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Liking for Musical Styles

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• **ABSTRACT**

This paper reports two experiments on liking for musical styles. The first study investigated the relative extent to which liking for musical excerpts is associated with liking for the styles in which they are performed and for the pieces on which they are based. Fifty subjects were presented with 24 short musical excerpts comprising 5 original pop music pieces and 19 'cover' versions of them in different musical styles. The results indicated that subjects' liking for the excerpts was more closely associated with their liking for the musical styles than for the pieces themselves. Given their apparent importance, the second study investigated whether liking for musical styles could be explained in terms of subjects' voluntary and involuntary exposure to them. This was done in the context of the preference-feedback hypothesis. Subjects were presented with 30 musical styles which were rated for either 'liking' *or* their degree of familiarity to subjects personally (voluntary exposure) *and* their prevalence in British culture (involuntary exposure). The results supported the prediction of the preference-feedback hypothesis that there should be a positive relationship between liking and voluntary exposure, although the prediction of an inverted-U relationship between liking and involuntary exposure was not confirmed.

This paper reports two studies concerning aesthetic responses to musical styles. The importance of stylistic variations in musical preference seems undeniable, yet although some studies have investigated the development of responses to generic musical styles (e.g. Gardner, 1973; Hargreaves, Comber, and Colley, 1995; LeBlanc, Sims, Siivola, and Obert, 1993), most experimental research on aesthetic responses to music has considered responses to specific excerpts. Such experimental approaches may have over-simplified their approach to music by neglecting the potential influence of stylistic variations on subjects' musical preferences (see e.g. North and Hargreaves, 1996a; North, Hargreaves, and Binns, 1996). In particular,

two issues remain unclear. First, to what extent is musical style an important feature of responses to specific pieces ? Second, if stylistic variations are important determinants of preference then which variables may mediate responses to musical styles ? Experiment 1 addresses this first issue directly by assessing listeners' responses to specific pieces played in different styles. Experiment 2 addresses the second issue by investigating one variable that may underlie liking for musical styles, namely their familiarity.

One issue which is immediately raised by questions such as these concerns the difficulties of defining the nature of 'musical style'. Meyer (1989) defines style as '...a replication of patterning, whether in human behavior or in the artefacts produced by human behavior, that results from a series of choices made within some set of constraints' (p.3). Musical styles are clearly defined within social and cultural contexts, but Meyer's definition also incorporates the choices which individual artists or composers make, either consciously or unconsciously, in working within those culturally-defined styles to different degrees. Meyer goes on to develop this idea by defining the 'hierarchy of constraints', or the *laws*, *rules* and *strategies* by which individuals conform to a greater or a lesser extent to a given style.

Serafine (1983) made a similar case in distinguishing between what she called *musical style* and *musical-cognitive processes*. Musical styles are 'the common features of artworks and ... the principles by which a particular community composes, hears, and understands its music' (p.122-3). For example, Serafine argues that pieces of 20th century music will frequently involve the given melody being played backwards, note for note, and such commonalities between works can be used to define a musical style. In contrast, musical-cognitive processes are 'generic human processes that cut across all styles' (p.122). For example, 'playing a melody backwards is a characteristic of style, whereas the act of transforming or changing musical material is a generic cognitive process' (p.122), carried out by virtually all musical cultures. This led Serafine to the controversial view that only the latter were genuinely universal aspects of musical behaviour, even though the former had often been regarded as such by music theorists. This provoked the criticism that Serafine was using the term 'style' too widely, incorporating almost any type of structural regularity: Brody (1985), for example, suggested that Serafine was confusing idioms, systems and styles, and that these exist at different levels of cultural specificity.

In spite of these difficult conceptual problems, it is still possible to arrive at an *operational* definition of the terms involved for the purposes of a particular empirical study. Theorists such as Nettl (1964), Boretz (1972) and Nattiez (1990), for example, enable us to do so by speaking in terms of *hierarchies* of stylistic phenomena. Nattiez (1990) described musical semiology as how a work of art functions in society, and this necessarily involves consideration of the work's musical structure, its cultural background and context, as well as the processes involved in its perception. This broader view might transcend some of the boundaries between music analysis, history, musicology and psychology, and resolve some of the problems of definition raised above.

For the purposes of the present paper, we will adopt the model described by Nattiez (1990). Different levels of cultural generality in musical style are represented by 6 levels within an inverted pyramid whose tip is the most culturally specific (see Figure 1). At this first level, a given work can be compared directly with other works in the same group or set. As we ascend the pyramid to deal with increasingly higher levels of cultural generality, the work is set within the style of a period in the life of a particular composer (e.g. the style of Beethoven's late quartets, or of John Coltrane's 'sheets of sound' period); the style of that composer more generally; the genre or epoch in which that work might be located (e.g. the Viennese classical style, or that of post-bop modern jazz); the system of reference within which styles are defined (e.g. tonality); and the universals of music itself (e.g. timbre, pitch). Adopting this model elsewhere, for example, North and Hargreaves (1996b) investigated three *genres* (pop, classical and jazz), and asked subjects to nominate different *styles* within each (e.g. rap, baroque or bebop respectively).

