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SUBJECTIVE COMPLEXITY, FAMILIARITY, AND LIKING FOR POPULAR MUSIC

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The optimal complexity and preference-feedback hypotheses make specific predictions about the effects of stimulus familiarity and subjective complexity on liking for music excerpts. This study investigates the relationships between each of these three variables within the same experimental design. Seventy-five undergraduate subjects rated 60 excerpts of contemporary popular music for liking, subjective complexity, or familiarity. The results strongly supported the predictions of the two models, indicating a positive relationship between liking and familiarity, and an inverted-U relationship between liking and subjective complexity. The observed relationship between familiarity and subjective complexity was more difficult to predict and explain, although there was some evidence that this relationship might best be described as an inverted-U function. The different relationships of these two variables with liking are explained in terms of subjective complexity being related to objective properties of the stimuli, and familiarity being determined by cultural exposure and subjects' own volition.

Recent research in experimental aesthetics has investigated the relationships between aesthetic responses to stimuli and other properties of them, such as their complexity, orderliness, and familiarity. Several conflicting theories have been proposed (e.g., Cantor, 1968; Zajonc, 1968), but probably the most widely-accepted is that of Berlyne (1970, 1971) who proposed that an inverted-U-shaped relationship exists between the novelty, complexity, etc. of stimuli and what he called their "hedonic tone." Berlyne drew on the Yerkes-Dodson hypothesis (Yerkes and Dodson, 1908) in proposing that aesthetic judgments reflect our attempts to optimize our psychobiological arousal level, which is directly related to hedonic tone, or liking. Artistic stimuli can increase or decrease this arousal level, and the inverted-U theory predicts that we prefer stimuli that give rise to intermediate rather than to very high or very low levels of arousal.

Berlyne's theory has given rise to considerable empirical research. Although most of this research has involved visual stimuli, an increasing number of recent studies have suggested that some form of inverted-U relationship might best explain the relationship between liking for music and its different stimulus properties. Vitz (1966) found an inverted-U relationship between the information content of tone sequences and subjects' ratings of their pleasantness. Similarly, Heyduk (1975) provided empirical support for his own "optimal complexity" model, which predicts that listeners will like music stimuli that are of optimum complexity to them more than those that are either too complex or too simple at any given point in time.

The optimal complexity model also predicts that repeated exposure to a stimulus increases its familiarity and should lead to a reduction in the perceived complexity (or subjective complexity) of that stimulus. The model can help us to predict how a listener's liking for a piece should change as a function of repetition. Music stimuli that are initially below or above the subject's level of optimal complexity will exhibit low levels of liking. Repetition of the former should lead to a further decrease in liking, since subjective complexity is lowered even further. Repetition of the latter should lead to an increase in liking, since the decrease in subjective complexity shifts liking nearer to the peak of the inverted-U curve.

It is clear from this analysis that the notions of subjective complexity and familiarity are very closely linked, and their joint relationships with liking for music have been discussed by Hargreaves (1986). Central to this discussion is the *preference-feedback* hypothesis of Colman, Sluckin, and Hargreaves (1981; see also Sluckin, Hargreaves, & Colman, 1983). This proposes that for classes of stimuli whose exposure is beyond subjects' voluntary control (Class B), such as geometrical shapes or letters of the alphabet, an inverted-U relationship between familiarity and liking normally should be obtained. For those classes of stimuli for which people are free to determine their amount of exposure (Class A), however, such as styles of dress or Christian names, very high levels of familiarity are prevented from occurring because a cultural feedback mechanism occurs such that people cease to seek further exposure to them as soon as these high levels of familiarity show signs of decreasing popularity. Accordingly, there should exist a positive monotonic relationship between liking and familiarity at any given point in time. Over time, this hypothesis can also explain the cyclical pattern of waxing and waning in popularity for Class A stimuli (Hargreaves, 1986).

In summary, the optimal complexity and preference-feedback hypotheses suggest that ratings of the same music excerpts for subjective complexity or familiarity should produce different relationships with liking at any given point in time. The former clearly predicts an inverted-U relationship between subjective complexity and liking, provided that a sufficiently wide range of stimulus complexity is represented. Since the exposure of most forms of music can be thought of as being subject to the voluntary control of listeners, however (and particularly popular music, which is employed in the present study), the preference-feedback theory predicts a positive monotonic relationship between familiarity and liking. The relationship for which we currently have no direct empirical evidence is that between subjective complexity and familiarity, and we might hypothesize two possible relationships between these variables.

Our earlier analysis of the likely effects of repetition leads to the prediction of an inverse monotonic relationship between these two variables: Increasing familiarity by means of repetition should give rise to a decrease in subjective complexity. However, consideration of the possible effects of subjective complexity on familiarity, that is, the reverse causal relationship, leads to the hypothesis of an inverted-U relationship between the two variables, with subjective complexity as the abscissa and familiarity as the ordinate.

