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음악 전공자와 비전공자의 음악 미적 경험 및 작품에 대한 미적 판단 비교 분석

Comparative Analysis of Aesthetic Experiences and Judgments of Musical Works Between Music Majors and Non-Music Majors

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Abstract This study compares the aesthetic experiences and judgments of music majors and non-music majors during classical music listening. A total of 166 undergraduate students participated, responding to a survey based on the Affect-Space Framework (ASF) proposed by Schubert, North, and Hargreaves (2016). The survey examined both emotional and affective responses across internal and external dimensions after listening to three classical pieces, each representing distinct emotional characteristics and structural complexity. The results revealed no significant differences in the overall distribution of internal and external emotional responses between the two groups. However, music majors reported experiencing deeper positive internal affective responses (e.g., awe, frisson), indicative of aesthetic experiences, particularly when listening to structurally complex and extended pieces. In terms of external affective responses (aesthetic judgments), music majors were more likely to evaluate the artistic qualities of the music as "beautiful" or "sublime," whereas non-music majors more frequently described the same pieces as "odd" or "strange." These findings highlight the critical role of musical expertise in shaping aesthetic experiences and judgments. Music education appears to enhance listeners' sensitivity to musical complexity and to foster positive affective engagement, thereby contributing to deeper and more meaningful aesthetic appreciation.

Key words: aesthetic experience, aesthetic judgment, music listening, music education, arts education

초록 본 연구는 음악 전공 대학생과 비전공 대학생을 대상으로, 음악감상 시 나타나는 미적 경험과 미적 판단의 차이를 비교하였다. 이를 위해 총 166명의 대학생을 대상으로 서로 다른 정서적 특성과 구조적 특징을 지닌 세 곡의 클래식 음악을 제시하고, Schubert, North, & Hargreaves(2016)가 제안한 정서-차원 체계(ASF)에 기반한 설문을 실시하여 내·외적 감정과 정서 반응을 조사하였다. 분석 결과, 두 집단 간 내·외적 감정 반응의 전체 분포에서 유의미한 차이는 없었으나, 구조적으로 복잡하고 긴 곡에서 음악 전공자는 비전공자보다 감동과 전율 등 보다 깊은 내재적 정서(미적 경험)를 경험하였다. 또한, 작품에 대한 외재적 정서 반응(미적 판단)에서도 음악 전공 대학생이 곡의 예술적 특성을 '아름다운' 또는 '숭고한'으로 평가한 비율이 높았던 반면, 비전공 대학생은 이를 '기이한' 또는 '이상한'으로 평가한 비율이 더 높았다. 이러한 결과는 음악적 전문성이 미적 경험과 판단 과정에서 중요한 역할을 하며, 음악교육이 심미적 민감성과 정서적 반응을 심화하여 궁극적으로 더욱 깊고 의미 있는 미적 감상을 가능하게 함을 시사한다.

주제어: 미적 경험, 미적 판단, 음악감상, 음악교육, 예술교육

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Ⅰ. Introduction

Aesthetic experiences, encompassing moments such as appreciating the subtle hues of a painting or immersing oneself in a moving symphony, offer valuable insights into how individuals perceive, interpret, and derive meaning from the arts (Leder & Nadal, 2014; Maslow, 1954). These experiences go beyond mere sensory pleasure by engaging cognitive and emotional processes, thereby contributing to the formation of personal and cultural identities (Hargreaves & North, 2010; Huron, 2014; Menninghaus et al., 2015). Among the various art forms, music holds a unique position because it can evoke profound emotional responses, facilitate cognitive engagement, and foster aesthetic appreciation. These qualities have drawn considerable interest from scholars across diverse disciplines, including psychology, neuroscience, and music education (Jacobsen, 2006, 2010; Kirsch, Urgesi, & Cross, 2016; Pearce et al., 2016).

Music appreciation is shaped by a variety of factors, including cultural background, personal experiences, and formal training. Among these, formal musical training is particularly significant, as it distinguishes music majors from non-majors. Research suggests that formal training enhances perceptual acuity, analytical listening, and emotional engagement (Fredrickson & Coggiola, 2003; Madsen & Geringer, 2004). Music majors, through extensive education and structured practice, develop a heightened sensitivity to musical elements such as timbre, harmony, and form, enabling them to experience music in a more refined and nuanced manner. In contrast, non-majors, who have limited exposure to formal musical training, tend to rely on intuitive and immediate responses, which may result in simpler or less sophisticated aesthetic judgments.

Although prior research has examined differences in musical preferences and perceptual abilities between music majors and non-majors, a comprehensive understanding of how these groups experience music aesthetically remains limited. In particular, much of the existing work has focused on broad listener preferences or performance-based perception (Fredrickson & Coggiola, 2003; Madsen & Geringer, 2004), leaving unanswered questions about the extent to which formal training fosters deeper affective and evaluative engagement with music. To address this gap, the Affect-Space Framework (ASF) proposed by Schubert, North, and Hargreaves (2016) provides a systematic approach to analyzing musical aesthetic experiences. Specifically, the ASF conceptualizes aesthetic responses along three key dimensions: (1) an internal vs. external locus, (2) affect-valence vs. emotion-valence, and (3) deep vs. shallow hedonic tone, thereby distinguishing whether the response arises from the listener's subjective reflection or the perceived qualities of the music, and whether the engagement involves profound states (e.g., awe) or more

superficial preferences. By integrating these dimensions, the ASF offers a structured way to probe how listeners' formal training might shape not only immediate emotional reactions but also deeper aesthetic judgments.

