

Western Classical Music in the Minor Mode is Slower (Except in the Romantic Period)

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ABSTRACT: Two studies are reported that examine the relationship between musical mode and tempo in Western classical music. In the first study, modes were determined for 331 works bearing the tempo markings *largo*, *adagio*, *allegro*, or *presto*. Slower tempo markings are significantly more likely to be associated with the minor mode in the case of music from the Baroque and Classical periods, whereas the reverse trend is observed in music from the Romantic period. In the second study, an analysis of 21 audio recordings of theme-and-variation keyboard movements (from all three style periods) shows that variations written in the minor mode are performed more slowly than neighboring variations in the major mode. These tempo-related observations are largely consistent with research in speech prosody, which has shown that sad speakers speak relatively slowly.

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IN a number of cultures, music is commonly thought to exhibit or portray a variety of emotions. Among these purported emotions, perhaps the most common contrast is that between sadness and happiness (e.g., Heinlein, 1928; Hevner, 1935). A number of researchers have drawn attention to parallels between affective cues in speech and similar cues in music (e.g., Juslin & Laukka, 2003). In the case of sadness, speech research has identified a number of prosodic cues that characterize utterances judged sad. Among other acoustical cues, sad speech is associated with slow speaking rates. For example, Breitenstein, van Lancker and Daum (2001) showed that slower speech rate is associated with sadness in samples of both German and American English. Similarly, Siegman and Boyle (1993) found that slow speech rate is associated with sadness and depression. In this study, we investigate whether a parallel association between sadness and slow tempo can be found in Western classical music.

HYPOTHESIS

In light of the research on vocal prosody, we propose to test the following hypothesis:

H1. Western classical music deemed to exhibit a sad affect will tend to exhibit a slower tempo.

In order to test this, each of the principal terms in the hypothesis must be operationalized so as to permit quantitative measurement. Specifically, we need to address three main terms: sad affect, tempo, and Western classical music (which we henceforth refer to as ‘classical music’). Of course sadness or sad affect is a subjective experience. As Kivy (1980) has noted, to humans, the face of a St. Bernard dog may appear to express sadness, but the dog may feel no such emotion. That is to say, it would be a mistake to interpret a specific facial arrangement as necessarily an indication that the dog is sad. Similarly, although the majority of listeners may hear a work as evoking or portraying sadness, it would be misguided to regard the piece itself as somehow sad. If we want to know whether a given musical work conveys or represents sadness, we would ideally ask listeners for their opinions. In this study, however, we did not ask listeners to judge whether particular musical passages evoke or represent sadness. For convenience, we simply used the *mode* (major or minor) as a practical estimate of whether listeners would likely report a passage to be sad. Playing major and minor versions of the same classical pieces, Hevner (1935) found that listeners judge the minor-mode versions to be more

sad, depressing, mournful, tragic, pathetic, gloomy, and plaintive than the major-mode versions. We should also note that, in addition, Hevner found that the minor mode is associated with the terms yearning, restless, weird, dramatic, mysterious, serious, sober, dreamy, frustrated and vague. Of course, there are numerous pieces where the presumed association between the minor mode and sadness does not appear to hold. In Handel's *Messiah* for example, the aria "He Was Despised" might be regarded as evoking or portraying feelings such as grief, pathos, or sadness, yet the work is in the major mode. At the same time, in some minor-mode passages (such as the opening section of Mozart's *Rondo Alla Turca*) most listeners would not characterize the predominant feeling as sad.

In classical music, the minor mode is used for many purposes, not merely for the presumed purpose of evoking or portraying a particular emotion. By way of example, the minor mode may be used to increase a compositional contrast, to add musical variety, or as a means of delineating formal divisions in a work. Alternatively, the minor mode may be used merely because its use in a particular context conforms to an existing musical tradition or convention. Or a composer may have employed the minor mode for no specific reason. Despite these caveats, we will assume that at least some passages composed in the minor mode are intended or expected to represent or evoke sadness. The various exceptions notwithstanding, the widely assumed association between the minor mode and sadness might be expected to provide a useful, though imperfect, operational definition for perceived or experienced sadness.

Determining the mode of a work is not always straightforward. Many works alternate between major and minor passages, other works are ambiguous, and some works have no discernible mode at all. A work in the minor mode might end in the major; more rarely, major-mode works sometimes end in the minor (such as the last movement of Prokofiev's first violin sonata). Having noted these difficulties, in practice, mode determination often proves straightforward.

