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Wired for sound

Listening and responding to music genres and introversion–extraversion preferences

When ‘Rock Around The Clock’ would come on I could feel my pulse quicken... It was a visceral, emotional response—one that was different from what I felt when I listened to more ‘serious’ music, but no less compelling.

Geoff Emerick, recording engineer

According to Rentfrow and Gosling (2006), the question ‘What kind of music do you like?’ is so revealing that it is the number one topic of conversation among young adults who are getting to know each other.

Rentfrow and Gosling contend that personality clues are conveyed in the music’s tempo, rhythm and lyrics. Reviewing CDs compiled from an individual’s playlist has proved more reliable than other ways of quickly assessing people, and appears to provide information about personality that is unavailable through other clues.

One limitation of previous research on personality and music is that researchers have asked people to recall how they usually respond to music. The thrust of this report is different—it concerns reactions when actually involved in listening to music.

The specific purpose of this study was to examine the reactions of persons differing in introversion–extraversion preferences while actually listening to selected items representing four music clusters identified by Rentfrow and Gosling (2003).

In this report, after a clarification of what is meant by extraversion and introversion, the research linking music preferences to psychological type is briefly explored. An exploratory study of the degree of liking for four clusters of music genres by type preferences is described, and a further analysis is presented. Lastly, perceptions of examples of the four music genres are presented and discussed.

Concepts of extraversion and introversion

In the literature there are three distinct positions regarding the concepts of ‘extraversion’ and ‘introversion’:

- the preference view
- the cortical arousal view
- the trait approach

The preference view

The focus here is on a psychological type interpretation, with extraversion and introversion being seen as distinctive and opposing ‘attitudes’ towards the outside world. Derived from the writings of Jung (1921), it was developed by researchers such as Myers and Myers (1980) through to Majors (2007).

Developing Form M of the Myers-Briggs Type Indicator, Myers, McCaulley, Quenk and Hammer (1998) distinguished extraversion and introversion as ‘complementary attitudes or orientations of energy’:

The nature and extent of differences in extraversion and introversion translate into profoundly different approaches to or orientations toward life. In the extraverted attitude, energy and attention flow out, or are drawn out, to the objects and people in the environment... In the introverted attitude, energy is drawn from the environment toward inner experience and reflection. (25-26)

The type preference approach has been augmented with a view of facets of this aspect of personality.

Ian Ball

Exploring relationships between preferences for music genres and preferences for E or I

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MBTI Step 2 formulations recognise five facets, suggesting that people can vary in subtle ways in expressing their preference for extraversion or introversion. Quenk, Hammer and Majors (2001) measure five facets of this preference:

- Initiating
- Receiving
- Expressive
- Contained
- Gregarious
- Intimate
- Active
- Reflective
- Enthusiastic
- Quiet

It’s worth pointing out that in type dynamics theory, each person makes use of some of the functions of perception and judgement with extraversion, and other functions with introversion.

The preference approach is based on a spectrum of normality, in essentially neutral or positive terminology. This contrasts with the following approaches, where identification of abnormality or pathology is of more concern.

The trait approach

A third approach to the concept of extraversion and introversion is trait theory. This is represented by various theorists, but was popularised by Costa and McCrae (1992) with a descriptive five-factor model of personality, sometimes referred to as the ‘Big 5’. On one of these five factors, individuals are seen as having degrees of extraversion.

In Costa and McCrae’s instrument, extraversion is defined in terms of ‘surgency’ and ‘positive emotionality’. There are six subscales which measure aspects such as warmth, gregariousness, assertiveness, activity, excitement seeking, and positive emotion.

Extraversion is seen as a dimension where lower scores show a lack of extraversion. There is no separate measure of introversion, and low scores on extraversion are described in somewhat unflattering terms.

Newman (1993) has demonstrated that the Five-Factor Model has convergence with psychological type when the Type Differentiation Indicator version of the MBTI is utilised.

He points out that correlations between these different measures of extraversion are often around 0.7, close to that expected due to their reliability estimates.

However, a correlation of 0.7 implies that about 50% (0.7 squared) of the variance in one measure is not explained by the other—so, there is not a one-to-one correspondence between these measures of extraversion.

