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Music Hath Charms . . . And Can Influence Helpfulness¹

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Eighty university students, half men and half women, were distributed evenly among 4 conditions in a one-way design. Three of the groups heard a seven-minute-long musical selection, either soothing, stimulating, or aversive in nature, while the remaining subjects were not exposed to any music and sat still. Ratings indicated that the soothing and stimulating music created somewhat different positive moods while the aversive music tended to arouse negative feelings. Those who heard the soothing music were most apt to be helpful immediately afterwards, significantly more so than the aversive music or no music subjects, perhaps because of the ideas evoked by this selection.

We like to think of ourselves as actors who initiate and steer our behavior to suit our purposes rather than as reactors who respond more or less involuntarily to situational influences. Yet we also know that we can be affected almost unthinkingly at times by the conditions surrounding us—the heat of the day, the presence or absence of other persons, national and religious symbols, and the noises in our environment. We can even be influenced by the music we hear. Back in 1697 William Congreve observed that "Music hath charms to soothe a savage breast/To soften rocks, or bend a knotted oak." In a less picturesque way, he was saying that music can alter the listener's mood, calming anger and promoting love and affection.

Twentieth century research supports this time-honored wisdom. Studies of music in industry, for example, suggest that industrial music helps the performance of simple repetitive jobs and can also improve employee morale (Anastasi, 1964). Music therapists have also frequently attested to the beneficial effects of music and cite studies showing that soft background

¹The experiment was carried out by the first author under the second author's supervision.

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music tends to heighten pleasant interactions (Barmel, 1973; Chertock, 1974; Preueter & Mezzano, 1973). Musical harmonies can facilitate harmonious relationships.

The present study asks whether music can influence, by altering their mood, the listeners' willingness to help others. A great many experiments have now demonstrated that people who feel good are especially likely to aid those in need (Aderman, 1972; Berkowitz & Connor, 1966; Isen, 1970; Isen & Levin, 1972; Isen, Clark & Schwartz, 1976; Isen, Horn & Rosenhan, 1973; Levin & Isen, 1975; Moore, Underwood & Rosenhan, 1973; Rosenhan, Underwood & Moore, 1974). This help-enhancing positive mood can arise in various ways: by completing an assigned task successfully, receiving a cookie or some other gift, finding money, reading statements having happy connotations, or reminiscing about happy events. However the good feeling comes about, apparently chances are that it will promote helpfulness. Pleasant music could therefore increase the chances that the listeners will aid others by improving their mood.

But music can create negative as well as positive feelings. The audience might like some selections and detest others. They might even regard some pieces as nothing but "noise," and of course, noise can be aversive (Glass & Singer, 1972). Sustained unpleasant noise can dampen the listeners' willingness to assist others (Mathews & Canon, 1975); especially if they do not believe they can terminate the unpleasant sounds (Sherrod & Downs, 1974). However, it was difficult to specify beforehand just what effect the aversive music employed in this study would have. For one thing, while some studies have found that a bad mood can lessen efforts in behalf of others (Aderman, 1972; Isen et al., 1973; Moore et al., 1973), there are times when an unhappy person will be helpful (Aderman, 1972; Isen, 1970; Rosenhan et al., 1974). We cannot adequately account for this difference as yet although some suggestions have been offered (Cialdini, Darby & Vincent, 1973). Furthermore, we are also uncertain whether the aversive stimulation used here produced moods that were akin to the negative feelings that dampened helpfulness in the earlier experiments.

This last point raises the possibility that different kinds of negative moods might have different effects on the listeners' willingness to be helpful. The same possibility exists in the case of positive moods. While a broad variety of pleasant events can foster helpfulness, they might do this by creating the kinds of positive feelings that facilitate giving benefits to others. Consider the possible impact of different types of pleasant music. After hearing some selections the listeners might feel calm, content and relaxed, while other musical compositions might cause them to be more actively joyful. Would both kinds of music influence the audience in the same way? Although both are pleasant, the former pieces might evoke some types of ideas that are not

elicited by the latter compositions. Isen and her colleagues (Isen, Shalcker, Clark & Karp, 1978) have recently suggested that happy events tend to promote helping by increasing the likelihood of positive ideas. But some positively-toned ideas might do more than others to increase willingness to aid others. The thoughts stimulated by soothing and peaceful music might conceivably smooth the way for some beneficial actions in some situations, whereas the ideas evoked by joyous, buoyant selections might lead to a fairly different outcome.

Method

Subjects

Eighty male and female university students were distributed among the 4 conditions in the one-way design, 3 exposed to music and 1 required to sit in silence. Although each of these conditions had 20 subjects, 10 of each sex, the participants were assembled in 21 groups varying from 2 to 5 people in size, with 5 groups in each of the musical conditions and 6 in the other. All of the subjects received credit toward their course requirement in introductory psychology.