Apart from questions regarding the use of the minor mode and the problem of mode determination, another methodological issue concerns the measurement of tempo. To begin with, we can distinguish two tempo concepts: the tempo intended by a composer and the tempo actually executed by a performer. In the case of the composer, explicit metronome markings sometimes appear in a published score, but more commonly composers have relied on generic tempo terms, such as *allegro*. Unfortunately, many tempo terms are notoriously vague. Some indications such as *moderato* and *andante* are difficult to assess and compare. In addition, many works prior to the classical period contain no tempo markings at all. In the case of recorded performances, one might measure the tempo in terms of the average beats per minute. However, even in this case, tempos may be difficult to compare. For example, a work performed at quarter note = 60 beats per minute would normally be regarded as slower than a work performed at quarter note = 72. This interpretation becomes questionable, however, if the nominally slower work contains a significantly higher density of notes per time unit, or the performer consistently stresses shorter note values than in the nominally faster work. Either of these situations may cause listeners to judge the nominally slower work as the faster paced performance. In the two studies reported below, we have attempted to circumvent these measurement issues.

STUDY #1

In addressing the hypothesis, we might begin by looking for an association between the mode of a musical work and its notated tempo marking. In order to avoid ambiguous tempo terms, we chose to restrict the study to works whose tempos are unambiguously fast or slow. *A priori*, we chose four standard tempo terms: *largo*, *adagio*, *allegro*, and *presto*. The first two terms clearly specify slow tempos, whereas the latter two terms clearly specify fast tempos. Accordingly, we predict an association between the minor mode and works bearing a tempo indication of *largo* or *adagio*, and conversely, an association between the major mode and works bearing a tempo indication of *allegro* or *presto*.

Sample

Since our hypothesis assumes an enculturated link between the minor mode and sadness, the population of music of interest is all classical music in which the major-minor/happy-sad association is presumed to apply. For practical reasons, we restricted our sample to the works available on the classical music online database www.ClassicsOnline.com. This database contains over 50,000 audio tracks whose contents can be accessed through numerous search options. Using this database, we made independent searches of track titles using the four target tempo terms. These searches yielded varying numbers of

items: 862 tracks for *largo*, 2,163 tracks for *adagio*, 6,879 tracks for *allegro*, and 1,369 tracks for *presto*.

Often the track titles returned by these searches included tempo modifiers, such as *allegro vivace* or *adagio serioso*. If the modifier was considered a qualifying adjective, the work was retained in the study sample. All other modifiers caused the track to be excluded. Some descriptors included indications of a change of tempo within a work or movement, such as *adagio - andante* or *moderato - presto*. Our method of mode determination focused on the beginnings of the sampled pieces (see below). If the starting tempo conformed to the target tempo term, then the recording was retained in the sample. Conversely, if the target tempo occurred later in the movement or work, the track was eliminated from the sample. Some pieces in the database were listed more than once due to the presence of multiple recordings of the same work. In these cases, only a single recording for each work was sampled. Finally, some occurrences of the target tempo term proved to be a component of an Italian title and were not actually intended to designate a tempo. For example, in Mozart's opera *Don Giovanni*, there is an aria entitled "Presto, Presto Pria Ch'ei Venga" – a title that refers to the opera's programmatic action rather than to the tempo of the aria itself. Once again, such items were eliminated from the sample.

In order to help maximize the independence of the individual observations, we established two *a priori* sampling criteria. First, we resolved to sample no more than two works for any given composer. Second, in order to avoid excessive reliance on particular stylistic periods, we resolved to sample roughly equivalent numbers of works from the three main historical periods constituting the so-called "period of common practice" for Western art music: the Baroque, Classical, and Romantic periods. The period of common practice approximately corresponds to post-modal and pre-atonal practices and coincides with the era when passages are most straightforwardly categorized as major or minor.

From each of the four repertoire lists, we aimed to select 90 works for study. This should have resulted in 360 sampled works. However, due to the sampling criteria described above, we were unable to sample the full 90 works for each of the four tempo terms. As a consequence, our sample consisted of 331 works.

In determining the mode for each piece, we focused on the work's beginning. First, we listened to determine whether the apparent mode at the beginning was representative of the work or movement as a whole. In some cases, the introduction of the work contrasted with the remainder of the work, in which case the track was discarded. For example, the opening of the slow movement in Smetana's first string quartet forms a marked contrast (in terms of mode) with the rest of the movement.

