Testing the Circumplex Model of Emotions in a Consumer Setting

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Abstract

There is widespread belief that more positive emotional reactions to consumption situations will lead to positive business outcomes such as increased market share through the combination of increased loyalty, repeat purchase and strengthened reputation. However, most of the psychological work on emotions has not dealt directly with consumption experiences, but rather broader everyday experiences. In this study, psychological models of emotion were tested using magazine subscribers, specifically looking at their emotional responses to the magazine and the overall subscription package. The aim was to determine whether one of the major theories on emotional structure, the circumplex model, is relevant and consistent when applied specifically to a consumption experience. The results are positive, with the model being supported, and they provide insight into the structure and relations of different emotional responses (e.g., satisfaction, delight) consumers might have to a consumption experience.

Introduction

Emotion research is vast and covers a wide range of topics (Izard, 1972, 1977; Nowlis, 1965; Plutchik, 1980; Russell, 1978, 1980; Schlosberg, 1952; Thayer, 1967), but the theories of emotion, which are at the core of this paper, are limited to the work of a small number of academics (Plutchik, 1980; Russell, 1980) who were primarily concerned with the structure of emotions and the succinct definition of emotion space. The objective of this research was not only to understand the broader interactions of emotions, but also to provide a basic framework for identifying individual emotions within that framework. The use and application of these theories was particularly useful for accurately defining constructs like delight and satisfaction.

Despite changing approaches to conceptualising the structure of emotions and the development of different theories based on these ideas, there is little consensus on what the structure of emotions should be. Although there are many, the two approaches that compete most predominantly in the consumer behaviour literature (Oliver, Rust and Varki, 1997) are the basic categories structure (Darwin, [1872] 1965; Izard, 1977; Plutchik, 1980) and the dimensional structure (Larsen and Diener, 1992; Russell, 1980; Thayer, 1989; Watson and Tellegen, 1985). The basic categories approach was one of the earliest to be developed and was applied by Darwin ([1872] 1965), Izard (1977) and Plutchik (1980). This theory allocates each emotion into a small set of mutually exclusive categories on some assessable basis. According to Plutchik, the eight primary emotions are joy, acceptance, surprise, fear, sorrow, disgust, anticipation and anger. To best understand the relationship of these emotions to all others, Plutchik arranges them in a circular pattern, which he likened to a colour wheel. The interpretation is that categories which are located next to one another are most similar and categories that are located on opposite sides of the wheel are most different. Despite the orientation, this depiction should not be confused with a circumplex model.
Plutchik’s (1980) approach to defining the structure of emotions has, however, been subject to criticism from various authors (Ortony and Turner, 1990; Richins, 1997). The key criticism, that Plutchik’s (1980) model of emotion would not easily facilitate the measurement of non-primary emotions, such as satisfaction or delight, meant it could not be adopted here.

The second approach to defining emotion structure is the dimensional approach, which says all emotions can be identified as displaying association with one or more dimensions, such as intensity, pleasantness or degree of activation. Most often, the two broad dimensions of pleasantness and intensity (or arousal) have been identified using factor analysis and multidimensional scaling (MDS) techniques. Rather than emotion terms clustering at the axes, as is typical with these statistical methods, they tend to form a circular pattern around the dimensions hence being referred to as a circumplex. This approach to definition was pioneered and most widely used by Russell (1979, 1980), who now believes that the circumplex model is better suited to understanding core affect than prototypical emotional episodes (Russell and Feldman Barrett, 1999). Figure 1 provides an example of Russell’s (1980) circumplex structure, by placing eight emotion terms, indicative of each octant of the circumplex, around the two primary dimensions of pleasantness–unpleasantness (horizontal axis) and arousal–sleep (vertical axis).

In his 1980 study, Russell used a list of “28 words or phrases that people use to describe their moods, feelings, temporary states, affect or emotions … [as a] sample … chosen to represent the domain of affect” (p. 1164). In that study, these 28 emotion terms were analysed using five different scaling techniques to illustrate that the structure of emotion was roughly circular (represented by a circumplex) and its’ properties held constant, regardless of which statistical technique was used.