Despite its theoretical potential, empirical research applying the ASF to compare the experiences of music majors and non-majors remains unexplored. Specifically, the question of how musical training influences internal aesthetic experiences and external evaluative judgments warrants closer examination. Gaining insight into this question is crucial not only for understanding the role of formal education in shaping musical engagement but also for designing pedagogical strategies that can foster richer emotional and aesthetic appreciation among diverse listener groups.

Accordingly, this study aims to explore the differences in internal and external affective and emotional responses between music majors and non-majors during classical music listening, utilizing the ASF as a guiding framework. By applying this framework, the study seeks to provide a deeper understanding of how formal music education influences the way listeners engage with music aesthetically and emotionally. The findings of this study are expected to illuminate the complexities of music appreciation and contribute to educational strategies that enhance music appreciation and engagement across various listener groups.

Ⅱ. Literature Review

1. Aesthetic experience of music

The aesthetic experience associated with music encompasses far more than the simple enjoyment of pleasant sounds. It involves a dynamic constellation of perceptual, cognitive, and emotional processes that can profoundly shape how individuals engage with and interpret music (Gabrielsson, 2010; Sloboda, 1992). Such experiences, which intertwine sensory impressions with intricate mental and affective responses, have been shown to influence a variety of life choices and activities. For example, the desire to learn a musical instrument or to deepen one's understanding of music often springs from meaningful aesthetic encounters that inspire long-term commitment and appreciation (Juslin & Laukka, 2004; Sloboda, 1992).

The psychological significance of these aesthetic interactions cannot be overstated. Research indicates that aesthetic engagement with music can foster heightened self-awareness and bolster self-esteem (Juslin & Laukka, 2004). Moreover, recent findings suggest that music education

improves mental health outcomes when emotional intelligence is high (Wang et al., 2022), while individuals who engage in profound musical experiences also tend to demonstrate enhanced social competencies and problem-solving skills (Winston et al., 2022; Wu & Lu, 2021). These benefits extend beyond personal development, influencing interpersonal relationships and community well-being. By reinforcing shared values and cultural identities, aesthetic music experiences can strengthen social bonds and nurture collective psychological health (DeNora, 2000; Markovic, 2012).

Such effects underscore the importance of understanding the mechanisms behind these experiences, not merely out of scholarly curiosity but also for practical applications. Insights into the aesthetic dimension of music can inform music education, guide therapeutic interventions, and shape community-based arts programs aimed at improving social cohesion and mental health outcomes (Koelsch, 2014; MacDonald, Kreutz, & Mitchell, 2012). Recognizing these complexities, researchers continue to develop theoretical models that systematically investigate how listeners' interactions with music give rise to multifaceted aesthetic experiences.

2. Music and emotion

The capacity of music to evoke strong emotional responses has long captivated scholars in diverse fields, ranging from psychology to neuroscience and cultural studies. Levitin's (2006) foundational work demonstrated that music's impact resonates far deeper than mere entertainment: it can activate neural reward circuits and influence physiological states, thereby shaping listeners' emotional landscapes. Building on such perspectives, Juslin and Laukka (2004) identified specific structural elements, such as rhythm, melody, harmony, and timbre, that can reliably trigger a spectrum of emotional responses. These elemental properties interact within complex musical contexts to yield nuanced affective experiences.

In addition, socio-cultural inquiries have highlighted the context-dependent nature of musical emotions. Zillman and Gan (1997) argued that cultural background, personal experience, and the immediate social environment all play crucial roles in determining how individuals emotionally engage with music. Differences in cultural traditions, for instance, can result in distinct emotional interpretations of the same musical passage. Meanwhile, neuroscientific research provides further insight into these phenomena. Koelsch (2014) illustrated how listening to music can recruit regions of the brain responsible for emotion processing, supporting the therapeutic use of music in contexts such as mental health treatment, cognitive rehabilitation, and stress reduction (Fancourt,

Finn, Warran, & Wiseman, 2022).

Despite substantial progress, scholars continue to grapple with the multifaceted ways in which music molds emotional states. Some researchers employ cross-cultural comparative methods (Thompson & Quinto, 2011; Morrison & Demorest, 2009), while others combine psychological, neuroimaging, and ethnographic approaches to unveil the interplay of symbolic meaning, personal memory, and contextual cues in music listening (Taruffi & Koelsch, 2014). These interdisciplinary efforts reflect a growing consensus that fully understanding musical emotions demands an integrative approach, one that acknowledges both the universality of certain emotional responses and the variability introduced by individual and cultural differences.

Juslin and Västfjäll (2008) further contributed to this discussion by proposing six underlying mechanisms of musical emotion, which explain how different cognitive, physiological, and psychological processes contribute to emotional responses during music listening. These mechanisms include brain stem reflex, evaluative conditioning, emotional contagion, visual imagery, episodic memory, and musical expectancy. Brain stem reflex accounts for immediate, involuntary reactions to sudden or intense sounds, while evaluative conditioning explains how past experiences shape emotional responses to certain musical styles. Emotional contagion describes how listeners unconsciously mirror the emotions expressed in music, and visual imagery refers to the mental images that music evokes, which in turn elicit emotional responses. Episodic memory highlights how personal memories associated with music influence emotions, and musical expectancy explains how deviations from anticipated musical structures can evoke emotions such as surprise, pleasure, or tension. Together, these mechanisms provide a theoretical foundation for understanding how music elicits both universal emotional responses and individual variations shaped by memory and experience.

3. Affect-space framework

The Affect-Space Framework (ASF), proposed by Schubert, North, and Hargreaves (2016), has been recognized as a systematic tool for exploring the complexity of aesthetic experiences related to music. This framework introduces three axes to describe aesthetic experiences: *locus*, *hedonic tone*, and *affect-emotion valence*.