There are two reasons for this second formulation. First, according to the optimal complexity model, excerpts of low and high subjective complexity should be disliked by most listeners, and the preference-feedback mechanism should lead to their avoidance, giving rise to low familiarity ratings in each case. Moderately complex excerpts should be liked, causing listeners to seek further exposure to them, which in turn should give rise to relatively high familiarity ratings. Second, subjective complexity ratings are a direct function of the objective complexity (i.e., of the stimulus properties) of the excerpt in question. This means that, contrary to the inverse monotonic relationship hypothesized above, the most familiar excerpts are not necessarily those of the lowest subjective complexity. Indeed, they are likely to be those of optimal, moderate complexity.

The main contribution of the present study is therefore to assess the relationships between familiarity, subjective complexity, and liking for excerpts of popular music by providing independent measures of each within the same experimental design. This will enable much more insightful tests of the optimal complexity and preference-feedback models than have been possible in the past. In order to throw further light on the relationships between these variables, a self-rating measure of music training is also employed. The rationale is that subjects with low levels of music training are likely to perceive a given music excerpt as being more subjectively complex than those with greater training, and this can provide an important additional source of insight into the relationship between the variables.

Method

Design And Methodology

Three preliminary methodological issues should be raised at this point, which concern the adoption of an independent subjects design, the use of subjective rating scales, and the choice of music excerpts. Following Sluckin, Colman, and Hargreaves (1980), subjects in the present study rated the same experimental excerpts for just one of the three variables under investigation, which eliminates any potential artifacts which might arise from the subjects' own hypotheses about relationships between the variables involved.

The use of subjective measures of familiarity enables the range of this variable to be determined by natural cultural variations in the prevalence of the particular class of stimuli as experienced by subjects, which ought to maximize its width. Many previous studies have varied familiarity and complexity by means of experimental manipulation, which involves the potentially unfounded assumptions that such objective variations will give rise to corresponding variations in subjective experience, and that the full range of the variables has been sampled. Furthermore, subjective assessments of the complexity of the excerpts provide a direct measure of this variable; and it is surprising that such measures previously have not been employed, since the subjective assessment of this variable is fundamental to the optimal complexity hypothesis.

The choice of music excerpts for this study was determined by four primary considerations: (a) that they should all be representatives of a homogenous style or genre, thus minimising the possibility of subjects' biases influencing responses; (b) that this style should possess face or ecological validity to the subject sample; (c) that they should represent a wide range of complexity/familiarity within this style; and (d) that none of the excerpts should previously have been heard by any of the subjects, so as to minimize the probability of ratings being influenced by external factors. To fulfill all these criteria, it was decided to employ excerpts of "new age/ambient house music." This is a genre of modern popular music which was currently fashionable amongst the subject population (i.e., university students) at the time of the study. Recordings of this genre are readily identifiable as such, and have the great advantage of varying widely in objective music complexity.

Subjects

The subjects were 75 university undergraduates, 24 males and 51 females, with a mean age of 21.5 years (range 18 - 46 years, $SD = 6.28$). On the basis of four independent judges' assessments of subjects' responses to a self-report measure of music training and experience (Appendix A, Section B), 27 were assigned to a high training group, 26 to an intermediate training group, and 22 to a low training group.

Music excerpts

Thirty-nine of the 60 excerpts were selected from recordings of new age music listed in the Music Master Catalogue (1993), while 21 suitable excerpts by other artists were also selected. Only nonvocal excerpts were taken from these pieces. A representative 30 s excerpt of each was recorded on audio tape. Three different quasi-random orderings of the 60 excerpts were recorded, with a 10 s gap between each to allow subjects time to mark their ratings. Each of the three orderings began with 3 additional practice excerpts for subjects. The names of the excerpts, the artists, and the style of music were withheld from subjects throughout. Titles from which the 60 excerpts were selected are listed in Appendix B.

Design and procedure

Using 11-point scales, 25 of the subjects rated the excerpts for liking (*Response Sheet A*), 25 for subjective complexity (*Response Sheet B*), and 25 for familiarity (*Response Sheet C*; details of each scale are reproduced in Appendix A). Each excerpt was rated immediately after its presentation. Approximately equal numbers of subjects from the high, intermediate, and low training groups were assigned to each condition, that is, 11, 6, and 8 respectively in the liking condition; 9, 10, and 6 respectively in the subjective complexity condition; and 7, 10, and 8 respectively in the familiarity condition. Each of the three presentation orders of the music was played to equal numbers of subjects in each condition.

Subjects were tested in a single session in groups of 1 to 5. Each group sat in an outward facing semicircle to effectively prevent nonverbal communication. The instructions at the top of the appropriate response sheet were read to them, and the experimenter ensured that they fully understood the definition of liking, subjective complexity, or familiarity (Appendix A) before they began to rate the excerpts. The 3 practice excerpts were played and rated, followed by the 60 experimental excerpts. Subjects in each of the three groups then completed Section B of the response sheet. Any ratings for excerpts that subjects marked as having been recognized subsequently were discarded. At the end of each session, subjects also were asked to rate their degree of attention to the excerpts on an 11-point Likert scale on which 5 equaled a point midway between *total attention* and *complete lack of attention*. If any subject had given an attention rating of below 5, then his/her ratings would also have been discarded. In practice, all 75 subjects gave an attention rating above 5.

