Practice Habits and Development of Adult Musicians

A Comprehensive Study of Mature Musicians' Practice Routines, Mindset, Motivation, and Health

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Executive Summary

This comprehensive study examines the practice habits, motivations, and developmental approaches of mature professional and amateur musicians, with a particular focus on individuals aged 40 and above. Conducted between 2020 and 2023, the research involved 19 professional musicians from prestigious organizations including the Malmö Opera and Cape Town Philharmonic Orchestra, as well as accomplished amateur musicians from diverse musical backgrounds.

Research Context and Methodology

The study was conducted during the unprecedented global COVID-19 pandemic, which necessitated methodological adaptations. Nine participants were interviewed face-to-face before pandemic restrictions, while the remaining ten participated through online questionnaires and video interviews. This mixed-methods approach combined quantitative surveys with rich qualitative insights, providing both statistical rigor and nuanced understanding of musicians' lived experiences.

Key Findings

Participant Demographics and Musical Background

The study sample represents a mature cohort with substantial musical experience: 63% of participants were aged 60 or above, with the majority possessing decades of instrumental expertise. Participants demonstrated remarkable versatility, with 84% playing secondary instruments in addition to their primary specialization. The geographic distribution included strong Scandinavian representation (58% from Sweden) alongside international perspectives from South Africa and the United States.

Growth Mindset and Musical Development

Musicians in this study demonstrated strong growth mindset orientations (mean score of 4.09 out of 5), significantly exceeding the neutral midpoint. This finding suggests that professional musicians, regardless of age, maintain beliefs about the malleability of musical ability and continue to view their skills as developable through effort and practice. This growth-oriented perspective appears fundamental to sustained musical engagement across the adult lifespan.

GRIT and Perseverance

Participants exhibited high levels of perseverance and passion for long-term musical goals, with GRIT scores averaging 3.89 out of 5. The Perseverance of Effort subscale proved particularly robust (mean 3.71), indicating that sustained effort and commitment characterize these musicians' approach to their craft. Notably, GRIT scores significantly predicted energy levels during practice, suggesting that psychological determination translates into tangible physical and mental resources for musical work.

Practice Habits and Structure

Musicians reported practicing an average of 5.39 hours per week on their primary instrument, with considerable variation (range: 0-25 hours). Interestingly, practice enjoyment averaged 82%, challenging Ericsson's (1993) assertion that deliberate practice is "not inherently enjoyable." This finding suggests that mature musicians may have developed approaches that integrate effortful, goal-directed practice with intrinsic enjoyment—a potential departure from traditional deliberate practice theory that warrants further investigation.

Injury Prevention and Physical Health

A critical finding revealed that 50% of participants had experienced practice-related injuries at some point in their musical careers. Despite this high prevalence, formal injury prevention measures remained inconsistent, with many musicians lacking systematic pre-practice preparation routines or structured approaches to physical well-being. This gap between injury awareness and preventive practices represents an important area for intervention and education within the professional music community.

General Health and Stress Management

Musicians demonstrated an overall health score of 3.79 out of 5, indicating reasonably good health. Positive mood emerged as their strongest health indicator (4.47/5), while stress management represented their greatest challenge (2.63/5—below the neutral midpoint). Participants averaged 7.05 hours of sleep per night, closely approximating recommended sleep duration. Critically, neither GRIT nor growth mindset appeared to buffer against stress, suggesting that psychological resilience in musical domains may not automatically transfer to stress management capabilities.

Psychological Skills During Practice

Assessment of psychological skills during practice revealed that musicians scored highest on Belief/Confidence (mean 3.78) and Energizing (mean 3.68), indicating strong self-efficacy and effective energy management during practice sessions. However, Focusing emerged as a relative weakness (mean 2.64), suggesting that concentration and attention management represent areas for potential development, even among experienced professionals.

Implications and Contributions

This study makes several important contributions to understanding musical development across the adult lifespan. First, it challenges the notion that musical expertise is primarily the domain of youth, demonstrating that mature musicians maintain active learning orientations and continue to develop their skills. Second, the finding that practice can be simultaneously effortful and enjoyable for experienced musicians suggests important refinements to deliberate practice theory. Third, the identification of stress management and injury prevention as critical gaps highlights specific areas where professional musicians would benefit from targeted support and intervention.