Procedure

Musical selections. Two selections from Mendelssohn's "Songs Without Words," Op. 19, no. 1 in E minor and Op. 38, no. 4 in A major, were chosen to instill a soothing mood, while Duke Ellington's "One O'Clock Jump" was picked as a stimulating piece, and John Coltrane's "Meditations" was used for the aversive treatment. Each passage was played for about 7 minutes. In a pilot study 50 judges of both sexes, assembled in 10 groups, listened to each of these selections in counterbalanced order and rated their mood at that time. These ratings indicated that the music could successfully influence the listeners' mood. The judges reported that they felt most peaceful, content, and contemplative after hearing the Mendelssohn pieces, and had the lowest level of these feelings after the agitated Coltrane music. This latter passage also tended to arouse the strongest annoyance, boredom, and irritation.

Experiment proper. The subjects were given a mood questionnaire as soon as they were seated and the female experimenter asked them to indicate their present feelings. Once these ratings were made the experimenter told the participants either that they would hear a musical passage (in the three music conditions) or that they were serving in the control group and would merely sit still for 7 minutes.³ She informed the students that the study had to do

³There is a question as to how adequately this no music condition can serve as a control for the musical treatments; the people in the former condition might have found

with the effect of music on the listeners' feelings.⁴ Unlike the pilot session, the group was exposed to only one of the selections or to the period of silence. When this interval had run its course and the appropriate treatment was over, the subjects again filled out the mood questionnaire and then were informed that the study was over.

But rather than just dismissing the participants, the woman asked the assembled students for a favor. After saying that they were "under absolutely no obligation to comply with this request," she told them that she was working for a professor who was giving her far too much work and that she required additional subjects for yet another experiment which had nothing to do with the present investigation. She could use as many subjects as she could get, and for anywhere between 15 minutes and 2 hours, if she was to complete her own experiment before the end of the semester when she would be leaving. In conclusion, she repeated that the volunteers would be doing her a personal favor since she could not give experimental points for their service.

Dependent measures. As soon as the experimenter had told the subjects about her need for volunteer subjects, she distributed a one-page form which they were to fill out if they were willing to serve in her study. Those who could not participate were to indicate this on the paper. The subjects' expressed willingness to be in the experimenter's investigation and the amount of time they volunteered are taken as the indicators of their motivation to help the woman.

The mood questionnaires presented the participants with 22 adjectives and they were to rate the extent to which each term characterized their present feelings on a five-step scale ranging from "little or no such feeling" to "very strong feeling."

Statistical analysis. Since the subjects were run in groups, the data should ideally be analyzed at the group level. However, there are problems in performing such an analysis. It obviously would be based on very few degrees

it unpleasant to sit still for seven minutes doing nothing. However, giving them an activity to carry out could have inserted a possible confound. This activity might have been pleasant in itself or perhaps unpleasant because the subjects found it meaningless or difficult. Thus, we think it best to view this condition only as one in which the subjects merely sat in silence.

⁴This information about the study's purpose might have intensified the subjects' response to the music, perhaps by making the subjects more aware of how they were reacting to the given selection. However, this information was also the "cover story" making our primary interest in the subjects' response to the later request for help. We did not want to give the students another task to perform while the music was played in order to ensure that they attended to the particular passage, and assumed that unless we were straightforward about why we wanted them to listen to the selection, they would figure it out anyway. Further research could investigate whether our results were facilitated by this heightened attention to the music.

of freedom and substantial condition differences might not attain the conventional levels of significance; moreover, the groups are not always of the same size. Nevertheless, a preliminary examination was carried out to determine if there were strong trends that held above and beyond the variation within the groups. For each measure we obtained the mean score for the men and women separately in each of the 21 groups. These scores were then used in a preliminary analysis of variance. It was found that the music conditions differed significantly on 12 of the 22 mood measures and the sex of the participant did not have much of an effect. Moreover, the group-level help scores also yielded fairly sizable differences among the conditions. We therefore concluded that the subjects within a group could be considered as independent of each other for our purposes although there could have been some within-group effects as well. The following analyses are therefore based on the individual responses. Because of the absence of clearcut sex differences, the following analyses also disregarded the participants' sex.

Results

Mood ratings. Several multivariate analyses of variance were conducted in order to assess the effects of the musical "treatments" on changes in self-reported moods from just before to immediately after the experimental variation.⁵ One set of analyses was based on a comparison of the musical conditions with the no music group. First, a preliminary MANOVA yielded a significant F ratio, $F = 2.64, p < .001$, indicating the presence of significant condition differences in these mood changes. (The significant univariate Fs from this analysis [$p < .05$] are shown in the last column of Table 1.) After this, other multivariate analyses were performed comparing each musical condition separately with the no music group. The F ratios were again significant, and Table 1 summarizes the univariate results: those mood changes in the given experimental condition which were significantly different from the changes on the same items in the group sitting silently. And finally, although these were of lesser interest to us, we also carried out similar multivariate analyses which compared the mood changes in the aversive music condition with the changes in each of the three other groups. Again, all the F ratios were significant.

