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Affect-Space Framework를 이용한 대학생의 음악감상에서의 미적 경험 분석

Analyzing the Aesthetic Experience of College Students in Music Listening through the Affect-Space Framework

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Abstract The study aimed to explore the diversity of emotional and affective responses experienced by college students during music listening, based on the 'affect-space framework' (ASF) proposed by Schubert, North, and Hargreaves (2016). Three classical pieces representing various periods and styles were selected for the survey of 84 college students. The results are as follows. First, the pieces evoked profound affections and simultaneously contrasting emotions in college students, revealing the multilayered and complex nature of music perception. Second, when applying the ASF, noticeable gender differences were observed in the aesthetic experiences and judgments of various musical works. Third, participants' prior music education levels significantly influenced their aesthetic experience and artistic judgments of the pieces. Fourth, no clear correlation was found between the familiarity of the pieces and the aesthetic experience. These findings suggest that various factors can influence college students' music listening experiences and underscore the need for more detailed research.

Key words: aesthetic experience, music listening, affect-space framework, familiarity, musical emotion, music education

초록 본 연구는 대학생들의 음악감상 과정에서의 감정 및 정서 반응의 다양성을 Schubert, North, & Hargreaves (2016)가 제시한 'affect-space framework'(ASF)를 기반으로 탐색하였다. 여러 시대와 스타일을 대표하는 총 3곡의 클래식 악곡을 선정하고, 이에 대한 84명의 대학생의 반응을 설문조사를 통해 수집하였다. 연구 결과는 다음과 같다. 첫째, 선정된 악곡들은 대학생들에게 깊은 정서와 동시에 상반된 감정을 불러일으켜 음악 인식의 다층적이고 복잡한 특성을 드러냈다. 둘째, ASF의 적용 결과, 다양한 음악 작품에 대한 미적 경험 및 판단에서 성별에 따른 차이가 관측되었다. 셋째, 대상자들의 이전 음악 교육 수준은 악곡에 대한 미적 경험 및 예술적 판단에 유의미한 영향을 주었다. 넷째, 악곡의 친숙도와 미적 경험 사이에는 명확한 상관관계를 찾을 수 없었다. 이러한 결과는 대학생들의 음악감상에 있어 다양한 요소가 영향을 줄 수 있음을 시사하며, 더욱 세부적인 연구의 필요성을 제기한다.

주제어: 미적 경험, 음악감상, affect-space framework, 친숙함, 음악 정서, 음악 교육

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Ⅰ. Introduction

Aesthetic experiences, such as listening to music or observing a beautiful sunset, are deemed highly significant, enriching, and rewarding in human experiences (Leder & Nadal, 2014; Maslow, 1954). While philosophers have contemplated these experiences for centuries, psychologists in the past century have made substantial progress in understanding the essence of this phenomenon through empirical research, complemented by the advancement of brain scanning technology in recent decades (Hodges, 2014; Jacobsen, 2006, 2010; Kirsch, Urgesi, & Cross, 2016; Leder & Nadal, 2014; Pearce et al., 2016). Nevertheless, the fundamental psychology of experiencing aesthetics remains elusive (Huron, 2014).

Delving into the realm of music, particularly the intricate fabric of Western classical music, it is evident that various periods and styles elicit diverse emotional responses. The specific type of a musical piece might profoundly influence a listener's aesthetic experience, underscoring the importance of recognizing these nuances. Additionally, the role of familiarity, highlighted by Verhaeghen (2018) as pivotal in aesthetic appreciation, is noteworthy. Individual differences, such as gender and prior musical education experiences, might also play a significant role in shaping these aesthetic encounters. While research has pointed towards gender differences in aesthetic preferences in other art forms (Bernard, 1972; Pulzella, 2000), its direct influence on music remains largely unexplored.

Aesthetic experience pertains to the pleasure derived from contemplating an object judged to be beautiful (Augustin, Wagemans, & Carbon, 2012; Hargreaves & North, 2010; Huron, 2014; Menninghaus et al., 2015). Yet, these aesthetic experiences encompass a myriad of intricate factors, making them challenging to quantify or qualify. This complexity in research has opened up extensive debates centered on emotions. For instance, Juslin and Västfjäll (2008) examined the relationship between music appreciation and emotions, while Gabrielsson (2001) delved into the connection between strong musical experiences and emotions. Despite the valuable insights from these investigations, a recurring limitation is the ambiguous differentiation between 'emotion' and 'affect'. This literature gap underscores the necessity for a more inclusive framework. In response, Schubert, North, and Hargreaves (2016) introduced the 'affect-space framework' (ASF). This novel approach distinctively differentiates between 'emotion' and 'affect', providing a richer understanding of aesthetic experiences.

Given this context, the current study aspires to employ the ASF in examining the musical experiences of college students. The goal is to attain a more detailed comprehension of how

music impacts emotional and affective states. The specific research questions for this study include:

(1) How does the specific type of musical work shape subjective aesthetic experiences?
(2) How is gender manifested in subjective aesthetic experiences?
(3) How does prior musical education affect subjective aesthetic experiences?
(4) How does familiarity with a musical piece influence subjective aesthetic experiences?

