Relations Among Text, Mode, and Medium: Historical and Empirical Perspectives

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We examined, by historical and empirical means, relations among text (positive, negative), mode (Ionian, Phrygian), and medium (organ, vocal) in settings of a popular Christian melody from the baroque era. A descriptive analysis of 51 representative settings indicated that baroque composers tended to link Ionian settings of the melody to a "salvation" text and Phrygian settings to a "condemnation" text. They also set vocal pieces more frequently in the Ionian mode and organ pieces in the Phrygian mode. A series of experiments confirmed that contemporary adult and child listeners linked reward texts to the Ionian mode and punishment texts to the Phrygian mode, with the internal cadence structure of the settings affecting such links. Moreover, adult listeners associated these texts differentially with organ and vocal settings.

In the baroque era, church musicians freely borrowed the chorale (i.e., hymn) melodies of other composers, altering the rhythms, harmonies, performance medium, and, at times, the mode. Hymnbook editors often changed the assignment of texts to melodies. Poets, likewise, wrote new texts for old tunes, the new texts sometimes becoming more popular than the original.

An interesting example of such treatment of a chorale tune is the melody known variously as "Herzlich tut mich verlangen" ("From My Heart I Yearn"), "Ach Herr, mich armen Sünder" ("O Lord, This Wretched Sinner"), "O Haupt voll Blut und Wunden" ("O Sacred Head Now Wounded"), or "Wie soll ich dich empfangen" ("How Shall I Receive Thee"). Hans Leo Hassler composed the melody, first publishing it in 1601 as a secular song entitled "Mein gnüth ist mir verwirret" ("My Spirit Is Confused"). The piece was appropriated by the composer’s brother into the Lutheran reper-

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toire, appearing in a chorale book in 1613 with a new text, "Herzlich tut mich verlangen."

During the seventeenth and eighteenth centuries, this tune became one of the central chorales in the sacred Lutheran repertoire, remaining so in many Christian denominations. Composers and hymnbook compilers over the years associated the tune with many different texts. Mattheson (1739/1981), for example, knew of 24 texts for the melody. The tune is particularly important to the sacred music of J. S. Bach (1685-1750), who gave it two organ settings and included it in five cantatas, two passions, and the Christmas Oratorio.

In the seventeenth and early eighteenth centuries, the tonal organization of music was based on the system of church modes. Two modes in particular are relevant to the present investigation: the Ionian, which became known as the C-major scale (i.e., CDEFGABC), and the Phrygian (i.e., the scale EFGABCD). It is important to note that these and other church modes have an identical set of pitches, differing only in the starting note and the order of tones and semitones. By contrast, the ordering of tones and semitones in the major and minor scales remains constant across all possible starting notes.

The chorale in question is unusual because it can be set to either the Ionian or Phrygian mode. When set in the Ionian mode, the last note of the melody is a major third above the first note of the scale (Figure 1); when set in the Phrygian mode, the last note of the melody is the first note of the scale (Figure 2). Theorists have argued, over the years, about the suitability of these modes. Walther (1732/1953) and Kirnberger (1771/1982), for example, claimed that the melody was most appropriately set in the Phrygian mode because it ends on the tone E. In arguing, further, that Ionian settings are inconsistent with the original composer's intentions, Kirnberger (1771/1982) was unaware that the original melody had been set in the Ionian mode. By contrast, Schenker (1935/1979) argued for the unsuitability of Phrygian settings because the melody's last note "is correctly understood as the third of the tonic chord in the major mode" (p. 35). Other theorists thought the meaning of the text or the medium of performance should guide the choice of modal settings. Werckmeister (1702), for example, criticized the use of the Ionian mode for an organ prelude entitled "Ach Herr, mich armen Sünder" because of the inconsistency of the "cheery" Ionian mode with this song of atonement (p. 56). Heinichen (1728/1966) argued that modes did not imply specific emotions: "all keys or musical modes without distinction are suited to expressing many and opposing affects" (p. 270).

