

The Effects of Selected Classical Music on Self-Disclosure

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A cognitive theory of emotion and aesthetics in music suggests that listening to music is cognitively and in turn emotionally arousing. In addition a theory of inhibition and psychosomatic disease suggests that disclosing personal and traumatic information is psychologically and physically beneficial. This study examined the effect of music within a disclosure setting on the use of cognitive and emotional language in 85 undergraduates. Participants in both the background music and no music conditions wrote or spoke into a tape recorder, about the most significant event or experience of their lives. In addition to language, self-reported moods, subject impressions about the disclosure experience, and the environment were examined. Results indicate that background music had an effect on the disclosure topics chosen, promoted cognitive suggestion and expression, and increased the enjoyment of listening to classical music.

Introduction

Various studies have yielded inconsistent findings related to the impact of background music on human behavior, cognition, and emotional interpretation (Blood & Ferriss, 1993; Kiger, 1989; Madsen, 1987; McElera & Standing, 1992; Milliman, 1986; Stratton, 1992). Some researchers conclude that background music enhances task performance, others conclude that background music interferes with task performance, still others report no effects of background music (Davidson & Powell, 1986; Kiger, 1989; Sogin, 1988).

Investigations that examine the effects of background music on psychotherapy yield equally inconsistent results (Bonny, Cistrunk, Makuch, Stevens, & Tally, 1965; Dollins, 1956; Mezzano & Prueter, 1974; Sommer, 1958; Traub, 1969). Theoretically, Bever (1988) proposes that the very act of listening to music involves perceptual and cognitive processes that are then translated into emotion by a lis-

tener. In general, researchers and clinicians tend to agree on the therapeutic benefit of using background music as well as the need for rigorous study of the relationship between background music and therapeutic outcomes. Further, researchers and clinicians appear to share a common rationale for using background music in therapy settings. Overall, they believe that music alters behavior, intensifies existing moods and emotional states, improves client/counselor as well as client/client relationships, promotes self-exploration as well as self-disclosure, and concretely embodies life experiences (Bonny et al., 1965; Caspy, Peleg, Schlam, & Goldberg, 1988; Devlin & Sawatzky, 1987; Dollins, 1956; Merrill & Andersen, 1993; Mezzano & Prueter, 1974; Oguchi, 1992; Ortiz & Johnson, 1991; Schiff & Frances, 1974; Sommer, 1958; Traub, 1969).

Results from a variety of disclosure studies support the premise that the act of translating deep feelings and thoughts into oral or written language is psychologically and physically beneficial. However, differences between the use of oral and written language are inconclusive (Esterling, Antoni, Fletcher, Margulies, & Schneiderman, 1994; Esterling, Antoni, Kumar, & Schneiderman, 1990; Murray, Lamnin, & Carver, 1989; Pennebaker & Beall, 1986; Pennebaker, Colder, & Sharp, 1990; Pennebaker, Hughes, & O'Heeron, 1987). The underlying assumptions for disclosure studies are that (a) the use of emotion language is associated with affective discharge or catharsis, (b) the use of cognitive language is associated with assimilation, and (c) both processes are seen as psychotherapeutically beneficial (Pennebaker, 1990).

There is persuasive evidence for the psychotherapeutic impact (Francis & Pennebaker, 1992; Pennebaker, 1988) and physiological impact (Esterling et al., 1990; Esterling et al., 1994; Pennebaker, Kiecolt-Glaser, & Glaser, 1988) of translating thoughts and feelings into language as well as the use of music as a psychological and physiological stimulus.

The purpose of this study was to investigate the effects of selected classical music in the environment (background music) during disclosure on the oral and written expression of thoughts and feelings as well as on post-disclosure mood. Specifically, it was hypothesized that both participants hearing background music and writers would report greater positive and negative mood, and use more negative emotion language while both talkers and participants hearing background music would use more cognitive language.

Method

Participants

Eighty-five undergraduates (37 = males; 48 = females) enrolled in music appreciation classes at Southern Methodist University volunteered for the study. Course credit was given to those who volunteered. Age ranged from 18–22 years. None of the participants were music majors. None of the participants reported a preference for listening to classical music.

Procedure

Participants were randomly assigned to one of four conditions: either a writing with background music condition, a talking with background music condition, a writing without background music condition, or to a talking without background music condition. Thus, there were two levels of Disclosure Environment, one with background music and one without. Further, there were two levels of Disclosure Method, one was writing and one was talking.

Each participant disclosed in a soundproof 10 × 10 room equipped with a writing desk and chair, computer, stereo system, and a reclining chair. The room is adjoined by a control booth, from which audio equipment was monitored. Upon arrival at the intervention site subjects completed a 23-item General Questionnaire and the Positive Affect Negative Affect Schedule (short form PANAS).

After completing the General Questionnaire and PANAS, each session began with a 10-minute induction that included breathing exercises and suggestions for internal focusing imagery. For example participants were instructed to pay attention to their normal breathing rate, to vary their breathing rate by inhaling deeply or exhaling fully and holding their breath, and finally to allow their breathing to return to normal. During the breathing exercises participants were asked to pay attention to their heartbeat and to their chests rising and falling. Following the breathing exercises participants were asked to imagine their breath moving a ball of energy through their body (e.g., shoulders, elbows, wrists, hands, torso, hips, knees, ankles, and feet). A 30-minute disclosure portion followed the induction.