There needs to be a close examination of what various instruments actually are measuring in the distinction between extraversion and introversion. Ignoring this distinction, and the use of varying approximations to the theory of preferences established by Jung (1921), make for confusion at best, and ‘apples and oranges’ comparisons at worst.

The point here is that one must be careful to regard the various definitions of extraversion—introversion and their related

An individual’s playlist provides information about their personality

The cortical arousal view

The second approach to the concepts of extraversion and introversion can also be described as a type approach, as it has its roots in the historical model of individual differences coming from Hippocrates’ four temperaments.

Following this tradition, Eysenck and Eysenck (1985) and Eysenck (1987) believed that extraverts and introverts have different cortical arousal patterns:

- Introverts are characterised by higher levels of [cortical] arousal than extraverts, and so are chronically more cortically aroused than extraverts. (1987: 245-7)

In Eysenck’s approach, extraverts are seen as having the tendency to enjoy positive events; the extravert seeks to heighten their arousal to a more optimal level by increased activity, social engagement and other stimulation-seeking behaviours.

In this model, individuals also vary on ‘neuroticism’ and ‘psychoticism’.
measures as being somewhat dissimilar. This lack of identity between the concepts means that any comparisons of pieces of research need careful interpretation: just because they bear the same name (e.g. 'extraversion'), that does not mean they relate to precisely the same concept.

In the following discussion, an attempt is made to orient the reader to become aware of these distinctions.

Recalling one's responses to music

Differences in psychological type have been related to responses to music. Hedden's (1973) research was based on recall of previous associative and cognitive perceptions. He found a difference between 'associative' listeners (e.g. 'In listening to music, I experience mental pictures') and 'cognitive' listeners (e.g. 'In listening to music, I focus on the notes and their relationships').

This difference was thought to be related to T—F: associative listeners were more likely to be those with a preference for feeling, whereas those identified as more cognitive listeners were characterised by a preference for thinking.

Kemp (1996) re-interpreted Hedden's research as indicating that both thinking and feeling types undertake a form of double-checking, using the other preference as a back up:

> Each type uses the more dominant mode to make their first assessments of a piece, only to follow up afterwards by reinforcing or testing it with the use of their more subsidiary attitude. (133)

(Note that here Kemp is not referring to 'dominant' in the sense of a dominant function as in type dynamics.)

In a partial replication of Hedden's study, Lewis and Schmidt (1991) noted that T and F types did not differ significantly, but concluded that a preference for intuition (versus sensing) is associated with a more catholic set of attitudes to music listening.

On Lewis and Schmidt's Music Listening Response Scale, SPs and SJs tended to have lower scores, while NPs and NTs had much higher scores. It was asserted that sensing types crave enjoyment, and that possibly their listening preferences for different types of music were limited by this characteristic. Lewis and Schmidt concluded that these results provide further evidence that individual differences in personality offer some degree of explanatory power in questions concerning response to music. (316)

Kemp (1996) asserted that the types most represented among practising musicians, NPs, display a distinct tendency to engage in a wider gamut of listening strategies:

> ... this would tend to suggest that they approach their listening with the capacity to engage in more than one type of response at any one time, but it also suggests that they would have the ability to mobilize their listening strategy more easily from one piece to another. Because of this they could be expected to display music tastes that would tend to be more catholic. (134)

Whereas Hedden (1973) and Lewis and Schmidt (1991) used measures of responses to music per se, other measures have identified responses to particular genres of music. The measures used by Pearson and Dollinger (2004) were the MBTI and the Musical Preference Scale, a modification of Little and Zuckerman's questionnaire (1986). It should be noted that Pearson and Dollinger considered the latter scale to be somewhat dated, which in their view limited their study.

Pearson and Dollinger hypothesised that the S—N dimension would correlate with overall musical enjoyment, expecting that those with intuition preferences would endorse more musical styles. They found that intuition is associated with preferences for jazz, soul, folk ($p < 0.001$) and classical music ($p < 0.05$). The researchers saw a parallel between intuition and the Big 5 'Openness to Experience' or culture factor. This hypothesis was confirmed in a sample of 104 undergraduates.
Associations were also recorded for T—F. Feeling preferences were correlated with a liking for country and western music, more so than those with preferences for thinking (p < 0.01).