Since the online database contains many obscure composers, consulting scores for each of the sampled works was deemed impractical. Consequently, all mode characterization (major/minor) was done by ear. In order to assess the ease of judging modes by ear, we carried out a pilot test. From a total of 100 recordings, we found that characterizing the mode proved uncomplicated in 80 percent of the cases. Of the 20 percent of the recordings that proved difficult to categorize by ear, roughly half could be regarded as tonal compositions whose modality was difficult to decipher – often because the music included few if any cadences, avoided the tonic, or involved mixed modality. The remaining half of the difficult cases might be regarded as highly chromatic, polytonal, or atonal. Nearly all of the ambiguous pieces were classified in the database as "Late Romantic" works. Consequently, we decided to exclude Late Romantic works from the main study. In collecting the actual study data, each recording was audited and classified as either: obviously major-sounding, obviously minor-sounding, or not obviously major- or minor-sounding. If a sampled recording was classified as not obviously major or minor, that work was eliminated. In classifying the mode of the works, the authors adopted a conservative attitude, discarding any work whose mode might be regarded as unclear.

Given the above sampling criteria, some 20 recordings were eliminated. While the pilot test suggested that 20 percent of the recorded works would be difficult to categorize, in the main study, the number of difficult classifications proved to be less than 10 percent. This improvement probably originated in the decision to exclude works deemed Late Romantic.

Results

The aggregate results for all three style periods are summarized in Table 1, which shows the tallies for the different tempo terms for both major and minor modes.

Table 1: Association of Different Tempo Terms with Major/Minor Modes

	Major	Minor
Largo	36	32
Adagio	54	36
Total	90	68
Allegro	61	29
Presto	42	41
Total	103	70

In order to test whether a significant association exists between the mode and the tempo terms, we used a chi-square test. Amalgamating the data for the slow tempos and the fast tempos, there is no statistically significant association between tempo and mode (applying Yates' correction for continuity, $\chi^2 = 0.13$; $\phi = 0.02$; $df = 1$; $p = 0.72$). At face value, this result is inconsistent with the hypothesis.

In carrying out our study, we noticed substantial differences between the different stylistic periods. Table 2 provides a breakdown according to the three periods as classified in the Classical Music Online database:

Table 2: Association of Tempo and Mode by Style Period

	BAROQUE		CLASSICAL		ROMANTIC	
	Major	Minor	Major	Minor	Major	Minor
Largo	14	16	12	10	10	6
Adagio	11	19	22	8	21	9
Total	25	35	34	18	31	15
Allegro	23	7	26	4	12	18
Presto	13	14	21	5	8	22
Total	36	21	47	9	20	40

From this table we carried out post-hoc analyses by period. For the Baroque period, the results are consistent with the hypothesis. There is indeed a significant association between the minor mode and slow tempo with the major mode associated with fast tempo (applying Yates' correction for continuity, $\chi^2 = 4.58$; ϕ (Cramer's V) = 0.20; $df = 1$; $p = 0.016$ [one-tailed]). Similarly, in the case of the Classical period a significant association was found consistent with the hypothesis (applying Yates' correction for continuity, $\chi^2 = 4.01$; ϕ (Cramer's V) = 0.19; $df = 1$; $p = 0.022$ [one-tailed]). Finally, in the case of the Romantic period, a significant *reverse* association is evident. That is, in the sample of Romantic music, the minor mode is associated with faster tempos, and the major mode is associated with slower tempos (applying Yates' correction for continuity, $\chi^2 = 10.77$; ϕ (Cramer's V) = 0.32; $df = 1$; $p = 0.002$ [two-tailed]).

Discussion

It is perhaps noteworthy that a number of music scholars have questioned the received distinction between Baroque and Classical music. These scholars argue that there is considerable stylistic continuity, especially when compared with the later change from Classicism to Romanticism. It has been common to refer to a combined Baroque/Classical era as "Gallant" in style (e.g., Gjerdingen, 2007). The results of Study #1 are consistent with this interpretation. That is, *prima facie*, the results suggest a notable stylistic change linked to the advent of the Romantic period.