The study also illuminates the complex interplay between psychological traits (mindset, GRIT), practice behaviors, and health outcomes, revealing that sustained musical engagement requires more than technical skill—it demands psychological resilience, physical awareness, and adaptive practice strategies. For music educators, institutions, and health professionals working with musicians, these findings underscore the importance of holistic approaches that address not only musical skill development but also psychological well-being and physical health.

Future Directions

Future research should investigate the mechanisms by which mature musicians integrate enjoyment with deliberate practice, explore interventions to improve injury prevention awareness and implementation, and examine strategies for enhancing stress management among professional musicians. Additionally, longitudinal studies tracking musicians' practice habits, health, and psychological well-being over time would provide valuable insights into the trajectories of sustained musical engagement across the adult lifespan.

Introduction and Overview

Introduction

1. Project Purpose & Research Questions

This research project examines the practice habits, motivations, and approaches of adult amateur and professional musicians who continue to engage actively with their instruments throughout their lives. Unlike the extensive body of research focusing on young musicians and students in formal music education settings, relatively little attention has been paid to understanding how mature musicians—particularly those in their 40s, 50s, 60s, and beyond—maintain and develop their musical skills.

The central purpose of this study is to explore the phenomenon of deliberate practice among adult musicians, investigating not only what they practice and how they practice, but more fundamentally, why they continue to practice. The research seeks to understand the intersection of motivation, mindset, and methodology in sustaining musical engagement across the adult lifespan.

The study is guided by the following research questions:

1. What motivates adult musicians to maintain regular practice routines?
2. How do adult musicians structure their practice sessions, and what elements of deliberate practice do they employ?
3. What role does mindset (fixed versus growth orientation) play in adult musicians' approach to practice and performance?
4. How do adult musicians balance technical skill maintenance with creative exploration and musical enjoyment?
5. What strategies do adult musicians use to prevent injury and maintain physical and mental health in relation to their practice?
6. How do the practice habits of adult musicians compare to theoretical frameworks of deliberate practice developed primarily through research with younger musicians?

2. Context: Conducting Research During COVID-19

This research was conducted during a period of extraordinary global disruption. Data collection commenced in January 2020 with face-to-face interviews, which represented the optimal method for capturing the rich, nuanced insights that characterize qualitative research. However, the emergence of the COVID-19 pandemic in March 2020 necessitated significant methodological adaptations.

Of the 19 participants in this study, 9 were interviewed face-to-face before pandemic restrictions were implemented (January-February 2020). As social distancing measures and lockdowns took effect, the research protocol was modified to include video interviews (4 participants) and online surveys (6 participants). This shift from exclusively face-to-face interviews to a mixed-method approach was not planned but became essential to continue the research while ensuring participant and researcher safety.

While the enforced transition to remote data collection methods presented challenges—particularly in establishing rapport and observing non-verbal cues that are more readily apparent in face-to-face interactions—it also demonstrated the resilience and adaptability that characterized the participants themselves. Musicians worldwide faced unprecedented disruptions to their practice routines, performance opportunities, and collaborative work during this period. Yet the participants in this study continued to engage with their practice, offering valuable insights into the intrinsic motivations that sustain musical engagement even during periods of isolation and uncertainty.

3. Methodology Overview

This study employs a mixed-methods research design, combining qualitative and quantitative approaches to provide a comprehensive understanding of adult musicians' practice habits. The research draws on principles from both phenomenological inquiry—seeking to understand the lived experience of musical practice—and quantitative survey methodology to identify patterns and trends across the participant group.

Survey Structure

The research instrument consisted of a detailed questionnaire addressing multiple dimensions of musical practice and musicianship:

1. **Demographics:** Personal characteristics of the participants
2. **Background Data:** Musical history, training, years of experience, primary instrument(s), and performance context
3. **Mindset:** Personal growth/fixed mindset orientation
4. **Motivation and Drive:** Internal and external factors sustaining practice engagement
5. **Practice Data:** Frequency, duration, and structure of practice sessions
6. **Deliberate Practice Steps:** Specific approaches to skill development and problem-solving during practice
7. **Preventing Injury Data:** Strategies for physical health and injury prevention
8. **General Health Data:** Physical and mental health considerations related to musical practice
9. **During and After Practice:** Reflective practices and evaluation strategies relating to how individual practice affects the musician's health
10. **Why Practice:** Fundamental motivations and personal meanings of practice

Research Circles and Participatory Approaches

The research design was informed by Swedish participatory research traditions, particularly the concept of 'brukarmedverkan' (user involvement) and research circles. Several participants were recruited through established musical communities, including the Malmö-Copenhagen Blues Connexion, Malmö Opera, and local music schools (kulturskola). This community-based recruitment strategy ensured that participants were not isolated individuals but members of active musical networks who could provide insights into both individual practice and collective musical culture.