Thus, the theoretical literature is replete with contradictory prescriptions for setting this particular melody. Of further interest to the issue of the relations between modal setting and text is the fact that the two most
popular texts for this tune in the baroque era had opposing meanings. “Herzlich tut mich verlangen” tells a story of a believer who looks forward to dying and going to Heaven; “Ach Herr, mich armen Sünder” involves a believer who fears the wrath of God and going to Hell (for a discussion of these texts, see Hill, 1994, in press a, in press b).

Although settings can be classified as Phrygian or Ionian, and although theorists have argued that one mode or the other is better suited to the melody (sometimes depending on its context), baroque musicians had different ways of determining the mode of a piece. Some scholars (e.g., Crüger, 1625; Lippius, 1612/1977) claimed that the mode of a polyphonic setting was determined by the harmony of the final cadence and that the mode
was to be complemented by the internal cadence structure (i.e., the set of harmonies at the endings of the phrases as well as the types of cadences—full, half, deceptive, or Phrygian). Ionian pieces generally cadence on the first, third, and fifth steps of the scale, whereas Phrygian pieces cadence on the first, third, fourth, and sixth steps (e.g., Dahlhaus, 1990). Other theorists were more prescriptive: "musical mode is the way to begin a song, to continue it properly within certain bounds, and to end it appropriately" (Walther, 1732/1953, p. 218). Phrygian and Ionian settings had the potential to have very similar cadence structures because the harmonies built on all but one of the prescribed scale steps are found in both modes: C is I of Ionian, VI of Phrygian; E is III of Ionian, I of Phrygian; and G is V of Ionian, III of Phrygian. Thus, a given Phrygian and Ionian setting might differ only in the harmony of the final cadence.
The mode of the harmonization and the text of the melody were not the only musical factors to be considered in setting this tune. Also at issue was the performance medium—whether the tune was to be played on an organ or sung by a choir (and/or congregation). The implications of assigning a given mode to a particular text may differ across media. For example, textual material is available to supplement the musical meaning of vocal but not organ performances.

Another issue in the cultural context of this hymn, its use in the religious instruction of children, is generally ignored by scholars. Nevertheless, three composers (J. H. Schein, J. Kuhnau, and J. S. Bach) who wrote settings of this melody were directly involved in education, holding the post of cantor of Leipzig’s Thomas School. Indeed, the Leipzig Council charged Bach with the responsibility of “conscientiously instruct[ing] the youth in the fear of God” (Leipzig Council, 1723/1945, p. 94). Moreover, boys performed the soprano and alto parts in most baroque churches, including that of Bach. There is evidence that young children associate the major key with happiness and the minor key with sadness (Dolgin & Adelson, 1990; Kastner & Crowder, 1990; Terwogt & Van Grinsven, 1988, 1991), but little is known about their associations between music and text.

In the present investigation, we attempted to ascertain the relations among text, mode, and medium in settings of this melody, examining differences in cadential structures as well. First, we explored the apparent intentions of baroque composers by analyzing many settings of the two texts they most commonly associated with the tune. Second, we inquired whether contemporary churchgoers make associations that are consistent with historical practice (Experiment 1). Third, we explored these issues in a secular context with adult listeners (Experiment 2). Fourth, we examined the effect of cadence structure on text-mode associations (Experiment 3). Finally, we evaluated the extent to which children systematically associate narratives with modes (Experiment 4).