**Figure 1: Circumplex structure of emotions** Russell (1980, p. 1164)

The five scaling techniques included direct circular scaling, MDS, unidimensional scaling, regression analysis and principal components analysis. Although the structure of each of the resulting circumplexes demonstrated some variation, the general structure was very similar. Therefore, the hypothesised structure proposed by Russell (1980) was a relatively accurate representation of affective space and evidence substantiating these properties can be found in many other research studies (Bush, 1973; Dittmann, 1972; Neufeld, 1975, 1976; Plutchik, 1991; Russell and Feldman Barrett, 1999, Remmington, Fabrigar and Visser 2000).

These models are illustrative of Russell’s (1980) belief that “affective states are not independent of one another, but are related to each other in a highly systematic fashion” (p.
and indicate that to understand two specific emotions, such as satisfaction and delight, we also need to understand their opposites and neighbours. Hence the need to measure a range of emotions to fully understand both satisfaction and delight. Given the strength of Russell’s (1980) circumplex model in identifying emotional structure, this study relied heavily on its theory and proposes using it in order to gain a better understanding of delight and satisfaction. Specifically, our interest was in determining whether the emotions experienced by a consumer, post-consumption, fitted this circumplex model developed for more general circumstances. Here we examine the emotions felt by consumers of a high-involvement, subscription-based product. This is a common situation, but one very different from what has previously been examined (e.g., advertising responses) due to its importance and on-going nature. In addition, the focus of this research study is on positive emotions (e.g., delight) whereas the bulk of emotion based marketing research focuses on the negative (e.g., anger in complaint handling). That said, it is feasible that a consumer could experience strong negative emotions if the product they receive falls well short of what they expected.

Method

We chose to conduct the experiment in a non-contrived environment (field experiment) to differentiate it from the bulk of past consumer emotions research. A magazine subscription base of a highly specialised area (Wake Magazine – a glossy wakeboarding publication) was deemed suitable for this purpose, where the level of interaction between the service provider and the customer was minimal and largely controllable. With only 731 subscribers, a census of the population was conducted rather than drawing a sample from the population. It is also important to note that only 715 of the 731 subscribers were included in the quantitative stage of the research. The remaining 16 subscribers participated in an earlier qualitative stage of research (focus groups). A mail questionnaire consisting of five components: performance and satisfaction, disconfirmation of expectations, emotions, intentions and demographics was sent to all subscribers. The chosen emotion terms were the same 28 terms used by Russell (1980) in his original and subsequent studies. Respondents were required to report how frequently they experienced each emotion when they were reading their copy of Wake magazine. Responses to this question were recorded on a 5-point ordinal scale used by Russell (1980) and by Oliver, Rust and Varki (1997) in gauging emotion levels. The scale points included never, hardly ever, sometimes, quite often and always. A response rate of 35.0% was achieved, but only 33.0% of all questionnaires were deemed useable. Respondents were overwhelmingly male (94.0%), which is reflective of the general male dominance in the sport. Ages of respondents ranged between 11 years old and 46 years old, with the majority being aged between 16 and 30 years (69.6%).

The returned sample was checked against the population, and no evidence of bias was found. The 27 remaining emotion terms from Russell’s (1980) affect scale (“serene” was removed after almost all of the qualitative respondents stated they did not know its meaning) were also assessed for construct validity, which, for example, meant that if a respondent reported they were always “happy” they could not logically have reported they were always “sad”. Those respondents who provided 18 or more of the same response across all items were removed from the analysis. This left 236 cases in the sample.
**Analysis & Results**

Based on Tracey’s (2000) advice and following the examples set by Russell (1980), the following section analyses the circumplex of emotions using three of these methods in order to address the hypotheses associated with Russell’s (1980) theory of emotions: correlations, factor analysis and multidimensional scaling. The correlation matrix of the emotion scores gathered in this study is not reproduced here due to space limitations, however, a pattern could clearly be seen when each emotion term was examined in isolation. The emotion term “Happy” (A), for example, demonstrates relatively high correlation coefficients either side of the diagonal (r=0.45 and r=0.57 respectively), but as one moves away from the diagonal (in either direction) these correlations dip to a low level of r=-0.26. This pattern holds across all of the emotion terms, but to differing degrees. The best results of the other two exploratory methods used to examine the circumplex structure (factor analysis and multi-dimensional scaling), are shown in Figures 2 and 3.