The first axis, *locus*, distinguishes the origin of emotional or affective states as either internal (arising from within the listener) or external (perceived as attributes of the music itself). Internal emotions are often linked to personal reflections or subjective feelings, while external emotions

are tied to the perceived characteristics of the musical piece.

The second axis, *hedonic tone*, spans a spectrum of pleasure, ranging from shallow enjoyment (e.g., liking or pleasantness) to profound aesthetic delight (e.g., awe or chills). This axis captures the depth and intensity of the listener's affective engagement with the music.

Finally, *affect-emotion valence* refers to the distinction between "affect-valence," which involves the attraction (positive, such as preference or awe) or repulsion (negative, such as hatred or disgust) that a listener feels toward the artwork, and "emotion-valence," which denotes a specific emotional quality (for instance, happiness as positive or sadness as negative).

Within the ASF, aesthetic experiences occur when an internal locus combines with a positive affect-valence, allowing listeners to move beyond mere auditory perception to engage in meaningful and rich aesthetic experiences. Conversely, when an external locus combines with a positive affect-valence, listeners engage in aesthetic judgment, where they evaluate the artistic and structural qualities of the music itself (Schubert, North, & Hargreaves, 2016).

Empirical studies further underscore the ASF's utility. Schubert, North, and Hargreaves (2020) asked participants to choose music they loved (labeled "great/classic") and music they disliked, then describe their experiences. A word frequency analysis revealed that disliked selections frequently evoked negative internal affect—terms like frustration, anger, and irritation—with virtually no references to beauty. As a result, the authors categorized these as nonaesthetic experiences. By contrast, loved pieces elicited both external attributions of beauty and positive internal feelings (e.g., calm, joy, and nostalgia), indicative of deeper aesthetic engagement. Taken together, these findings demonstrate how the ASF's core dimensions (locus, hedonic tone, and affect-valence) can differentiate between aesthetic and nonaesthetic listening experiences.

4. Differences in aesthetic and emotional responses between music and non-music majors

Musical training significantly impacts how listeners perceive and experience musical elements. Music majors, in particular, tend to analyze and interpret musical structures and contexts in greater depth, often resulting in more refined and sophisticated aesthetic experiences and judgments. Indeed, a variety of studies have consistently demonstrated that musical training not only enhances sensitivity to pitch perception and musical nuances, but also facilitates deeper engagement with complex musical structures.

Madsen and Geringer (2004) examined how music majors and non-majors responded to gradual

pitch changes (ascending or descending). Both groups reported negative responses to descending pitch shifts. However, only music majors found ascending pitch changes to be unpleasant, suggesting that musical training enhances sensitivity to subtle musical changes, such as pitch shifts, leading listeners to perceive these changes as musical inaccuracies rather than neutral variations.

Similarly, Hancock (2008) found that music majors responded more negatively than non-majors when a violin concerto's pitch center was gradually altered (either sharp or flat). While non-majors exhibited little difference in aesthetic response, music majors were highly sensitive to small pitch deviations, reinforcing the idea that training heightens auditory discrimination and influences aesthetic judgment in music.

Furthermore, Bugos, Heller, and Batcheller (2014) demonstrated that musicians performed significantly better than non-musicians in a musical nuance perception task, indicating that trained musicians are more adept at recognizing subtle expressive variations in musical phrasing. These findings collectively suggest that musical training not only enhances pitch perception but also refines the ability to perceive nuanced expressive elements in performance.

Fredrickson and Coggiola (2003) also investigated how music majors and non-majors perceived musical tension in two recorded versions of St. Louis Blues: a relatively "stylized" version by Nat King Cole and a more improvisation-rich performance by Ella Fitzgerald. Although both groups displayed broadly similar tension contours, music majors tended to report lower tension for the simpler (Cole) piece overall and responded more positively to the complexity of the Fitzgerald version. In contrast, non-majors showed comparatively higher tension for the improvisational performance, presumably due to its unpredictability and harmonic complexity. This suggests that formal musical training helps listeners interpret and appreciate complex musical structures as both aesthetically valuable and less overwhelming.

Chang, Lin, and Hoffman (2021) further explored differences in music listening experiences and emotional engagement. Music majors reported significantly higher positive affect and lower negative affect compared to non-majors, particularly excelling in the contemplation subscale. This suggests that music majors engage in deeper reflective processing when listening to music, potentially contributing to their ability to derive greater emotional meaning from complex compositions. Taken together, these studies highlight how formal music education shapes both the perceptual acuity and the emotional dimensions of music listening, laying a foundation for further investigation into the specific mechanisms, such as those described by the ASF, that underlie these enhanced responses.

Ⅲ. Method

1. The participants and procedure

A total of 166 undergraduate students participated in this study, comprising 83 music majors (all of whom were piano majors) and 83 non-music majors. All participants provided informed consent. The sample included 140 female and 26 male students, with a mean age of 20.83 years (SD = 2.02, range = 18-28).

Three classical compositions were selected to represent diverse musical characteristics and emotional tones: (1) J. S. Bach *Goldberg Variations, BWV 988* (Variation 1), noted for its harmonic balance and structured form; (2) N. Rimsky-Korsakov *Flight of the Bumblebee*, featuring rapid, energetic passages; and (3) L. v. Beethoven *Moonlight Sonata* (Op. 27, No. 2, 1st movement), known for its melancholic and reflective nature. Each piece was played in its entirety during separate class sessions to ensure consistent listening conditions.

Participants were instructed to listen attentively and focus on their emotional and affective responses. Immediately after each listening session, they completed a questionnaire assessing their internal and external emotional and affective reactions based on the ASF. No pre-tests or post-tests were conducted, as the focus was solely on the emotional experiences reported during the listening sessions.