Analysis of Historical Data

Hill (1994) conducted an exhaustive search of baroque hymnbooks, manuscripts, and publications (including their modern reprints) and found 76 settings of the melody written by at least 30 composers. (The number of composers cannot be determined with precision because of anonymous or ambiguously attributed settings, but most of the important Lutheran composers of the era, such as Schein, Scheidt, Pachelbel, Buxtehude, Telemann, Kuhnau, and J. S. Bach, are represented.) These settings originated in at least 16 different cities, including important Lutheran musical centers such as Berlin, Hamburg, Leipzig, and Dresden. Four titles were used in more than one setting (Table 1). We selected, for analysis, the 51 settings entitled
Table 1

Distribution of Titles

<table>
<thead>
<tr>
<th>Title</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herzlich tut mich verlangen (From My Heart I Yearn)</td>
<td>26</td>
</tr>
<tr>
<td>Ach Herr, mich armen Sünder (O Lord, This Wretched Sinner)</td>
<td>25</td>
</tr>
<tr>
<td>Wie soll ich dich empfangen (How Shall I Receive Thee)</td>
<td>11</td>
</tr>
<tr>
<td>O Haupt voll Blut und Wunden (O Sacred Head Now Wounded)</td>
<td>6</td>
</tr>
<tr>
<td>Other (once each)</td>
<td>8</td>
</tr>
</tbody>
</table>

either "Herzlich tut mich verlangen" or "Ach Herr, mich armen Sünder," because these titles were the most common and most widely distributed among composers throughout the era (1613—1752).

Did baroque composers set the melody in the Phrygian mode, regardless of text, as Walther (1732/1953) and Kirnberger (1774/1982) prescribed? The occurrence of 31 Ionian and 20 Phrygian settings is clearly inconsistent with this view. Did baroque composers consider the text when selecting a mode, as Werckmeister (1702) suggested? A chi-square analysis revealed that “Herzlich tut mich verlangen,” with its text of salvation, was set more frequently in the Ionian mode; “Ach Herr, mich armen Sünder,” with its text of fear and condemnation, was set more frequently in the Phrygian mode, $\chi^2(1, N = 51) = 17.05, p < .0001$ (Table 2). An evaluation of the suggested association between medium and mode revealed that vocal pieces were set more frequently in the Ionian mode and organ pieces in the Phrygian mode, $\chi^2(1, N = 51) = 7.78, p < .005$ (Table 3).

Table 2

Association Between Modes and Texts

<table>
<thead>
<tr>
<th>Text</th>
<th>Ionian</th>
<th>Phrygian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salvation</td>
<td>23</td>
<td>3</td>
<td>26</td>
</tr>
<tr>
<td>Condemnation</td>
<td>8</td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>20</td>
<td>51</td>
</tr>
</tbody>
</table>

Table 3

Association Between Media and Modes

<table>
<thead>
<tr>
<th>Media</th>
<th>Ionian</th>
<th>Phrygian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocal</td>
<td>20</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Organ</td>
<td>11</td>
<td>15</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>20</td>
<td>51</td>
</tr>
</tbody>
</table>
Although composers regularly set vocal versions in the Ionian mode and organ versions in the Phrygian mode (intuitively, if not deliberately), it is unclear whether the association between text and mode holds across media. Chi-square analyses revealed an association between text and mode that was highly significant for organ settings, \( \chi^2(1, N = 26) = 15.37, p < .0001, \) but that only approached conventional levels of significance for vocal settings, \( \chi^2(1, N = 25) = 3.28, p = .07. \) For organ settings, "Ach Herr, mich armen Sünder" (i.e., condemnation) was almost always set in the Phrygian mode (13 out of 14) and "Herzlich tut mich verlangen" (i.e., salvation) in the Ionian mode (10 out of 12) (Table 4). For vocal settings, not only was the salvation text typically set in the Ionian mode (13 of 14) but the condemnation text tended to be set in this mode (7 of 11) as well (Table 4). Thus, a preference for the Ionian mode was evident in vocal settings, regardless of the text.

To compare cadential structures across modes, all settings were transposed to a key signature with no sharps or flats. (Those that omitted phrases or used the opening phrase as a fugue subject were excluded, leaving 48 settings available for this comparison.) Other than the final cadence, the only cadences that consistently differed across the two modes occurred at the end of the first phrase, \( \chi^2(1, N = 48) = 25.67, p < .0001, \) and its repetition, \( \chi^2(1, N = 48) = 25.87, p < .0001 \) (Table 5). Ionian settings tended to have a V-I cadence (Figure 3) at the end of the first phrase and its repetition; Phrygian settings tended to have a Phrygian cadence or its transposition (Figure 4) at these points.