For the disclosure portion, all participants were asked to describe significant event(s) or experience(s), with an emphasis on relating their deepest thoughts and feelings. Further, they were asked to

choose events or experiences that they had not previously disclosed. Immediately following the induction and task directions, the experimenter left the room, and the disclosure portion began. Following the disclosure portion each participant completed the PANAS-X (expanded version), and a postexperimental questionnaire (PEQ). All participants were debriefed immediately following posttests and offered free counseling services to process any issues that arose during disclosure. At the conclusion of data collection, all participants were informed as to the nature and purpose of the study.

Materials

The background music consisted of musical selections that were compiled by Bonny (1978). Specifically, the compilation program titled "Peak Experience" was used (see Clark 1998 for a discography of the recordings compiled on that program). The loudness level of the music was consistent across participants. The volume was determined to be appropriate and comfortable for either writing or talking by eight students and the researcher, after they practiced disclosing while music was playing.

The music was played through a JVC cassette deck (TD-R431) and Mission Electronic speakers. In the writing conditions, participants entered their writing samples on a Macintosh SE computer. In the talking conditions, participants were recorded using a lapel microphone and recordings were stored on a cassette tape.

Measures

The General Questionnaire was used to assess prior music experience and music listening preference. In addition it included questions regarding health behaviors. These items were considered distracter items. The General Questionnaire was adapted from a questionnaire used in a related disclosure and health study (Pennebaker et al., 1990).

The 20 item PANAS measures two broad general mood factors, positive affect and negative affect, and was used to assess predisclosure mood differences (Cronbach's coefficient alpha ranging from .84 to .90 for Positive Affect and from .83 to .88 for Negative Affect). The 60-item PANAS-X was used to measure postdisclosure mood (Watson & Clark, 1991). The PANAS-X measures the two broad general mood factors: Positive Affect (PA) and Negative Affect (NA), which are further subdivided into Fear, Hostility, Guilt,

Sadness, Joviality, Self-Assurance, Attentiveness, Fatigue, Serenity, Shyness, and Surprise. The 11 subdivided scales have also been shown to have acceptable internal consistencies (Cronbach's coefficient alpha ranging from .72 to .91). Various versions of the PANAS have proven sensitive and meaningful as affect measures (Francis & Pennebaker, 1992; Pennebaker et al., 1990; Watson & Clark, 1991; Watson, Clark, & Tellegen, 1988).

The postexperimental questionnaire served two purposes. First, as a dependent measure, it included questions regarding (a) how personal the material was, (b) how emotionally revealing the material was, and (c) the environment. Second, as a control measure and manipulation check, it included questions relevant to (a) the amount of desire and withheld desire to speak to others about the event prior to the study, (b) how often the event had been thought about, (c) how many people had been spoken to about the event prior to the study, and (d) the environment. Responses to questions were tallied on 7-point Likert scales ranging from not at all (1) to a great deal (7). The postexperimental questionnaire was adapted from questionnaires used in similar disclosure and background music experiments (Murray et al., 1989; Pennebaker et al., 1990; Sogin, 1988).

Students transcribed the audio tape recordings of disclosure material. Computer text files of written disclosure samples and recorded disclosure samples were corrected for spelling and grammar. Following this, the text files were analyzed by the LIWC. The LIWC produces word totals on 62 language dimensions relevant to four categories of information. The categories of interest in the present study include emotional expression (negative emotionality, depression, & anxiety) and cognitive mechanisms (acceptance & tentativity). Further, the present study also informally examined content domains (body, relatives, & college), and language composition (negations, about me, self-references, you references, & passive voice verbs). Francis (1993) established the external validity of LIWC by performing correlational analyses of LIWC output and judges' ratings (Pearson correlations ranged from .64-.94).

Results

Control Measures

Due to a collation error with the condition packets, 32 participants did not receive questions relevant to the disclosure environ-

ment. Nevertheless, one-way ANOVAs were computed for pretest positive affect and pretest negative affect, awareness of the environment ($N = 53$), the extent the environment was considered enjoyable ($N = 53$), the extent the environment was considered aesthetic ($N = 53$), amount of desire and withheld desire to speak to others about the disclosure topic prior to the study, the number of people spoken to about the disclosure topic prior to the study, how often the disclosure topic had been thought about prior to the study (all $Ns = 85$ except as noted). The results of these analyses, as shown in Table 1, indicated that the groups were equivalent on all the control variables.

Postdisclosure Mood

Factorial analysis of variance yielded no significant differences for mood. Means and standard deviations are presented in Table 2.

Disclosure Essay Emotion Processes

For negative emotionality, neither the main effect of disclosure environment nor the interaction between disclosure environment and disclosure method were significant, $F(1, 81) = 0.04$ and 0.01 respectively. The main effect of disclosure method, however, was significant, $F(1, 81) = 6.93$, $MSE = 0.665$, $p \leq .01$. This analysis revealed that writers expressed significantly more negative emotionality than talkers.

For depression the main effect for disclosure method was significant, $F(1, 81) = 7.70$, $MSE = 0.138$, $p < .01$. An examination of the means revealed that writers expressed significantly more depression than talkers. The main effect of disclosure environment and the interaction between disclosure environment and disclosure method were not significant, $F(1, 81) = 0.28$ and 0.43 respectively. Finally, for anxiety, the interaction between disclosure environment and disclosure method was significant, $F(1, 81) = 6.84$, $MSE = 0.108$, $p \leq .01$. A follow-up analysis of variance for simple effects revealed that participants who wrote while music was playing expressed significantly more anxiety than participants who talked while music was playing, $F(1, 81) = 4.40$, $p < .04$.