With regard to E—I, Pearson and Dollinger (2004) reported that extraversion was correlated with overall musical interest, particularly for popular/rock music, (p < 0.05). Pearson and Dollinger thought that extraverts like the shared interest in popular music that connects them to other people, rather than the stimulation provided by the rhythm or volume of the music.

Silcox (2003) described the difference between extraversion and introversion in listening to music in the following way:

**Extraversion:**
Picture the extravert in a convertible, cruising along with the top down and music blaring. Extraverts tend to enjoy music fairly loud and spirited, although they enjoy background music unless they are trying to concentrate.

**Introversion:**
Silence is golden. Introverts don’t mind loud music, but find it tiring after a while and prefer soft, subdued music which does not intrude upon their thoughts, although they are capable of blocking out unwanted noise if they are concentrating on something else. (33)

Such ideas and empirical findings suggest that it is worth further effort to research the ways in which aspects of psychological type are reflected in music preferences.

A focus in some detail about the relationship of extraversion—introversion to music preferences was seen to be the way ahead.

The E—I dichotomy was chosen because of the disparity in previous findings across instruments and ways of investigating music preferences. Lately, more sophisticated methodology has been devised in regard to defining clusters and types of music.

Research on music genres

Adopting an approach with considerable rigour in a series of studies, Rentfrow & Gosling (2003) investigated the nature of music preferences and how these are related to personality. Three studies focused on defining the nature of musical genres and subgenres.

The first used a sample of 1704 people. The factor analysis indicated four factors, which were labelled by an expert group based on the nature of the underlying ideas. The same structure was confirmed with a different sample of 1383 persons. In a third study of 20 items from each of 500 downloaded music libraries, judges found the same four clusters of genres were very meaningful.

Rentfrow and Gosling later reported (2007) that this structure of 14 music genres grouped within four clusters has also been established in other parts of the USA, as well as Australia, Canada and the UK, amongst other cultures.

Rentfrow and Gosling's *Short Test of Musical Perception* (STOMP) asks respondents to 'indicate your basic preference levels for the genres listed' on a 7-point scale, where 1 = 'strongly dislike', 4 = 'neither like nor dislike', 7 = 'strongly like'. The 14 genres are:

- Classical
- Blues
- Country
- Dance/Electronica
- Folk
- Rap/Hip-Hop
- Soul/Funk
- Religious
- Alternative
- Jazz
- Rock
- Pop
- Heavy Metal
- Soundtracks/Theme Songs

Rentfrow and Gosling (2003) reported the relationships between the four distinct music preference clusters identified from these genres and Big 5 personality factors.
Reflective and Complex (RSC)

A cluster comprising the genres of classical, blues, folk, and jazz.

Music in this cluster is generally slower in tempo than other clusters, uses acoustic instruments and has little use of lyrics. Lyrics (where used) tend to be complex, expressing both positive and negative emotions, and have a low energy level.

This cluster is positively correlated with Openness to New Experiences.

Intense and Rebellious (IBR)

A cluster comprising the genres of alternative, rock, and heavy metal.

Music in this cluster is faster in tempo, uses mostly electric instruments, and has a moderate amount of lyrics. Lyrics tend to be moderately complex, low in positive affect, high in both negative affect and energy level.

This cluster is also positively correlated with Openness to New Experiences.

Upbeat and Conventional (UCS)

A cluster comprising the genres of country, religious, pop, and soundtracks/theme songs.

Music in this cluster is moderate in tempo, uses both acoustic and electric instruments, and uses a moderate amount of lyrics. Lyrics are perceived to be simple and direct, low in negative affect, but high in positive affect and energy level.

This cluster is positively correlated with Extraversion, Agreeableness, and Conscientiousness, and negatively correlated with Openness to New Experiences.

Energetic and Rhythmic (ERG)

A cluster comprising the genres of dance/electronica, rap/hip-hop, and soul/funk.

Music in this cluster is moderate in tempo, uses electric instruments, and has a moderate amount of lyrics. Lyrics are perceived to be somewhat complex, unemotional and moderate in energy level.