By integrating these research objectives and questions, the current study seeks to provide a deeper and more comprehensive understanding of aesthetic experiences. Specifically, it aims to offer practical guidelines for enhancing education about aesthetic experiences, particularly in the fields of music. In doing so, the study hopes to pave the way for future research and contribute to a richer understanding of aesthetic appreciation and experience.

Ⅱ. Literature Review

1. Aesthetic experience of music

The aesthetic experience of music is a multidimensional phenomenon that goes beyond mere auditory pleasure. It encompasses a complex interplay of sensory, cognitive, and emotional elements, a perspective supported by various studies (Sloboda, 1992). These experiences often serve as powerful motivators for individuals to learn an instrument, cultivate a deep understanding and appreciation of music, and can even influence career choices (Juslin & Laukka, 2004; Sloboda, 1992).

The psychological impact of these aesthetic experiences is particularly significant. For instance, aesthetic experiences through music have been shown to contribute to increased self-awareness and self-esteem (Juslin & Laukka, 2004). Research also suggests that aesthetic experiences have a positive influence on emotional intelligence, social skills, and even problem-solving abilities (Juslin & Västfjäll, 2008).

Beyond the individual, the social dimensions of aesthetic experiences are also important. Within communities, aesthetic experiences through music can foster social bonds and contribute to cultural and psychological well-being. According to Markovic (2012), aesthetic experiences offer

‘mental pleasures’ that encourage individuals to play more active and positive roles in their social environments.

Considering this theoretical background, a deep understanding of aesthetic experiences through music has implications far beyond academic curiosity. It holds the potential to influence music education, psychological therapy, and social welfare. Therefore, this study will employ the ASF to explore the complex interactions between music listening and aesthetic experience.

2. Music and emotion

The emotional power of music is a topic that has intrigued researchers across various fields, from psychology to neuroscience. Levitin (2006) demonstrated that music’s impact extends beyond simple entertainment, affecting both the nervous system and emotional states. He argued that listening to music can activate the same neural pathways that are integral to feelings of reward and pleasure. Expanding on Levitin’s foundational work, Juslin and Laukka (2004) examined the specific mechanisms through which music induces emotions. They identified several key triggers, such as rhythmic patterns, melodic structure, and tonal complexity, that can evoke a wide range of emotional responses in listeners.

Zillman and Gan (1997) took a socio-cultural approach to explore how music shapes emotional experiences. They found that music’s emotional impact can be influenced by cultural background, personal experiences, and social settings, emphasizing the role of context in determining emotional outcomes. Meanwhile, research by Koelsch (2014) offered a neurological perspective, revealing how musical stimuli can activate areas of the brain associated with emotional processing. His findings have been influential in understanding the therapeutic potential of music, especially in contexts like mental health treatment and cognitive rehabilitation.

Despite the extensive research on this subject, the precise mechanisms through which music influences emotion remain an active area of inquiry. This complexity may be due, in part, to the multi-dimensional nature of music itself, encompassing elements such as rhythm, melody, lyrics, and even the social and cultural contexts in which it is experienced. As the field continues to evolve, scholars are increasingly employing interdisciplinary approaches, leveraging insights from psychology, neuroscience, cultural studies, and other disciplines to paint a more complete picture of how music shapes our emotional landscape.

3. Affect-space framework

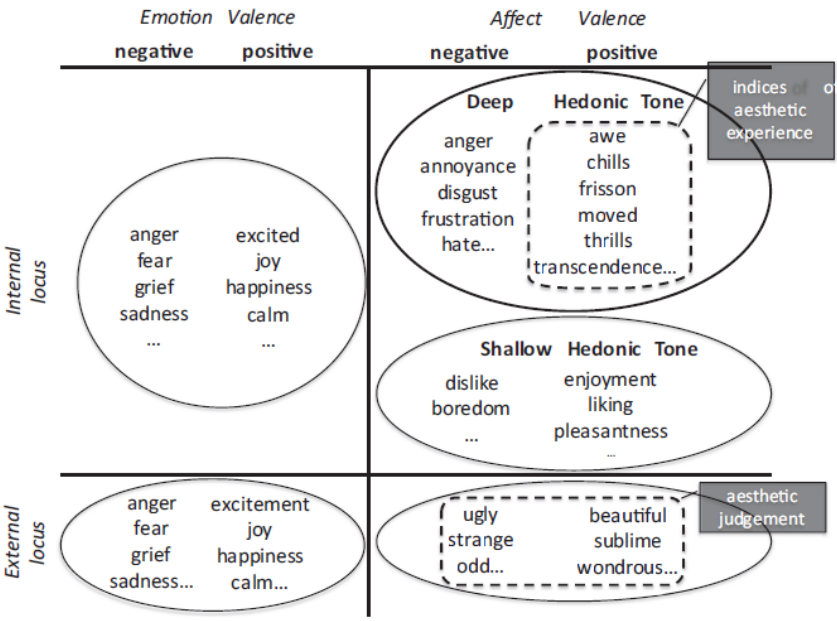
Schubert, North, and Hargreaves (2016) proposed the 'affect-space framework' (ASF) to analyze the relationship between aesthetic experience and emotion. This framework integrates various aspects of aesthetic experiences and specifies the essential conditions under which they occur. ASF is structured around three main factors: 'Locus,' 'Hedonic Tone,' and 'Affect-Emotion Valence.'