2. Survey design and structure

The survey utilized in this study was adapted from Bae (2023), which was based on the Affect-Space Framework (ASF) proposed by Schubert, North, and Hargreaves (2016). Following the ASF's distinction between internal and external loci of emotion and affect, the survey was structured into four sections, each addressing a specific aspect of emotional and affective responses.

(1) Internal Locus + Emotion Valence: This section focused on participants' immediate internal emotional reactions during listening (e.g., anger, joy, calm).
(2) External Locus + Emotion Valence: This section evaluated the perceived emotions conveyed by the music itself, such as perceiving the music as sad or joyful.
(3) Internal Locus + Affect Valence: This section assessed participants' overall internal

affective impressions that persisted after the piece concluded, which correspond to their aesthetic experience. Following the ASF framework, internal affect was categorized by Hedonic Tone into deep (e.g., awe, moved) and shallow (e.g., enjoyment, liking) affective responses.

(4) External Locus + Affect Valence: This section captured evaluative judgments of the music's aesthetic qualities, including descriptors such as beautiful, sublime, or odd.

This structure provided a comprehensive framework for analyzing participants' emotional and aesthetic engagement with the music, reflecting both their internal personal states and their perceptions of the music's expressive content.

Compared to Bae (2023), two key modifications were made in this study. First, survey item wording was refined to enhance clarity in distinguishing immediate emotional responses (e.g., "What emotion best describes how you felt while listening to this piece?") from overall affective impressions (e.g., "What overall feeling did this piece give you?"). Second, a multiple-response format was employed, allowing participants to select multiple emotions or affections for each question. This approach provided a more comprehensive representation of their emotional and affective states than the original single-response format.

3. Data analysis

Data analysis was conducted using Python's statistical libraries and IBM SPSS statistics. Because a multiple-response format was used, each emotional or affective choice was treated as a separate binary outcome ("selected" vs. "not selected"). This approach allowed a more detailed examination of how frequently each category was endorsed.

The analysis began with frequency and proportion calculations, where frequencies and proportions of selected responses were computed relative to the total number of participants in each group (n = 83 for both music majors and non-majors). Because participants could provide multiple responses, the proportions represent the percentage of participants endorsing each response category, rather than mutually exclusive choices.

Chi-square tests were conducted for each musical piece to compare differences in emotional and affective distribution between music majors and non-majors. During the analysis, some emotional and affective categories had expected frequencies below 5. To ensure the validity of the statistical tests, internal and external emotions, as well as external affection, were consolidated

into two categories: negative and positive. For internal affection, a more detailed classification was applied by categorizing responses into four groups: deep hedonic negative, shallow hedonic negative, deep hedonic positive, and shallow hedonic positive. Because participants could endorse both positive and negative emotions or affections for a single piece, the degrees of freedom varied across questions, reflecting how these co-occurring responses were distributed between groups.

To further investigate differences in specific emotional and affective categories between the two groups, Fisher's exact test was applied. This test was particularly suitable for cases where expected frequencies were low, providing more accurate statistical comparisons. The Fisher's exact test was conducted both for individual emotional categories (e.g., joy, sadness, frustration) and for broader dimensions such as positive and negative responses. This dual approach facilitated a comprehensive examination of both granular and overarching patterns in the emotional and affective responses of music majors and non-majors.

Ⅳ. Results

1. Internal emotional responses to selected music pieces

Internal emotional responses refer to the emotions that listeners personally feel during music listening. The frequencies and proportions of internal emotional responses reported by music majors and non-music majors to the music of Bach, Rimsky-Korsakov, and Beethoven are presented in <Table 1>.

An initial review of these responses revealed distinct emotional trends for each piece. For Bach's music, positive emotions such as joy and happiness were reported more frequently than negative emotions, indicating that both groups experienced the piece as uplifting and harmonious. In contrast, Beethoven's music elicited predominantly negative emotions (e.g., sadness and grief), suggesting that both groups found the piece emotionally profound and melancholic. Rimsky-Korsakov's music showed a more balanced distribution of positive and negative emotions, reflecting its dynamic and energetic nature. These patterns suggest that the emotional characteristics of each musical piece influenced participants' responses, regardless of their musical training background.

<Table 1> Internal emotional responses (multiple responses allowed)

		Bach		Rimsky-Korsakov		Beethoven	
		Music	Non-Music	Music	Non-Music	Music	Non-Music
		n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Positive	Excited	13(15.66)	21(25.3)	77(92.77)	67(80.72)	0(0.0)	1(1.2)
	Joy	60(72.29)	63(75.9)	2(2.41)	2(2.41)	1(1.2)	1(1.2)
	Happiness	51(61.45)	38(45.78)	2(2.41)	2(2.41)	0(0.0)	0(0.0)
	Calm	12(14.46)	4(4.82)	0(0.0)	2(2.41)	11(13.25)	9(10.84)
Negative	Anger	1(1.2)	2(2.41)	18(21.69)	19(22.89)	1(1.2)	5(6.02)
	Fear	1(1.2)	2(2.41)	32(38.55)	25(30.12)	9(10.84)	14(16.87)
	Sadness	0(0.0)	1(1.2)	0(0.0)	1(1.2)	69(83.13)	67(80.72)
	Grief	0(0.0)	3(3.61)	0(0.0)	1(1.2)	50(60.24)	45(54.22)
	Longing	5(6.02)	3(3.61)	0(0.0)	0(0.0)	20(24.1)	9(10.84)

* *Note.* Multiple responses were allowed, so the sum of percentages may exceed 100%. Percentages are based on the total number of participants in each group (n = 83).

To statistically compare these distributions between music majors and non-music majors, internal emotional responses were categorized into two groups—negative emotions (*anger, fear, sadness, grief, longing*[1]) and positive emotions (*excited, joy, happiness, calm*)—to address the issue of low expected frequencies and ensure the validity of the chi-square analysis. The results of the chi-square tests are presented in <Table 2>.