Cell means and standard deviations for disclosure essay emotion processes are presented in Table 3. In summary, as expected writers expressed significantly more negative emotion processes than talkers. Unexpectedly, background music only accompanied a greater expression of anxiety for writers when compared to talkers.

TABLE 1

Means, Standard Deviations and Summary of Analysis of Variance for Control Variables by Group

Variable	MT M (SD)	MW M (SD)	NMT M (SD)	NMW M (SD)	F
PA	29.38 (4.95)	32.36 (5.87)	31.38 (8.39)	29.43 (7.55)	1.01
NA	18.05 (8.56)	14.68 (4.73)	14.05 (4.52)	16.43 (6.47)	1.75
*Environmental awareness	4.38 (1.94)	4.93 (1.49)	5.21 (1.85)	4.75 (2.22)	0.46
*Liked environment	5.23 (1.36)	6.29 (0.91)	5.50 (1.45)	6.00 (1.59)	1.68
*Aesthetic environment	4.38 (2.06)	5.14 (1.75)	4.07 (1.86)	3.80 (1.69)	1.25
Wanted to tell	4.86 (1.85)	5.00 (2.00)	4.00 (2.25)	4.24 (2.23)	1.11
Actively withheld	4.00 (1.75)	4.86 (2.17)	4.33 (1.88)	3.86 (2.17)	1.07
Told others	3.24 (1.41)	2.50 (1.37)	2.67 (1.43)	3.05 (1.94)	1.02
Thought about	5.38 (1.80)	5.95 (1.59)	5.43 (1.50)	5.38 (1.77)	0.61

Note. *Degrees of freedom = $F(3, 52)$ all other $df = F(3, 84)$. All F s are not significant, $p > .10$. MT = Music Talking; MW = Music Writing; NMT = No Music Talking; NMW = No Music Writing; PA = Positive Affect; NA = Negative Affect. Large NA for MT due to an outlier.

Disclosure Essay Cognitive Processes

For acceptance, a cognitive language category, the main effect of disclosure method was significant, $F(1, 81) = 6.35$, $MSE = 0.682$, $p \leq .01$, revealing that talkers expressed significantly more language associated with the expression of acceptance than writers. Neither the main effect of disclosure environment nor the interaction between disclosure environment and disclosure method was significant, $F(1, 81) = .56$ and $.83$, respectively.

TABLE 2
Means and Standard Deviations of Post-disclosure Mood

Variable	MT M (SD)	MW M (SD)	NMT M (SD)	NMW M (SD)	F		
					DE	DM	DE × DM
PA	27.71 (6.69)	27.32 (6.59)	24.95 (7.72)	25.86 (8.19)	1.76	0.03	0.17
NA	16.71 (7.66)	14.77 (6.99)	14.71 (5.81)	17.86 (6.08)	0.14	0.17	3.08

Note. All *F*s not significant, $MSE = 44.63$, $p > .10$. MT = Music Talking; MW = Music Writing; NMT = No Music Talking; NMW = No Music Writing; PA = Positive Affect; NA = Negative Affect; DE = Disclosure Environment main effect; DM = Disclosure Method main effect; DE × DM = Interaction.

For tentativity, the other cognitive language category, the main effect of disclosure environment was significant, $F(1, 81) = 6.01$, $MSE = 1.857$, $p \leq .01$ and the main effect of disclosure method was significant, $F(1, 81) = 22.69$, $p < .00$. The results for tentativity revealed that talkers and participants who disclosed while music was playing expressed significantly more tentativity than writers and disclosers in the no music condition. In general, talkers expressed significantly more cognitive processes than writers while music in the environment only significantly increased the expression of tentativity. Cell means and standard deviations are presented in Table 4.

TABLE 3
Means and Standard Deviations of Disclosure Essay Emotion Processes

Variable	MT M (SD)	MW M (SD)	NMT M (SD)	NMW M (SD)	F		
					DE	DM	DE × DM
Neg. emotionality	1.49 (0.61)	1.94 (0.72)	1.51 (0.75)	1.99 (1.10)	0.04	6.93*	0.01
Depression	0.35 (0.26)	0.52 (0.47)	0.25 (0.17)	0.53 (0.47)	0.28	7.69*	0.43
Anxiety	0.27 (0.15)	0.48 (0.39)	0.45 (0.40)	0.29 (0.31)	3.69	0.12	6.84*

Note. * $p \leq .01$. MT = Music Talking; MW = Music Writing; NMT = No Music Talking; NMW = No Music Writing; DE = Disclosure Environment main effect; DM = Disclosure Method main effect; DE × DM = Interaction.

TABLE 4
Means and Standard Deviations of Disclosure Essay Cognitive Processes

Variable	MT	MW	NMT	NMW	F		
	M (SD)	M (SD)	M (SD)	M (SD)	DE	DM	DE × DM
Acceptance	1.75 (1.03)	1.46 (0.84)	1.78 (0.69)	1.16 (0.70)	0.56	6.34*	0.83
Tentativity	5.26 (1.25)	3.75 (1.65)	4.43 (1.10)	3.13 (1.39)	6.01*	22.69**	0.73

Note. * $p \leq .01$; ** $p \leq .0001$, $MSE = 1.857$. MT = Music Talking; MW = Music Writing; NMT = No Music Talking; NMW = No Music Writing; DE = Disclosure Environment main effect; DM = Disclosure Method main effect; DE × DM = Interaction.