Results

To check for possible order effects in the data, product-moment correlations were computed between excerpt orders 1 and 2, 2 and 3, and 1 and 3 over all 60 excerpts for each of the three rating scales separately: These were 0.87, 0.71, and 0.79 for liking; 0.90, 0.86, and 0.86 for subjective complexity, and 0.85, 0.84, and 0.82 for familiarity. All these coefficients were significant at the $p < 0.001$ level ($N = 60$), which means that we can rule out the possibility of order effects influencing the results.

Figure 1 illustrates a scatter diagram of the relationship between mean liking and subjective complexity ratings for the 60 excerpts. The product-moment correlation coefficient over all of these was -0.43 ($p < 0.001$), which indicates a negative linear relationship. However, visual inspection of the plot suggests a peak at a mean subjective complexity level of approximately 5.5, and thus the equivalent coefficients were computed separately for the 41 excerpts, with a mean subjective complexity rating < 5.5, and the 14 excerpts with a mean subjective complexity rating > 6.0. These coefficients were 0.45 ($p < 0.01$, $N = 41$) and -0.77 ($p < 0.001$, $N = 14$) respectively, which shows that the scatter diagram incorporates statistically significant rising and falling portions respectively below and above the liking peak.

A further test of this inverted-U trend was carried out by means of a curvilinear regression analysis in which the significance-of-fit of linear and quadratic models was calculated (see Kerlinger & Pedhazur, 1973). The linear and quadratic models both showed a significant fit to the data, linear $F(58) = 12.81$, $p = 0.001$; quadratic $F(57) = 29.31$, $p < 0.001$ (the latter is shown in Figure1). In view of these relative values it seems reasonable to

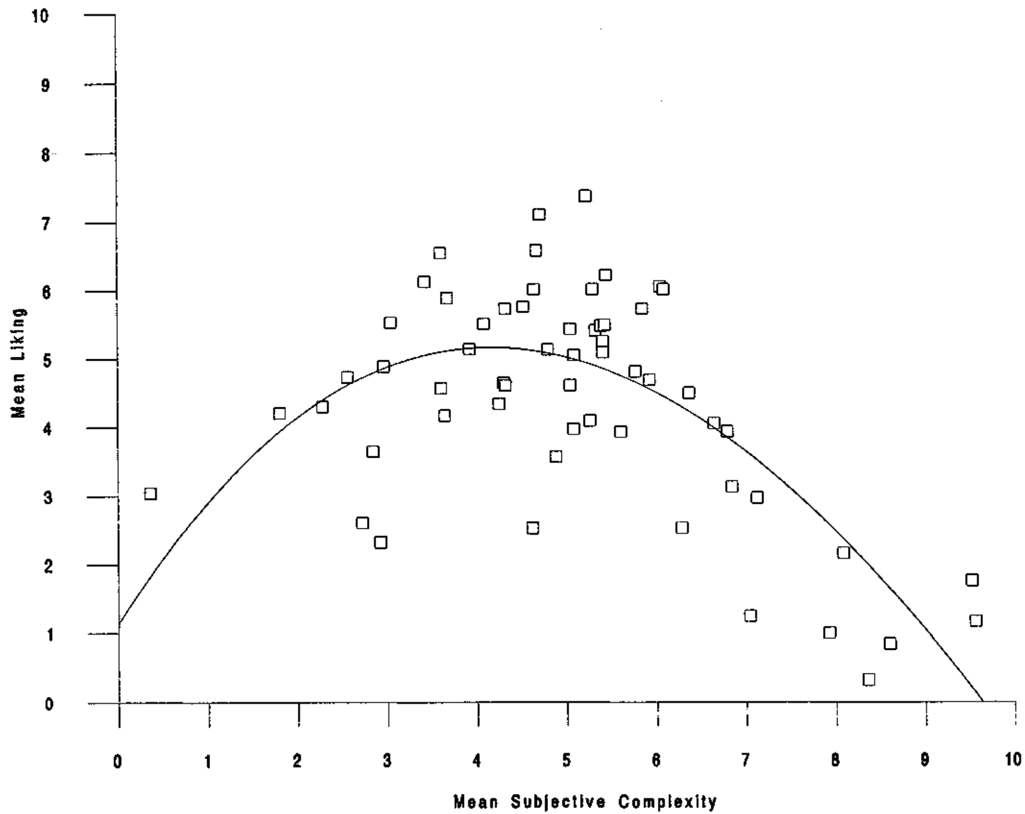

Figure 1. The relationship between mean liking and mean subjective complexity ratings for 60 music excerpts.

conclude that the liking-subjective complexity relationship takes the form of an inverted-U curve.