It is evident, then, that composers of the baroque era did not consider the Phrygian mode more suitable for this melody. Instead, they set the tune more frequently in the Ionian mode, their final choice of mode being influenced by textual content. Thus, the salvation text, "Herzlich tut mich verlangen," was generally linked with the Ionian mode, and the condemnation text, "Ach Herr, mich armen Sünder," with the Phrygian mode. Furthermore, although vocal versions were set more frequently in the Ionian

<table>
<thead>
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<th>Table 4</th>
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<tbody>
<tr>
<td><strong>Association of Mode and Text, Split by Medium</strong></td>
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<tr>
<td><strong>Text</strong></td>
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<td>---</td>
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<tr>
<td><strong>Organ Settings</strong></td>
</tr>
<tr>
<td>Salvation</td>
</tr>
<tr>
<td>Condemnation</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td><strong>Vocal Settings</strong></td>
</tr>
<tr>
<td>Salvation</td>
</tr>
<tr>
<td>Condemnation</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
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<table>
<thead>
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<th>Table 5</th>
</tr>
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<tr>
<td>Cadence Structure of Phrase I and Its Repetition</td>
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<td></td>
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<tr>
<td>Phrase I</td>
</tr>
<tr>
<td>Ionian</td>
</tr>
<tr>
<td>Phrygian</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Repetition of Phrase I</td>
</tr>
<tr>
<td>Ionian</td>
</tr>
<tr>
<td>Phrygian</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

![Fig. 3. Dominant-to-tonic cadence.](image)

![Fig. 4. Phrygian cadence and its transposition.](image)

Mode and organ versions in the Phrygian mode, and composers associated the salvation text with the Ionian mode regardless of medium, they systematically linked the condemnation text with the Phrygian mode only when writing organ settings. In any case, settings in the two modes are more alike than different, with five of eight phrases tending to cadence on a given harmony regardless of whether the conclusion is Phrygian or Ionian. Only the first, third, and last cadences differ across the two modes.

**Experiment 1**

Although the aforementioned analyses indicate that composers of the baroque period made consistent choices of texts, modes, media, and cadence structures, it is unclear whether listeners perceive these associations
and have similar preferences. Baroque listeners are obviously beyond our reach, but these questions are still relevant to contemporary churchgoers who regularly hear performances of sacred music. Accordingly, we attempted to determine whether such listeners: (1) favor one mode over the other, (2) link the salvation text to the Ionian mode and the condemnation text to the Phrygian mode, (3) are influenced by medium in their judgments of modal suitability, and (4) are influenced by medium in their judgments of text/mode association.

METHOD

Participants

The participants, 71 men (age range = 23–69 years; M = 46.6 years) and 118 women (age range = 19–69 years; M = 45.1 years), were drawn from suburban congregations of the United Church of Canada (an amalgamation of Presbyterians, Methodists, and Congregationalists).

Materials

Two settings of the melody, one in the Ionian mode (J. S. Bach's BWV 244/17) and one in the Phrygian mode (J. S. Bach's BWV 153/4), were sequenced by means of Nightingale software on a Macintosh Quadra 950 computer and a Korg 01/WFD synthesizer. To equalize the pitch level across melodies, BWV 244/17 was transposed down a major third. Rhythmic activity was made more comparable by simplifying the final cadence of BWV 153/4. A setting in each mode was recorded on four audiotapes (Yamaha MT1X cassette recorder; Maxell XL II 90 chromium dioxide tapes). The sequences were played on the synthesizer’s preprogrammed organ sound for two of the tapes and on the preprogrammed choral voice for the two others. The synthesized choral voice provided a reasonable facsimile of vocal timbre in the absence of words. Furthermore, the use of synthesized voices allowed constant tempo and dynamics across all settings. The order of the settings (Phrygian/Ionian) was counterbalanced in both the organ and vocal versions.