Although the mood terms were presented to the subjects in a fixed jumbled order, they are listed in Table 1 in terms of 4 a priori categories: (a) clearly positive moods (items 1 through 6 in this table), (b) more neutral moods (7-10), (c) negative moods of a depressed and relatively passive nature

⁵The conditions did not differ significantly in these mood ratings prior to the experimental variations.

TABLE 1
CHANGES IN MOOD AFTER THE MUSIC "TREATMENT"

	No music	Stimulating	Aversive	Soothing	Overall Fa
1. Delighted	-.15	+.50	-.25	+.50*#	3.12
2. Soothed	+.15	+.60	-.65*	+1.45*#	11.36
3. Content	-.05	+.05	-1.15*	+.75*#	14.16
4. Peaceful	-.25	-.30	-1.30*	+.65*#	12.26
5. Happy	-.30	+.15*	-.85*	+.20*#	5.80
6. Joyful	-.50#	+1.05*#	-.75*	+.40*#	15.73
7. Contemplative	+.25#	-.15	-.50*	+.40#	5.57
8. Indifferent	+.30	-.30	.00	-.45#	
9. Surprised	+.35	+.20	+.80	+.15	
10. Startled	-.30#	+.05	+.45*	.00	
11. Bored	+.70	-.40*#	+1.50*	-.35*#	9.26
12. Tired	+.30	-.40*#	+.40	.00	2.90
13. Downhearted	+.10	-.55*#	+.70*	.00#	4.81
14. Distressed	-.10	-.15#	+.80*	-.15#	6.37
15. Depressed	.00	-.40*#	+.10	.00	
16. Sad	+.10	-.35*#	+.05	+.10	
17. Anxious	-.40	-.40	-.35	-.35	
18. Scared	-.35	-.35	-.85*	-.40#	
19. Irritated	+.35	-.10*#	+1.35*	-.25*#	10.06
20. Annoyed	+.05	-.25*#	+1.85*	-.40#	22.90
21. Angry	+.30	-.05#	+1.00*	-.15#	7.13
22. Violent	-.05	-.15	+.50*	-.15#	4.22

Positive numbers indicate a change toward more of the specified mood, while negative scores refer to a change toward less of the mood.

*The "Overall F ratio" refers to the results of the multivariate analyses of variance comparing the three music condition means with the no music group. The F ratios given are those for the univariate analyses. Only significant ($p < .05$) F ratios are reported.

*In the multivariate comparison of only this particular condition with the no music group, this mean differed significantly ($p < .05$) from the corresponding mean in the no music group.

#Significantly different from the corresponding mean in the aversive music condition in the multivariate comparison of this condition with the aversive music group.

(11-18), and (d) negative moods of an angry and more active nature (19-22). Looking at these crude categories, we can first assess the mood changes in the people who could only sit in silence. Over all items, with the exception of "bored," there was not much change in this group—a slight trend to a less positive mood (mean change = $-.19$), and even smaller trends to very slightly more depressed (mean change = $+.06$) and angry (mean change = $+.11$) moods. Thus, the no music condition appears to be a fairly satisfactory baseline against which to match the mood changes in the conditions exposed to the musical passages.

The table indicates that the musical treatments had their intended effects. The men and women who listened to the stimulating Ellington selection generally felt less tired, sad, and depressed (significantly less than the no music or aversive music subjects), while the changes in these moods in the other musical groups did not differ reliably from the baseline silent condition. They also reported themselves as less downhearted after hearing the stimulating composition, whereas those in the aversive group indicated an increase in this particular feeling and the soothing music subjects on the average said they had no change at all in this mood.

After listening to the soothing music by Mendelssohn, on the other hand, the subjects became significantly more soothed, content, and peaceful than those in the silent group, although their counterparts who had been exposed to the stimulating selection expressed about the same level of changes in these feelings as those in the no music condition. As expected, this piece was indeed soothing rather than exciting. By contrast, we can also see that the people who listened to the unpleasant Coltrane composition reported a decrease in these feelings of contentment and peace as well as in their feelings of being soothed, joyful, and happy. But most clearly of all, the aversive music tended to arouse the negatively active moods so that the participants in this condition had a significantly greater increase in feelings of irritation, annoyance, and anger than did the people in the other musical groups. All in all, the people in the Ellington condition seemed to be most actively joyous, while those who heard the Mendelssohn music felt comparatively peaceful and relaxed, and the Coltrane subjects experienced the greatest annoyance.