The concept of 'Locus' distinguishes the 'source' of the aesthetic experience and emotions, which can be either internal or external. In the internal locus, emotions or feelings arise from within the individual. For example, when you feel, 'this music makes me happy,' the source of the emotion is internal. In contrast, in the external locus, emotions or feelings stem from external factors like a piece of art or music. For instance, if you feel 'the music itself is sad,' the source of the emotion is external. This distinction plays an important role in understanding and analyzing the complex interplay between art and humans.

'Hedonic Tone' relates to the degree to which an individual is attracted to an art piece and ranges from shallow preferences or liking to deep levels of aesthetic pleasure. Shallow hedonic tone includes everyday pleasures, preferences, and general enjoyment, which are often temporary and quickly experienced without complex emotional reactions or deep contemplation. In contrast, deep hedonic tone includes complex, multi-layered emotions like awe, frisson, and spirituality. These emotions are related to 'self-actualization' in Maslow's hierarchy of needs (1954) and suggest that the individual is interacting with the artwork or aesthetic experience on a more complex and meaningful level. This could also include concepts like 'Flow' (Csikszentmihalyi, 1991) and 'being moved' (Hanich et al., 2014; Kuehnast et al., 2014). Deep hedonic tone can be considered as a separate 'aesthetic emotion,' distinguishing it from everyday likes or preferences. This is because aesthetic experiences impact not just the emotional but also the intellectual and even spiritual dimensions of human life.

The 'affect-emotion valence' framework proposes that two categories of 'emotion' can occur simultaneously. These two categories are broadly classified as 'affect-valence' and 'emotion-valence.' Affect-valence refers to the subjective attraction or excitement towards an artwork or piece of music and can be understood as a motivational aspect towards the artwork. On the other hand, emotion-valence represents the specific emotional states felt through an artwork. These two categories are not mutually exclusive and can both occur during the experience of the same artwork. For example, when listening to sad music, one might feel sadness on the emotion-valence side, but simultaneously feel a positive attraction on the affect-valence side. Such multidimensional

emotional experiences provide important insights into the complex interplay between art and emotions. Under the conditions of an aesthetic experience, sadness can be an important emotion-valence leading to a positive affect-valence. Therefore, emotion-valence is a component but not a necessity or sufficiency for aesthetic experiences (Menninghaus et al., 2017; Schubert, 1996, 2013). Thus, the ASF distinguishes this emotion-valence from affect-valence.



[Figure 1] Aesthetic experience explained by the affect-space framework. (Schubert, North, & Hargreaves, 2016, p. 336)

According to the ASF, a well-defined aesthetic experience enables empirical studies of aesthetic experiences. Schubert, North, and Hargreaves (2020) conducted an open-ended survey with a total of 172 participants to analyze their aesthetic and non-aesthetic experiences related to their chosen music. Word frequency analysis used in the study confirmed that disliked music mainly evoked negative affect-valence and did not produce an aesthetic experience. On the other hand, music that evoked an aesthetic experience elicited a variety of positive emotions and responses from the participants. These results contributed to understanding and analyzing the complex aspects of aesthetic experiences through the ASF.

Ⅲ. Method

1. The participants and procedure

The study was conducted with 84 undergraduate students who were attending a general education course. Informed consent was obtained from all participants before the study began. Out of the total participants, 63 were females and 21 were males. The average age of the participants was 20.50 years (SD=2.33, range 18-32).

The focus of the research was to analyze the emotional responses elicited by listening to three distinct classical pieces: Beethoven「Moonlight Sonata」1st Movement, Rimsky-Korsakov「Flight of the Bumblebee」, and Bach「Goldberg Variations」Var.1. These pieces were selected to represent a range of emotional tones and musical styles – Beethoven's piece for its melancholic and slow tempo, Rimsky-Korsakov's for its fast-paced and lively mood, and Bach's for its balanced harmony and structure – thus enabling a comprehensive examination of the emotional responses they provoke.

Each piece was played for the entire classroom during individual class sessions to ensure that all students were exposed to the same auditory conditions. Students were instructed to focus intently on the music and to pay special attention to the emotions they experienced during the listening session. Immediately after each listening session, participants were asked to complete a questionnaire designed to capture their emotional responses. They were encouraged to recall and articulate their feelings as accurately as possible. The questionnaire was based on the ASF to enable a structured analysis of the collected emotional responses. No pre- or post-tests were administered, as the focus of the study was solely on the emotional experiences reported during the listening session.

2. Survey design and structure

The survey was carefully designed to collect comprehensive data on participants' emotional and affective reactions to music, drawing inspiration from the research questionnaire used by Schubert, North, and Hargreaves (2020). It was divided into several parts: basic demographic information and backgrounds including gender and previous music education, an assessment of participants' familiarity with the music, and structured questions based on the ASF. This approach was employed with the aim of achieving a profound understanding of the emotional and aesthetic

experiences associated with music listening.