Disclosure Essay Content Categories

For the essay topic "body," there were no significant effects. However, for the essay topic "relatives," both main effects were significant while the interaction was not significant, $F(1, 81) = 1.54$. The significant main effect of disclosure environment, $F(1, 81) = 6.15$, $MSE = 1.132$, $p \leq .01$, indicated that background music significantly decreased references to relatives. Further, writers disclosed significantly more often about relatives than did talkers, $F(1, 81) = 4.15$, $p < .05$.

For the essay topic "college" background music had a significant effect while neither the interaction nor the main effect of disclosure method was significant, $F(1, 81) = 1.33$ and 2.69 , respectively. The main effect of disclosure environment, $F(1, 81) = 7.32$, $MSE = 1.278$, $p < .01$, suggested that background music significantly reduced references to college life. In summary, background music significantly decreased references to both relatives and college. Further, writers chose relatives as a topic significantly more often than did talkers. Cell means and standard deviations are presented in Table 5.

In order to examine the data for individual differences, the variable degree-of-disclosure (high versus low disclosers) was created. In order to separate high from low disclosers, a median split was made on the LIWC category Negative Emotionality. A $2 \times 2 \times 2$ (Music versus No Music × Talkers versus Writers × High versus Low Disclosers) ANOVA was computed on references made to both relatives and college. For the essay topic "relatives" no significant differences were found. For the essay topic "college", all three main effects were significant while none of the interaction effects were significant.

TABLE 5
Means and Standard Deviations of Disclosure Essay Content Categories

Variable	MT M (SD)	MW M (SD)	NMT M (SD)	NMW M (SD)	F		
					DE	DM	DE × DM
Body	0.42 (0.33)	0.37 (0.31)	0.37 (0.28)	0.56 (0.44)	0.76	0.91	2.66
Relatives	0.77 (0.79)	0.95 (0.95)	1.05 (0.66)	1.81 (1.60)	6.15**	4.15*	1.54
College	0.76 (0.45)	0.88 (0.77)	1.14 (0.77)	1.83 (1.94)	7.32~	2.69	1.33

Note. * $p < .05$; ** $p \leq .01$, $MSE = 1.132$; ~ $p \leq .008$, $MSE = 1.278$. MT = Music Talking; MW = Music Writing; NMT = No Music Talking; NMW = No Music Writing; DE = Disclosure Environment main effect; DM = Disclosure Method main effect; DE × DM = Interaction.

The main effect of degree-of-disclosure revealed that low disclosers chose college as a topic significantly more often than high disclosers, $F(1, 77) = 10.13$, $MSE = 11.446$, $p \leq .002$. The main effect of disclosure environment revealed that participants in the no-music conditions chose college as a topic more often than those in the music conditions and those participants who wrote chose college as a topic more often than participants who spoke.

Disclosure Essay Linguistic Factors

For the linguistic factor “negations,” the main effect of disclosure method was significant, $F(1, 81) = 7.00$, $MSE = 0.526$, $p < .001$. The analysis revealed that talkers used significantly more “negations” while disclosing than writers. Neither the interaction nor the environment main effect was significant, $F(1, 81) = 0.01$ and 2.07, respectively. Similar results were found for the linguistic factor “about me.”

Again the main effect of disclosure method was significant, while neither the interaction effect nor the main effect of disclosure method was significant. In this case, however, writers used significantly more words such as “me,” “mine,” “myself,” while disclosing than did talkers ($F(1, 81) = 12.42$, $MSE = 0.460$, $p < .001$).

The same results were found for the linguistic factor “self” references. Writers used significantly more “self” references while dis-

TABLE 6
Means and Standard Deviations of Disclosure Essay Linguistic Categories

Variable	MT M (SD)	MW M (SD)	NMT M (SD)	NMW M (SD)	F		
					DE	DM	DE × DM
Negations	2.82 (0.61)	2.39 (0.90)	2.58 (0.60)	2.18 (0.74)	2.02	7.00*	0.01
About me	1.32 (0.53)	2.01 (0.84)	1.23 (0.55)	1.57 (0.73)	3.27	12.42**	1.43
'Self' references	10.73 (1.74)	12.58 (2.69)	10.83 (1.85)	11.63 (3.19)	0.64	6.21*	0.97
'You' references	1.31 (1.32)	0.35 (0.75)	1.56 (1.08)	0.26 (0.38)	0.12	30.14~	0.68
Passive voice verbs	6.13 (0.52)	4.93 (1.34)	5.95 (0.81)	5.31 (1.62)	0.15	13.27~	1.27

Note. * $p \leq .01$, $MSE = 0.525$ and 5.990 . ** $p \leq .001$, $MSE = 0.460$ ~ $p = .0001$, $MSE = 0.899$ and 1.347 . MT = Music Talking; MW = Music Writing; NMT = No Music Talking; NMW = No Music Writing; DE = Disclosure Environment main effect; DM = Disclosure Method main effect; DE × DM = Interaction.

closing than did talkers ($F(1, 81) = 6.21$, $MSE = 5.990$, $p \leq .01$), while there were no significant effects found for the interaction between disclosure environment and disclosure method nor for the main effect of disclosure environment.