This cluster is positively correlated with Extraversion, and Agreeableness.

An Australian study of genre clusters and type preferences

Ball and Hall (2006) provided the first Australian analyses using the STOMP instrument. This current report refers to some of those previously-published findings and also includes some new analyses.

Psychological type preferences were used as independent variables to analyse STOMP genres scores. 26 persons in workshops at the 8th conference of the Australian Association of Psychological Type and at an earlier meeting of the Victorian region formed the sample of convenience. The majority of participants were very familiar with psychological type theory, and all volunteered to supply their validated type codes.

Ball and Hall noted that the group was evenly divided on E-I and T-F, but that the balance between S and N was very disproportionate. This sample contrasts with the samples used by Rentfrow and Gosling (2003) in significant ways—one another continent, more aware of type, and generally older.

A small number of participants indicated that they were practising musicians.

Analyses of the STOMP scores

Results for the 14 genres and four genre clusters are presented first.

As this was exploratory research, the general trend data is probably of more interest than statistical significance per se. Further research with a larger number of participants could enhance these findings and further verify the existence of the clusters as described by Rentfrow and Gosling (2003).

The statistical test used was the probability associated with Wilks' Lambda for the multivariate results. Table 1 shows the means and standard deviations for the 14 STOMP genres for the groups differing on extraversion—introversion. The higher of the means in each pair is shown in bold for clarity.
On 10 of the 14 genre scores, participants with preferences for extraversion scored higher than those with preferences for introversion. The Wilks’ Lambda result for these comparisons is close to statistical significance (p < 0.08), suggesting that persons varying in E–I preferences may have systematic differences in their liking for some of the genres.

### Table 1: Music preferences by genre—extraversion and introversion

<table>
<thead>
<tr>
<th>Genre</th>
<th>Extraversion</th>
<th>Introversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflective and Complex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blues</td>
<td>4.92 (1.12)</td>
<td>4.15 (1.86)</td>
</tr>
<tr>
<td>Classical</td>
<td>6.23 (1.01)</td>
<td>5.69 (1.03)</td>
</tr>
<tr>
<td>Folk</td>
<td>5.00 (1.41)</td>
<td>4.08 (1.80)</td>
</tr>
<tr>
<td>Jazz</td>
<td>4.85 (1.82)</td>
<td>5.23 (1.30)</td>
</tr>
<tr>
<td>Intense and Rebellious</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative</td>
<td>4.08 (1.38)</td>
<td>3.38 (1.56)</td>
</tr>
<tr>
<td>Heavy Metal</td>
<td>2.23 (1.54)</td>
<td>2.08 (1.89)</td>
</tr>
<tr>
<td>Rock</td>
<td>5.38 (1.12)</td>
<td>4.92 (1.89)</td>
</tr>
<tr>
<td>Upbeat and Conventional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>3.62 (1.12)</td>
<td>2.69 (1.44)</td>
</tr>
<tr>
<td>Pop</td>
<td>4.46 (1.27)</td>
<td>5.00 (1.58)</td>
</tr>
<tr>
<td>Religious</td>
<td>3.85 (1.63)</td>
<td>4.00 (2.00)</td>
</tr>
<tr>
<td>Soundtracks/Themes</td>
<td>4.31 (1.04)</td>
<td>5.08 (1.50)</td>
</tr>
<tr>
<td>Energetic and Rhythmic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dance/Electonica</td>
<td>2.62 (1.76)</td>
<td>2.31 (1.80)</td>
</tr>
<tr>
<td>Rap/Hip-hop</td>
<td>1.92 (1.26)</td>
<td>1.77 (1.24)</td>
</tr>
<tr>
<td>Soul/Funk</td>
<td>3.77 (1.09)</td>
<td>3.23 (2.05)</td>
</tr>
</tbody>
</table>

### Intense & Rebellious:

**Alternative**

Pearl Jam, 'Why Go?'

Good solid rhythm—underpinning acoustic that’s not overdone.

**ENFP**

Jarring! Turn it off!

**INFP**

The differences between the groups are most evident in the folk and rock genres, where those with extraversion preferences show higher means; and the soundtracks and jazz genres, where the introversion means are higher. It is also relevant to note the broader interest across the music genres by those with extraversion preferences.