The structured questions were guided by the ASF, focusing on distinct dimensions of the experience, namely ‘locus,’ ‘hedonic tone,’ and ‘affect-emotion valence.’ The survey consisted of four key sections, each addressing different facets of the musical experience:

① Internal Locus + Emotion Valence: This section aimed to understand the inner emotional experience of the respondents. They were provided with a list of emotions like Anger, Fear, Grief, Sadness, Excited, Joy, Happiness, and Calm and were asked to select the one that best described their feelings. The guiding question for this section was, "How does this piece make you feel?"

② Internal Locus + Affect Valence: This part provided options for both deeper, complex affection experiences known as ‘deep hedonic tones’ (like Awe or Transcendence) and simpler affection states termed ‘shallow hedonic tones’ (such as Enjoyment or Dislike). The guiding question was the same: "How does this piece make you feel?" However, the answer options provided were different.

③ External Locus + Emotion Valence: This section aimed to understand how the music itself evoked emotional responses. The emotion list was similar to the first section, but the key question was, "What emotions do you think the piece portrays?"

④ External Locus + Affect Valence: This section focused on evaluating the external characteristics of the music itself, asking participants to describe the music using terms like Ugly, Strange, Odd, Beautiful, Sublime, and Wondrous. The guiding question here was, "How would you describe this music?"

3. Data analysis

Data analysis was conducted as follows. First, descriptive statistics were used to outline the participants’ demographic and background characteristics, including gender and previous music education. Second, frequency analysis categorized participants’ emotional and affective reactions to the three selected music pieces within the context of the ASF. Third, descriptive statistics were used to assess the degree of familiarity that the participants had with each of the three classical pieces. Following this, frequency distributions were employed to examine the differences in emotional and affective responses to the pieces between the two genders. Fourth, participants were grouped into three categories based on their previous music education experience. Frequency distributions were employed to analyze the differences in emotional responses to the three pieces

among the groups. Lastly, a correlation analysis was conducted to examine the relationship between participants' familiarity with the music pieces and their emotional and affective reactions.

Ⅳ. Results

1. Emotional and affective responses to selected music pieces

Upon analyzing the participants' reactions to the three chosen music pieces, it was evident that each composition elicited unique emotional and affective responses within the context of the ASF. The results of the emotional and affective responses of college students upon listening to Bach「Goldberg Variations」Var. 1 were as in <Table 1>. For the internal locus, within the emotion category, positive responses dominated, accounting for 94.05% (n=79) out of the subtotal of 84 responses. Negative emotions were minimal, constituting only 5.95% (n=5). For the affection dimension under the internal locus, deep hedonic tone displayed a positive affect in 19.05% (n=16) and a negative affect in merely 2.28% (n=2). Shallow hedonic tone saw positive reactions at a significant 73.81% (n=62) and negative responses at 4.76% (n=4).

<Table 1> Emotional and affective responses of college students to Bach「Goldberg Variations」Var. 1 according to ASF

Affect-space frame				By space		Subtotal	
				N	%	N	%
Internal locus	Emotion		Positive	79	94.05	84	100
			Negative	5	5.95		
	Affection	Deep	Positive	16	19.05	84	100
			Negative	2	2.28		
		Shallow	Positive	62	73.81		
			Negative	4	4.76		
External locus	Emotion		Positive	70	83.33	84	100
			Negative	14	16.67		
	Affection		Positive	74	88.10	84	100
			Negative	10	11.90		
Total				336	400.0	336	400.0

For the external locus, the emotion category continued to demonstrate a strong inclination towards positive emotions, with 83.33% (n=70) of the total 84 responses. Negative emotions formed the remaining 16.67% (n=14). In the affection domain of the external locus, positive affections were observed in 88.10% (n=74), while negative affections accounted for 11.90% (n=10) of the responses.

The results of analyzing the emotional and affective responses of college students to Rimsky-Korsakov「Flight of the Bumblebee」according to the ASF are as in <Table 2>. Within the internal locus dimension, positive emotions were dominant, capturing 83.33% of the response (n=70). Conversely, negative emotions accounted for the remaining 16.67% (n=14). As for the affection segment of the internal locus, positive affections with deep hedonic tone dominated, making up 75.00% (n=63) of the responses. However, negative responses in this category were quite limited, registering at just 3.57% (n=3). When considering the shallow hedonic tone of affection within this dimension, positive responses were represented in 17.86% (n=15) of cases, while the negative ones made up 3.57% (n=3).

<Table 2> Emotional and affective responses of college students to Rimsky-Korsakov「Flight of the Bumblebee」according to ASF

Affect-space frame				By space		Subtotal	
				N	%	N	%
Internal locus	Emotion		Positive	70	83.33	84	100
			Negative	14	16.67		
	Affection	Deep	Positive	63	75.00	84	100
			Negative	3	3.57		
		Shallow	Positive	15	17.86		
			Negative	3	3.57		
External locus	Emotion		Positive	64	76.19	84	100
			Negative	20	23.81		
	Affection		Positive	45	53.57	84	100
			Negative	39	46.43		
Total				336	400.0	336	400.0

In the context of the external locus, positive emotions still led the way, constituting 76.19% (n=64) of the responses. The remaining portion was made up of negative emotions, accounting for 23.81% (n=20). Venturing into the affection category of the external locus, positive affections

represented 53.57% (n=45) of the reactions. Meanwhile, negative affections had a considerable presence, contributing to 46.43% (n=39).