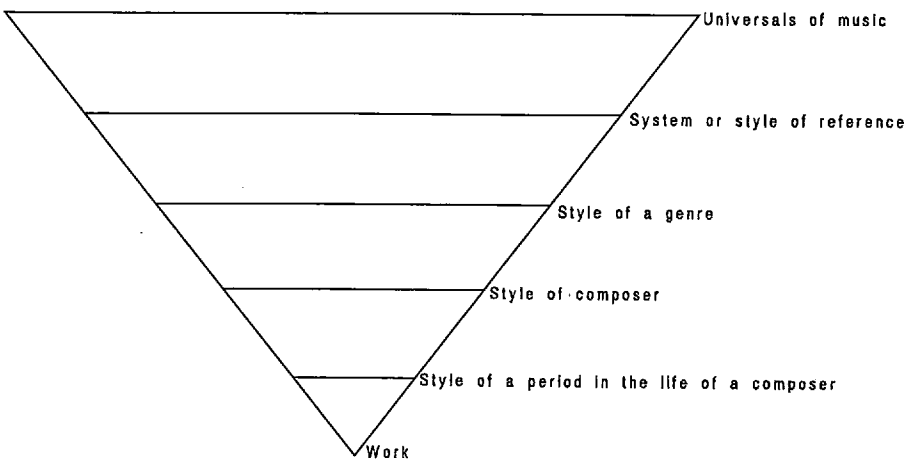

Figure 1. A model of musical styles (adapted from Nattiez, 1990).

EXPERIMENT 1

Despite the apparent importance of stylistic variations in musical preference, research has yet to determine the relative importance of responses to works and styles as such. For example, when we hear a piece of music, to what extent do we respond directly to its specific melodic, choral or rhythmic features as distinct from more general characteristics such as its style or idiom ? This first experiment con-

siders the relative extent to which liking for musical excerpts is determined by liking for the style and liking for the *work* or *piece* that the excerpt represents.
It should be noted here that in this paper the term 'piece' is used to denote a given musical work regardless of the style in which it is performed, whilst the term 'excerpt' is used to denote a musical extract derived from a specific piece x musical style combination. Subjects were presented with short musical excerpts taken from the original and from 'cover' versions of 5 well-known pieces by The Beatles: The large number of cover versions available meant that stimuli could be employed which represented a wide range of styles. This technique is considered further in the Discussion.

Each of the excerpts was rated for liking, and subjects also rated how much they liked each of the 5 pieces employed irrespective of the style they were recorded in, as well as how much they liked each of the musical styles they had heard irrespective of the pieces performed. In an attempt to determine which predominates, multiple regression and partial correlation analyses should indicate the relative importance of liking for the pieces and liking for the styles in governing liking for the given musical excerpts. Also, by virtue of their fame, responses to excerpts by The Beatles may be subject to factors other than those which govern responses to excerpts from the remaining musical styles. Consequently, it would also be interesting to repeat the analyses whilst excluding excerpts performed by The Beatles so as to determine whether this changes the general pattern of results obtained.

METHOD

• **Subjects.** The 50 subjects (10 males, 40 females) were first-year psychology undergraduates with a mean age of 23.7 years (s.d. = 7.31, range = 18-44 years). To provide further information on the sample, a panel of three independent judges assessed a self-report of musical training and experience made by subjects, and determined that 23, 17, and 10 subjects possessed low, intermediate, and high levels respectively. These assignations were not made on the basis of pre-determined criteria since training and experience in pop music and jazz cannot be expressed in terms of examinations passed etc. Instead, the judges reached their decision by evaluating the sum of information provided by the subjects concerning the number of years they had played, the number of instruments they played, etc.

• **Musical stimuli.** Excerpts were selected from the original versions of 5 pieces that were written and performed by The Beatles (i.e. pop music). Comparable 'cover' versions of each of the 5 pieces were then identified in four other styles, and excerpts were also taken from these. The other musical styles were light orchestral, steel band, karaoke, and jazz. Each of the styles was represented by a single album containing

the 5 pieces performed by a single artist/group, and the Music Master Catalogue (1993) was used to verify that the artists were associated with their respective musical styles. This operationalisation meant that stylistic variations were minimally confounded by variations in the performing artist, and seems justifiable in that it reflects variations in both the style of the performers and the genre they represent. In Nattiez's (1990) model, both these levels are superordinate to that of the particular work/piece in question. In short, both the style of the performer and the genre itself are elements of 'musical style' which exist at a higher level of Nattiez's hierarchy than the particular work/piece in question.

One unfortunate consequence of this operationalisation was that a jazz excerpt could be identified for only 4 of the 5 pieces. Since excerpts from the 5 original recordings of the pieces were employed in conjunction with excerpts from the 19 cover versions, the experimental stimuli comprised a total of 24 commercially-released excerpts, with each representing a different piece x musical style combination. Full details of the pieces, performing artists, and source recordings may be found in Appendix 1.

A high quality master tape was prepared containing 45-second excerpts of the 24 stimuli. Each excerpt comprised the initial 45 seconds of the source recording from which it was taken, such that all the exemplars of a given piece contained the same portion of that piece. Each 45-second excerpt ended with a two second fade-out. Five random orders of the 24 excerpts were prepared from the master tape. Within each of these random orders, the 24 excerpts were assigned to one of four sets of five excerpts and one set of four excerpts. A particular piece or style was not repeated within any given set. Across the 5 tape orders, each of the 24 excerpts appeared once in each of the 5 sets. This ensured that any given excerpt was presented at a different place in each of the 5 orders. On the basis of a small pilot study, a 10 second silent gap was recorded between excerpts to allow subjects time to mark their ratings.