Previous findings about the extraversion preference for pop are replicated here, as are those of Miller (2007), whose research using the Big 5 measure found that extraversion was correlated with a liking for heavy, fast music, such as rap/hip-hop and heavy metal.

Testing the Eysenck model, Sato, Ficiak and Baum (2006) also reported that extraverts like stimulating music (Metallica) more than calming music (Mozart), while introverts favour the calming over the stimulating music.

Examining Table 1 on a cluster-by-cluster basis, it can be noted that those with extraversion preferences recorded higher means for all genres in both the Intense & Rebellious and Energetic & Rhythmic clusters. The Upbeat & Conventional cluster differed most from the others in respect to the introversion preference, with three genres having higher means than for the extraversion preference—but the Country genre in this cluster defied that trend.

A separate analysis of cluster means was conducted. These are presented in Table 2, with the higher scores in each cluster shown in bold. The E–I contrasts indicate consistency across both preferences: the highest means are for the Reflective & Complex cluster, with somewhat lower mean scores for Upbeat & Conventional, lower scores for Intense & Rebellious, and the lowest scores are for Energetic & Rhythmic.

In three of the clusters the extraversion mean scores are higher than those for introversion, but that trend is not supported in the Upbeat & Conventional cluster, where the introversion means are somewhat higher.

### Table 2. Mean STOMP cluster scores by E—I psychological type preferences

<table>
<thead>
<tr>
<th>Preference</th>
<th>n</th>
<th>Reflective &amp; Complex</th>
<th>Intense &amp; Rebellious</th>
<th>Upbeat &amp; Conventional</th>
<th>Energetic &amp; Rhythmic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>13</td>
<td>5.25</td>
<td>3.90</td>
<td>4.06</td>
<td>2.77</td>
</tr>
<tr>
<td>Introversion</td>
<td>13</td>
<td>4.79</td>
<td>3.46</td>
<td>4.19</td>
<td>2.44</td>
</tr>
</tbody>
</table>

STOMP scores range from 1 to 7.
It should be pointed out that none of the differences in mean scores between the extraversion and introversion groups in Table 2 are statistically different from chance alone.

Wilks' Lambda is significant between the genres clusters themselves ($p < 0.001$). Thus the participants have clearly distinguished between the genres, and an overall preference pattern of clusters is demonstrated: Reflective & Complex music is rated highest, Energetic & Rhythmic music lowest. However, the cluster-by-preference interaction was not statistically significant.

**Analyses of data obtained while actually listening to music tracks**

This section of the report shifts attention from the generality of liking for particular genres and genre clusters to the reactions of individuals while actually listening to selected music tracks.

In the second part of the workshops, the 26 participants recorded their reactions to eight different tracks. The tracks were selected from lists provided by Rentfrow and Gosling (2003), with two tracks as examples from each of the four clusters.

The tracks were chosen from recordings readily available to the author, and were presented to participants in their entirety in harmony with the composers' intentions. The tracks were played in the following sequence:

**Reflective & Complex**

1. **Folk**: Bob Dylan, 'Blowin' In The Wind'
2. **Classical**: Joan Carden, 'O Mio Bambino Caro'

**Intense & Rebellious**

3. **Alternative**: Pearl Jam, 'Why Go?'
4. **Rock**: Led Zeppelin, 'Living Loving Maid'

**Upbeat & Conventional**

5. **Pop**: Madonna, 'Material Girl'
6. **Country**: Kasey Chambers, 'Like A River'

**Energetic & Rhythmic**

7. **Funk**: Isaac Hayes, 'Theme from Shaft'
8. **Soul**: Bill Withers, 'Ain't No Sunshine'

Participants were presented with a standard reaction sheet for each track, and an opportunity was provided for any free response they felt warranted.

From this sheet, three differing types of reactions can be investigated:

- First, there is a form of the Semantic Differential which investigates the 'dimensions of meaning' that the music has for the listeners.
- Secondly, those terms chosen from a standard list can be used to examine any systematic differences in reactions across genre clusters.
- Thirdly, there are the free responses written by participants during the playing of particular tracks.