The results of emotional and affective responses of college students to Beethoven 「Moonlight Sonata」 1st Mov., based on the ASF, are presented in <Table 3>. For the internal locus, the data showed a distinct pattern. Negative emotions heavily outweighed positive ones, constituting a significant 82.14% (n=69) out of 84 responses. In contrast, positive emotions were registered at just 17.86%, (n=15). When delving into the affection realm of the internal locus, positive affections characterized by a deep hedonic tone held the majority, accounting for 50.00% (n=42). Negative affections in this deep hedonic tone represented 33.33% (n=28). Moving to the shallow hedonic tone of affection, positive responses made up 9.52% (n=8), while negative responses amounted to 7.14% (n=6).

<Table 3> Emotional and affective responses of college students to Beethoven 「Moonlight Sonata」 1st Mov. according to ASF

Affect-space frame				By space		Subtotal	
				N	%	N	%
Internal locus	Emotion		Positive	15	17.86	84	100
			Negative	69	82.14		
	Affection	Deep	Positive	42	50.00	84	100
			Negative	28	33.33		
		Shallow	Positive	8	9.52		
			Negative	6	7.14		
External locus	Emotion		Positive	10	11.90	84	100
			Negative	74	88.10		
	Affection		Positive	64	76.19	84	100
			Negative	20	23.81		
Total				336	400.0	336	400.0

In the external locus dimension, negative emotions were even more pronounced, taking up a substantial 88.10% (n=74). The balance was held by positive emotions, coming in at 11.90% (n=10). Focusing on the affection category within the external locus, positive affections made up the majority, accounting for 76.19% (n=64) of the reactions. The negative affections in this dimension, on the other hand, contributed to 23.81% (n=20).

In summation, upon examining the emotional and affective responses of college students to

the three classical music pieces with distinct compositional styles, intriguing patterns were observed. Rimsky-Korsakov「Flight of the Bumblebee」stood out for inducing the most profound aesthetic experience, especially in the realm of deep hedonic tones within the internal locus of affection. Interestingly, despite its richness in evoking internal aesthetic experiences, the piece also recorded higher negative evaluations in the external locus of affection, as per the ASF theory. This dichotomy suggests that the inherent characteristics of the piece might be perceived as unconventional or unfamiliar, yet the emotional resonance it instigated was unparalleled.

On the other hand, Beethoven「Moonlight Sonata」1st Mov. elicited predominantly negative reactions in the external emotional dimension. This suggests that listeners likely interpreted the intended emotional or thematic expression of the piece in a negative light. Yet, on an internal level, a significant depth of positive affective experience was still evident. Notably, the piece also evoked a considerable degree of negative affection within the deep hedonic tone of the internal locus. This indicates a personal aversion to the piece, emphasizing that universally recognized classic compositions like the「Moonlight Sonata」do not guarantee universally positive receptions.

Bach「Goldberg Variations」Var. 1 was characterized by a prevailing positive emotional response within the internal framework, suggesting listeners experienced heightened positive feelings. However, in terms of the depth of aesthetic experience, it fell short when compared to the pieces by Rimsky-Korsakov and Beethoven.

2. Differences by gender

Upon analyzing the data on the emotional and affective responses of male and female college students to three classical music pieces, distinct patterns emerged as shown in <Table 4>. For Bach, a greater percentage of female students (96.8%) reported positive internal emotional responses than their male counterparts (85.7%). In terms of deep internal affection, male students surpassed female students, with 28.6% of males showing positive reactions compared to 15.9% of females. Externally, both genders exhibited high positive affections, with 66.7% of males and 88.9% of females responding favorably.

For Rimsky-Korsakov, 76.2% of male students exhibited positive internal emotions, a slightly lower rate than the 85.7% observed among female students. In the domain of deep internal affection, the percentages were closely matched, with 66.7% of males and 76.2% of females indicating positive sentiments. Regarding external affections, the responses were fairly aligned: 52.4% for males and 54.0% for females.

Beethoven's piece, on the other hand, showed a significant deviation in internal emotional responses. Only 14.3% of male students reported positive feelings, while 19.0% of female students did so. When assessing deep internal affection, both genders demonstrated comparable rates of positive sentiments: 52.4% for males and 49.2% for females. Notably, in terms of external affection, female students expressed a much higher rate of positive responses at 82.5%.

In sum, while female students generally showed higher positive internal emotional responses across the three pieces, the nuances of deep internal affection and external affection varied by gender and by piece.