<Table 2> Chi-square test results comparing internal emotional response distributions between music and non-music majors

	χ^2	*p*-value	*dof*
Bach	5.53	.595	7
Rimsky-Korsakov	6.63	.356	6
Beethoven	5.97	.742	9

The chi-square analysis revealed no statistically significant differences in the distribution of internal emotional responses between music majors and non-music majors for all three pieces (Bach: χ^2 = 5.53, p = .595; Rimsky-Korsakov: χ^2 = 6.63, p = .356; Beethoven: χ^2 = 5.97, p = .742). Additionally, Fisher's exact test was conducted to further analyze the positive and

1) "Longing" can evoke mixed feelings, but here it was classified as negative because it is typically tied to an unfulfilled desire or sense of absence.

negative emotional categories separately, and no significant differences were found between the two groups. These findings suggest that both groups exhibited generally similar patterns in their internal emotional responses.

To explore potential differences beyond overall trends, Fisher's exact test was applied to individual emotional categories for each musical piece. The results indicated that for Bach's music, no significant differences were found between music majors and non-majors for any of the emotional categories. However, for Beethoven's music, a significant difference was observed in the emotion of "longing" (p = .040), with music majors reporting higher levels compared to non-majors. Similarly, for Rimsky-Korsakov's music, a significant difference was found in the emotion of "excitement" (p = .038), suggesting that music majors experienced higher excitement in response to the dynamic elements of the composition. Overall, aside from these specific findings, no other significant differences in internal emotional responses were observed between the two groups, indicating general similarities in their internal emotional experiences.

2. External emotional responses to selected music pieces

External emotional responses refer to the emotions that listeners perceive the music as expressing. The frequencies and proportions of external emotional responses to the music of Bach, Rimsky-Korsakov, and Beethoven, reported by the two groups, are presented in <Table 3>.

<Table 3> External emotional responses (multiple responses allowed)

		Bach		Rimsky-Korsakov		Beethoven	
		Music	Non-Music	Music	Non-Music	Music	Non-Music
		n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Positive	Excited	14(16.87)	19(22.89)	74(89.16)	61(73.49)	0(0.0)	0(0.0)
	Joy	64(77.11)	59(71.08)	2(2.41)	2(2.41)	0(0.0)	1(1.2)
	Happiness	46(55.42)	42(50.6)	1(1.2)	2(2.41)	0(0.0)	0(0.0)
	Calm	18(21.69)	9(10.84)	0(0.0)	1(1.2)	11(13.25)	4(4.82)
Negative	Anger	0(0.0)	2(2.41)	18(21.69)	16(19.28)	1(1.2)	4(4.82)
	Fear	0(0.0)	2(2.41)	31(37.35)	36(43.37)	6(7.23)	11(13.25)
	Sadness	3(3.61)	0(0.0)	0(0.0)	0(0.0)	64(77.11)	70(84.34)
	Grief	1(1.2)	4(4.82)	3(3.61)	8(9.64)	53(63.86)	47(56.63)
	Longing	2(2.41)	1(1.2)	0(0.0)	0(0.0)	23(27.71)	11(13.25)

* *Note.* Multiple responses were allowed, so the sum of percentages may exceed 100%. Percentages are based on the total number of participants in each group (n = 83).

An initial review of these external emotional responses revealed patterns similar to those in the internal emotional responses. Positive emotions were more frequently reported for Bach's music, while negative emotions dominated in Beethoven's music. Rimsky-Korsakov's music showed a relatively balanced distribution of positive and negative emotions, reflecting its dynamic qualities. These findings suggest that both groups exhibited similar tendencies in perceiving the emotional content expressed of each piece.

As in the internal emotional responses, external emotional responses were also categorized into positive and negative emotions for statistical comparisons. The results are presented in <Table 4>. The chi-square test results indicated that there were no statistically significant differences in external emotional response distributions between music majors and non-majors for any of the three pieces (Bach: $\chi^2 = 6.56$, $p = .256$; Rimsky-Korsakov: $\chi^2 = 4.35$, $p = .630$; Beethoven: $\chi^2 = 5.63$, $p = .466$). Additionally, Fisher's exact test was conducted to analyze the positive and negative emotional categories separately, and no significant differences were found between the two groups. These findings suggest that music majors and non-majors exhibited generally similar patterns in their external emotional responses when interpreting the emotional content of the music.

<Table 4> Chi-square test results comparing external emotional response distributions between music and non-music majors

	χ^2	*p*-value	*dof*
Bach	6.56	.256	5
Rimsky-Korsakov	4.35	.630	6
Beethoven	5.63	.466	6

To further examine potential differences beyond overall trends, Fisher's exact test was applied to individual emotional categories. The results revealed no significant differences for any emotional category in Bach's music, indicating that both groups similarly perceived the emotional content expressed by the piece. However, in Rimsky-Korsakov's music, music majors were significantly more likely to perceive "excitement" compared to non-majors ($p = .016$), suggesting that their professional training may have heightened their sensitivity to the piece's dynamic elements. Similarly, for Beethoven's music, music majors reported significantly higher recognition of "longing" ($p = .033$), which may reflect their deeper engagement with the emotional nuances embedded in the structure of the piece.

Overall, aside from these specific findings, no other significant differences in external emotional responses were observed between the two groups, suggesting general similarities in how music majors and non-majors perceive the emotional qualities expressed in the music.

3. Internal affective responses to selected music pieces

Internal affection responses refer to the aesthetic affection and impressions experienced internally by listeners during music appreciation. The frequencies and proportions of internal affection responses reported by music majors and non-music majors for the music of Bach, Rimsky-Korsakov, and Beethoven are presented in <Table 5>.