To investigate this possibility further, Figure 2 shows the same data as in Figure 1, but with the data from the three music training groups plotted separately. It also shows the quadratic curve fits for each group separately. These three curves give further support for the predictions of the optimal complexity model in that the low training group's curve peaks to the left (i.e., lower mean optimal complexity) of the other two curves, with the high and intermediate training groups' curves peaking at approximately the same point. In other words, higher levels of training are associated with higher mean levels of optimal complexity. The statistical significance of these differences was confirmed by means of a one-way ANOVA on the mean subjective complexity ratings for each group, main effect $F(2) = 5.67, p < 0.01$.

Figure 3 shows the scatter diagram of the relationship between mean liking and familiarity ratings for the 60 excerpts. The product-moment correlation coefficient was 0.91 ($p < 0.001, N = 60$), which confirms the visual impression of a very strong positive monotonic relationship.

Figure 4 shows the scatter diagram of the relationship between mean subjective complexity and familiarity ratings for the 60 excerpts. Overall, there was a significant negative correlation of -0.51 ($p < 0.01, N = 60$). Visual inspection of the plot suggests much less clear evidence of an inverted-U relationship than in Figure 1, although there may be a peak at a mean subjective complexity level of approximately 5.0. The correlation coefficient, therefore, was computed for the 28 excerpts with a mean subjective complexity rating < 5.0. It was 0.29, which does not reach statistical significance ($p = 0.14, N = 28$). As with the data in Figure 1, curvilinear regression analysis was performed in which the significance-of-fit of linear and quadratic models was calculated. The linear and quadratic models both showed a significant fit to the data, although the F ratio for the quadratic fit was slightly higher, linear $F(58) = 19.91, p < 0.001$; quadratic $F(57) = 23.42$, $p < 0.001$; the latter is shown in Figure 4.

Although the right portion of the plot in Figure 4 clearly reveals a negative monotonic slope, the nature of the left-hand portion is less clear: the F ratios for the linear and quadratic models were of comparable size, whereas there was a considerable difference between them for the liking-subjective complexity plot (Figure 1). Furthermore, the positive correlation for the rising portion of the putative curve (mean subjective complexity < 5.0) failed to reach statistical significance. Overall, there is evidence in these results for the existence of a weak inverted-U trend as well as for a negative relationship.

Discussion

The results strongly support the predictions of the optimal complexity model as well as those of the preference-feedback hypothesis for Class A stimuli. There is a clear inverted-U relationship between liking and subjective complexity ratings (Figure 1), and a clear positive monotonic relation-