1. **Semantic differential:**
   **'The dimensions of meaning'**

In the first section of the sheet, individual reactions to each of the eight tracks (two per genre cluster) were collected by use of a form of the **Semantic Differential**.

The Semantic Differential, developed by Osgood (1979), is considered to be an appropriate way to investigate meanings associated with different stimuli (in this case, the music tracks) in the minds of participants.

This was constructed with bipolar scales for each of three dimensions: Evaluation, Activity and Potency. The scales feature polar opposites, with participants circling a point that they think best fits their response to the music.

The format is a scale numbered between 1 and 7, anchored by a pair of terms. The bipolar terms, chosen from the literature about the Semantic Differential, aimed to capture the evaluation, potency and activity aspects of the music tracks.

Scores for each of these semantic differential scales were analysed by comparing the ways in which the four pairs of music tracks were perceived differentially by those with extraversion preferences and those with introversion preferences.

**Intense & Rebellious:**

**Rock**

Led Zeppelin, 'Living Loving Maid'

I wouldn't have to go home from the party if it was playing, but not for my music collection.

**ENFP**

Hard to understand the words. Could imagine dancing to it, though, and enjoying that.

**INTJ**

Scores for each of these semantic differential scales were analysed by comparing the ways in which the four pairs of music tracks were perceived differentially by those with extraversion preferences and those with introversion preferences.
The Evaluation ratings for the four pairs of tracks are based on the additive scores for the two bipolar dimensions:

- beautiful
- ugly
- positive
- negative
- reverse scored

Figure 1 shows some interaction between E—I preferences and the evaluation of the music genres sampled. While listening to the tracks, the participants made strongly differentiated evaluations of the music. The two tracks in the Reflective & Complex cluster were evaluated much more highly than those in the Intense & Rebellious examples. This differentiation was more marked for the introversion preference group, who showed the greater contrast.

The Potency ratings for the four pairs of tracks are based on the additive scores for the two bipolar dimensions:

- shallow
- deep
- strong
- weak
- reverse scored

The mean potency ratings depicted in Figure 2 indicate a different outcome when the focus is on this aspect of the music being played.

Again, the highest scores recorded by both preference groups are for the Reflective & Complex music tracks. These scores stand out from the others, indicating the powerful connotations of these pieces had for the participants.

Figure 1: Evaluation ratings for pairs of tracks from the different clusters, by preferences for extraversion and introversion

There is also a difference between the preference groups for the Energetic & Rhythmic cluster, with the introversion preference evaluating these tracks somewhat more highly.

Overall, although there is a significant difference ($p < 0.001$) across the music genres, there is no significant difference between the E—I preferences.

The remaining comparisons suggest that the introversion preference was associated with more potency for the Energetic & Rhythmic tracks than the other samples.

Again, there is evidence of statistical significance between the means for the four music genres ($p < 0.001$), but there was no statistical difference between the E and I groups across those genres.

Figures 1 and 2 depict the higher evaluation and stronger potency ratings of the Reflective & Complex tracks for these participants. The data shown in Figure 3 for the Activity aspects of the music are of a different character.
The Activity ratings for the four pairs of tracks were based on the additive scores for the two bipolar dimensions:

passive ................................ active
cold ...................................... hot

These mean Activity ratings are plotted in Figure 3.

Here the Intense & Rebellious tracks have the highest means in the set, indicating that those tracks were interpreted as having higher levels of activity. Possibly this type of music was not familiar to some participants, but was distinguished by its underlying rhythmic structures.

2. Selection of terms to describe characteristics of the music tracks

In the second section of the reaction sheet, participants were asked to circle any of 20 descriptive terms they thought were applicable to the music they were listening to.

The terms were based on the research by Rentfrow and Gosling (2003), but edited down to 20 in the interests of continued participant involvement in the task. Thus, 5 terms from the original list were not used due to time demands made on the participants.

The 20 terms were presented in the same random order for each track. Participants circled those they considered appropriate.

The terms are shown, in their order of presentation, in the first column of Table 3. This table displays the total frequencies of the circled terms across each pair of tracks from a genre cluster.

Looking at the top left cells, for example, the term 'clever' was selected 6 times by those with extraversion preferences to describe the music being played for the Reflective & Complex genre, and 4 times by those with introversion preferences.