Ethics and Research Approval

This study received formal approval from the Swedish Ethics Review Board in April 2020. All participants provided informed consent prior to participation, and all data were handled in accordance with GDPR regulations and Swedish research ethics guidelines.

Informed Consent

The research protocol was designed to ensure full ethical compliance with principles of informed consent, participant confidentiality, and voluntary participation. All participants were provided with clear information about the study's purpose, their right to withdraw at any time, and the steps taken to protect their anonymity in any published findings. Participants provided written consent for their involvement, with special consideration given to the transition from face-to-face to remote data collection during the COVID-19 period.

4. Sample Characteristics

The study included 19 adult musicians, recruited through purposive sampling to ensure diversity in age, experience level, musical genre, and geographic location. The participant profile reflects a deliberately inclusive approach to understanding adult musical practice across different contexts.

Age Distribution

- 40-49 years: 2 participants (11%)
- 50-59 years: 5 participants (26%)
- 60-69 years: 8 participants (42%)
- 70+ years: 4 participants (21%)

The concentration of participants in the 50-69 age range reflects the study's specific interest in musicians who have sustained their practice well into mature adulthood. The inclusion of participants in their 70s and beyond provides valuable insight into lifelong musical engagement.

Sex Distribution

The sample included 16 male participants (84%) and 3 female participants (16%). This gender imbalance reflects both the demographics of certain musical communities from which participants were recruited, and the broader gender patterns observed in some musical genres and contexts.

Geographic Distribution

Participants were located across three primary regions:

- Sweden: 11 participants (58%), primarily in Malmö and surrounding areas
- South Africa: 3 participants (16%), based in Cape Town

- United States: 3 participants (16%), in Virginia, Nashville, and Maryland
- Other locations: 2 participants (10%)

This geographic diversity, while primarily concentrated in Sweden, provides a broader perspective beyond a single cultural context and suggests that certain patterns in adult musical practice may transcend national and cultural boundaries.

Musical Affiliation and Recruitment Sources

Participants were recruited through various channels, including:

- Malmö-Copenhagen Blues Connexion (multiple participants)
- Malmö Opera and professional orchestras (e.g., Cape Town Philharmonic Orchestra)
- Personal networks and referrals
- Cultural schools (kulturskola) and music education institutions
- Online music communities (e.g., Facebook groups)
- Professional contacts and colleagues

This diverse recruitment approach ensured representation across different musical contexts, from professional orchestral musicians to committed amateurs, from jazz and blues musicians to classical performers, and from those in formal teaching roles to those who practice primarily for personal fulfillment.

5. Analytical Approach

The analysis of data from this study employs a mixed-methods approach that integrates qualitative thematic analysis with quantitative descriptive statistics. This dual approach allows for both the identification of general patterns across the participant group and the exploration of individual experiences and meanings that characterize musical practice in adulthood.

Qualitative Thematic Analysis

Open-ended responses from interviews and survey questions were analyzed using inductive thematic analysis. Participants' descriptions of why they practice, how they approach skill development, and what motivates them to continue were coded to identify recurring themes and patterns. Particular attention was paid to the language participants used to describe their relationship with their instruments, their understanding of progress and improvement, and their experiences of challenge and mastery.

For instance, when participants were asked 'Why do you practice?', responses revealed themes such as:

- Intrinsic enjoyment and joy ('It brings me joy', 'I think it's fun to practice')
- Skill maintenance and improvement ('To keep the level', 'To maintain playing skills')
- Curiosity and continuous learning ('Curious about what happens if I continue with this')
- Identity and necessity ('Music is like the air I breathe, a necessity')
- Professional requirements ('To continue to deliver high quality performance')
- Meditative and psychological benefits ('A little meditative', 'When I sing good, I feel good')

Quantitative Descriptive Analysis

Structured survey items, including Likert-scale questions on mindset, practice frequency, duration, and strategies, were analyzed using descriptive statistics to identify central tendencies and distributions. Mindset data, in particular, was examined to assess the prevalence of growth versus fixed mindset orientations among participants and to explore potential relationships between mindset and practice behaviors.