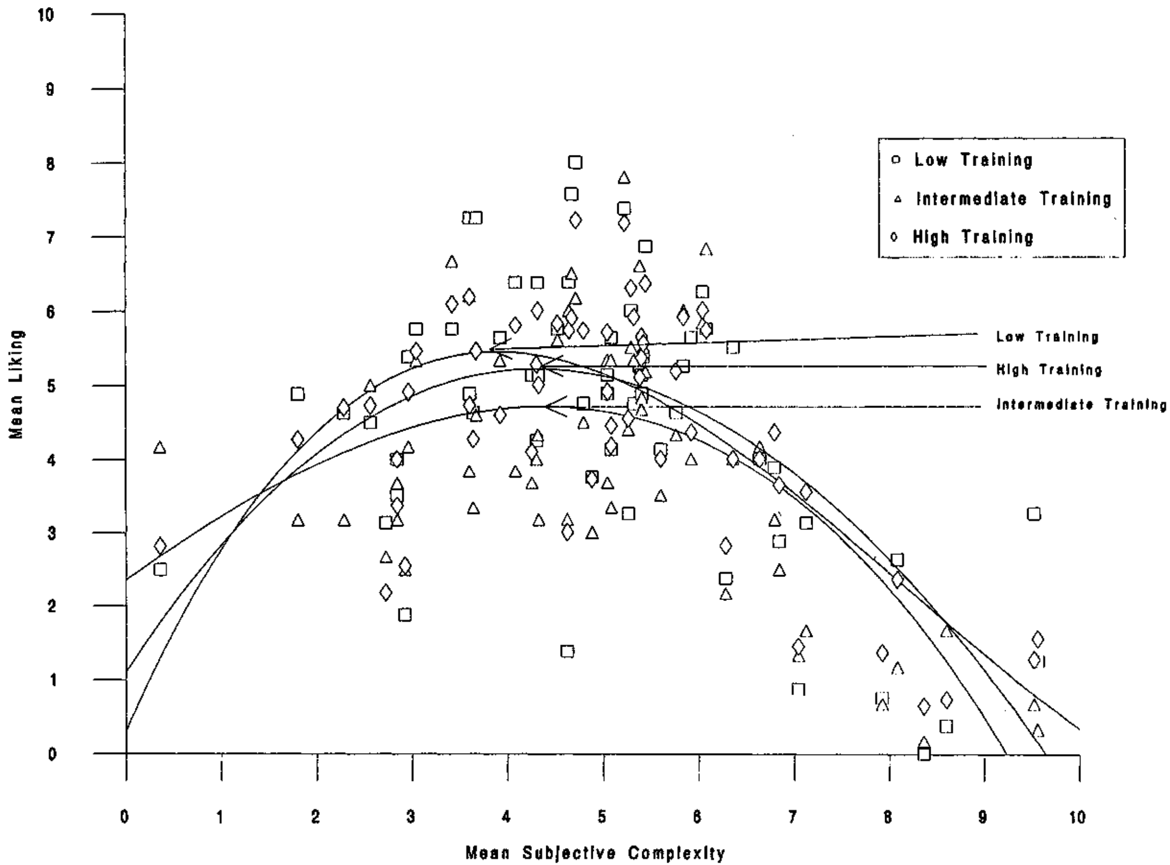

Figure 2. Liking and subjective complexity ratings of the "low," intermediate," and "high" music training groups.

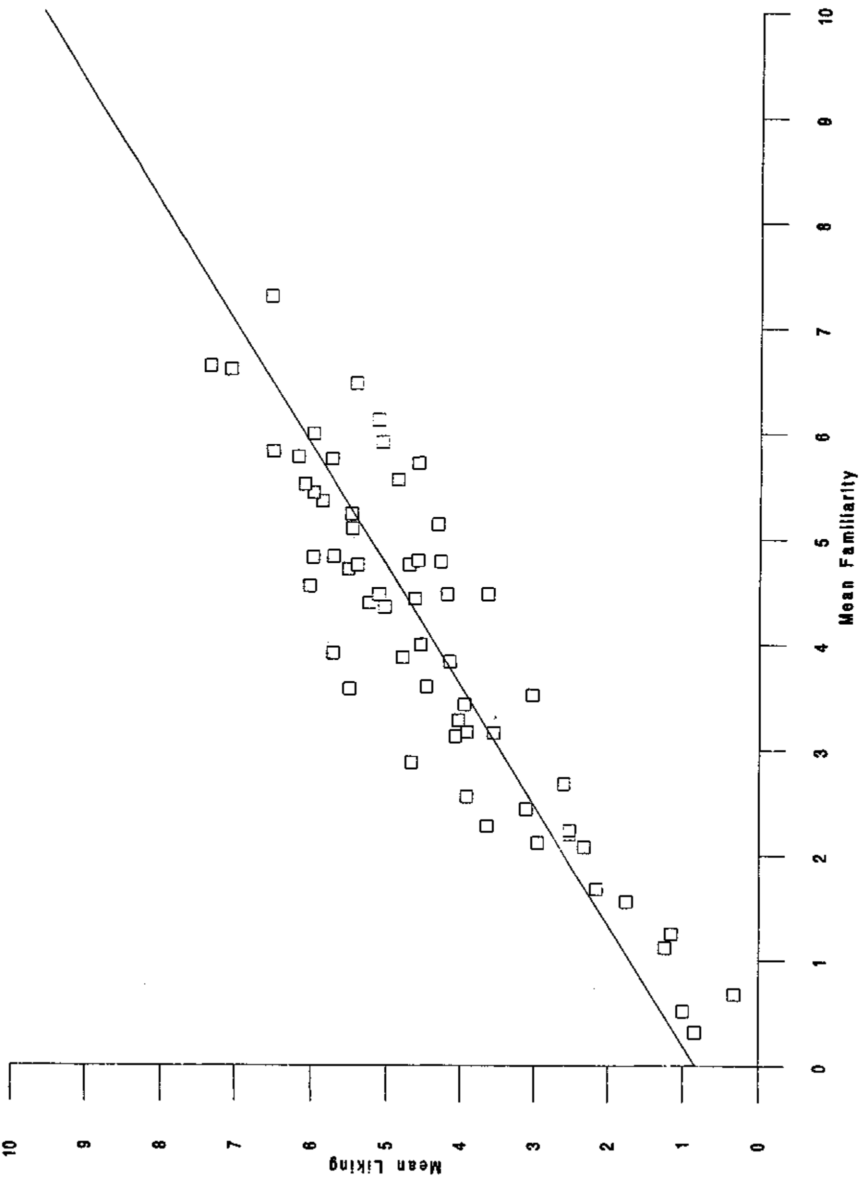

Figure 3. The relationship between mean liking and mean familiarity ratings for 60 music excerpts.