Procedure

Data were collected during the Sunday morning services of five different churches. The experimenter provided introductory information on baroque hymnody, explaining that hymns of the time often told theological narratives. Participants were told that the goal of the study was to determine whether the music that accompanied these stories could transmit some elements of the narrative, even without the words. Participants were given a brief training session1 in which the concepts of melody and harmony were explained and demonstrated using the popular hymn, “Amazing Grace.” Before hearing the target music, participants were told to keep two Christian narratives in mind as they listened. The first, reflecting “Herzlich tut mich verlangen,” was about a person looking forward to dying because of the promise of salvation. The second, reflecting “Ach Herr, mich armen Sünders,” was about a person fearing death because of the possibility of condemnation. Participants then listened twice to the two settings of the hymn in the church’s sanctuary (Sony stereo cassette deck TC-W32, Bose Lifestyle powered speaker system), each congregation hearing only one of the four audiotapes. The number of participants in each of the four groups was approxi-

1. A transcript of the training session, with musical examples, is available from the authors.
mately the same (Phrygian/Ionian, organ, n = 50; Ionian/Phrygian, organ, n = 43; Phrygian/Ionian, voice, n = 50; Ionian/Phrygian, voice, n = 46). Listeners were required to rate, on standardized forms, (1) the appropriateness of the two distinct religious narratives (condemnation and salvation) to each excerpt on a 7-point scale (1 = highly appropriate to condemnation, 7 = highly appropriate to salvation) and (2) the appropriateness of the mode to the melody on a 7-point scale (1 = highly unsuitable, 7 = highly suitable).

RESULTS AND DISCUSSION

The data were analyzed separately for each rating by means of a repeated-measures analysis of variance (ANOVA), with mode (Ionian, Phrygian) as the within-subject variable and medium (organ, vocal) as the between-subjects variable. Listeners rated the Ionian-mode harmonization as more suitable to the melody than the Phrygian-mode harmonization \[ F(1,186) = 45.93, p < .0001 \]. Mode and medium interacted significantly \[ F(1,186) = 9.32, p < .005 \], reflecting a larger difference between the two organ settings than the two vocal settings (Figure 5). The Ionian mode was judged more suitable to the salvation narrative and the Phrygian mode more suitable to the condemnation narrative \[ F(1,186) = 145.75, p < .0001 \]. Again, mode interacted with medium, \[ F(1,186) = 10.24, p < .005 \], reflecting a larger difference between the two organ settings than the two vocal settings (Figure 6).

These interactions indicate that organ settings, as opposed to vocal settings without words, elicited more contrastive judgments of suitability of mode to both melody and text. Thus, listeners may rely more on the text than on the harmonization in interpreting vocal materials. The interaction

![Fig. 5. Church congregants' ratings of the suitability of Phrygian and Ionian modes to the melody. Listeners heard organ or vocal versions of the two modal settings.](image-url)
Fig. 6. Church congregants' ratings of the appropriateness of condemnation and salvation narratives to organ or vocal versions of each modal setting.

of medium and mode in the perception of narratives also reflects baroque compositional practice. Our analysis of historical data indicated that composers made consistent choices of mode and narrative when setting the melody for organ but not when setting it for voice. If contemporary listeners are similar to those of the baroque period, then composers may have had intuitive knowledge that the choice of mode was less crucial for vocal than for organ performances.

Experiment 2

Although contemporary churchgoers associate modes and texts much like baroque composers, it is unclear whether these associations are based on intrinsic musical factors or whether they reflect prevailing theological conventions. Accordingly, we posed the same question with theological content and context removed.

METHOD

Participants

The participants, 26 men and 39 women (age range = 18–60 years; M = 27.1 years), were drawn from the college and general community.