In operationalizing the theoretical terms in our hypothesis, recall that we used the minor mode as a surrogate for sadness. Instead of asking listeners to judge the sadness of passages, we simply assumed that music in the minor mode would tend to evoke or portray sadness for Western-

enculturated listeners. Although perceptual research provides support for this assumption, that support is qualified. As mentioned earlier, Hevner's (1935) study of the emotional connotations of mode showed that, apart from sadness, the minor mode is also associated with seriousness, sobriety, restlessness, yearning, frustration, and the dramatic. Among music scholars, these same qualities are commonly used to describe Romantic music. This affective character is conveyed by the expression *Sturm und Drang* ('storm and stress,' or 'storm and longing'). Associated with Goethe, Herder, and Lenz in the late 18th century, the phrase was also used to refer to the impassioned or agitated elements evident in Romantic music. It is possible that linking the minor mode with fast (rather than slow) tempos contributes to the serious, restless, and dramatic qualia identified in Hevner's study. Although further research is clearly warranted, one might speculate that the reverse trend found in the Romantic sample might be a consequence of the more dramatic emotional portrayals thought to be characteristic of Romantic music.

STUDY #2

At least in the case of Baroque and Classical music, there is qualified evidence consistent with the experimental hypothesis. However, at least two methodological objections might be raised concerning our initial study. First, in the above study, no effort was made to control for the possible effects of genre. The type of music or genre is likely to be associated with tempo. For example, polkas may be faster than waltzes; sicilianos may be slower than marches, etc. In principle, such tempo differences may have no relationship whatsoever to sad affect. For example, hymns may be performed slower on average than piano études, simply because large groups of singers may have more inertia than nimble fingers. Similarly, a fugue may be slower than a courante for reasons that have nothing to do with sadness. If the musical concept of the courante is characterized by the use of the major mode and the use of a faster tempo, then any observed association between the major mode and fast tempo may be spurious. In short, any observed association between tempo and mode may be an artifact of the so-called third variable problem. In order to control for this possible confound, we would ideally compare the association of mode and tempo among works from the same genre. For example, we would predict that slower courantes would be more likely to employ the minor mode than faster courantes. In our first study, no effort was made to control for this possible confound; a better test of Hypothesis 1 would examine musical samples selected from the same genre.

A second objection might be raised concerning the meaning of the purported tempo terms. While an indication such as *allegro* may be regarded as principally indicating tempo, such a term could also be interpreted as instructions regarding the manner or mood of performance. Since *allegro* means both "quick" and "lively," one could interpret this indication as already biased against sadness. By relying on tempo terms such as *allegro*, our study may have invited a spurious correlation.

In order to address both of these possible confounds, a second study was carried out. In this study, we elected to ignore notated tempo indications entirely and chose to measure directly the tempo of recorded performances. Unfortunately, determining the tempo from a sound recording is not straightforward. As noted earlier, it may be difficult to compare tempos directly. Listeners may disagree about the duration of the basic beat or tactus. For one listener, a given recording may evoke a tempo of 60 beats per minute, whereas another listener might regard the salient beat to be 120 beats per minute. One might suppose that this problem can be avoided by agreeing to measure the tempo with respect to a fixed notated duration, such as the tempo of successive quarter notes. However, this assumes that a quarter duration occupies the same level in the metric hierarchy for both compositions. In *alla breve* works, for example, the beat is notated using half notes rather than quarter notes. In order to circumvent this problem, we restricted our measurements to tempo variations *within* a given musical work – as described below.

Our method might be illustrated by considering two versions of a hypothetical piece, one in the major mode and one in the minor mode. If the minor mode is associated with sadness, and if the sense of sadness is enhanced by performing the music more slowly, and if performers are motivated to convey this implied mood, we might predict that performers would perform the minor mode version slower than the equivalent major mode version. Accordingly, we could re-compose musical works originally written in the major in order to create a minor-mode version (and vice versa), and then compare the tempos of paired performances by several different performers. (In her 1935 study, Hevner employed a similar approach by instructing a pianist to play major- and minor-mode versions of several works.) However, there are at least two problems that arise from this approach. Changing a work's mode may dramatically change the musical sense of the work; it may also introduce technical difficulties that could affect the tempo of performance.

In the current study we chose an analogous but more convenient method. Instead of recomposing pieces and having a musician perform them, we chose to use commercial recordings. The genre we studied was the keyboard theme-and-variations genre. In this genre, it is common for nearly the same material to be presented in both the major and minor modes. This genre of music has existed since at least the 17th century and spans the entire period of common practice. The theme-and-variation form begins with a brief passage, often 16 or 32 measures in length, that presents the basic thematic material. A series of repetitions ensues in which the thematic passage is reiterated (with varying degrees of recognizability), each time featuring a different variation technique. The number of variations can range from just two or three to as many as 30 or more. In many, though not all, theme-and-variation works, the mode is varied: a work in a major mode may contain one or more variations in the minor mode, and similarly, minor-mode works may contain one or more variations in the major mode.