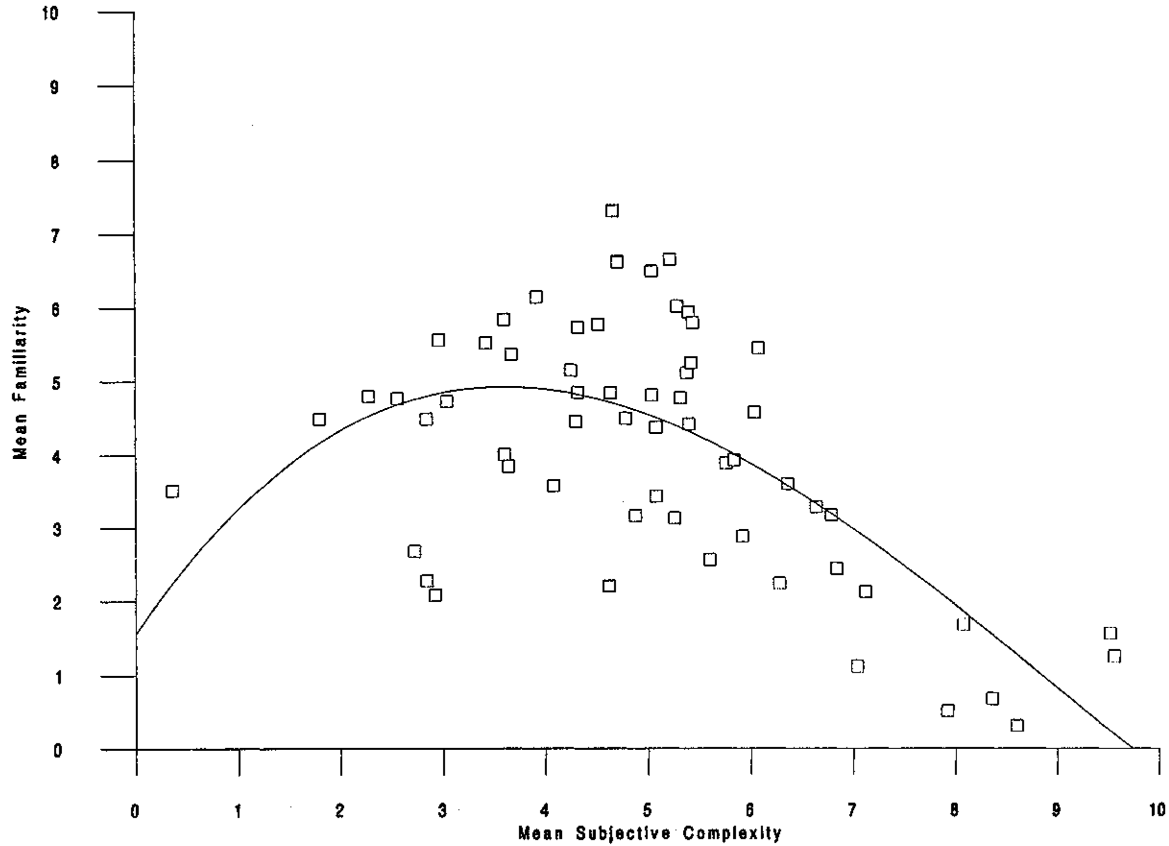

Figure 4. The relationship between mean familiarity and mean subjective complexity ratings for 60 music excerpts.

ship between liking and familiarity (Figure 3). These findings are particularly interesting in that subjective complexity and familiarity have been shown to exhibit different relationships with liking within the same experimental design, i.e., involving ratings of precisely the same stimuli, and this has not been accomplished in any previous research.

Further support for the first of these relationships also emerges from the separate analyses of the three music training groups, since the optimal complexity model predicts that subjects with higher levels of training should prefer music at higher levels of complexity. The plots of the inverted-U curves for the high, intermediate and low training groups in the present study confirm this prediction in that the peak of the 'low training' group's curve is to the left of the curves for the other two groups (Figure 2). The statistical significance of this difference is confirmed by the main effect for training on the one-way ANOVA between the three group means. This confirms that different levels of music training lead to differential perceptions of the complexity of the excerpts.

Neither of the initial hypotheses concerning the previously untested familiarity-subjective complexity relationship (i.e., of a negative monotonic or an inverted-U function) were clearly supported by the results. Although there is no doubt that there exists an overall negative relationship between familiarity and subjective complexity in Figure 4, the regression analysis also reveals some evidence of a quadratic or inverted-U relationship, although weaker for that present in Figure 1. Inspection of Figure 4 shows that there are some points on the curve that might represent the rising part of an inverted U, that is, representing those excerpts with low means for both familiarity and subjective complexity. The correlation coefficient over the 28 of these points with a mean subjective complexity rating less than 5.0, although positive, was not statistically significant.

Although the relationships found between each of the three pairs of these three variables broadly support our theoretical prediction, which indicates that the optimal complexity and preference-feedback models are compatible, full consideration of the overall pattern of relationships leads to a fundamental conceptual problem. If "the expected functions relating experience to preference may be derived from the functions relating complexity to preference. . ." (Heyduk, 1975, p.85), and if the optimal complexity and preference-feedback models are indeed compatible, why do subjective complexity and familiarity bear such strikingly different relationships with liking at a given point in time?

