00"	36"	White text message on black background, saying "Heathrow Terminal 5. 27th October 2010", and another white text message; "No instruments were used in this film". Bird's-eye view of the arrivals hall, succeeded by a medium shot focusing on a young black courting couple embracing. A white woman, approaching the couple with a white rose in her hands, initiates the Etta James song. She is accompanied gradually by other human voices imitating musical instruments.
2 Comin' Home Baby (Mel Torme)	0'36"	20"	Medium shot of a black businessman singing "I'm comin' home, baby now" while running with a suitcase towards, as it turns out, a female British Airways employee who gasps in happy surprise. Alternating shots of 'vocal musicians' performing and people in the arrivals hall enjoying the show.
3 Return Of The Mack (Mark Morrison)	0'56"	24"	Medium shot of a white woman and man both making human beatbox sounds with their mouths, succeeded by different shots of three white male singers approaching and surrounding an arriving white man with sunglasses walking with a carrier back in his right hand and a guitar bag on his back.
4 I Am The Passenger (Iggy Pop)	1'20"	21"	Close-up shot of a black man wearing a brown hat and a silk scarf while singing "I am the passenger, and I ride and I ride, singing", succeeded by the whole choir repeating the line, "la la la la...". Alternating shots of the lead singer, choir singers, people using mobile phones to document the event, and choir singers mixing with the audience who either watch or participate.
5 Boys Are Back In Town (Thin Lizzy)	1'41"	14"	Initiated by a human drum solo, six white women sing repeatedly "The boys are back in town" while running with their arms open wide towards, as it turns out, a group of middle-aged white men who react with joy and delight.
6 Oh My God (Kaiser Chiefs)	1'55"	13"	Medium shot of an Indian man (viewed from behind) passing a Middle Eastern man when suddenly turning around and facing the astonished man whiling singing "Oh my god, I can't believe it, I've never been away this far from home". Alternating shots of 'vocal musicians' and laughing audiences.
7 I Knew You Were Waiting (Aretha Franklin & George Michael)	2'08"	21"	Medium shot of a black woman entering the arrivals hall while responding to the choral line ("When the river was deep"), succeeded by a shot of a white man responding to the choir as well, and after that returning to the woman who approaches a Middle Eastern man holding a white name board, while the choir sings the title line of the song.
8 Welcome Home (Peters & Lee)/ T-Mobile logo	2'29"	40"	Alternating shots of the choir singing, 'vocal musicians', people greeting, and people smiling and laughing with tears. The advertising slogan, saying 'Life's for Sharing' (white text), is dissolving in the end; and finally the company's logo (white T and dots and the word "Mobile" in black on pink background) is scaled in and immediately succeeded by the advertising slogan (black text) and the website address, "youtub.com/lifesforsharing" (also black text), as well as the five-note sonic logo, while the 'Welcome Home' song fades out.
	3'09"	Total duration	

#### Appendix 4. Transcript of the DeWalt commercial

<i>Event</i>	<i>Running time</i>	<i>Duration (secs.)</i>	<i>Scene description/Camera viewpoint</i>
1 Electrician at work	0'00"	21"	A construction worker (probably an electrician), wearing yellow ear protectors and, as revealed shortly afterwards, a yellow tool belt, picks his drill (also yellow) up from the floor and turns it on for testing (medium shot). Then he turns to face a concrete wall and begins to drill a hole in the wall. Apart from the visuals there are diegetic sounds (primarily noise from the drill) and room ambience. As he keeps on drilling, a second construction worker (probably a bricklayer) shows up in the doorway to the right. In his left hand the bricklayer is carrying a heavy bucket (probably containing cement), which he briefly places on the floor in the doorway before he switches it to the right hand and goes on past the doorway behind the wall where the drilling is in progress.
2 Penetration of the bricklayer/ Logo and animated slogan	0'21"	13"	Suddenly, the sound of the drill changes, and at the same time one can glimpse the bricklayer twirling and losing his safety helmet, which rolls through the doorway into the electrician. The electrician stops the machine, but apparently he notices nothing unusual and carries on drilling. After the second time he stops the machine and pulls the drill out of the hole. One hears a clunk indicating that the bricklayer has fallen dead on the floor behind the wall. Finally, a yellow logo on black background, saying "DeWALT". A slogan (white text), saying "GUARANTEED TOUGH TOOLS", is added below the yellow logo. The slogan enters twirling in sync with the sound of the drill.
	0'34"		Total duration