**Figure 2: Factors one and three of a rotated factor solution using unipsatised data**

Disregarding the orientation, the both Figures 2 and 3 are considered sufficiently circular to justify the existence of a circumplex structure in the data. It does not represent a “circulant model” (Guttman, 1954) because there is unequal spacing between each point. However, it is representative of a “quasi-circumplex model” (Guttman, 1954), where equal spacing between points is not required. Further, the location of each of the emotions is relatively consistent with Russell’s (1980) hypothesised model of emotion, as well as some of the empirical evidence shown by Russell (1980), who used this and other methods to test for the existence of a circumplex model. The MDS analysis was conducted using the ALSCAL MDS procedure, and the use of standardised variables (z-scores) produced the best circumplex structure. Similar to the factor analysis, the above figure indicates that a two-dimensional MDS solution provides a good representation of circumplex structure. This assessment was made on the basis that the stress level of 0.15260 was less than the calculated random stress (0.3299 with a lower limit of 0.2999), and the r-squared was 0.90, therefore the model is reasonably well represented in two dimensions (Kruskal and Wish, 1978; Spence, 1979).

There are several common features of the two circumplexes presented in Figures 2 and 3. For instance, both are characterised by a large gap at the low intensity end of the vertical dimension (low in intensity, but at the top end of the scale). Second, both show some
inconsistencies in the location of terms around the circumplex. All of the pleasantness terms (located on the left-hand side of the circumplex) are located in similar positions to those found in Russell’s (1980) five representations of the circumplex model, but several of the unpleasantness terms seem to be misplaced. For example, both “angry” and “annoyed” are located on the low intensity half of the circumplex, but both of these terms were consistently seen on the high intensity half of the circumplex in Russell’s (1980) five examples. The non-perfect circumplexity may be a result of not sampling an equal number of terms from each octant of the circumplex, as Larsen and Diener (1992) suggest, or the dominance of the pleasantness–unpleasantness dimension. In this context, where respondents were typically members of a supportive “brand community” (Muniz and O’Guinn 2001), and the consumption experience was typically positive, the failure for two highly negative emotions to load as theorised is perhaps not surprising. The respondents may have experienced anger or annoyance at some aspects of the product (e.g., late arrival of magazines to subscribers) but their connection to the brand meant there was little intensity to those feelings.

Discussion

The analysis presented here indicates that all three properties of the circumplex described by Russell (1980) are present to varying degrees. First, the pleasantness–unpleasantness and arousal–sleep dimensions account for the major proportion of variance in the judged similarities among emotion terms. This is evidenced by the various factor analyses presented (and more not reported here), which consistently extract factors with the pleasantness–unpleasantness and arousal–sleep interpretations. Second, the dimensions descriptive of affect (pleasantness–unpleasantness and arousal–sleep) are bipolar and independent. This is evidenced by the final factor analysis of ipsatised data, which produces the two hypothesised uncorrelated factors. Third, emotion terms are defined as some combination of the pleasure and arousal dimensions and therefore are related to each other as described by a circumplex. This was also seen in the results (Figure 3), which demonstrated a roughly circular structure with relatively accurate placement of terms around the periphery of the circumplex.
Based on the results, it appears the 27 emotion terms chosen to represent emotion space are related to each other by way of a circumplex and therefore the hypothesised structure (Russell, 1980; Russell and Feldman Barrett, 1999) does hold in a consumer setting. Such findings give us greater insight into the relationship between similar emotions, and knowing this, better managerial insights into how to generate and manage each. Specifically, knowing that delight includes an element of surprise and higher intensity, and that it is not just “excess” satisfaction, means that marketers seeking to “delight” their customers must not only know what customer expectations are, but be able to provide unforeseen benefits. Testing the impact on emotions of marketing actions designed to “delight” seems a logical next step.
References