It seems reasonable to speculate that this difference arises because of fundamental differences in the nature and *modus operandi* of the two variables. It is possible to make the distinction between the objective and subjective complexity of a given music stimulus. The former theoretically can be measured, by information or music theoretical means, and subjective complexity is presumably a function of objective complexity and the music knowledge of the listener with respect to that stimulus. Although it may be possible to make a similar conceptual distinction between objective and subjective familarity, however (cf. Hargreaves, 1986), it would be extremely difficult to carry out a valid objective measurement of either of these variables. This is because both of them are essentially independent of the characteristics of the stimulus: They refer only to the exposure of the listener to that stimulus. Put simply, the complexity variables are stimulus-bound whereas the familiarity variables are not.

Furthermore, the familiarity of a listener with a given music stimulus might be thought of as being a product of two separate influences, namely *conscious selection* and *cultural exposure*. According to Colman et al. (1981), the preference-feedback effect occurs for Class A stimuli because they are subject to conscious selection. In the case of popular music, this might involve turning off a radio or buying a particular record. The other component of familiarity with a particular stimulus, over which we have much less control, is that of cultural exposure. We are unknowingly exposed to different specific pieces and genres of music through radio, television, background music in commercial settings and various other media, and this must also be taken into account in the determination of a person's familiarity with a specific excerpt.

This analysis of the two components of familiarity leads to another specific point concerning our own results. In the present study, subjects were required to rate the familiarity of previously unheard excerpts, but within a genre which was very familiar to them. They presumably did so by referring to their knowledge of other exemplars of that genre, and thus their familiarity ratings are dependent on their conscious experience of that genre. In contrast, subjective complexity ratings are tied much more closely to the excerpts themselves. This may help to explain the relationship between these two variables in the present study. It seems plausible that the familiarity ratings of the low complexity excerpts were influenced by the cultural exposure of the subjects to contemporary popular music within the same genre as the experimental excerpts. The dance music which predominated radio airtime and the record charts in the United Kingdom at the time of the study are characterized by its simplicity in relation to contemporaneous styles of popular music and its reliance almost wholly on elecronic instruments. Since the low complexity excerpts used in this study shared these characteristics, exposure to dance music may have increased the familiarity ratings ascribed to them. This "prototypicality effect" could help to explain the nonsignificant but nevertheless positive correlation for the rising part of the putative curve in Figure 4.

In conclusion, this study has provided empirical support for both the optimal complexity and preference-feedback models of aesthetic response, using excerpts of a specific genre of contemporary popular music in a sample of university students for whom the genre is well known. The clear finding that familiarity and subjective complexity exhibit markedly different relationships with liking can be explained in terms of the joint contributions of conscious selection and cultural exposure to the former, and of the interaction between objective complexity and the listener's experience in determining the latter.

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Appendix A: Response Sheets

Response Sheet A: Liking

Section A

Over the next 45 minutes you will hear 60 pieces of music. Each will last for 30 seconds. You will be rating how much you like these pieces. As soon as each piece ends, you should rate the extent to which you liked it. You will have 10 seconds to give your rating. Try to rate your liking for the 60 pieces independently of your liking for the music that you normally listen to. There are no right or wrong answers - your honest opinion is what counts. Try to use the full range of the rating scale, i.e. do not be afraid to give ratings of 0 or 10.

Please give your liking ratings for the following pieces on a scale of 0 to 10 where 0 = 'did not like at all', 10 = 'liked very much', and 5 = midway between the two.

Did not like at all					mid-way					Liked very much
0	1	2	3	4	5	6	7	8	9	10

If you recognize one of the pieces then please put a circle around the rating you give it.

Please give your rating clearly for each piece next to the appropriate number. Before the 60 pieces begin, please rate these 3 practice pieces.

PRACTICE PIECE 1: PRACTICE PIECE 2: PRACTICE PIECE 3:

Now please rate the following 60 pieces:

(Piece Number 1: ....Piece Number 60:)

Section B

1. Sex: (M / F)
2. Age:
3. How many hours a week do you spend deliberately listening to music ?:
4. Which of the following types of music would you say you listened to most ?: Classical / Jazz / Popular & Easy Listening
5. Please describe your level of music training/experience:
6. How much attention did you pay to the pieces ? Please rate the attention you paid on a scale from 0 to 10 where 0 = complete lack of attention, 10 = total attention and 5 = mid-way between the two.

Response Sheet B: Music Complexity

Section A

Over the next 45 minutes you will hear 60 pieces of music. Each will last for 30 seconds. You will be rating how 'complex' you think these pieces are. 'Complex' means how easy it is to predict what the music will do next and how many surprises the music contains. More complex pieces are harder to predict. As soon as each of the pieces ends, you should rate the extent to which you think that piece is complex. You will have 10 seconds to give your rating. Try to rate the complexity of the 60 pieces independently of the level of complexity in the music you normally listen to. There are no right or wrong answers - your honest opinion is what counts. Try to use the full range of the rating scale, i.e. do not be afraid to give ratings of 0 or 10.