Helpfulness. A simple index of helpfulness was computed by giving the subject a score of 1 if s/he agreed to help the experimenter and a score of 0 if s/he did not comply with the woman's request. The amount-of-time-offered measure was based on the number of 15 minute units the subject said could be given to the experimenter's research, with the refusing subjects being assigned a score of 0. Both indices yielded a significant main effect for the music conditions and no reliable differences between the male and female participants, $F(3,72) = 3.58, p < .05$, and $4.48, p < .01$, respectively. As Table 2 shows, the students who had listened to the soothing music were

TABLE 2
HELPLEFULNESS INDICES IN MUSIC CONDITIONS

	Soothing music	Stimulating music	No music	Aversive music	F
Help offered yes or no	0.90+*	0.65	0.60	0.45	3.58
Amount of time	3.50+*	2.60+	2.05	1.42	4.48

The time measure is in 15-minute units, with those not offering help given a score of zero.

+Mean is significantly different at the .05 level by *t* test from the corresponding mean in the aversive music condition.

*Mean is significantly different at the .05 level by *t* test from the corresponding no music mean.

significantly more likely to offer assistance to the supplicant than the people in any of the other conditions. The aversive music tended to dampen the participants' willingness to assist the experimenter, but not significantly so. Much the same pattern was obtained with the amount of time the subjects offered the woman. Again, those who had heard the Mendelssohn pieces were most helpful, reliably more so than those in the no music and aversive music conditions and almost significantly more ($p < .10$) than the people who had listened to the stimulating Ellington composition. This latter group volunteered significantly more time than those who were exposed to the unpleasant Coltrane music, but not more than the subjects who merely sat quietly.

Discussion

The present data indicate that comparatively brief musical selections can alter the listeners' mood and influence their willingness to comply with another person's request for assistance. However, this heightened helpfulness came about primarily when the subjects were pleasantly calm and peaceful. The negative mood aroused in this study did not dampen the participants' motivation to give assistance. Perhaps this was because the aversive passage was only 7 minutes long. It could well be that a much longer exposure to this kind of agitated and even raucous music would be so disturbing that it would seriously dampen the audience's willingness to help someone, especially if the listeners believed they had little control over this unpleasant noise.

Our results do suggest that there are different kinds of positive moods, and that these pleasant feelings do not affect the listeners' willingness to be helpful in the same way. While the subjects exposed to the soothing Mendelssohn pieces did not report feelings that were distinctly different from those experienced by the Ellington subjects, the former generally reported becoming somewhat more peaceful and relaxed, while the latter seemed to become a bit more joyous. The soothing music evidently had the greatest impact on the subjects' willingness to be helpful. Those who heard this music tended to be somewhat more helpful than those who listened to the stimulating selection. These behavioral differences did not attain statistical significance ($p < .10$), but the means in the Mendelssohn condition were the only ones that were reliably higher than those in the no music group. Thus, only 2 of the 20 subjects hearing the soothing music, one man and one woman, did not offer help, and this group volunteered reliably more time than those who had listened to the aversive piece or who had not heard any music at all. By comparison, about a third of those in the stimulating music condition refused to aid the supplicant and this group volunteered, on the average, only slightly more time than the no music subjects.

Assuming this difference is a reliable one, we are inclined to favor the type of explanation advanced by Isen and her associates (Isen et al., 1978). These investigators had suggested that pleasant moods can enhance the willingness to aid others by facilitating the arousal of positive and even prosocial ideas and memories. Feeling good, a person is especially apt to have the kind of thoughts that encourage helpfulness. In the present case, then, it might be that the pleasantly peaceful and relaxed feelings engendered by the soothing music were most likely to evoke the kinds of ideas that supported helpful behavior.

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Effect of Level of Challenge on Pressor and Heart Rate Responses in Type A and B Subjects¹

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The present study examined the relationship between the Type A coronary-prone behavior pattern and the magnitude of cardiovascular response induced by varying levels of environmental challenge. In a 2 X 2 experimental design, Type A and B (noncoronary-prone) subjects ($n = 80$) were randomly assigned to either high or low challenge instructional conditions for both the cold pressor (CP) and a choice reaction time task (RT). Overall, across both tasks, Type A subjects responded with greater systolic blood pressure (SBP) and heart rate (HR) elevation than Type B subjects. While these differences between the Types tended to be larger in the high challenge condition, some differences were also observed under low challenge. Component analyses of the Pattern revealed that high hostile/competitive Type A's responded to *both* low and high challenge instructions in the CP and RT tasks with physiologic elevations comparable to that displayed by globally defined Type A's receiving high challenge instructions. The present findings tentatively suggest that (a) high hostile/competitive Type A's respond to even mild challenge with enhanced physiologic response; (b) globally defined A's tend to evidence the physiologic elevations when specifically challenged; and (c) Type B's show much smaller

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