• **Design.** Ten subjects were presented with each of the 5 excerpt orders. Each excerpt was rated on an 11-point Likert scale for liking, where 0 was defined as 'dislike very much', 10 was defined as 'like very much', and 5 was defined as 'midway between the two'. After rating each excerpt, subjects were asked to circle which of the 5 musical styles they thought it represented. There were four occasions when subjects circled a style that did not correspond with that which the excerpt was intended to represent, and the four ratings of liking for the excerpt associated with these were not analysed further. At the end of each session, subjects rated their 'liking for each of the pieces, regardless of the styles they were recorded in', and also their 'liking for each of the styles, regardless of the pieces that were played in those styles'. Both these sets of ratings were given on the 11-point scale for liking described above.

• **Procedure.** Subjects were assembled in groups of 5, and were told that they would be hearing 5 excerpts of pieces performed by The Beatles along with 19 excerpts of these pieces recorded in other musical styles. The 5 pieces were then named by the experimenter, and subjects were asked to write the names of any pieces they did not know on the front of their response booklet as a check on the validity of ratings of liking for the pieces made at the end of the study. No subjects did this. It was then stressed that subjects should think carefully about the rating they would assign to each excerpt as it was playing. The 24 experimental excerpts were subsequently played and rated, with subjects also circling which of the 5 styles they thought each excerpt represented. Afterwards, subjects were asked to rate their liking for each of the pieces and each of the styles.

RESULTS

• **Order effects.** A series of product-moment correlation coefficients was calculated between the mean liking ratings assigned to the excerpts for each excerpt ordering. The coefficients between the five excerpt orders ranged between +0.82 and +0.87 ($N = 24$, $p < 0.001$, in all cases). Mean ratings were also calculated within each excerpt ordering for ratings of 'Liking for the piece' and 'Liking for the style'. Product-moment correlations were calculated for each of these variables between the mean ratings assigned within the different orders. 'Liking for the piece' coefficients between the five excerpt orders ranged between +0.92 and +0.94; and 'Liking for the style' coefficients between the five excerpt orders ranged between +0.92 and +0.99 ($N = 5$, $p < 0.01$, in all cases). The possibility of order effects influencing subjects' ratings can therefore be ruled out.

• **Liking for pieces and liking for styles.** A multiple regression analysis was carried out to determine the extent to which ratings of liking for the styles and liking for the pieces regressed upon ratings of liking for excerpts. Both liking for the style (LS) and liking for the piece (LP) regressed significantly upon liking for the excerpt (LE), giving rise to respective T values of 27.85 and 6.98 ($p < 0.001$ in each case). The resulting regression equation, explaining 41.66% of the variance ($F = 424.95$, d.f. = 2, 1190, $p < 0.001$), is;

$$LE = -0.01 + 0.62\ LS + 0.23\ LP$$

This was further investigated by two partial correlation analyses of subjects' raw ratings (see Cooley and Lohnes, 1971; Darlington, 1968). The first calculated the correlation between liking for the style and liking for the excerpt, partialling out the effects of liking for the piece. The resulting coefficient was +0.63 (d.f. = 1190,

$p < 0.001$). The second calculated the correlation between liking for the piece and liking for the excerpt, partialling out the effects of liking for the style. The resulting coefficient was +0.20 (d.f. = 1190, $p < 0.001$). A z^1 transformation test (see Edwards, 1960) was carried out on these two coefficients, with the resulting value of $z^1 = 13.12$ indicating that they differed at the $p < 0.01$ level. This result indicates that ratings of liking for the excerpt were associated more closely with liking for the style than with liking for the piece. Mean ratings of liking for each of the pieces and liking for each of the styles are presented as part of Appendix 1.

These analyses were then repeated with the exclusion of responses to excerpts performed by The Beatles, and this second set of analyses gave rise to an identical pattern of results to the first. Multiple regression showed that both liking for the style (LS) and liking for the piece (LP) regressed significantly upon liking for the excerpt (LE), giving rise to respective T values of 18.06 and 5.30 ($p < 0.001$ in each case). The resulting regression equation, explaining 29.06% of the variance ($F = 183.76$, d.f. = 2, 897, $p < 0.001$), is;

$$LE = -0.33 + 0.50\ LS + 0.20\ LP$$

This was further investigated by two partial correlation analyses of subjects' raw ratings, with responses to excerpts performed by The Beatles again being excluded. The first test calculated the correlation between liking for the style and liking for the excerpt, partialling out the effects of liking for the piece. The resulting coefficient was +0.52 (d.f. = 897, $p < 0.001$). The second test calculated the correlation between liking for the piece and liking for the excerpt, partialling out the effects of liking for the style. The resulting coefficient was +0.17 (d.f. = 897, $p < 0.001$). A z^1 transformation test was carried out on these two coefficients, with the resulting value of $z^1 = 8.54$ indicating that they differed at the $p < 0.01$ level. This result indicates that ratings of liking for the excerpt were more closely associated with liking for the style than with liking for the piece. Whilst the relationships demonstrated by this second set of analyses were generally weaker than those obtained when the analyses also considered the excerpts actually performed by The Beatles, they remain highly significant and in the same direction.

DISCUSSION

The multiple regression analyses suggest that liking for the excerpts was more closely associated with liking for the styles than with liking for the pieces, and partial correlation analyses supported this conclusion. The correlation between liking for the excerpts and liking for the *styles* (controlling liking for the pieces) was significantly higher than was the correlation between liking for the excerpts and liking for the

pieces when liking for the styles was controlled. In conjunction, these analyses indicate that responses to musical styles are a better predictor of liking for particular excerpts than are responses to pieces. This is interesting given that perhaps the majority of experimental research on musical preference has tended to consider responses to specific pieces. The present results suggest that it may also be important to consider responses to the musical style(s) from which those pieces are drawn.