<Table 5> Internal affective responses (multiple responses allowed)

		Bach		Rimsky-Korsakov		Beethoven	
		Music	Non-Music	Music	Non-Music	Music	Non-Music
		n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Deep negative	Anger	0 (0.0)	1 (1.2)	5 (6.02)	8 (9.64)	0 (0.0)	4 (4.82)
	Annoyance	0 (0.0)	4 (4.82)	8 (9.64)	8 (9.64)	0 (0.0)	1 (1.2)
	Disgust	1 (1.2)	0 (0.0)	2 (2.41)	1 (1.2)	0 (0.0)	4 (4.82)
	Frustration	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.2)	24 (28.92)	41 (49.4)
	Hate	0 (0.0)	0 (0.0)	3 (3.61)	0 (0.0)	2 (2.41)	4 (4.82)
Shallow negative	Dislike	0 (0.0)	2 (2.41)	7 (8.43)	4 (4.82)	0 (0.0)	2 (2.41)
	Boredom	3 (3.61)	4 (4.82)	0 (0.0)	1 (1.2)	6 (7.23)	5 (6.02)
Deep positive	Awe	4 (4.82)	1 (1.2)	10 (12.05)	3 (3.61)	11 (13.25)	8 (9.64)
	Chills	3 (3.61)	1 (1.2)	30 (36.14)	28 (33.73)	28 (33.73)	20 (24.1)
	Frisson	4 (4.82)	2 (2.41)	31 (37.35)	23 (27.71)	5 (6.02)	10 (12.05)
	Moved	2 (2.41)	2 (2.41)	1 (1.2)	1 (1.2)	42 (50.6)	11 (13.25)
	Thrills	4 (4.82)	8 (9.64)	51 (61.45)	40 (48.19)	0 (0.0)	0 (0.0)
	Transcendence	5 (6.02)	3 (3.61)	8 (9.64)	10 (12.05)	7 (8.43)	6 (7.23)
Shallow positive	Enjoyment	57 (68.67)	61 (73.49)	4 (4.82)	5 (6.02)	0 (0.0)	2 (2.41)
	Liking	38 (45.78)	27 (32.53)	2 (2.41)	5 (6.02)	16 (19.28)	7 (8.43)
	Pleasantness	26 (31.33)	22 (26.51)	1 (1.2)	0 (0.0)	0 (0.0)	1 (1.2)

* *Note.* Multiple responses were allowed, so the sum of percentages may exceed 100%. Percentages are based on the total number of participants in each group (n = 83).

An initial review of these responses revealed distinct patterns across the three musical pieces.

For Bach's music, while positive affective responses such as enjoyment and liking were more frequently reported than negative responses, the majority of positive reactions were categorized as shallow hedonic positive emotions. This suggests that both groups experienced the piece as aesthetically pleasing but with a relatively lower level of deep aesthetic engagement compared to the other compositions.

In contrast, Beethoven's music elicited a more polarized pattern, with significantly higher deep hedonic negative responses, particularly frustration, among non-music majors. However, music majors demonstrated notably higher levels of deep hedonic positive responses, indicating that they were able to derive greater aesthetic engagement from the complexity and emotional depth of the piece. These findings suggest that Beethoven's music evoked stronger emotional responses in both positive and negative dimensions, highlighting differences in engagement between the two groups.

Rimsky-Korsakov's music, on the other hand, exhibited a predominant trend of deep hedonic positive responses across both groups. The piece's energetic, technically challenging, and fast-paced nature may have contributed to its ability to evoke stronger aesthetic experiences compared to the other compositions. This trend suggests that such compositions, characterized by intensity and dynamism, might be particularly effective in eliciting deep aesthetic responses regardless of musical training.

Unlike previous analyses, internal affective responses were categorized into four distinct groups —deep hedonic negative, shallow hedonic negative, deep hedonic positive, and shallow hedonic positive—to facilitate statistical comparisons while accounting for differences in the depth of aesthetic engagement. The results are presented in <Table 6>. The chi-square test results indicated no statistically significant differences in the distribution of internal affective responses between music majors and non-music majors for Bach's music (χ^2 = 9.64, p = .723) and Rimsky-Korsakov's music (χ^2 = 22.03, p = .339), suggesting that both groups experienced similar overall internal affective patterns in response to these compositions. However, a significant difference was observed for Beethoven's music (χ^2 = 29.58, p < .05), suggesting that the structural complexity and the slow, sustained expressive development characteristic of the sonata form may have influenced differing internal aesthetic experiences based on musical training.

<Table 6> Chi-square test results comparing internal affective response distributions between music and non-music majors

	χ^2	*p*-value	*dof*
Bach	9.64	.723	13
Rimsky-Korsakov	22.03	.339	20
Beethoven	29.58	.014*	15

* $p < .05$

To further explore these differences, Fisher's exact test was applied to the four internal affective categories. The results indicated no significant differences between the two groups for Bach's and Rimsky-Korsakov's music. However, for Beethoven's music, significant differences emerged in the overall internal affective categories as well as in specific affective responses. Music majors reported significantly higher levels of deep hedonic positive affections ($p < .001$) and the specific affection of "being moved" ($p < .001$), reflecting a stronger aesthetic engagement with the piece. In contrast, non-majors exhibited significantly higher levels of deep hedonic negative affections ($p = .001$) and the specific affection of "frustration" ($p = .011$), suggesting greater difficulty in appreciating Beethoven's music and a lower preference for its complex expressive qualities. These findings underscore the impact of musical training on the depth and intensity of aesthetic experiences, with music majors showing greater affective resonance with structurally intricate works.