The maximum possible selection sum for this sample of 26 respondents is 26. To make the table easier to read, the terms selected by 50% or more from a group are shown in bold.

The terms were selected by participants to describe the pairs of tracks for each of the four clusters. The data are arranged by the music genre clusters, to highlight the ways in which the music from the four clusters was differentiated.

The grouping by extraversion and introversion preferences within the four clusters enables the reader to form a judgment about whether those preferences are reflected in choices made.

![Image](image-url)

Figure 3: Activity ratings for the pairs of tracks for clusters, by preferences for extraversion and introversion.

Again there was a statistically significant difference between the means for the music genres (p < 0.02), but there was no significant interaction between the E—I groups and the music genres.

To summarise the findings presented in Figures 1 to 3: the responses to the three Semantic Differential scales indicate clear and significant differences in the ways these participants considered the evaluation, potency and activity aspects of the four sets of music samples. However, these results do not reflect any systematic differences associated with a preference for either extraversion or introversion.
### Energetic & Rhythmic: Funk

Isaac Hayes, 'Theme from Shaft'

The complexity of beats makes it interesting and variety of sounds. Makes me want to smile and bop.

ENFP

Music of my youth. Can play it in anticipation in my head, associated with my happy memories.

INTJ

---

Table 3: Frequencies of terms selected to describe the pairs of music tracks representing different music genre clusters—analysed by extraversion-introversion preferences

<table>
<thead>
<tr>
<th>Term</th>
<th>Reflective &amp; Complex</th>
<th>Intense &amp; Rebellious</th>
<th>Upbeat &amp; Conventional</th>
<th>Energetic &amp; Rhythmic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>I</td>
<td>E</td>
<td>I</td>
</tr>
<tr>
<td>clever</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>dreamy</td>
<td>15</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>relaxed</td>
<td>6</td>
<td>8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>enthusiastic</td>
<td>2</td>
<td>-</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>cheerful/happy</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
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<td>8</td>
<td>4</td>
<td>2</td>
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<td>-</td>
<td>-</td>
<td>15</td>
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<td>11</td>
<td>2</td>
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<tr>
<td>depressing/sad</td>
<td>6</td>
<td>6</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>frank/direct</td>
<td>3</td>
<td>6</td>
<td>12</td>
<td>9</td>
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<td>7</td>
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<td>10</td>
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<td>-</td>
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<td>bitter</td>
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Note: Figures in bold represent 50% or higher endorsement. n = 26.

Inspection of Table 3 reveals the five most frequently selected terms for each of the music genre clusters. This indicates both qualitative and quantitative differences in the frequency of selection of particular descriptive terms.

- Reflective & Complex music: reflective, emotional, dreamy, romantic, uplifting
- Intense & Rebellious music: energetic, rhythmic, loud, frank/direct, enthusiastic
- Upbeat & Conventional music: rhythmic, simple, energetic, frank/direct, cheerful/happy
- Energetic & Rhythmic music: rhythmic, depressing/sad, reflective, energetic, emotional

As these data indicate, most of the terms selected for the Reflective and Complex cluster do not appear in the other selections. All of the other clusters were frequently described as rhythmic and energetic, amongst other terms.
Statistical analysis of the data in Table 3 resulted in Wilks’ Lambda results of:

- $p < 0.13$ for the four music clusters differences
- $p < 0.30$ for the extraversion-introversion contrasts
- $p < 0.26$ for the interaction between genre and preference

These results are clearly not statistically significant, but there are aspects of Table 3 that warrant further consideration.

Some of the 20 terms were selected differentially across the music genre clusters. The univariate analysis showed that some pairs of tracks were clearly regarded as different, e.g. relaxed and loud ($p < 0.01$), and energetic, dreamy, uplifting, emotional, rhythmic and reflective ($p < 0.05$).

However, except for the item relaxed ($p < 0.01$), the selections made by those with extraversion preferences did not differ from those with introversion preferences. This term also varied between music genre clusters and E-I ($p < 0.05$). It should be borne in mind that across 20 comparisons, a probability ($p$) level of 0.05 represents what could be expected by chance alone.