The present study also raises an interesting methodological issue which may have some bearing on future research. It was necessary to employ stimuli which comprised the original and cover versions of a number of pieces: This was to control for variations between styles in the pieces presented to subjects, and music originally performed by The Beatles was employed so as to provide a sufficiently wide range of available cover versions. One implication of this is that the pieces employed were consequently so well established in British culture that the experimental stimuli may not generalise well to other musical pieces and styles. A wider range of stimuli may have altered the relative contributions of liking for the piece and liking for the style, and this is perhaps reflected in the weaker effects that obtained when the analyses above did not include excerpts performed by The Beatles. For this reason, it may be imprudent to generalise from the present results and assert that liking for a musical excerpt is *always* more closely associated with responses to the style than with responses to the piece. A more cautious conclusion is that these results show that musical style is a significant aspect of our responses to a given musical excerpt.

This issue reiterates the need for an accurate definition of musical style, since it highlights the difficulties of reliably operationalising and measuring the effects of stylistic variations when it is not clear what a 'musical style' actually is. It also demonstrates that studying the effect of stylistic variations from an experimental perspective has inherent advantages (i.e. stimulus control) and disadvantages (i.e. operational definitions possibly leading to over-simplification of the problem under investigation). However, the main contribution of this first experiment is in demonstrating that we should consider responses to the style when investigating musical preference, and that experimental techniques can be useful in this despite the difficulties they may inherently involve.

EXPERIMENT 2

Experiment 1 indicated that musical style may in its own right be associated with liking for a particular excerpt. This finding suggests several further studies, such as a replication with different materials, or an investigation of why a particular musical style might be liked more than another. Experiment 2 investigates this second issue.

Whilst several studies have investigated the factors underlying liking for musical styles from a developmental, social psychological, or sociological perspective (e.g. LeBlanc et al (1993), Chapman and Williams (1976), and Gans (1974) respectively), there have been few attempts to attribute differences in liking for styles to variables more closely related to the music itself. Furthermore, the majority of studies on preference for musical excerpts have involved manipulating properties of the music in question (e.g. its complexity, familiarity etc. - see reviews by Finnäs, 1989; Hargreaves, 1986). If musical style is an important factor in determining responses to specific excerpts, and if most research on musical preference has addressed musical variables, then this suggests that the next logical step from Experiment 1 ought to involve determining which properties of musical *styles* determine liking for them. The present study considers one such variable, namely the familiarity of musical styles, and this is done in the context of the *preference-feedback hypothesis.*

The preference-feedback hypothesis (Colman, Sluckin, and Hargreaves, 1981; Sluckin, Hargreaves, and Colman, 1983) is an attempt to relate liking for stimuli to the extent of their familiarity to individuals, and to their prevalence in culture as a whole. The hypothesis is based on Berlyne's (1971) theory of aesthetic preference. This proposes that liking for aesthetic stimuli is determined principally by properties such as their familiarity or complexity which mediate arousal in the reticular formation of the brain. Berlyne's research indicated that there is an inverted-U relationship between liking for stimuli and the extent to which they bring about this arousal. This means that moderate amounts of stimulus familiarity should be most liked, and that liking should decrease progressively at more extreme levels of this variable.

Berlyne argues that stimuli which bring about a moderate level of arousal are liked most because on their way to the higher brain, the fibres of the reticular system pass through both pleasure and displeasure centres. The former has a lower threshold level and a lower asymptotic level than the latter. In short, with low degrees of musically-evoked arousal, only the pleasure centre is activated so that liking increases with arousal. At slightly higher degrees of arousal the displeasure centre also becomes activated so that the relationship between arousal and liking begins to level off. At high degrees of arousal, the pleasure centre has already reached its asymptotic degree of activation whilst activation in the displeasure centre continues to increase, and this causes liking to decrease.

Several studies of musical stimuli have investigated the predictions of Berlyne's theory with respect to familiarity (see reviews by Finnäs, 1989; Hargreaves, 1986). Whilst support for the theory has been equivocal, a number of studies have identified an inverted-U relationship between liking for music and subjects' familiarity with it. For example, Hargreaves (1984) found such a relationship for excerpts of 'easy listening' and classical music. Heyduk (1975) found that preference for specially constructed piano compositions rose and then decreased over the course of 16 repetitions. Although it was carried out before the formulation of Berlyne's theory,

Verveer, Barry and Bousfield's (1933) study also found an inverted-U relationship between preference for two 'jazz selections' and their degree of repetition.

The preference-feedback hypothesis divides stimuli into two classes which differ in the extent to which their familiarity is under direct volitional control. The hypothesis predicts that Class A stimuli (e.g. Christian names, see Colman, Hargreaves, and Sluckin, 1981), whose degree of familiarity is under voluntary control, should, at any given moment in time, exhibit a positive, monotonic relationship between familiarity and liking, and *not* the inverted-U function which Berlyne's theory would initially lead us to expect. Super-optimal, and consequently disliked, levels of familiarity are prevented from occurring by a feedback mechanism which operates such that further exposure is deliberately avoided once optimal stimulus familiarity has been attained. Over time, this process is hypothesised to produce a waxing and waning in the popularity of a given cultural object as we continually cease and re-commence exposure in an attempt to maintain its familiarity at an optimal level.

In contrast, Class B stimuli (e.g. surnames, see Colman et al, 1981), whose degree of familiarity is beyond voluntary control, should give rise to an inverted-U relationship between ratings of familiarity and liking. Moderate levels of familiarity should generally be most liked because they evoke moderate levels of arousal. We cannot choose to cease exposure to Class B stimuli, and super-optimal levels of familiarity can be consequently attained.