<Table 4> Emotional and affective responses to each music piece by gender

Music	Gender		Internal locus						External locus			
			Emotion		Affection				Emotion		Affection	
					Deep		Shallow					
			P+	N-	P+	N-	P+	N-	P+	N-	P+	N-
Bach	M	N	18	3	6	2	12	1	15	6	14	7
		%	85.7	14.3	28.6	9.5	57.1	4.8	71.4	28.6	66.7	33.3
	F	N	61	2	10	0	50	3	59	4	56	7
		%	96.8	3.2	15.9	0.0	79.4	4.8	93.7	6.3	88.9	11.1
Rimsky-Korsakov	M	N	16	5	14	1	5	1	14	7	11	10
		%	76.2	23.8	66.7	4.8	23.8	4.8	66.7	33.3	52.4	47.6
	F	N	54	9	48	2	11	2	50	13	34	29
		%	85.7	14.3	76.2	3.2	17.5	3.2	79.4	20.6	54.0	46.0
Beethoven	M	N	3	18	11	7	2	1	3	18	12	9
		%	14.3	85.7	52.4	33.3	9.5	4.8	14.3	85.7	57.1	42.9
	F	N	12	51	31	21	6	5	7	56	52	11
		%	19.0	81.0	49.2	33.3	9.5	7.9	11.1	88.9	82.5	17.5

* % by gender

3. Differences by prior music education

Participants were categorized into three groups based on their prior music education: Group 1, who were educated only in elementary, middle, and high school; Group 2, who took additional music lessons outside of school; and Group 3, who received professional music training. Across the board, it was clear that the variations in educational background led to distinct and intriguing emotional and aesthetic reactions for each composer's piece.

For Bach's「Goldberg Variations」Var. 1, a substantial 90.9% of those in Group 1, with basic music education, displayed positive internal emotions. A deeper, more profound affection was felt by 21.2%, while the majority (72.7%) expressed a simpler, more shallow appreciation. From an external standpoint, assessing the piece's artistic value, 81.8% perceived Bach's composition positively, whereas 18.2% held a more critical view. In the intermediate group (group 2) with supplemental music lessons, 93.8% expressed positive internal emotions. Within this group, 15.6% conveyed deep affection, and 71.9% displayed a more surface-level appreciation. For external appreciation, 81.3% evaluated Bach favorably, while 18.8% did not. Among the professionally trained (group 3), unanimous positive internal emotions (100%) towards Bach were reported. Delving deeper, 21.1% indicated profound affection, and 78.9% a shallower appreciation. In terms of external judgment, 89.5% valued Bach's piece positively, with a minority of 10.5% being critical.

Reactions to Rimsky-Korsakov's piece varied across the groups. In the basic music education group (group 1), 72.7% had positive internal feelings. Notably, a high 66.7% reported a deep aesthetic experience, with 27.3% having a more surface-level appreciation. However, only 54.5% externally appreciated the piece as artistically valuable, and 45.5% found it less so. For the intermediate group (group 2), 93.8% showed positive internal emotions. Here, 75.0% experienced deep affection, while 12.5% felt a shallower affection. Interestingly, only 40.6% evaluated Rimsky-Korsakov's piece positively from an external perspective, with a larger 59.4% being critical. For the professionals (group 3), 84.2% internally appreciated the music. Among them, 84.2% reported deep affection, while 15.8% had a simpler appreciation. In terms of external judgment, 73.7% assessed the music favorably, while 26.3% were less appreciative.

For Beethoven's piece, emotional responses varied intriguingly. In the basic group (group 1), only 12.1% felt internal positive emotions. Within this, 42.4% experienced deep affection, while a minimal 6.1% felt shallower affection. From an external perspective, 63.6% appreciated Beethoven's composition as artistically valuable, with 36.4% not sharing this sentiment. In the intermediate group (group 2), merely 15.6% had positive internal feelings. Of these, 56.3% experienced profound affection, and 12.5% expressed a more superficial appreciation. In terms of external aesthetic value, a significant 84.4% evaluated Beethoven positively, with 15.6% being more critical. Among the professionals (group 3), 31.6% conveyed positive internal feelings. In this cohort, 52.6% reported deep appreciation, with 10.5% expressing shallower feelings. Externally, 84.2% regarded Beethoven's composition as artistically valuable, whereas 15.8% were less convinced.

<Table 5> Differences in responses to each music piece by prior music education

Music	Prior music ed.*		Internal locus						External locus			
			Emotion		Affection				Emotion		Affection	
					Deep		Shallow					
			P+	N-	P+	N-	P+	N-	P+	N-	P+	N-
Bach	1	N	30	3	7	2	24	0	27	6	27	6
		%**	90.9	9.1	21.2	6.1	72.7	0.0	81.8	18.2	81.8	18.2
	2	N	30	2	5	0	23	4	30	2	26	6
		%	93.8	6.3	15.6	0.0	71.9	12.5	93.8	6.3	81.3	18.8
	3	N	19	0	4	0	15	0	17	2	17	2
		%	100.0	0.0	21.1	0.0	78.9	0.0	89.5	10.5	89.5	10.5
Rimsky-Korsakov	1	N	24	9	22	1	9	1	22	11	18	15
		%	72.7	27.3	66.7	3.0	27.3	3.0	66.7	33.3	54.5	45.5
	2	N	30	2	24	2	4	2	26	6	13	19
		%	93.8	6.3	75.0	6.3	12.5	6.3	81.3	18.8	40.6	59.4
	3	N	16	3	16	0	3	0	16	3	14	5
		%	84.2	15.8	84.2	0.0	15.8	0.0	84.2	15.8	73.7	26.3
Beethoven	1	N	4	29	14	15	2	2	4	29	21	12
		%	12.1	87.9	42.4	45.5	6.1	6.1	12.1	87.9	63.6	36.4
	2	N	5	27	18	8	4	2	2	30	27	5
		%	15.6	84.4	56.3	25.0	12.5	6.3	6.3	93.8	84.4	15.6
	3	N	6	13	10	5	2	2	4	15	16	3
		%	31.6	68.4	52.6	26.3	10.5	10.5	21.1	78.9	84.2	15.8

* Prior music education:
1. Received music education only in elementary, middle, and high school.
2. Have had music lessons outside of school (e.g., music institutes, private lessons).
3. Received professional music training.