An advantage of the theme-and-variation genre is that there generally exists a constant harmonic or melodic structure across all variations. This structural constancy allows us to compare successive variations and determine whether the tempo has increased or decreased. If we assume that slower tempo enhances the perception of sadness, and if we assume that performers attempt to convey the salient mood or character of musical passages, and if we assume that it is appropriate to render the minor-mode passage with a sadder mood, then we might predict that performers will employ a slower tempo for variations in the minor mode compared with their major-mode counterparts.

Performers sometimes increase or decrease the tempo over the course of a work for dramatic effect. Such tempo changes may also arise from unconscious tendencies to drift over the course of a performance. In order to minimize such possible confounds, we decided to compare variations with their immediate alternate-mode neighbors (both preceding and following). Thus, for example, if the seventh variation in a nominally major-mode set of variations is rendered in the minor mode, we would compare the tempo of this variation with the tempos of the preceding sixth and ensuing eighth variations – provided they are in the (contrasting) major mode.

In estimating the tempos for each variation, we counted a standard number of beats and measured the elapsed time in the recording. No effort was made to compensate for possible rubato effects. In exploring the musical materials used in the study, it was noted that although the presence of rubato is clearly noticeable, these tempo deviations were found to have little influence on the overall tempo assessment.

In operational terms, our original hypothesis may be reformulated as follows:

H2a. The total duration of a fixed number of beats will be longer for a minor-mode variation from a theme-and-variation keyboard work than for both its preceding and ensuing major-mode variations.

H2b. The total duration of a fixed number of beats will be shorter for a major-mode variation from a theme-and-variation keyboard work than for both its preceding and ensuing minor-mode variations.

Sample

Once again, our hypothesis assumes an enculturated link between the minor mode and sadness. For this reason, the population of interest is all classical music in which the major-minor/happy-sad association is presumed to apply.

The recordings used in this study were again sampled from the Classical Music Online database, www.ClassicsOnline.com. In selecting our musical sample from the database we established an *a priori* set of sampling criteria. First, the work had to include “variation” in the title. Second, a sampled work had to contain at least one deviant-mode variation. Third, in order to increase the data independence, no more than two recordings could be sampled from any given composer. Fourth, roughly equivalent numbers of works would be sampled from each of the three style periods: Baroque, Classical, and Romantic. Finally, in order to avoid potential confounds arising from varying instrumentation, we decided to limit our sample to a fixed instrumentation. An exploration of the database established that the most common theme-and-variation recordings make use of the piano. Accordingly, we explicitly limited our sample to recordings of variations employing the piano.

Initially, we intended to carry out a pilot study based on 10 sampled works. Ideally, this would involve sampling 3 or 4 works from each of the Baroque, Classical and Romantic periods. However, our sampling criteria proved much more restrictive than anticipated. For example, the second criterion alone eliminated all but one of the Baroque theme-and-variation series. Also, although there were ample numbers of works available from the Romantic period, our fourth criterion limited us to a

selection of just four. In the end, we sampled variations from 7 variation sets (1 Baroque, 2 Classical, and 4 Romantic). The works and target variations were sampled using a pseudo-random procedure.

Method

In brief, the method involved selecting a variation, measuring the duration of a fixed number of beats, and comparing this measurement to comparable measures made from closely preceding and following variations whose modes contrasted with the target variation. Due to our second sampling criterion, we knew that each sampled work contained a mixture of major- and minor-mode variations. In selecting a variation for study, a random variation was selected and its mode determined. One by one, the preceding variations were examined to find a variation whose mode differed from the target variation. A similar procedure was used to locate the first ensuing variation that differed in mode. These three variations were then used for our tempo comparison. If the selected target variation did not allow us to identify the needed comparison variations, then a new target variation was selected. This procedure was repeated until three suitable study variations were identified. The tempo of each variation was determined by counting a fixed number of beats (e.g. 32) and measuring the elapsed time in seconds. In all cases, the differences in tempo between the variations (faster or slower) proved to be obvious.

Results

The main results are shown in Table 3. Each line in the table pertains to a different variation set. The composer is identified in the first column. (The specific theme-and-variations studied are identified in Appendix I.) The second and third columns show the mode relationship between the three variations and the corresponding tempo relationships. The last column indicates the number of tempo relationships that are consistent with the hypothesized association. In total, eleven out of fourteen tempo relationships are consistent with the hypothesis. With an expected ratio of 1:1, and an actual ratio of 11:3, the hypothesized association between mode and tempo proves statistically significant without sampling data beyond that used in the pilot study ($\chi^2 = 4.57$; $df = 1$; $p < 0.05$). Although questions might be raised about the independence of the two observations made within each work, we nevertheless concluded that further sampling was unnecessary.