#### Appendix 5. Transcript of the John West Foods commercial

<i>Event</i>	<i>Running time</i>	<i>Duration (secs.)</i>	<i>Scene description/Camera viewpoint</i>
1 Duel	0'00"	11"	A fisherman wearing orange overalls fights with a grizzly bear standing on its hind legs. Suddenly the bear begins to dance on the spot. It lets out a karate yell and delivers a spinning rotational kick to the stomach of the fisherman, who doubles up with pain, whereupon the bear delivers another karate kick on the fisherman's left thigh.
2 Fooling the bear/ Voice-over	0'11"	9"	While holding his thigh and wincing, the fisherman distracts the bear's attention by pointing and saying "Oh look, there is an eagle!" When looking up in the sky, the fooled bear receives a kick in the groin and starts yowling, while the fisherman grabs a salmon lying on the ground. Finally, a voice over, saying "John West endures the worst to bring you the best!", is heard simultaneously with the images showing a large John West can of salmon to the left, while the fisherman and the yowling and wincing bear appear in the background.
	0'20"		Total duration

## Appendix 6. Transcript of the Toyota commercial

<i>Event</i>	<i>Running time</i>	<i>Duration (secs.)</i>	<i>Scene description/Camera viewpoint</i>
1 Spotting the deserted Toyota	0'00"	6"	A male Asian-looking jogger on a road (mid shot) has stopped running when spotting, as it turns out in the next shot, a deserted Toyota VIOS holding at a parking lot next to a foggy and misty lake. Here, viewed from behind, we see him approaching the car (very wide shot), which is succeeded by a medium close-up shot of him smiling.
2 Sea monster/ Logo	0'06"	15"	As he touches the car with his left hand, the car collapses into a flat plate, and a spit second later a sea monster pops to the surface, rises quickly and grabs the man and then disappears beneath the surface with a loud splash. Then a white text message appears "The irresistible Vios", while one hears the cries of seabirds. Just before the calming of the water surface, the monster reaches up an arm, reshapes the Toyota and then disappears again, as a new white text message ("You'll want one") appears. Finally, a very brief concluding logo (red text) and web address ("www.toyoya.com.my") below in white text on black background.
	0'21"		Total duration

## Appendix 7. Transcript of the Tetsuo II movie trailer

<i>Event</i>	<i>Running time</i>	<i>Duration (secs.)</i>	<i>Scene description/Camera viewpoint</i>
1 Reviews	0'00"	26"	Alternating citations from reviewers (white on black background) and drum music.
2 Male protagonist and opening credits	0'26"	26"	Quick camera shots of the male protagonist and high-speed images of people. High-pitched, frictional and noisy sounds as well as gunfire sounds. After that, explosive fire in the dark, the suffering of the protagonist and opening credits in Japanese and English.
3 Title and voices-over	0'52"	32"	Orange title characters (TETSUO II) on black background, one letter at a time, from lying to standing during heavy knocking to the sound of heavy knocking (3 sequences), interspersed with action scenes (2 sequences), while a voice over says "Manga Entertainment presents [5-6 secs pause] Tetsuo Body Hammer. After that, slower cutting rhythm and images with slower camera and actor movements. A voice-over tells about the movie. Low-key musical groove in the background.
4 Horror and action	1'24"	45"	Sudden musical dynamic change from low-key to louder. Images featuring people getting tortured by machines while screaming. Then the musical sound mutes as the voice-over continues. Images featuring hazardous car driving succeeded by images of shooting robots. Sounds of screeching tyres, gunfire and screams. After that, images and sound of a crying and grieving woman. The musical sound fades out and only the woman's crying is left. Images and sounds of fighting and shooting robots brake the crying, and the voice over continues, while different images of suffering men are shown.

5	Flickering images and talking	2'09"	17"	Flickering images, drums and sound effects, succeeded by silence, except for human voices. The woman from before confronts the male protagonist and asks, "What are you?"; and he replies, "I don't even know ...".
		2'26"	Total duration	

#### Appendix 8. Transcript of the Ginger video blog

<i>Event</i>	<i>Running time</i>	<i>Duration (secs.)</i>	<i>Scene description/Camera viewpoint</i>	
1	Presentation	0'00"	36"	Close up shot of a red-haired teenage boy saying that he gets annoyed when <i>South Park</i> says that red-haired people have no souls because, as he says, "we do have souls, alright!" Then he says that he has been called "a fat ginger", and he looks quite sad.
2	Burst of anger, imitation and conclusion	0'36"	28"	Suddenly he moves even closer to the camera, shouting angrily "Gingers have souls!" while pointing with his finger. And then he addresses all those who have hurt him by saying "I go to church, I'm a Christian. You don't know me, you're not God!". After saying the word "God", he utters an airy "Huh!" while shaking his head very close to the camera, and he continues by imitating a scary ghost (or perhaps God himself?). Then he repeats (more quietly) some of the sentences before his acting". After a minor pause, he looks into the camera, very determined and insisting, saying "So if you think I have a soul, you tell me; otherwise, fuck (you)!" The video is cut off just before the last word.
		1'04"	Total duration	



## Authors' biographies

**Allan Grutt Hansen** is currently employed by The Department of for Communication and Psychology at The University of Aalborg in North Denmark as Assistant Professor where he works with professional coverage of inter-alia Strategic Market communication and media analysis. He holds a Ph.D. in Mixed Methods Research and is responsible for the Department's Media Analysis laboratory for both researchers and students.