Finally, for the linguistic factors "you" references and "passive voice verbs" the main effect of disclosure method was again significant. Talkers used "you" references significantly more often than did writers, $F(1, 81) = 30.14$, $MSE = 0.899$ $p \leq .0001$. Additionally, talkers used significantly more "passive voice verbs" than did writers, $F(1, 81) = 13.27$, $MSE = 1.347$ $p \leq .0005$. No other significant effects were found for these two variables. In summary, talkers used words such as "can't," "never," "you," "yourself," and "been," significantly more often than writers. While writers used significantly more words such as "me," "mine," "myself," "I," and "we." Background music did not seem to affect the language composition while disclosing. Cell means and standard deviations for disclosure essay linguistic factors are presented in Table 6.

TABLE 7
Means and Standard Deviations of Disclosure Experience

Variable	MT M (SD)	MW M (SD)	NMT M (SD)	NMW M (SD)	F		
					DE	DM	DE × DM
Personal	5.52 (1.47)	6.23 (1.07)	5.48 (1.17)	5.79 (1.12)	0.86	3.69*	0.56
Revealing	5.43 (1.21)	5.23 (1.60)	5.43 (1.40)	5.17 (1.39)	0.01	0.01	0.57

Note. * $p \leq .05$, $MSE = 1.48$. MT = Music Talking; MW = Music Writing; NMT = No Music Talking; NMW = No Music Writing; DE = Disclosure Environment main effect; DM = Disclosure Method main effect; DE × DM = Interaction.

To examine for individual differences related to degree-of-disclosure a $2 \times 2 \times 2$ ANOVA was used again to evaluate the Disclosure Essay Linguistic Categories “about me,” “self” references, and “you” references. For the linguistic factor “about me” the main effect for both degree-of-disclosure and disclosure method were significant ($F(1, 77) = 4.30$ and 9.06 , $MSE = 44.448$, $p \leq .04$ and $p \leq .003$). For “self” references the main effect degree-of-disclosure was significant ($F(1, 77) = 9.59$, $MSE = 40.250$, $p < .003$), revealing that high disclosers used significantly more “self” references than low disclosers. There were no significant effects for “you” references.

Disclosure Experience

For how personal participants rated their disclosure material, there were no significant effects for the interaction between disclosure environment and disclosure method ($F(1, 81) = 0.56$) nor the main effect of disclosure environment ($F(1, 81) = 0.86$). However, the main effect of disclosure method was significant ($F(1, 81) = 3.69$, $MSE = 1.48$, $p \leq .05$) revealing that writers rated their disclosure material as significantly more personal than talkers. To evaluate for individual differences, the same method for creating a degree-of-disclosure variable was used to examine participants’ ratings of how personal their disclosure material was. A $2 \times 2 \times 2$ ANOVA revealed no significant differences. There were no significant effects for how revealing participants rated their disclosure material. Cell means and standard deviations for disclosure experience are presented in Table 7.

Disclosure Environment

For how supportive the environment was, writers rated the environment as significantly more supportive than talkers ($F(1, 49) = 5.43$, $MSE = 1.97$, $p \leq .02$). Talkers felt that the environment significantly interfered with disclosing as compared to writers ($F(1, 49) = 7.60$, $ME = 2.56$, $p \leq .01$). Similarly, talkers felt that the environment significantly distracted them when compared with writers ($F(1, 49) = 13.08$, $ME = 1.23$, $p < .001$). In all three cases there were neither interaction effects nor main effects for disclosure environment, suggesting that music did not affect participants' sense of feeling supported.

For how often the environment suggested ideas for disclosure, the main effect of disclosure environment was significant ($F(1, 49) = 11.59$, $ME = 2.50$, $p \leq .001$), revealing that participants who disclosed while music was playing reported that the environment suggested ideas significantly more often than did participants who disclosed without background music. A similar result was found on ratings for how much participants liked classical music. Again, background music significantly increased how much participants reported liking classical music ($F(1, 49) = 8.43$, $ME = 2.36$, $p \leq .005$). There were no significant effects for how often the environment helped disclosure.

Overall, writers indicated that disclosing with or without music supported the disclosure process, whereas talkers disclosing with or without background music indicated that the environment interfered with and distracted from the disclosure process. Those who disclosed with background music thought that the environment suggested ideas and reported liking classical music when compared to those who disclosed in silence. Cell means and standard deviations for disclosure environment are presented in Table 8.

Caution should be taken when interpreting the practical significance of the music related results. In order to estimate the strength of association between disclosure environment and the statistically significant outcomes, omega squared was computed. The results indicated that the proportion of variance accounted for by the music conditions ranged from 0.01–14. Specifically, the music conditions accounted for 1% of the variance in the anxiety (emotion processes) variable, 3% of the variance in the tentativity (cognitive processes) and relatives (disclosure topic) variables, 5% of the col-

TABLE 8

Means and Standard Deviations of Disclosure Environment Characteristics

Variable	MT M (SD)	MW M (SD)	NMT M (SD)	NMW M (SD)	F		
					DE	DM	DE × DM
Supportive	4.46 (1.66)	5.79 (1.25)	5.36 (1.08)	5.83 (1.59)	1.49	5.43*	1.20
Interfere	2.85 (2.11)	1.43 (0.76)	2.43 (1.95)	1.42 (1.16)	0.24	7.60**	0.21
Suggest ideas	3.00 (1.73)	3.29 (1.90)	1.57 (0.94)	1.75 (1.60)	11.59~	0.28	0.01
Help expression	3.54 (1.90)	4.86 (1.83)	3.29 (2.20)	3.17 (1.99)	3.15	1.20	1.73
Distract	2.61 (1.61)	1.14 (0.36)	2.07 (0.99)	1.33 (1.15)	0.33	13.08~	1.44
Like classical	5.61 (1.32)	5.79 (1.12)	4.86 (1.66)	4.08 (1.97)	8.43**	0.51	1.21

Note. * $p < .05$, $MSE = 1.97$; ** $p < .01$, $MSE = 2.56$ and 2.37 ; ~ $p \leq .001$, $MSE = 2.50$ and 1.23 . MT = Music Talking; MW = Music Writing; NMT = No Music Talking; NMW = No Music Writing; DE = Disclosure Environment main effect; DM = Disclosure Method main effect; DE × DM = Interaction.

lege (disclosure topic) variable, 9% of the variance in the ratings for the degree to which classical music is liked, and 14% of the variance in the degree to which the music suggested ideas for disclosure.