Overall, these findings suggest that Bach's piece generally elicited surface-level positive affect among both groups, while Rimsky-Korsakov's energetic composition prompted deeper engagement regardless of musical training. In contrast, Beethoven's structurally complex and somewhat longer sonata produced more divergent affective responses, underscoring how formal training and various musical attributes (e.g., complexity, form) can shape the depth and quality of aesthetic experiences.

4. External affective responses to selected music pieces

External affective responses refer to listeners' judgments regarding the aesthetic qualities of each musical piece. The frequency and proportion of external affective responses to the three selected works in this study are presented in <Table 7>.

<Table 7> External affective responses (multiple responses allowed)

		Bach		Rimsky-Korsakov		Beethoven	
		Music	Non-Music	Music	Non-Music	Music	Non-Music
		n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Positive	Beautiful	44(53.01)	56(67.47)	1(1.2)	7(8.43)	51(61.45)	28(33.73)
	Sublime	32(38.55)	4(4.82)	1(1.2)	3(3.61)	46(55.42)	47(56.63)
	Wondrous	23(27.71)	13(15.66)	39(46.99)	35(42.17)	17(20.48)	10(12.05)
Negative	Ugly	0(0.0)	1(1.2)	3(3.61)	4(4.82)	1(1.2)	5(6.02)
	Strange	1(1.2)	6(7.23)	45(54.22)	30(36.14)	2(2.41)	12(14.46)
	Odd	8(9.64)	10(12.05)	16(19.28)	20(24.1)	0(0.0)	6(7.23)

* *Note.* Multiple responses were allowed, so the sum of percentages may exceed 100%. Percentages are based on the total number of participants in each group (n = 83).

An initial review of these external affective responses revealed distinct trends across the three pieces. Bach's music was generally evaluated positively by both groups, with high frequencies of responses such as "beautiful" and "wondrous," indicating that participants perceived it as aesthetically pleasing. Rimsky-Korsakov's music, on the other hand, received higher frequencies of "strange" and "odd" responses, suggesting that participants found the piece unconventional and challenging. Beethoven's music was predominantly described with positive terms such as "beautiful" and "sublime," reflecting a shared appreciation of its artistic value.

To facilitate statistical comparisons, external affective responses were categorized into two groups: negative (*ugly, strange, odd*) and positive (*beautiful, sublime, wondrous*). The Chi-square test results presented in <Table 8> showed statistically significant differences between music majors and non-majors for Bach's music (χ^2 = 21.49, p < .001) and Beethoven's music (χ^2 = 19.84, p < .001), suggesting that participants' evaluations of these pieces varied significantly based on their musical training background. In contrast, no significant differences were found for Rimsky-Korsakov's music (χ^2 = 6.58, p = 0.254), indicating that both groups perceived the aesthetic qualities of this composition similarly.

To further explore these differences, Fisher's exact test was conducted for both broader external affective categories and specific affections. The results revealed that for Bach's music, music majors were significantly more likely to provide positive evaluations compared to non-majors (p < .001), with music majors particularly describing the piece as "sublime" (p < .001).

<Table 8> Chi-square test results comparing external affective response distributions between music and non-music majors

	χ^2	*p*-value	*dof*
Bach	21.49	< .001	4
Rimsky-Korsakov	6.58	.254	5
Beethoven	19.84	< .001	4

Similarly, for Beethoven's music, significant differences were observed in both positive (p < .001) and negative (p < .001) external affective responses, suggesting that music majors were more likely to recognize the piece as aesthetically valuable, whereas non-majors were more inclined to judge it as lacking artistic value. Specifically, non-majors reported significantly higher frequencies of "odd" (p = .010) and "strange" (p = .028), indicating that they perceived the piece as unfamiliar or unconventional. Conversely, music majors were significantly more likely to describe the piece as "beautiful" (p < .001), emphasizing their appreciation of its aesthetic qualities.

For Rimsky-Korsakov's music, while no significant differences were found in overall positive or negative responses, music majors were significantly more likely to describe the piece as "strange" (p = .029), suggesting heightened sensitivity to the composition's unconventional elements. Despite this specific difference, the piece's energetic and recognizable qualities seem to foster broadly similar aesthetic perceptions across both groups.

Overall, these findings suggest that musical training significantly influences the perception of aesthetic qualities in classical music. Music majors demonstrated a stronger appreciation for the artistic value of complex compositions such as Bach's and Beethoven's works. Music majors were more likely to evaluate Bach's music as having greater artistic value compared to non-majors; however, there were no significant differences between the two groups in terms of negative evaluations. This suggests that, while non-majors may have been less inclined to recognize the artistic value of Bach's music to the same extent as music majors, they did not necessarily perceive it in a negative light. In contrast, Beethoven's music received more polarized reactions, with non-majors significantly more likely to describe it using negative terms such as "odd" and "strange," whereas music majors predominantly evaluated it positively. These findings highlight that musical training influences the perception of aesthetic value, with music majors engaging more deeply with structurally complex compositions.

Ⅴ. Discussion

This study examined the emotional and aesthetic responses of music majors and non-majors to three classical pieces by Bach, Rimsky-Korsakov, and Beethoven. The findings highlight both shared and divergent patterns in internal and external emotional responses, internal affective experiences, and external aesthetic judgments, revealing the influence of musical training on how listeners perceive and engage with the music.

1. Similarities in emotional responses across groups

Analysis of internal (felt) and external (perceived) emotional responses showed that both groups exhibited highly similar patterns. Rimsky-Korsakov's piece predominantly evoked excitement, Bach's piece elicited uplifting emotions, and Beethoven's music was strongly associated with sadness and grief in both internal and external responses. Although minor differences were observed, such as music majors reporting higher excitement for Rimsky-Korsakov and stronger longing for Beethoven, these variations were limited to specific emotions and did not affect the overall similarity between groups.