In what is perhaps the only direct test of the preference-feedback hypothesis, Colman, Best, and Austen (1986) failed to confirm its predictions for a variety of Class B non-musical stimuli: Instead there were generally positive monotonic relationships between measures of liking and familiarity for both Class A and B stimuli. However, it is worth noting that Martindale's (1990) evolutionary theory makes some very similar predictions to the preference-feedback hypothesis concerning fluctuations over time in the arts, and this theory has received some empirical support.

As individuals, we all at times choose voluntarily to listen to pieces of music drawn from a particular style. However, the culture to which we belong also exposes us to musical styles involuntarily (e.g. through the media). Consequently, musical styles may fall into Class A or Class B of the preference-feedback hypothesis, according to the type of exposure through which they are experienced. They may be classified as Class A when exposure to them is voluntary, and as Class B when exposure to them is involuntary. The present study investigates the application of the preference-feedback hypothesis to liking for musical styles by obtaining 'liking' and 'familiarity' ratings for 30 musical styles. Two aspects of 'familiarity' are rated, corresponding with voluntary and involuntary exposure to the styles. The preference-feedback hypothesis predicts that a positive, monotonic relationship should hold between ratings of 'liking' and the degree to which the 30 styles are rated as being familiar to subjects personally ('personal familiarity'), since this exposure is under voluntary control (Class A). In contrast, an inverted-U relationship

should hold between subjects' ratings of 'liking' and their ratings of the prevalence of the 30 styles in British culture ('general cultural familiarity'), since this exposure is beyond direct personal control (Class B).

METHOD

• **Subjects.** Subjects were sampled from a further education college in the East Midlands region of the U.K. (Further education colleges teach at a level between school and university). Students were asked to volunteer for an experiment on music and from these, 64 (13 males, 51 females) were randomly selected for the study. An equal number of students were then randomly assigned to either a 'Liking' or a 'Familiarity' group. The mean ages of the two groups were 17.97 years (s.d. = 1.40, range = 16-22 years) and 17.05 years (s.d. = 0.94, range = 16-19 years) respectively. To provide further information on the sample, subjects were asked to complete a self-report measure concerning their level of musical training and experience. On the basis of this, a panel of three independent judges determined that 28, 21, and 15 subjects possessed low, intermediate, and high levels respectively. These assignations were made by the same process employed in Experiment 1.

• **Experimental stimuli.** Musical styles were selected, predominantly from the Music Master Catalogue (1993), according to three criteria: that they should represent music from a wide span of years; be readily identifiable and distinguishable by subjects; and have been/currently be a part of British musical culture. 30 musical styles were subsequently selected. A 30 second representative excerpt was selected from each style to serve as a reminder to subjects. These excerpts were taken from the recordings of artists commonly associated with that style, and were recorded onto audio tape with a 15 second gap between each to allow subjects time to mark their ratings. Instructions to subjects emphasised that these excerpts were only a reminder of each style, and that ratings should not be based on the excerpt itself. Although such a technique introduced the risk that subjects might still respond to the particular excerpt rather than the style it was held to exemplify, it was thought that playing specific musical excerpts was perhaps the best way to ensure that the stylistic labels were understood reliably by the subjects. Details of the styles and representative excerpts may be found in Appendix 2.

• **Design and procedure.** Subjects were tested in two groups, seated in large classrooms within their college. The exemplar excerpts were presented, with each style being rated immediately after its exemplar excerpt. The 'Liking' group rated how much they liked each style, whilst the 'Familiarity' group rated each style for two aspects of familiarity, corresponding to voluntary and involuntary exposure respec-

tively; how familiar the style was to each subject personally ('personal familiarity'), and the prevalence of the style in British culture ('general cultural familiarity'). Whilst more objective approaches to measuring general cultural familiarity are of course possible (e.g. amount of radio air time), the technique employed here has the advantage of representing participants' *subjective experience* of the prevalence of the styles in British culture (see detailed discussion in Colman et al, 1981). According to the preference-feedback hypothesis, it is our *experience* of exposure to musical styles that determines liking, rather than their *actual* prevalence. For example, a radio station may play classical music all day, but this will have no impact on the general cultural familiarity of the style if nobody listens. Subjects' ratings were given on 11-point scales where 0 represented 'not at all', and 10 represented 'very much' for liking ratings and 'very' for the familiarity ratings. Subjects were instructed to not give a rating if they did not know the style in question, although in practice none did this.

RESULTS

Figure 2 shows the scatter diagram of the relationship between mean liking and mean personal familiarity ratings over the 30 musical styles. Curvilinear regression analysis indicated that the data is better fitted to a quadratic model than a linear model ($R^2 = 0.38$, $F = 8.14$, d.f. = 27, $p = 0.002$; and $R^2 = 0.32$, $F = 13.22$, d.f. = 28, $p = 0.001$ respectively). The regression equation for the quadratic model is $Y = 3.38 - 0.25X + 0.07X^2$, and this is plotted in Figure 2. Although statistically better