Materials

The materials were the same as in Experiment 1.
Procedure

Participants listened to the tapes in a quiet room on campus (Sony stereo cassette deck TC-W32, Sony headphones CD550). They were told that we were studying whether a song could tell a story, even if no words were present, and they were asked to keep two stories in mind—one about a person who behaved well and was rewarded, the other about a person who behaved badly and was punished. Listeners rated each of the two settings on a scale of 1 (highly appropriate to punishment) to 7 (highly appropriate to reward).

RESULTS AND DISCUSSION

The data were analyzed by means of a repeated-measures ANOVA, with mode (Ionian, Phrygian) as the within-subject variable and medium (organ, vocal) as the between-subjects variable. Ionian settings were judged more suited to reward and Phrygian settings to punishment \( F(1,63) = 31.93, p < .0001 \). Medium interacted with mode \( F(1,63) = 7.79, p < .01 \), reflecting a larger difference between ratings of the two organ settings than between ratings of the two vocal settings (Figure 7). Thus, despite the removal of these hymns from a religious content and context, the associations among text, mode, and medium remained intact.

Experiment 3

Our analysis of the historical data revealed that the cadential structures of the Phrygian and Ionian settings were very similar, differing only in the

![Fig. 7. Adults’ ratings of the appropriateness of punishment and reward narratives to organ and vocal versions of each modal setting.](image-url)
cadences at the end of three phrases (the first, its repetition, and the last). In light of these subtle differences, the dramatic interpretive distinctions are surprising. According to Walther (1732/1953), the mode of the piece influences the entire setting, implying that the first cadence creates the tonal expectations for the hymn. Thus, subsequent cadences may be perceived as being on different scale steps of the mode implied by the first cadence, with the last cadence confirming the mode of the opening. If, however, the first cadence actually sets the tonal expectations for the hymn, it is not clear why other theorists (e.g., Crüger, 1625; Lippius, 1612/1977) emphasized the role of the last cadence, rather than the first, in defining the mode. To assess which cadence contributes more to the perception of a hymn’s mode, and thus its suitability to a particular text, we interchanged the final phrases of both settings (the Ionian ending on the Phrygian setting and vice versa) and obtained ratings of the suitability of modes to texts.

METHOD

Participants

The participants, 25 men and 43 women (age range = 17–50 years; M = 21.8 years), were from the college and general community.

Materials

The materials were the same as those of Experiment 1, except for the final phrase (measure 10, beat 4, to measure 12) of each setting, which was interchanged.

Procedure

The procedure was the same as in Experiment 2.

RESULTS AND DISCUSSION

The setting with the Phrygian opening and Ionian conclusion was judged more suitable to punishment (M = 3.47), and the setting with Ionian opening and Phrygian conclusion was judged more suitable to reward (M = 4.52) [t(67) = 2.93, p < .005]. Apparently, listeners judged the hymns as appropriate for reward or punishment, depending on the mode implied by the first cadence.

A repeated-measures ANOVA was done to compare the results from incongruent settings with those from the congruent settings of Experiment 2. The between-subjects variable was congruence (congruent, incongruent) and the within-subject variable was mode of the opening phrase. There was a significant effect of mode [F(1,131) = 41.32, p < .0001], indicating that pieces with Ionian openings were associated with reward and those
with Phrygian openings were associated with punishment. Moreover, congruence interacted with mode \[ F(1, 131) = 6.05, p < .05 \], reflecting a smaller difference between the congruent and incongruent settings with Phrygian openings than between the congruent and incongruent settings with Ionian openings (Figure 8). The narrative judgments in response to the Phrygian opening were relatively unaffected by a change in mode at the end of the piece, in contrast to those of the Ionian opening, which were greatly affected by the incongruent ending. Although listeners judged both congruent and incongruent settings opening in the Ionian mode to be appropriate to the reward story, ratings of the former were more extreme.