These results align with the brain stem reflex and emotional contagion, two of the six underlying mechanisms identified by Juslin and Västfjäll (2008). For instance, the brain stem reflex may explain the universal excitement in response to Rimsky-Korsakov's fast and energetic music, as sudden and intense auditory stimuli can trigger automatic physiological arousal. Meanwhile, emotional contagion likely contributed to the consistency in sadness and grief responses for Beethoven's piece, as listeners internalized the expressive qualities of the music. The strong similarity in emotional responses across groups suggests that certain musical features evoke shared emotional experiences regardless of musical training, reinforcing the idea that some aspects of musical emotion transcend expertise.

2. Internal affective responses and musical training

The analysis of internal affective responses related to aesthetic experience revealed distinct trends across the pieces. Bach's piece primarily elicited shallow hedonic positive responses (e.g., enjoyment) in both groups, suggesting aesthetic appreciation without deep engagement. Rimsky-Korsakov's music consistently evoked deep hedonic positive responses, highlighting its broad

appeal regardless of musical expertise. However, Beethoven's piece exhibited a polarized pattern—music majors reported significantly higher deep hedonic positive responses (being moved), whereas non-majors experienced deep hedonic negative responses (frustration), likely due to its structural complexity and slow, evolving form.

These findings align with Fredrickson and Coggiola (2003), which demonstrated that music majors engage more positively with complex music, whereas non-majors may experience cognitive overload or discomfort. Musical expectancy, as described by Juslin and Västfjäll (2008), further explains this pattern—music majors, being more familiar with classical structures, may have formed stronger expectations regarding Beethoven's harmonic progression and phrasing, leading to greater aesthetic elevation when these expectations were met or creatively subverted. In contrast, non-majors, lacking this structural awareness, may have struggled to anticipate musical developments, resulting in frustration. Visual imagery and episodic memory may have also influenced responses, as trained musicians could have formed stronger mental representations or personal associations with Beethoven's themes, enriching their engagement with the piece.

3. Aesthetic judgments and musical training

External affective responses, defined as aesthetic judgments of the music, showed notable differences between music majors and non-majors in evaluating Bach and Beethoven. Music majors more often described Bach's piece as "sublime" and Beethoven's piece as "beautiful," whereas non-majors were likelier to label Beethoven as "odd" or "strange." Rimsky-Korsakov's energetic and recognizable features elicited broadly similar aesthetic judgments across both groups, although music majors did report it as "strange" (p = .029) more frequently indicating a finer sensitivity to its unconventional elements.

These discrepancies can be partly attributed to evaluative conditioning, as described by Juslin and Västfjäll (2008). Music majors, repeatedly exposed to classical repertoire through practice, performance, and study, accumulate positive associations with structurally complex or melancholic works. Consequently, they may perceive Beethoven's slow, evolving passages as "beautiful," where non-majors, lacking these reinforced experiences, might find them "odd" or "strange." Chang, Lin, and Hoffman (2021) further observed that music majors generally exhibit higher positive affect and a more contemplative approach to listening, which can deepen their appreciation of complex pieces.

Meanwhile, Rimsky-Korsakov's readily accessible style seemed to evoke similar responses

across both groups, suggesting that some musical characteristics can transcend differences in training. However, the fact that music majors still noted “strange” more often highlights how formal training can heighten listeners’ sensitivity to specific nuances. Overall, this underscores the pivotal role of repeated exposure and reflective engagement in shaping how individuals ultimately judge a piece’s aesthetic value.

4. Limitations and future directions

Despite these insights, this study has several limitations. First, the sample was limited to individuals with and without formal musical training, but other factors such as cultural background, personal listening habits, and prior exposure to classical music were not controlled. These variables could influence emotional and aesthetic responses, and future research should examine their potential impact. Second, the study focused on three specific classical pieces, which may not fully represent the diversity of musical structures and styles found in classical music. Expanding the repertoire to include different genres and compositional techniques could provide a more comprehensive understanding of how musical training affects perception and engagement. Lastly, the study relied on self-reported emotional and aesthetic responses, which may be influenced by individual biases. Incorporating physiological or neural measures in future research could offer more objective insights into the mechanisms underlying musical engagement.

Ⅵ. Conclusion

This study shows that, although music majors and non-majors share broadly similar emotional responses to classical music, formal musical training can substantially deepen affective engagement with more structurally complex works. Specifically, while internal and external emotional reactions were largely alike across both groups, affection-based differences emerged most clearly with Beethoven’s slow, intricate composition: music majors reported richer positive aesthetic experiences, whereas non-majors were less inclined to recognize its “beauty” or “sublime” qualities. Both Bach and Beethoven were consistently rated higher by music majors in external affection (aesthetic judgments), suggesting that advanced training heightens appreciation of compositional complexity. By contrast, Rimsky-Korsakov’s energetic style prompted widely positive evaluations from both groups, even though music majors occasionally detected “strange”

elements, a testament to their greater sensitivity to unconventional features.

Taken together, these findings underscore how formal musical training amplifies the capacity to discern and value nuanced structural details, thereby enriching the aesthetic experience. At the same time, the fact that rhythmic and sensory-rich pieces evoked similarly strong emotional responses in both groups highlights the universal accessibility of certain musical qualities. Recognizing this duality has practical implications for music education and audience engagement: while cultivating deeper listening skills benefits those inclined toward complex works, leveraging inherently accessible musical features can foster inclusive appreciation among diverse audiences. By attending to both universal emotional triggers and the refined sensibilities fostered by repeated exposure and reflective engagement, educators and practitioners can bridge the gap between novice and expert listeners, ultimately broadening the scope and impact of classical music experiences.

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