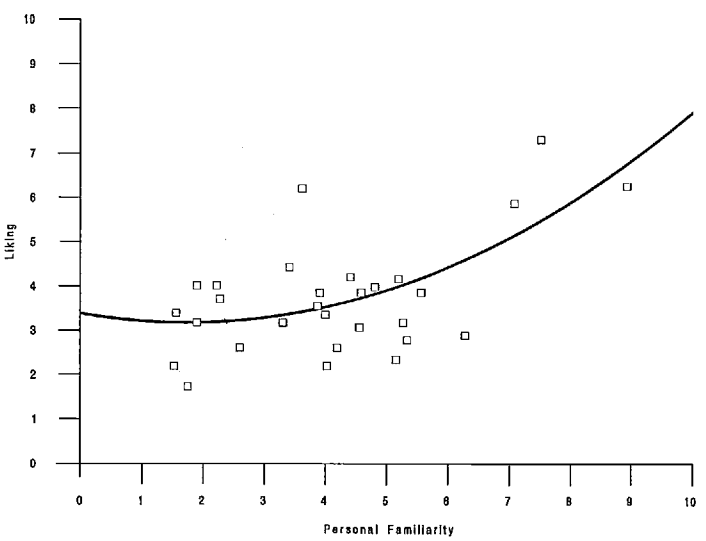

Figure 2. The Relationship Between Liking and Personal Familiarity Retings for 30 Musical Styles.

fitted to a quadratic function however, perhaps the most salient feature of this relationship is that liking for the musical styles generally increased with their personal familiarity, with the most liked styles receiving the highest personal familiarity ratings, and the least liked styles receiving the lowest personal familiarity ratings. As such, this provides some tentative evidence in support of the prediction of the preference-feedback hypothesis regarding voluntary (Class A) exposure.

Figure 3 shows the scatter diagram between mean liking and mean general cultural familiarity ratings for the 30 musical styles. Curvilinear regression analysis indicated that the data were significantly fitted to a linear model ($R^2 = 0.15$, $F = 4.85$, d.f. = 28, $p = 0.04$), whilst the fit to a quadratic model did not reach significance ($R^2 = 0.17$, $F = 2.82$, d.f. = 27, $p = 0.08$), and this fails to support the prediction of the preference-feedback hypothesis for involuntary (Class B) exposure. The regression equation for the linear model was $Y = 2.25 + 0.30X$, and this is plotted in Figure 3.

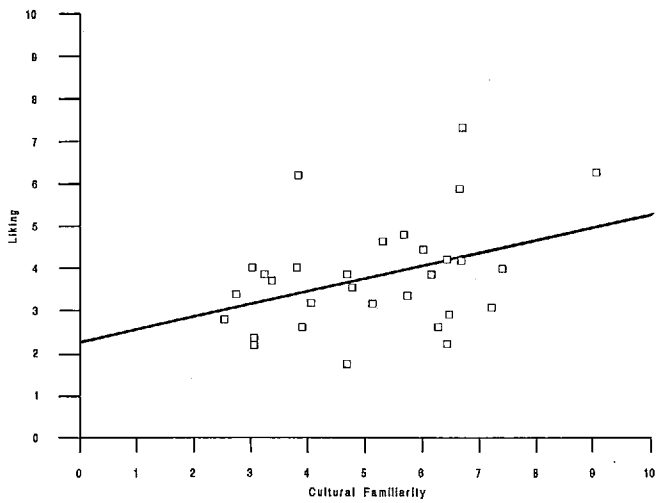

Figure 3. The Relationship Between Liking and Cultural Familiarity Retings for 30 Musical Styles.

The similarity of the relationships illustrated in Figures 2 and 3 raises the issue of whether subjects were able to distinguish between the two forms of familiarity they were asked to rate. To investigate this further, a product-moment correlation coefficient was calculated between the mean ratings of personal familiarity and general cultural familiarity assigned to the 30 musical styles. The result of this was +0.64 ($N = 30$, $p < 0.001$) which indicates a positive relationship between the two sets of ratings. In addition to this, a repeated measures t-test was carried out to investigate differences between the two sets of data, and the result of this was also significant (mean personal familiarity rating = 4.18, mean general cultural familiarity rating = 5.14, $t = 3.55$, d.f. = 29, $p < 0.001$). The results of these two analyses suggest that whilst the personal familiarity and general cultural familiarity ratings did reflect the

same general concept (i.e. presumably familiarity), subjects were nevertheless able to distinguish between these two measures.

DISCUSSION

The results regarding the relationship between ratings of liking and voluntary (Class A) exposure provided some tentative support for the prediction of the preference-feedback hypothesis, consistent with Colman, Best and Austen (1986). The general nature of the relationship evident in Figure 2 suggests that liking for musical styles increases with their degree of personal familiarity. The hypothesised inverted-U relationship between liking and involuntary exposure to the musical styles was not confirmed.

There are at least two possible explanations for this latter result. The first is simply that the preference-feedback hypothesis does not account for aesthetic responses resulting from involuntary exposure to musical styles. Indeed, the generally positive relationships between liking and *both* measures of familiarity would seem to support Zajonc's (1968) well-known mere exposure hypothesis, the notion that 'mere repeated exposure of the individual to a stimulus is a sufficient condition for the enhancement of attitude toward it' (p. 1). Whilst it is impossible to make any definite interpretation of the present results on such *post priori* grounds, this explanation is rather unattractive since the mere exposure hypothesis is unable to explain why several studies should demonstrate that liking for a stimulus can decrease with exposure to it (e.g. Berlyne, 1970; Cantor, 1968; Cantor and Kubose, 1969; Faw and Pien, 1971).