In addition, Allan has a Masters degree in Economics and Foreign Trade (combined) from Copenhagen Business School (CBS) and is an authorized censor for the Mercantile Academy of Trade and professional Education, and for trade-related economic studies within the broader fields of International Marketing Management at both Bachelors and Masters degree levels; primarily for Bachelor projects and Masters dissertations dealing with consumer behaviour, market analysis and market communication.

Previously he has worked as ad hoc consultant for various companies as well as Media- and Market-Analysis Consultant attached to a variety of projects. The latter has included Media Account Management and Strategic Media Planning for Young & Rubicam Nordic Media and the carrying out of market analyses for food companies on behalf of Europe's largest market analysis institute, GfK. Allan has also provided independent consultancy services to develop GfK Denmark's TV-meter proposal in collaboration with GfK-FeFo (Fernsehe Forschung / TV Research) in Nürnberg. Allan also worked with a comprehensive project for the telephone company Mobilix (later to become Orange and now part of Telia). His specific contribution was to set up the Marketing Intelligence Department, primarily to support the company's wider marketing functions by providing media- and market analysis advice. In this connection Allan's earlier involvement in the establishment of the Forum for Advertising Research should be mentioned. That forum is now the Centre for Market Communication at the Copenhagen Business School (CBS) and is especially concerned with the development of new methods and the adaptation of existing international methods for assessing the effect and impact of advertisements and the development of related decision-making tools.

Allan's specialist knowledge within the fields of i.a. International Market Communication Strategy, Media Planning and Market Anal-



ysis was honed while employed as Research Director for Europe's and the world's largest media Bureaus, MediaCom and Carat respectively. His specific responsibility at that time was to set up profit centers by applying a range of analysis methods to advertisers. As Nordic Research Director with Carat Scandinavia he employed similar methods in connection with key accounts in Holland, Norway, Sweden, Finland, and Denmark as a basis for the sale of advisory services to large international advertisers. In addition to international, strategic and administrative assignments Allan was also involved with project assignments related to quality assurance of marketing strategies and media and market analysis services to advertisers.

At the beginning of his career, Allan Grutt Hansen was employed as consultant and project leader by the world's largest analysis institute, A.C. Nielsen. In addition to the sale of analysis services to the media, including as project leader for the country's biggest analysis project, TV Surveys in Denmark, he was also engaged with various international projects, community-related scientific projects, opinion surveys and consumer satisfaction surveys for the public sector.



**Anders Bonde** is associate professor, Ph.D., at Aalborg University, Department of Communication and Psychology, and member of the knowledge group MÆRKK, covering research and teaching of media, market and communication with particular focus on aesthetics and experiences. Originally based in music analysis, including theoretical and methodological problems, his research is concentrated on the affective and cognitive meaning or attribute of music and sound in strategic media and marketing communication, such as advertising films, in-store environments, product design and, more generally, sound branding. A current research project deals specifically with the potentials of non-musical sound

in the construction and perception of branding, while another project has focus on correlations between sound branding and popular culture. Additionally, he is working on a long-term project, investigating theoretically as well as empirically the concept of emergent meaning in adverts and videos through synergistic or antagonistic interaction between the constituent auditory and visual components or semiotic resources. Finally, he is involved in a number of projects on the use of affecting-computing methods in empirical media and art studies, such as the present one.

**Morten Aagaard** is Master of Science in Computer Science and visiting researcher at Aalborg University and consultant in new empirical data sources in human science. Morten designs and builds data collection processes and tools, builds dataware houses and design accompanying interactive data visualizations. Based on a EU project HANDS in which the very profound ideographic case, individuals with autism, he aims to combine ideographic research methodology with nomothetic research methodology. Currently, he is involved in a psychiatric clinical experiment using Ecological Momentary Assessments.





This book is about using recent developments in the fields of data analytics and data visualization to frame new ways of identifying target groups in media communication. Based on a mixed-methods approach, the authors combine psychophysiological monitoring (galvanic skin response) with textual content analysis and audience segmentation in a single-source perspective. The aim is to explain and understand target groups in relation to, on the one hand, emotional response to commercials or other forms of audio-visual communication and, on the other hand, living preferences and personality traits. Innovatively, the research process is documented via an interactive data-visualization tool by which readers and fellow peers can access and, by using various filtering options, further analyze the results and, ultimately, reformulate the problem field.