Integration of Qualitative and Quantitative Findings

The integration of qualitative and quantitative data provides a richer and more nuanced understanding than either approach alone could offer. Quantitative patterns are illustrated and explained through participants' own words, while qualitative themes are contextualized and validated through numerical trends. This complementarity is particularly valuable in a study of practice habits, where subjective experience and objective patterns both contribute essential insights.

Organization of Findings

Following this Introduction, the dissertation is organized into thematic chapters that explore different dimensions of adult musical practice. Chapter 1 (Background Data) establishes participants' musical histories and expertise levels. Subsequent chapters examine practice structures, motivation, deliberate practice strategies, health and injury prevention, and the psychological dimensions of musical engagement in adulthood. Each chapter integrates both quantitative and qualitative findings to provide a comprehensive view of the phenomenon under investigation. The underlying rationale for this sequencing is that each chapter builds and

tells a story: *Who are these musicians → What drives them → What do they do → What are the consequences*?

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This research was approved by the Swedish Ethics Review Board in April 2020.

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Having established the purpose and context of this research, the following chapter provides essential demographic and personal background information about the study participants.

Chapter 0: Musicians' Background - Personal Identifiers

Personal Identifier
Demographic Summary

Overview

The Musicians' Practice Habits survey collected responses from 19 participants between January 2020 and December 2023, with the majority of responses gathered in early 2020.

Age Distribution

The participant group represents a mature cohort of musicians with substantial life and musical experience:

- 40-49 years: 2 participants (11%)
- 50-59 years: 5 participants (26%)
- 60-69 years: 8 participants (42%)
- 70+ years: 4 participants (21%)

The predominance of participants aged 60 and above (63% of the sample) reflects the study's focus on understanding practice habits among older, experienced musicians, which aligns well with the research interest in polyrhythmic practice and neuroscience among aging musicians.

Geographic Distribution

Participants represented an international sample, though with strong Scandinavian representation:

- Sweden: 11 participants (58%)
- South Africa: 4 participants (21%) - including Cape Town and surrounding areas
- United States: 3 participants (16%) - Nashville, Silver Spring MD, and one unspecified location
- Sweden (Swedish language responses): 1 additional (listed as "Sverige")

The strong Swedish presence reflects recruitment through Swedish musical

organizations, particularly the Malmö-Copenhagen Blues Connexxion and connections in the Malmö cultural community. The South African contingent adds valuable international perspective, particularly from the Cape Town Philharmonic Orchestra.

Recruitment Sources

Participants were recruited through diverse channels, demonstrating a mix of institutional and personal networks:

- Formal Musical Organizations (7 participants):
- Malmö-Copenhagen Blues Connexxion (4 participants)
- Malmö Opera (1 participant, combined with personal friend)
- Cape Town Philharmonic Orchestra (1 participant)
- Kävlinge kulturskola (1 participant)
- Personal Networks (9 participants):
- Friend / personal friend / Personlig vän (7 participants across various spellings)
- Gemensam bekant / Mutual acquaintance (2 participants)
- Other Channels (3 participants):
- Facebook group (1 participant)
- Spela för livet Fredrik Savbrant (1 participant)
- Son (1 participant)

The balanced mix of organizational and personal recruitment suggests that the sample includes both institutionally engaged musicians and those practicing more independently.

Practice Motivations

Participants articulated rich and varied motivations for practicing their instruments, which can be grouped into several thematic categories:

- Intrinsic Joy and Passion:
- "It brings me joy"
- "I think it's fun to practice"
- "Music is like the air I breathe, a necessity"
- "I have a burning interest in music. I'm still hungry"
- "Great interest in music since the 60's. Always wanted to be able to play guitar"
- Technical Maintenance and Development:
- "To maintain playing skills"
- "To build technique and to be able to play"
- "So that I can continue to deliver high quality performance"
- "I want to be as sharp as possible so I can play at as good a level as possible"
- Professional and Practical Needs:
- "I chose to play the cello as a way of life, not just as a profession"
- "Am a flute teacher. Love the flute"
- "As you grow up you try to attain the highest level so you can get a job. Once you have a job you need to maintain that level"
- Personal Growth and Learning:
- "It's a drive you have to improve, to learn something, you are curious about 'what happens if I continue with this?'"
- "To learn new songs and get better as an instrumentalist"
- "It feels creative and enriches life"
- Physical-Mental Connection:
- "In my case voice is not something you can let rest for too long... it is connected to the body, to the muscles"
- "When I sing good, I feel good, when I don't sing good, I don't feel good"
- "Nice feeling to pick up his instrument... A little meditative"
- Specific Musical Goals:
- "Two reasons: One, when I had a musical goal and Two, because I like it"
- "To keep the knowledge going and find song ideas"

Sample Characteristics Summary

This sample of 19 musicians represents a group of committed, mature practitioners with substantial musical experience. The predominance of participants in their 60s and 70s provides valuable insight into how experienced musicians maintain and develop their

practice habits across the lifespan. The international representation, though modest in size, adds cross-cultural perspective, particularly the comparison between Scandinavian and South African musical contexts.