Discussion

This study involved an evaluation of the relationships among disclosure environment (background music, no background music), disclosure method (writing, talking), and response domain (cognition, emotion). Background music had an effect on the disclosure topics chosen (participants referred to relatives significantly less often in music conditions), promoted cognitive suggestion and expression, and increased the enjoyment of listening to classical music. Specifically for writers, background music increased the expression of anxiety.

Writers expressed significantly more negative emotion processes, chose relatives as a topic, referred to themselves more often, and

rated their disclosure material as more personal than talkers. Further, writers felt that disclosing with or without background music supported the disclosure process. Talkers, on the other hand, expressed more cognitive processes, referred to others more often, and used more negations and passive voice verbs than writers. In addition, talkers felt that disclosing with or without background music interfered with and distracted from the disclosure process.

Postdisclosure Mood

No differences were found between conditions on postdisclosure mood. In other studies that have evaluated the effects of music on mood, the relationship between cognitive appraisal and music is implicated as a mediator of affective response (Blood & Ferriss, 1993; Stratton & Zalanowski, 1989, 1991, 1994; Thayer & Levenson, 1983). Stratton and Zalanowski (1991, 1994) suggest that the stimulus which directs cognition with the least ambiguity will take precedence as the mood determining factor. It may be that the disclosure task directions took precedence as a mood determining factor because of the level of specificity (lack of ambiguity) inherent in them. According to the ambiguity hypothesis or cognitive labeling hypothesis (Konecni, 1975; Konecni & Sargent-Pollock, 1976) any effect of the music would be subsumed by the initial appraisal of the task directions, suggesting that the effects of music can be superseded by direct cognitive instruction (e.g., discuss the most significant event in your life). In addition to the possible relationship between cognitive appraisal and postdisclosure mood, the temporal relationship between music and the assessment of mood may have influenced the findings.

This study like many others evaluated listener response when the music was over. Since music is a serial stimulus, it may be that the mood measurement was simply taken at the wrong time. In light of the programmatic music used in this study, this is an intriguing explanation.

The music program "Peak Experience" like others compiled by Bonny (1978), was designed to facilitate listener self-exploration. To accomplish this, Bonny identified six stages of each music program's affective contour. The last two stages are categorized as stabilization and return.

It is interesting to note the similarity between these stages and what is commonly referred to in psychotherapy clinical settings as

closure. Perhaps the music facilitated the listener, as it was intended to do, such that any feelings or thoughts that were aroused by the music were resolved by the conclusion of the music program. This idea is supported in the literature by Huron's (1991, 1992) notion of a ramp archetype inherent in musical organization, Thayer and Levenson's (1983) study of auditory anticipation cues and of course Meyer's (1956) theory of emotion and meaning in music. This explanation, while tantalizing to the music therapist, is speculative at best. In summary and with caution, the mood data reveal that neither music nor writing influenced mood.

Disclosure Essay Emotion Processes

As expected from previous research (Pennebaker, Hughes, & O'Heeron, 1987; Esterling et al., 1990; Esterling et al., 1994), writers used more negative emotion language than talkers. However, the most intriguing finding within this outcome domain is the interaction effect for anxiety. Writers hearing background music expressed significantly more anxiety when compared to talkers hearing background music.

There is some evidence suggesting that the appraisal characteristics of anxiety differ from those of other negative emotions. Manstead and Tetlock (1989) evaluated the degree to which certain emotions are associated with patterns of cognitive appraisal. The results indicated that anxiety provoking situations are those for which individuals feel little responsibility, involve events that are expected by the individual, and are more consistent with public standards of behavior, when compared to guilt, embarrassment, and shame. In summary, the authors found that anxiety experiences differed from all other situations which evoked negative emotion, except anger.

These results in combination with those found in the McFarland (1984) and Stratton and Zalanowski (1989, 1991, 1994) studies indicate that there are dimensions of appraisal which vary systematically and are relevant to emotional experience. Appraisal variability was not controlled in the present study and may account for the apparent effect of music on the expression of anxiety of writers.

Disclosure Essay Cognitive Processes

As expected, talkers used significantly more cognitive language than writers (Esterling et al., 1994; Pennebaker et al., 1987). In ad-

dition, those participants who disclosed while music was playing expressed significantly more tentativeness, more frequently using words such as “maybe” and “possible,” than those participants who disclosed in silence although there was no difference between conditions in language associated with the concept “acceptance.” Moreover, those who disclosed while music was playing chose to write or talk about relatives and college less frequently, reported a greater appreciation for classical music, and reported that the music suggested ideas for disclosure.

These combined results seem to suggest that background music promoted cognitive exploration (Gabrielsson, 1989; Kaltsounis, 1973; Sloboda, 1992). In conjunction with the effect of music on the expression of anxiety, these results may imply that music influenced the participants’ search for meaning as it related to communicating their thoughts and feelings about significant life experiences.