**Experiment 4**

Although children can recognize some musical metaphors, linking animals in stories such as “Peter and the Wolf” or “Carnival of the Animals” to specific musical passages (Trainor & Trehub, 1992), and major/minor keys to happiness and sadness (Dolgin & Adelson, 1990; Kastner & Crowder, 1990; Terwogt & Van Grinsven, 1988, 1991), it is unclear whether they have access to more abstract metaphors involving reward and punishment narratives. The purpose of the present experiment, then, was to ascertain whether children’s interpretations of music are influenced by mode and medium, as are those of adults.

![Graph](image)

**Fig. 8.** Adults’ ratings of the appropriateness of punishment and reward narratives to modal settings whose openings and conclusions were congruent or incongruent.
METHOD

Participants

The participants were 53 children (26 boys, 27 girls) 5 years (+3 months) old, 49 children (23 boys, 26 girls) 7 years (+3 months) old, and 41 children (21 boys, 20 girls) 9 years (+3 months) old.

Materials

The musical materials were the same as those used in Experiment 1. To make the stories and ratings interesting and comprehensible to children, they were accompanied by visual materials. The rating scale consisted of a large card with seven squares from left to right. The left-most square depicted a smiling rabbit eating ice cream; the right-most square depicted the same rabbit seated unhappily on a bed indoors while other rabbits could be seen playing outside (Figure 9). Children were given a small toy rabbit to hold and place on one of the squares when asked to do so.

Procedure

Children listened individually to the materials (same as Experiment 1) in a quiet room on campus. While sitting in front of the large card, the experimenter read the following description:

This is Bunny the Rabbit. Most of the time Bunny behaves well but sometimes Bunny does not. When Bunny behaves well, Bunny gets ice cream. When Bunny doesn’t behave, Bunny doesn’t get to play outside with the other rabbits. Sometimes music tells stories. Even songs that don’t have words can tell stories—it’s all in our imagination. You are going to hear two songs. If you think the song really is telling a story about Bunny the Rabbit behaving and getting ice cream, put Bunny in this square [the experimenter pointed to the ice cream picture]. If you think the song really is telling a story about Bunny the Rabbit misbehaving and not getting to play outside with the other rabbits, put Bunny in this square [the experimenter pointed to the bedroom picture]. You could also put Bunny somewhere in the middle if you think the song is only sort of about one of the stories.

The experimenter then presented each excerpt and asked children to put the toy rabbit on one of the squares, based on the suitability of the music for a “favorable” or “unfavorable” outcome.

Fig. 9. Illustrations used for children’s rating scale.
RESULTS AND DISCUSSION

The data were analyzed by means of a repeated-measures ANOVA, with mode (Ionian, Phrygian) as the within-subject variable and medium (organ, vocal) and age (5, 7, 9 years) as between-subjects variables. There was a significant effect of mode \([F(1,137) = 18.92, p < .0001]\), with the Phrygian mode being associated with punishment \((M = 3.64)\) and the Ionian mode with reward \((M = 4.96)\).

No other significant effects or interactions were found. The absence of a main effect of age and of a mode-by-age interaction indicates the relative similarity of text-mode associations across the three groups of children. Furthermore, the lack of a mode-by-medium interaction indicates that medium does not influence children's association of mode and narrative, as it does for adults. Children's and adults' performance (Experiment 2), collapsed across medium, was compared by means of a repeated-measures ANOVA, with age as a between-subjects variable and mode as a within-subject variable. As expected, the Ionian settings were found to be more appropriate to reward \((M = 5.12)\) and the Phrygian settings to punishment \((M = 3.48)\) \([F(1,204) = 42.48, p < .0001]\). There was no effect of age, however, and no interaction between mode and age, indicating comparable text-mode associations across adults and children.