The diversity of recruitment channels ensures representation from both formal musical institutions (orchestras, schools, organized groups) and independent practitioners, while the articulated motivations reveal a sophisticated understanding of practice that encompasses technical, professional, emotional, and personal development dimensions.

The sample size of 19 participants reflects several practical challenges inherent in this type of research. Face-to-face interviews took place during the COVID-19 pandemic, which significantly complicated recruitment efforts and made it increasingly difficult to find participants willing and able to meet in person. Additionally, response rates to online survey requests are notoriously low, particularly for surveys of this length (approximately 30 minutes to complete). Despite these challenges, the 19 participants who did complete the survey demonstrated exceptional commitment, providing thoughtful and detailed responses that enable rich qualitative analysis.

To enhance the research process and provide value to participants, Research Circles were organized with invited experts from Stellenbosch University in South Africa and the Swedish Judo Federation, allowing quick feedback to participants. This reciprocal approach helped foster engagement and demonstrated respect for participants' time and contributions to the research.

The sample size, while limiting statistical generalization, is appropriate for an in-depth qualitative and descriptive analysis of musicians' practice habits, particularly given the detailed nature of the survey responses and the focus on understanding nuanced practice behaviors rather than establishing population-wide norms.

With the demographic profile established, we now turn to a detailed examination of participants' musical backgrounds, training, and experience.

Chapter 1: Background Data
Musical Background of Survey Participants

Introduction

This chapter provides a comprehensive overview of the musical background characteristics of the 19 professional musicians who participated in this study. Understanding participants' musical training, experience, and career trajectories is essential for contextualizing their practice habits and attitudes toward musical development. The background data encompasses several key domains: primary and secondary instruments, years of experience, musical genres, professional status, practice frequency, music literacy, continuing education, and musical influences. Together, these variables paint a detailed picture of a highly experienced and diverse group of professional musicians.

Methodology

Background data were collected through a combination of face-to-face interviews, or the questionnaire made available to all participants (N = 19). The questionnaire included both closed-ended questions (e.g., instrument type, practice frequency) and open-ended questions (e.g., musical influences, reasons for admiration). Participants were recruited through professional music organizations including the Malmö Opera and Cape Town Philharmonic Orchestra, ensuring a sample of active professional musicians.

The background section comprised 28 variables organized into the following categories: musical genre preferences (8 checkbox items), instrumental proficiency (primary and secondary instruments with years of experience), self-assessed skill level, music literacy, practice frequency, continuing education (lessons, reading materials), professional status (6 checkbox categories allowing multiple selections), and musical influences. Descriptive statistics were calculated for quantitative variables, while qualitative responses were analyzed thematically for open-ended questions.

Result

Instrumental Background and Experience

Primary Instruments. All 19 participants (100%) reported their primary instrument. The sample showed considerable diversity in instrumental specialization. Woodwind instruments

(saxophone, oboe, flute, clarinet) and guitar were most represented, each comprising 26.3% of the sample (n = 5). Drums and percussion accounted for 15.8% (n = 3), while voice/vocals, string instruments (violin, viola, cello), bass, brass instruments, and other instruments each represented 5.3% of participants (n = 1 each).

Secondary Instruments. Sixteen participants (84.2%) reported playing a secondary instrument, indicating substantial multi-instrumental capability within the sample. Keyboards (including synthesizers) were the most common secondary instrument at 31.2% (n = 5), followed by guitar and bass, each at 18.8% (n = 3). Voice/vocals accounted for 12.5% (n = 2), while percussion (without drum set), strings, and drums each represented 6.2% (n = 1).