A second explanation concerns a further development of the preference-feedback hypothesis to account for the interaction between familiarity with Class B stimuli and their characteristic degree of complexity (i.e. the extent to which they are simple or complicated). Several researchers (e.g. Berlyne, 1971; Heyduk, 1975) have argued that complexity is linked to musical preference by the same arousal-based process as familiarity, and that increasing familiarity should reduce the extent to which a musical stimulus is subjectively complex and therefore arousing. In short, the better we know a stimulus (i.e. the more familiar it is), so the simpler (i.e. less complex) and less arousing it seems to us. This means that if a given musical style is sub-optimally complex (i.e. too simple and unarousing), then increasing familiarity should bring about a further decrease in the level of arousal it evokes and further reduce liking. This should cause a negative relationship between liking and familiarity. Similarly, if a given musical style is super-optimally complex (i.e. too arousing) then it might have to become extremely familiar before evoking a sub-optimal disliked level of arousal. This should cause a positive relationship between liking and the familiarity of Class B stimuli. In short, increasing familiarity may have different

effects on liking for different styles (cf. Hargreaves (1984) and Heyduk (1975) on liking for specific pieces).

In the context of the data reported here, it seems reasonable to suggest that the level of complexity which is characteristic of particular styles could have confounded the relationship between subjects' ratings of liking and general cultural familiarity. For example, the melodic variations that are characteristic of jazz mean that it is perhaps more complex than new age music, and this might cause liking for these two styles to exhibit completely different relationships with familiarity (i.e. liking for jazz should peak at a higher level of familiarity). A possible consequence of this is that the hypothetical inverted-U relationship between liking and general cultural familiarity might break down. Future research could investigate this.

In conclusion, the effects of voluntary (Class A) exposure on liking for musical styles were generally consistent with the prediction of the preference-feedback hypothesis. Data concerning the relationship between liking and involuntary (Class B) exposure did not support the hypothesis. However, given the wide range of music employed in the present study, it is encouraging that familiarity does appear to be useful in explaining liking for musical styles.

CONCLUSION

Experiment 1 showed that when responding to musical pieces, subjects may also in part be responding to the styles they represent. Such a finding questions the extent to which responses to musical pieces and styles can be regarded as independent. One consequence of this is that any explanation of musical preference must account for the effects of stylistic variation, and it is interesting that Experiment 2 provided some evidence that responses to musical styles may be predictable on the basis of their familiarity. Although musical preferences are undoubtedly subject to a variety of social, developmental, and cultural influences, the findings reported here show that experimental aesthetics can also contribute to our understanding of the role of stylistic variations in musical preference.[1]

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Appendix 1- Experimental Stimuli in Experiment 1

Experimental pieces (and mean liking ratings)
Hey Jude (8.20), Michelle (6.08), Penny Lane (7.70), Yesterday (7.56), and Eleanor Rigby (7.28)
Styles, artists, titles of source recordings (and mean liking ratings)
Light Orchestral (Full orchestral arrangements): The James Last Orchestra - *James Last plays the greatest songs of The Beatles* (5.64)
Steel Band (Oil drum and percussion arrangements): The Red Stripe Ebony Steel Band - *Popular Beatles songs* (3.17)
Karaoke (Synthesiser-based arangements): Karaoke Legends - *Lennon and McCartney* (2.24)
Pop: Excerpts taken from the original recordings by The Beatles (8.46)
Jazz (Piano, violin, flute, and double bass arrangements): Elena Duran, Stephane Grappelli, and Laurie Holloway - *Bach to The Beatles* (5.62)
N.B. Since all the excerpts within a style were required to be performed by the same artist, it was impossible to locate a jazz version of *Penny Lane.*

Appendix 2 - Musical Styles (and Representative Excerpts) in Experiment 2

Military (The Regimental Band Of The Royal Hampshire Regiment - *The Hampshire*); Christian Religious (Queen's College Choir - *Faire is the Heaven*); Trad Jazz (Acker Bilk And His Paramount Jazz Band - *Marching through Georgia*); Romantic Period Classical (John Ogden With The Phil-

harmonia Orchestra - *Tchaikovsky's Piano concerto no. 1 in B flat minor op. 23*); Traditional Scottish (Denny And Dunipace Pipes And Drums - *The rose among the thorn*); Heavy Metal (Iron Maiden - *Run to the hills*); Indian Folk (Loksagarnaan Moti - *Gujurati title*); Baroque (The Amsterdam Baroque Orchestra - *Telemann's Tafelmusik*); Brass Band (Britannia Building Society Band - *Showers of gold*); Country (The Bellamy Brothers - *Let your love flow*); Soul (Sade - *I couldn't love you more*); Big Band Dance (The Glenn Miller Orchestra - *In the mood*); Bhangra (Red Rose - *Nachla ni nachla ni nachla*); Rock 'n' Roll (Elvis Presley - *Guitarman*); American Folk (Joni Mitchell - *Nathan La Freneer*); Classical (Rutland Sinphonia - *Elgar's Carillon op. 75*); Be-Bop Jazz (Dizzy Gillespie and Charlie Parker - *Shaw 'nuff*); Rap (De La Soul - *Ooodles of O's*); World (The Boyoyo Boys - *Eloff Street no. 2*); Blues (Robert Johnson - *When you got a good friend*); Grunge (Nirvana - *Smells like teen spirit*); Light Opera (D'Oyly Carte Opera Company - *Gilbert And Sullivan's I am the very model of a modern major general*); Current Chart Pop (Cathy Dennis - *Irresistible*); Easy Listening (Bing Crosby - *Where the blue of the night*); New Age (Michael Brook - *Ultramarine*); Indian Classical (Baluji Shrivastav And Sarwar Sabri - *Raag shuddha sarang drut gat in teental*); Avant-Garde Jazz (Garbarek, Vitous, and Erskine - *Clouds in the mountain*); Ambient House (Aphex Twin - *Aegispolis*); Humorous (The Muppets - *I'm in love with a big blue frog*); Opera (Luciano Pavarotti - *Rossini's Larga al factotum*).