Table 3: Tempo and Mode Relationships between Studied Variations

Work	Mode Relationship	Tempo Relationship	Hypothesis Consistency
Beethoven	major/minor/major	faster/slower/faster	2/2
Bach	major/minor/major	faster/slower/faster	2/2
Schumann	minor/major/minor	faster/slower/slower yet	1/2
Dvorak	major/minor/major	faster/slower/faster	2/2
Glazunov	minor/major/minor	faster/slower/faster	0/2
Mompou	major/minor/major	faster/slower/faster	2/2
Mozart	major/minor/major	faster/slower/faster	2/2

Discussion

The two studies reported in this paper were motivated by observations in speech prosody linking sad affect with slower speaking rates. We hypothesized that a parallel relationship might also exist in Western classical music. Using the minor mode as a convenient though admittedly rough approximation for music-related sadness, we predicted an association between the minor mode and slower tempo.

In Study #1, we looked for an association between slow tempo markings and the minor mode, as well as an association between fast tempo markings and the major mode. Specifically, we tabulated the modes of musical passages whose tempos were indicated by the terms *largo*, *adagio*, *allegro*, and *presto*. We found no association between the slower tempo markings and the use of the minor mode. However, when the sample was analyzed according to style period we found significant results for each of the individual sub-samples. In the case of Baroque and Classical repertoires, there is indeed evidence consistent with the main hypothesis. In the case of the Romantic repertoire, there is a significant

reverse association: minor-mode music is associated with the faster tempos whereas major-mode music is associated with the slower tempo markings. It bears reminding that the sample used for Study #1 was *a priori* conceived as a balanced aggregate of three sub-samples. Before we began sampling, we resolved to select materials from the three main stylistic eras from the period of common practice and sought to weight each of these sub-samples equally. In our statistical analyses, we found no significant results for the aggregate sample, but did find significant results for all three sub-samples. As a statistical matter, these results suggest that the aggregate sample is not a homogeneous population – at least with respect to the hypothesis under consideration. The statistical result for the aggregate group is therefore not consistent with the conventional disproof of the null hypothesis. Therefore, it would be inappropriate to conclude that Study #1 shows no relationship between tempo and mode.

In contrast to Study #1 where the music was sampled on the basis of tempo markings, in Study #2 we examined music without regard to its tempo indication. Instead, we looked at how changes from major-to-minor or minor-to-major within a single composition influenced the tempo. In this study, we found a significant tendency for minor mode passages to be played more slowly than major mode passages in the same composition. These differences in tempo may have arisen from either interpretive nuances introduced by the performer, notated tempo markings in the score, or a combination of both. In either case, the results are consistent with the hypothesized relationship between tempo and mode.

At least two interpretations might be offered to account for the results reported in this study. One interpretation is that the presumed relationship between sadness-related affect in classical music and tempo is equivocal. A second, admittedly speculative interpretation is that the evidence is broadly consistent with the hypothesis, but that in the Romantic period, the minor mode was more commonly linked to other emotions. Recall that in Hevner's study of the emotions associated with the minor mode, common descriptors included seriousness, sobriety, restlessness, yearning, frustration, and the dramatic. As noted earlier, many of these descriptors would not seem out of place in characterizing Romanticism. In musical portrayals of feelings such as restlessness, drama, and frustration, one could well imagine composers electing to employ a faster rather than slower tempo. In short, our second interpretation suggests that the relationship between sadness, the minor mode, and slow tempo, evident in the Baroque and Classical periods, was subsequently dwarfed in the Romantic period by other uses of the minor mode. This interpretation may warrant further research.

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APPENDIX I: VARIATIONS USED IN STUDY #2

1. Johann Sebastian Bach, *Goldberg Variations*, BWV 988
2. Robert Schumann, *Symphonic Etudes*, opus 13
3. Antonin Dvorak, *Variations in A-flat Major*, opus 36
4. Alexander Glazunov, *Variations in F# Minor*, opus 72
5. Federico Mompou, *Variations on a Theme by Chopin*
6. Wolfgang Amadeus Mozart, *Variations on a Theme by Duport*, KV 573
7. Ludwig van Beethoven, *Variations on a Theme by Diabelli*, opus 120