Disclosure Essay Content Categories

Both disclosure method and disclosure environment had a significant effect on the essay topics chosen. Writers disclosed significantly more often about relatives than did talkers, while writers and talkers were equivalent in reference to their bodies and to college. However, background music significantly decreased references to two of the three content categories (relatives, college). Although individual differences may account for these results, differences in content are also consistent with the participants’ indication that the background music suggested topics for disclosure.

In a study that evaluated the psychophysiology of disclosure, Pennebaker et al. (1987) found that high disclosers were more likely to talk about divorce or separation of parents than low disclosers. Thus willingness to confront psychologically threatening material may influence the topics people choose to discuss. It may be that the essay topic “college” was not perceived as a psychological threat.

Disclosure Experience

In addition to disclosing about relatives, writers in the present study reported that the disclosures were significantly more personal when compared to the talkers, although participants were equivalent on their ratings for how revealing the disclosures were. These results are unlike Esterling et al. (1994) where written/stressful and verbal/stressful disclosure groups did not differ with re-

spect to disclosure themes or participants' rating of the seriousness of the disclosed event. Similarly, Murray et al. (1989) found no difference between psychotherapy and written expression on ratings of how personal the disclosures were. Individual differences related to coping or personality styles may account for the results (Pennebaker et al., 1987; Esterling et al., 1990).

It may be that writing is perceived as a more intimate method of communication than talking. For example, when one invests in maintaining a log of life events such as in a diary or journal this is done in written form. Another possible explanation is that participants in the oral conditions may have perceived being alone in a room and talking to oneself (while being tape recorded) as being socially inappropriate. That is, it would not be unusual to consider talking to oneself as socially linked to such things as psychiatric problems and homelessness. Perhaps a sociological association such as this resulted in talkers being more psychologically guarded than writers. Obviously, the data in the present study are inconclusive on this matter. However, the notion that writers become personally invested in what they are writing is corroborated in the linguistic factors found in the essays.

Disclosure Essay Linguistic Factors

When the essays of writers were compared with those of talkers, writers' language included self references (I) and words like me, mine, and myself whereas talkers' language style included passive voice verbs, negations, and you references. The use of self references by writers may imply that writing is conducive to personal investment and intimacy. In addition, writing may be a more socially acceptable way of revealing profoundly personal information. Further, the laboratory setting may have affected the results since discussing deep feelings and thoughts rarely, if ever, occur while one is speaking into a tape recorder.

An alternative explanation may be that, again, individual differences account for the results. In fact, writers and high disclosers used words like me, mine, and myself, significantly more often than talkers and low disclosers and high disclosers used significantly more "self" references than low disclosers. These results are similar to those found in a study that examined, in part, the individual difference correlates of a degree-of-disclosure variable (Pennebaker et al., 1987). The results of the Pennebaker et al. study (1987) re-

vealed that high disclosers used more first person language than low disclosers. The present study supports the individual difference data found in the literature.

Disclosure Environment

There were some interesting findings related to participants' ratings of the environment. First, writers rated the environment as being supportive of disclosing, whereas talkers felt that the environment distracted from and interfered with disclosing. These results are independent of whether or not the music was on and consistent with writers' evaluation of their essays as more personal and use of first person language.

The results of interest though are related to the presence of background music. Participants who disclosed while music was playing reported a significantly greater appreciation for classical music than those who disclosed in silence. This result may be an artifact of the study. Since classical music was used in the experiment participants may have been trying to give the "right" answer. Nevertheless, none of the participants reported a listening preference for classical music on the demographics questionnaire given prior to the onset of the study. It is also likely that this result is related to familiarity and the development of music preferences (Gaver & Mandler, 1987; Radocy & Boyle, 1988).

Most importantly, those who disclosed while music was playing reported that the music suggested ideas for them to talk or write about significantly more often than those who disclosed in silence. This, in addition to the anxiety and tentativeness results may suggest that there is a cognitive component involved when interpreting music (Bever, 1988; Konecni, 1975; Sloboda, 1992). The notion that music suggests ideas is consistent with results from other studies. Participants in research that examined significant emotional experience with music reported that music clarifies feelings and situations and conceptualized music as an agent of change (Gabrielson, 1989; Sloboda, 1992).

This view is further supported by unsolicited participant comments. During the individual debriefing portion of the study participants were simply asked "how was it?" A number of the participants in the music conditions replied with comments such as: "It's funny. When I was real emotional the music got real emotional." "Somehow when I felt real intense, the music was also intense."

“You know, when I was done, so was the music.” “It’s weird. When I was ending a thought, the music was ending too.” “I haven’t thought about what I wrote about in a long time. The music made me think of it.” “I was trying to be positive about the whole thing, but the music made me feel sad. The truth is I do get sad whenever I think about that time of my life. This time the music made me feel it. You know that sad part.” “The violins made me think about my mom.” “I didn’t feel anything from the music but it made me flow, you know in a physical way.”

In addition, the graduate student who transcribed the audio tapes noticed that participants in the music conditions seemed to finish ideas at cadences, speak at a pitch that fit within the harmonic structure of the music, used a tone of voice that was less matter of fact and more invested in the discussion of deeply personal information (whispering, crying, wavering voice). Obviously this anecdotal information is inconclusive. However, given that those who disclosed while music was playing (a) expressed significantly more anxiety (negative emotion that is thought to have an appraisal “fingerprint” that is more cognitively complex than other negative emotions); (b) expressed significantly more tentativeness (cognitive process); (c) did not choose common disclosure topics; (d) felt that the music suggested ideas; (e) developed an appreciation for classical music; and (f) imbued the music with life-like attributes, it does appear that participants were making an appraisal of the music which affected their appraisal of the disclosed experience.