Please give your complexity ratings for the following pieces on a scale of 0 to 10 where 0 = 'very low complexity' (i.e. very predictable, simple, and uniform), 10 = 'very high complexity' (i.e. very unpredictable, surprising, and erratic), and 5 = midway between the two.

Low complexity — mid-way — High complexity

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0 1 2 3 4 5 6 7 8 9 10

Further instructions and Section B: As in Response Sheet A.

Response Sheet C: Familiarity

Section A

Over the next 45 minutes you will hear 60 pieces of music. Each will last for 30 seconds. You will be rating how familiar these pieces are to you. You are unlikely to have heard these pieces previously. However, you do not need to have heard the piece previously in order to give it a familiarity rating. 'Familiarity' here involves ideas such as how often you have encountered music that is in a similar vein to each of these pieces; how typical each piece is of the music you have regularly experienced in everyday life; and how common you think each of these pieces is in the world as you see it. More simply, how much does each of the following 60 pieces resemble the music you come across in everyday life ? As soon as each of the pieces ends, you should rate the extent to which you are familar with it. You will have 10 seconds to give your rating. Try to rate your familiarity with the 60 pieces independently of your familiarity with the music that you normally listen to. There are no right or wrong answers - your honest opinion is what counts. Try to use the full range of the rating scale, i.e. do not be afraid to give ratings of 0 or 10.

Please give your familiarity ratings for the following pieces on a scale of 0 to 10 where 0 = 'very uncommon in my experience' (i.e. 'I very rarely encounter music like this'), 10 = 'very common in my experience' (i.e. 'I frequently encounter music like this'), and 5 = midway between the two.

Very uncommon in my experience	mid-way	Very common in my experience

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0 1 2 3 4 5 6 7 8 9 10

Further instructions and Section B: As in Response Sheet A.

Appendix B: Music excerpts

Michael Brook - *Urbana*; Cocteau Twins - *Suckling the mender*; Simple Minds - *Someone up there likes you*; Duran Duran - *Tiger tiger*; Jean Michel Jarre - *Tokyo kid*; Tangerine Dream - *Melrose*; Tangerine Dream - *Three bikes in the sky*; Japan - *Canton*; David Bowie and Gorgio Moroder - *The myth*; Enya - *After ventos*; Britt Fairclough - *Ode to Barbara Mallen*; Jean Michel Jarre - *Oxygene part IV*; Mick Karn - *Tribal dawn*; Lush - *Scarlet II*; Mike Oldfield - *Weightless*; Enigma - *Callas Went Away*; Suzanne Ciani - *Mosaic*; Suzanne Ciani - *Summer's day*; Cocteau Twins - *Fotzepolitic*; Cocteau Twins - *Cico buff*; Paul Mergener and Michael Weisser - *Power of independence* (P); Michael Brook - *Shona bridge*; Michael Brook - *Red bridge*; Jon Hassell - *Ravinia/ Vancouver*; Jon Hassell - *Pagan*; Jon Hassell - Mombassa; Cocteau Twins - *Spooning good singing gum*; Brian Eno - *Ju ju space jazz*; Klaus Schulze - *Gringo nero*; Klaus Schulze - *Trancess;* Klaus Schulze - *Brave old sequence;* Klaus Schulze - *The big fall;* Klaus Schulze - *The big fall* (see note 1); Aqua Regia - *Aqueanosolo*; Paul Lansky - *Idle chatter*; James Dashow - *Sequence symbols*; C. Barlow - *Relationships for melody instruments*; S. Kaske - *Transition nr.2*; Denis Smalley - *Clarinet threads*; Tangerine Dream - *Song of the whale (Pt.1-from dawn)*; Kraftwerk - *Kometenmelodie* 2; Amnon Wolman - *A circle in the fire* (P); Software - *Julius-dream*; Dead Can Dance - *As the bell rings the maypole spins*; B12 - *Basic emotion*; B12 - *Telefone 529*; David Bowie and Gorgio Moroder - *Irena's theme*; Jean Michel Jarre - *Oxygene part II*; Extreme - *Trasparenza*; Suzanne Ciani - *Aegean wave*; Fuse - *A new day*; Fuse - *Theycch*; Jon Hassell - *Courage*; Michael Brook - *Ultramarine*; Michael Brook - *Lakbossa*; Paul Mergener and Michael Weisser - *Timber-wave-reflections*; Brian Eno - *Distributed being*; System 7 - *Over and out*; Recoil - *Stone*; Recoil - *The sermon*; Recoil - 2; Tangerine Dream - *Poland* (P); Tangerine Dream - *Astral voyager*.

Note. This second excerpt was so different from the preceding item as to justify its inclusion as a separate excerpt. (P) denotes practice excerpt.