It is noteworthy that these participants did make systematic selections of terms which to some extent differentiated between the four music genre clusters, but this was not significantly different across the personality preferences. Thus:

- Intense & Rebellious music was clearly described as ‘energetic,’ while Reflective & Complex music was not;
- Reflective & Complex music was described as ‘emotional’ and ‘reflective,’ characteristics noted by only a few for Intense & Rebellious music.

3. Free-response comments about specific music tracks

In addition to the data reported above, participants were invited to comment on any of the tracks. A selection of their free responses (and type codes) appear in the sidebars through this report, to illustrate how a particular piece of music can elicit a range of responses which reflect each listener’s experiences and perceptions.

Across all tracks were characteristics that were differentiated between participants with preferences for extraversion and introversion. These characteristics might reflect differing life experiences of those varying on this type preference; they might also reflect that those persons ‘attend’ and respond to different elements in the music experience.

In their comments in the sidebars, it can be seen that those with preferences for extraversion tended to appreciate the variety of the genres: they responded with generally favourable comments, often associating music with their earlier life experiences. The thrust of the comments from those with introversion preferences is often more strongly marked by likes and dislikes; but again, the music recalls or evokes previous life experiences.

Conclusion

This report is concerned with exploring relationships between musical preferences and psychological type preferences for extraversion and introversion, following earlier research that showed some inconsistent findings.

As pointed out previously, drawing on prior research using the Big 5 assumes a relationship between the personality traits identified in the Big 5 and the types indicated by the MBTI. This is a moot point, as some practitioners regard the type and trait approaches as different in character. For example, Quenk, Hammer and Majors (2001) assert that the MBTI ‘is designed to identify qualitatively different types and not quantitatively varying traits’ (15).

There were some statistically significant differences in the genre scores and cluster scores for some of the type preferences, and these bear some relationship to other findings. It appears that musical preferences may indeed reflect some of the fundamental psychological type differences, but more research is needed to more firmly establish these trends.
How can we best interpret the data summarised here?

Firstly, there is a caveat about the sample size and representativeness. It is a sample of 26 persons. Its lack of balance between sensing and intuition types may limit the generalisability of the results.

Secondly, the restriction of the genres to two per cluster may have introduced a limitation to the representativeness of the total range. However, a longer study using the full range of genres would be likely to engender participant fatigue and withdrawal from further participation.

Thirdly, there are issues concerning the selection of tracks for the study. From the vast list of possibilities, it may be that the actual selection did not capture the central elements of the cluster.

Despite these reservations, however, there is a fairly clear demonstration of how reactions vary across the various styles of music, and this research suggests that some proportion of that variance is associated with personality type. The general trend has been for all participants to recognise and record common reactions to particular examples of music. Some characteristics of the Intense & Rebellious classification, for example, clearly illustrate its validity.

It is worth considering whether further research linking type with music preferences may become one way of reaching out from the ‘ageing’ type community to a younger audience whose familiarity with music through iPods and MP3 players may lead them to consider the personalities who like particular genres of music.

Listening and responding to music is both a cognitive and an associative process. When we attend to particular pieces, we are cognisant of features such as beat, instrumentation and lyrics (if any). We also associate particular pieces (and specific interpretations) to relevant events in our experience.

This observation takes us back to Hedden’s (1973) insights about music preferences. In the current research we have evidence of the validity of his assertions.

Unfortunately, the lack of balance between sensing and intuition limited the analysis of these factors.

It is evident that type differences can account for some of the variation in responses to the music being played. The results showing that those with extraversion preferences had higher STOMP scores on 10 out of 14 genres appear to be consistent with previous research.

There is, however, some inconsistency in reconciling previous research, and the issue of whether one is recalling across occasions or responding to music being heard ‘in the moment’. There are also the possible confounding effects of the three differing viewpoints in conceptualisations and measurement of the E—I construct.

The music genres data provide evidence of non-random variation in mean scores of the STOMP, linked to differences on E and I preferences and listening to and responding to samples from the four music clusters. These indicate some general and specific connotations linked to personality preferences.

This research, although having limitations, takes the study of possible links between music preferences reflecting psychological type a step further.

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References