General Discussion

Our historical analysis and empirical findings reveal that baroque composers and contemporary listeners preferred the Ionian to the Phrygian mode. Moreover, they considered the Ionian mode better suited to a favorable text, such as one involving salvation or reward, and the Phrygian mode to an unfavorable text, such as one involving condemnation or punishment. Baroque composers, but not contemporary churchgoers, linked the Ionian mode to vocal settings and the Phrygian mode to organ settings, but adult listeners and composers associated text and mode more strongly for organ than for vocal settings.

Familiarity may play a role in listeners' judgments of greater suitability of the Ionian mode to the melody. Not only is an Ionian setting of the melody provided in the current United Church Hymnbook (1971), but the Ionian mode is identical to the modern major scale. The Phrygian mode, however, is rarely used in contemporary music. Schenker (1935/1979) considered the melody to be best served by Ionian settings. Thus, listeners' judgments may have reflected their preference for the familiar tonal system over the archaic modal one.

Given the well-documented links between the major mode and “happiness” and between the minor mode and “sadness” (Crowder, 1985; Hevner,
1935; Kastner & Crowder, 1990; Scherer & Oshinsky, 1977), perhaps it is not surprising that the Ionian mode was associated with a positive narrative and the Phrygian mode with a negative narrative. In this respect, our conclusions extend previous evidence of mode/affect associations to the level of mode and narrative.

Because of the associations made by baroque composers between medium and mode, we had expected listeners to judge Phrygian-mode/organ harmonizations and Ionian-mode/vocal harmonizations to be best suited to the melody, and Ionian-mode/organ harmonizations and Phrygian-mode/vocal harmonizations to be least suited to the melody. Although this hypothesis was not confirmed, medium nevertheless affected judgments. The Ionian mode was preferred in both performance media, but the effect was considerably greater for organ settings than for vocal settings. Medium affected text/mode associations substantially more for Phrygian than for Ionian settings. Perhaps the relative strength of the Ionian setting’s final cadence (i.e., dominant to tonic) renders the harmonization less susceptible to the effects of medium. By contrast, the relatively less conclusive cadence that ends the Phrygian setting, which contemporary theorists sometimes describe as a half cadence on the dominant (e.g., Lerdahl & Jackendoff, 1983), allows a greater influence of medium.

Our quantitative analysis of the baroque repertoire revealed that composers associated text and mode in organ settings of the melody but not vocal settings. Why might this be the case? Perhaps composers were confident that the words would effectively transmit the meaning in vocal contexts, relegating the communicative function of musical elements to secondary status. The associations of mode and narrative are particularly striking in view of the similarities between Phrygian and Ionian settings. Composers distinguished the two settings by implying different modes in the first, third, and final cadences, but the remaining five cadences were much the same. When the first and third cadences implied the Ionian mode, but the concluding cadence was Phrygian, listeners still associated the setting with the reward narrative. Similarly, when the first and third cadences implied the Phrygian mode, but the concluding cadence was Ionian, listeners still associated the setting with the punishment narrative. Although listeners were most influenced by what they heard first, the ending qualified their interpretation, as reflected in less pronounced neutral associations when the modes implied by the opening and closing were incongruent. These results raise questions about the tendency of baroque theorists to privilege the ending, rather than the beginning, when assigning a mode to a piece.

Finally, children 5, 7, and 9 years old associated mode and text much like adults. To do so necessitated attention to subtle distinctions between the Ionian and Phrygian settings as well as differential interpretations of the musical subtleties. The substantial similarity of adults’ and children’s
text/mode associations indicate that extramusical associations such as these do not depend on a lifetime of listening to the music of one's culture, being available to listeners as young as 5 years old. Whether these associations arise from cultural conventions that are acquired from incidental exposure to music in early life or whether they reflect some elements of "natural" meaning remains to be determined. By contrast, links between medium and meaning, which were evident to baroque composers and which qualified the interpretations of contemporary adult listeners, were not apparent to young children. Adult-child dissimilarity with respect to medium and their similarity with respect to mode are consistent with the interpretation that musical exposure accounts for the mode/medium interactions and that "natural" or inherent factors contribute to the text/mode associations.2

References


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