• El gusto por los estilos musicales

Este trabajo presenta dos experiencias sobre el gusto por los estilos musicales. La primera ha investigado si la preferencia por un estímulo está en función del gusto por el estilo de interpretación y por la obra de la que es extraído. Cincuenta sujetos fueron enfrentados a 24 ejemplos breves, que comprendían cinco piezas de música pop originales y 19 versiones derivadas de ellas, en diferentes estilos musicales. Los resultados han indicado que el gusto de dichos sujetos estaba más asociado al gusto por el estilo musical que a la pieza misma. Dado su aparente importancia, el segundo estudio ha investigado si el gusto de los estilos musicales se podría explicar en términos de exposición voluntaria o involuntaria del sujeto. Este se llevó a cabo en el contexto de la hipótesis preferencia-retroalimentación (*feedback*). Los sujetos fueron enfrentados a 30 estilos musicales que fueron seleccionados bien por haber sido considerados «agradables», o bien por presentar un grado de familiaridad con la cultura personal (exposición voluntaria) y una prevalencia en la cultura británica (exposición involuntaria o pasiva). Los resultados confirman la predicción de la hipótesis preferencia-retroalimentación que establecería una relación positiva entre gusto y exposición voluntaria, mientras que la predicción de una relación contraria entre gusto y exposición involuntaria no ha podido ser confirmada.

• La preferenza per gli stili musicali

Questo studio riporta due ricerche sulla preferenza per gli stili musicali. Nella prima ricerca é stato indicato se la preferenza per i brani musicali scelti é funzione della preferenza per lo stile con il quale sono stati eseguiti o per le opere da cui sono stati tratti. A cinque soggetti sono stati presentati 24 brevi brani musicali comprendenti 5 brani originali di pop music e 19 versioni "camuffate" degli stessi brani eseguiti in differenti stili musicali. I risultati hanno dimostrato che la preferenza dei soggetti per i brani é più strettamente associata con i propri gusti per gli stili musicali che con i brani musicali di per sè. A partire da questi risultati, la seconda ricerca ha studiato se la preferenza per gli stili musicali possa essere spiegata in base a disposizione volontaria. Tutto ciò é stato fatto nell'ambito di una ipotesi di scelta e feedback. Ai soggetti sono stati presentati 30 stili musicali classificati per ciascun "gusto" o per il loro grado di familiarità con l'esperienza personale del soggetto (esperienza volontaria) oppure per la loro diffusione nella cultura britannica (esperienza involontaria). I risultati convalidano la previsione dell'ipotesi di una relazione tra scelta e feedback per la quale ci potrebbe essere una connessione tra la preferenza e la partecipazione volontaria, mentre, la previsione di una relazione tra preferenza ed esposizione involontaria, non é verificata.

• Le goût pour les styles musicaux

On présente ici deux expériences sur le goût pour les styles musicaux. La première cherche à savoir si la préférence pour un stimulus est fonction du goût pour le style d'interprétation et pour l'œuvre dont il est extrait. Cinquante sujets sont soumis à vingt-quatre courts extraits composés de cinq musiques pop originales et de dix-neuf «habillages» stylistiques divers. Leurs préférences sont plus étroitement liées aux styles qu'aux pièces en tant que telles. Découlant directement de ce constat, la deuxième étude cherche à savoir si le goût pour les styles musicaux découle d'une exposition volontaire ou passive. Fondée sur l'hypothèse d'un lien entre préférence et feed-back, elle soumet les sujets à trente styles musicaux retenus soit pour avoir été jugés «plaisants», soit pour présenter un degré de familiarité avec la culture personnelle (exposition volontaire) et une prédominance dans la culture britannique (exposition passive). Les résultats confirment l'hypothèse d'une relation entre préférence et feed-back. S'il existe bien un lien positif entre goût et exposition volontaire, il n'a toutefois pas été possible de démontrer l'existence d'une telle corrélation entre goût et exposition passive.

• Vorlieben für Musikstile.

Dieser Beitrag berichtet von zwei Experimenten zur Präferenz für Musikstile. Die erste Studie untersuchte das relative Ausmaß der Abhängigkeit der Präferenz für musikalische Exzerpte vom Stil, in dem sie ausgeführt wurden, bzw. von den Musikstücken, aus denen sie stammten. 24 kurze musikalische Ausschnitte einschließlich Popmusikstücke in Originalfassung und 10 Cover-Versionen in unter-

schiedlichen Musikstilen wurden 50 Vpn. geboten. Die Ergebnisse zeigen, daß die Vorlieben der Vpn. für diese Exzerpte stärker vom Stil als von den Stücken selbst abhingen. Unter der Voraussetzung der offenkundigen Bedeutung dieser Resultate untersuchte die zweite Studie, ob die Präferenz für Musikstile vom willentlichen oder unfreiwilligen Hören her erklärt werden könnte. Dies geschah im Kontext der Präferenz/Rückkopplungshypothese. Den Vpn. wurden 30 Musikstile geboten, die bewertet wurden entweder hinsichtlich der Präferenz oder hinsichtlich des Grades der persönlichen Vertrautheit (willentliches Hören) und hinsichtlich des Grades ihrer Präsenz in der britischen Kultur (unfreiwilliges Hören). Die Ergebnisse unterstützen die Vorhersage einer positiven Beziehung zwischen Präferenz und willentlichem Hören durch die Präferenz/Rückkopplungshypothese, obwohl die Vorhersage einer umgekehrt U-förmigen Beziehung zwischen Präferenz und unfreiwilligem Hören nicht bekräftigt wurde.