** % by prior music education

4. Relationship between familiarity with music and emotional and affective responses

Participants' familiarity with selected musical pieces was assessed using a 5-point Likert scale. Beethoven「Moonlight Sonata」1st Mov. received the highest average familiarity rating with a score of 4.26 and a standard deviation of 0.94. Following closely, Rimsky-Korsakov「The Flight of the Bumblebee」registered a mean score of 4.23 with a standard deviation of 1.08. On the

other hand, Bach「Goldberg Variations」Var.1, had a notably lower mean familiarity rating of 2.85 and a standard deviation of 1.18. This indicates that participants were most familiar with the pieces by Beethoven and Rimsky-Korsakov, while they were less acquainted with Bach「Goldberg Variations」Var.1 among the given selections.

<Table 6> Familiarity with each music piece

Music pieces	N	M	SD
Bach「Goldberg Variation」Var.1	84	2.85	1.18
Rimsky-Korsakov「The Flight of the Bumblebee」	84	4.23	1.08
Beethoven「Moonlight Sonata」1st Mov.	84	4.26	.94

To analyze the correlation between familiarity with music pieces and emotional and affective responses, the responses were converted into numerical values. Specifically, a 'negative' response was assigned a value of -1, while a 'positive' response was given a value of 1. Furthermore, a combination of a deep hedonic tone of the internal locus with negative affection was denoted by -2, whereas a deep hedonic tone of the internal locus paired with positive affection was given a score of 2. Additionally, a shallow hedonic tone of the internal locus combined with positive affection received a score of 1, and a shallow hedonic tone of the internal locus coupled with negative affection was also assigned a value of -1. Using these converted scores, the correlations were subsequently assessed.

The correlation analysis between familiarity with music pieces and the converted emotional and affective scores reveals a particular pattern. For most of the music pieces and categories, there isn't a significant correlation between the degree of familiarity and the respective emotional or affective response. This is observed in the pieces by Bach and Rimsky-Korsakov, where correlations indicate no significant relationship across both the internal and external loci for emotion and affection. However, an exception emerges with Beethoven, where there is a moderate and significant positive correlation between familiarity and external locus affection ($r = 0.245$). This suggests that individuals more familiar with Beethoven's piece tend to exhibit stronger affectionate responses in the external locus. Outside of this specific association with Beethoven, it seems that the degree of familiarity with the music doesn't notably impact emotional or affective reactions.

<Table 7> Correlation between familiarity with music and emotional and affective responses

	Music piece	Internal locus		External locus	
		Emotion	Affection	Emotion	Affection
Familiarity	Bach	0.033	0.080	-0.047	0.114
	Rimsky-Korsakov	0.154	-0.050	-0.078	0.130
	Beethoven	0.035	-0.063	0.109	0.245*

* The correlation is significant at the 0.05 level (two-tailed).

V. Conclusion

The purpose of this study was to investigate the diverse emotions and affections experienced by college students during music listening. Utilizing the affect-space framework, several patterns were discerned.

First, the classical compositions examined in our study induced a range of affections and emotions, showcasing the complexity of music perception. A single piece could evoke both profound affection and contrasting emotions, highlighting the dual nature of musical experience. This phenomenon aligns with the findings of Schubert (2013) on the paradoxical reactions to loved music, which can simultaneously elicit both positive and negative emotions. A notable example in our study was Rimsky-Korsakov's 「Flight of the Bumblebee」 which, despite its captivating aesthetic appeal, also garnered negative evaluations. This complexity in reactions underscores the need for a nuanced understanding of the interplay between affection and emotion in music, as it can evoke a spectrum of feelings from joy to sadness, or even discomfort.

Second, guided by the ASF, which distinguishes deep positive internal affection as an aesthetic experience and external affection as aesthetic judgment, significant differences in both aesthetic experiences and judgments between genders across various musical pieces were observed. For Bach's 「Goldberg Variations」 Var. 1, a pronounced difference was noted in aesthetic experience: 28.6% of males showed deep positive internal affection, compared to 15.9% of females. This suggests that male listeners might have a heightened appreciation for the mathematical and polyphonic characteristics of Bach's composition. Regarding aesthetic judgment, 66.7% of males expressed positive external affection, while a higher proportion of females, 88.9%, did the same. Turning to Rimsky-Korsakov's piece, females exhibited slightly higher levels of aesthetic

experience at 76.2%, compared to 66.7% of males. In terms of aesthetic judgment, the figures were relatively even between genders (52.4% for males and 54.0% for females). With Beethoven's composition, aesthetic experience was comparably distributed between both genders (52.4% for males and 49.2% for females). However, in assessing aesthetic judgment, a significant disparity was seen: females exhibited 82.5% positive external affection, compared to 57.1% for males.