Limitations of the Study

Several considerations should be made when interpreting these findings. First, the sample was homogeneous. All participants were college age and attending a private university. Second, the same music (mood congruent) was used for all the music conditions. Obviously, these two issues limit the generalizability of the results.

Third, the PANAS (mood measure) and postexperimental questionnaire were self-report instruments. The self-report format is accurate only to the extent that an individual is able to identify and assess her/his experience. It is also important to note that the postexperimental questionnaire was newly developed for this study and is of unknown validity.

Fourth, while the no-music condition was included to serve as a control, it would have also been informative to include a group

that received mood incongruent music (e.g., new age, marches). Additionally, to control for writing and speaking, it would have been informative to include a trivial topics condition.

Clinical Implications

From a practical perspective it is important to consider the implications of this study. First, music therapists need to assess the possible mood altering stimuli that are present during their sessions. Clinicians who use Guided Imagery and Music, musical mood induction, music and relaxation, music and art tasks or other receptive (music listening) techniques should be aware that the directions they use could alter the intended effect of the music. In addition, it may be useful to continually evaluate, through direct questioning, what a listener is responding to (e.g., the relaxation exercises, the melodic line, the imagery, the environment). Further, it may be clinically useful to state directly the need for the listener to focus on what the music is suggesting to them.

When other art media are used (drawing, sculpture) in combination with receptive music, it may be clinically more appropriate to organize such experiences sequentially rather than in conjunction with music. If art media are used concurrently, music therapists should be aware that interpretations made about listener behavior (mood) may not be related to the music used. In general, a music therapist ought to be cognizant of the variety of mood altering stimuli present during music therapy sessions, all of which could impact a patient.

Second, since emotional expression was significantly higher among writers and those who wrote in the presence of background music, music therapists would be well advised to incorporate writing into music therapy techniques. For example, song-writing, lyric substitution, music listening and journal keeping, may assist individuals who are confronting upsetting experiences. Additionally, psychotherapists may want to consider involving a music therapist when clinically dealing with (a) the initial outpouring of negative emotion and (b) patients who seem to be emotionally confused, in denial, or psychologically unable to consider change. The initial negative feelings that lead people to drop out during the early stages of therapy may be addressed more effectively through music therapy. Traditionally, music has been thought of as providing aesthetic and/or intrinsic motivation for dealing with upsetting expe-

riences. Song writing homework, music listening homework, as well as music listening and journal keeping may be indicated at the onset of psychotherapy.

Third, music therapists should be aware that the degree to which people disclose significant life events is an important dimension of coping style. The literature on individual differences suggests that emotional inhibition (repressors, suppressers) is defined by low level thinking about emotions, a lack of emotional awareness, a deficit in emotional communicativeness, and a proclivity to somatic complaints (Esterling et al., 1994; Paez, Basabe, Valdosedá, Velasco, & Iraurgi, 1994; Pennebaker et al., 1987). The results in this study support, in part, the individual difference literature. Thus, music therapists should make themselves aware of personality assessment outcomes by consulting their team psychologist and adjusting treatment plans accordingly. For example it may be clinically useful to use a successive approximation model when self expression is the goal of music therapy.

Finally, patients who benefit from leisure time counseling, such as those with substance abuse problems or forensic problems, may benefit from exposure to the type of music they are likely to encounter in the community *prior* to release. While many music therapists become defensive at the mention of using music education methods in the clinical domain, it appears as if familiarity with a type of music increases the appreciation for that type of music. Music therapists ought to expose patients to the various types of music (e.g., classical, jazz, new age) available in the community. Perhaps this would increase a patient's enjoyment for that type of music and thereby effect how an individual chooses to use free time (e.g., attend concerts, learn to play an instrument).

Future Research

Studies using similar methodology should attempt to achieve experimental control by adding mood incongruent music, benign disclosure task directions, and a standardized as well as behavioral measure of individual differences (high/low disclosers). Additionally, using noncollege students, preferably those involved in psychotherapy, as the experimental sample may more directly target therapy processes.

Future studies should evaluate the appraisal characteristics of music as it relates to the expression of thoughts and feelings. While

Bever (1988) attempted to bridge theories of emotion, theories of perception, and theories of emotion and meaning in music, much work is needed to clarify a theoretical basis for the use of music in psychotherapy. It may be fruitful to begin this arduous task by evaluating the effects of music within the framework of cognitive appraisal theories of emotion (Ellsworth & Smith, 1988; Lazarus, 1991; Ortony, Clore, & Collins, 1988).

Finally, it would be useful to evaluate the effects of music across time on expression. Studies by Madsen and Fredrickson (1993), Madsen, Byrnes, Capperella-Sheldon, and Brittin (1993), Huron (1991), and Thayer and Levenson (1983) have investigated both the effects of music across time as well as the attributes of the music itself; it would be useful, however, to investigate the relationship between the serial nature of music and the expression of thoughts and feelings.

In summary, music therapy and more broadly music psychology have benefited by interdisciplinary study, including advances at the junctions of developmental psychology, cognitive science, and neuroscience. The incorporation of the study of emotion as a co-discipline would likely improve the predictability of music responses. Ultimately, such predictive power would result in improved quality of patient care.

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