These findings somewhat resonate with prior research on aesthetic preferences. For instance, Bernard (1972) and Pulzella (2000) found that females tend to appreciate more lyrical and emotive forms of art, such as impressionistic paintings and artworks from the Rococo era, more than males. Salkind and Salkind (1997) observed that while males often gravitate towards more geometric and intricate art, females frequently express a higher appreciation for representational art. The subtle gender differences observed in our study in relation to Bach's polyphonic composition and Rimsky-Korsakov's vibrant piece could be seen in alignment with these earlier findings.

Third, the extent of prior musical education has been shown to influence the aesthetic experience and artistic judgment of classical music pieces. Affect-space framework differentiated between aesthetic experience, represented as 'deep internal positive affection,' and aesthetic judgment, depicted as 'external affection.' Observing the response to Bach's 「Goldberg Variations」 Var. 1, there wasn't a significant difference in the aesthetic experience across the groups. However, in terms of aesthetic judgment, Group 3, which had received professional musical education, displayed the highest score at 89.5%. For the works of Rimsky-Korsakov, Group 1 started at 66.7%, gradually increasing to 84.2% in Group 3, indicating a trend of enhanced aesthetic experience with the depth of musical education. This suggests that in-depth musical education can provide a profound appreciation for complex musical compositions. In artistic judgment, Group 2 scored lower than Group 1 at 40.6%, but Group 3 surged to 73.7%, valuing the artistic worth of the piece highly. Responses to Beethoven's piece revealed that Group 1 had an aesthetic experience of 42.4%, which wasn't significantly different from Group 2's 56.3% or Group 3's 52.6%. From these results, one might deduce that the aesthetic experience towards Beethoven's music may not be heavily correlated with the level of education. However, in terms of artistic judgment, both Groups 2 and 3 displayed high scores of 84.4% and 84.2% respectively. This indicates a strong association between the depth of musical education and the artistic valuation of Beethoven's work. These findings clearly suggest the profound influence of musical education depth on a listener's aesthetic experience and aesthetic judgment. It leads to the conclusion that there is a pressing need to deeply recognize the significance and impact of musical education.

Lastly, familiarity did not correlate with aesthetic experience. This challenges the notion that the

more familiar one is with a piece, the deeper the internal positive affection or aesthetic experience they are likely to have (Verhaeghen, 2018). However, when it comes to aesthetic judgment or 'external affection,' the results revealed a nuanced relationship. Overall, familiarity did not universally dictate a listener's aesthetic judgment across various musical works. Yet, a notable exception was found in Beethoven's piece. In this instance, a moderate and significant positive correlation between familiarity and positive external affection was observed. This indicates that individuals more familiar with Beethoven's piece are more likely to evaluate it as having artistic or aesthetic value.

Contrasting with Verhaeghen's (2018) emphasis on the strong correlation between familiarity and aesthetic appreciation of musical pieces, these findings present a nuanced view, especially in the context of Beethoven's work. Familiarity doesn't seem to universally amplify aesthetic experience, yet it appears influential in determining aesthetic judgment for certain iconic pieces or composers. The study suggests that the relationship between familiarity and music appreciation varies based on the specific musical context, underscoring the intricate ways in which multiple factors come together to shape emotional and evaluative responses to music.

Given the findings of this study, several implications emerge that can guide both future research and pedagogical approaches in the realm of musical education and appreciation.

First, the multifaceted nature of musical perception evident in this study implies that musical pieces can elicit a broad range of emotions. This points to the intricacy of musical experiences, suggesting that music researchers and educators should approach musical perception with a comprehensive understanding, avoiding the risk of oversimplifying emotional responses.

Second, the gender-specific differences in musical appreciation observed indicate broader intersections between gender, societal norms, and artistic inclinations. Such nuanced variations underscore the importance of considering gender as a significant factor in music-related studies and curricula.

Third, the strong influence of musical education on aesthetic perceptions and judgments reinforces the crucial role of in-depth music pedagogy. The differentiation based on the depth of musical training suggests that musical experiences are significantly shaped by educational exposure.

Fourth, the nuanced relationship between musical familiarity and appreciation challenges established beliefs about the role of familiarity in aesthetic experiences. This distinction hints at the possibility that familiarity might not always be the predominant determinant, especially in different musical contexts.

Furthermore, based on the insights from this research, several recommendations can be put forth to inform future endeavors.

First, it's advisable to employ the affect-space framework more extensively across diverse musical genres and listener demographics. Its further exploration in varied contexts can validate or refine the framework, offering richer insights.

Second, academic curriculum, especially those related to music, should integrate the findings about gender differences and the depth of musical education. Such integration ensures that teaching methodologies resonate more closely with student perceptions and needs.

Third, extending the study's methodologies to different musical genres beyond classical music could be beneficial. Diverse musical landscapes might offer deeper insights into the universality or specificity of the observed patterns, enriching the discourse on music appreciation dynamics.

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