Years of Experience. Participants demonstrated extensive experience on their instruments. For primary instruments, all 19 participants provided data showing a mean of 44.4 years (SD = 13.8, Median = 48.0, range = 5-65 years). This exceptionally high level of experience confirms that the sample comprises musicians with decades of dedicated practice. For secondary instruments, 16 participants (84.2%) provided data showing a mean of 29.9 years (SD = 18.4, Median = 31.0, Range = 2-60 years). The substantial standard deviation reflects greater variability in secondary instrument experience, with some participants having recently adopted secondary instruments while others have cultivated multi-instrumental skills over many decades.

Musical Genre Preferences

Participants were asked to indicate which musical styles they play most, with the option to select multiple genres. Blues emerged as the most commonly selected genre, with 47.4% (n = 9) of participants indicating they play blues music. Classical music was selected by 42.1% (n = 8), while jazz and pop/rock were each selected by 31.6% (n = 6). Folk/world music was indicated by 26.3% (n = 5) of participants. Less commonly represented genres included religious/church music and country & western, each selected by 10.5% (n = 2), and other musical styles, also at 10.5% (n = 2).

This distribution reveals a sample with diverse musical backgrounds, with particular strength in blues, classical, and jazz traditions. Many participants indicated proficiency in multiple genres, consistent with the career trajectories of professional musicians who often work across stylistic boundaries. The predominance of blues and jazz suggests significant representation of improvisational traditions within the sample.

Professional Status

Participants' professional status was assessed using multiple categories, with participants able to select all applicable roles. Music teaching was the most common role, with 42.1% (n = 8) identifying as music teachers. Amateur musicians and full-time professional musicians each comprised 31.6% of the sample (n = 6), while semi-professional musicians with day jobs accounted for 21.1% (n = 4). An additional 21.1% (n = 4) indicated they were retired from regular employment.

The overlap in categories reflects the complex career patterns typical of professional musicians. For instance, some participants simultaneously identified as both professional musicians and music teachers, while others combined amateur status with teaching or retirement. This pattern aligns with research showing that musicians often maintain multiple professional identities and income streams throughout their careers.

Self-Assessed Skill Level and Music Literacy

Skill Level Compared to Peers. All 19 participants responded to the question "Compared to others in my age group, my level of playing is." The majority (63.2%, n = 12) rated themselves as "3. About the same" as their age group peers. Five participants (26.3%) rated themselves as "4. Higher," while one participant (5.3%) selected "5. Much higher." One response could not be categorized. Notably, no participants rated themselves lower than their peers, suggesting either genuine high achievement within this professional sample or a positive self-assessment bias common among dedicated musicians.

Music Literacy. All 19 participants reported their ability to read musical notation. Nearly half (47.4%, n = 9) indicated they read notation "5. Yes, fluently," while 42.1% (n = 8) reported "3. Yes, but slowly." One participant (5.3%) indicated that they "2. Can only read chord symbols," and one participant (5.3%) reported "1. Not at all." This distribution reveals that the vast majority (89.5%) possess at least basic notation reading skills, with approximately half achieving fluent sight-reading ability. The presence of two participants with limited or no notation reading skills reflects the diversity of musical traditions represented, as some genres (particularly blues, rock, and certain folk traditions) emphasize aural learning and improvisation over written music.

Practice Frequency

Primary Instrument. All 19 participants reported their practice frequency on their primary instrument. Nearly half (47.4%, n = 9) practiced "a few times per week," while 36.8% (n = 7) reported daily practice. Two participants (10.5%) practiced once a week, and one participant (5.3%) practiced very rarely. This distribution indicates that the majority of participants (84.2%) engage in regular, frequent practice on their primary instrument, consistent with professional-level commitment to maintaining and developing instrumental skills.

Secondary Instrument. Sixteen participants (84.2%) reported practice frequency on their secondary instrument. The most common frequency was "a few times per week" at 43.8% (n = 7), followed by "very rarely" at 18.8% (n = 3) and daily practice also at 18.8% (n = 3). Two participants (12.5%) practiced once a week, and one participant (6.2%) practiced once every other month. The lower practice frequency for secondary instruments compared to primary instruments may reflect prioritization patterns among experienced musicians.

Continuing Education and Professional Development

Formal Lessons. All 19 participants responded regarding whether they currently take lessons. The vast majority (84.2%, n = 16) reported *not* currently taking lessons, while only three

participants (15.8%) indicated they do take lessons. Among those taking lessons, frequency varied: one participant reported 5-6 lessons per year, one took lessons once or twice per week, and one took guitar lessons once per year. The low percentage taking lessons is consistent with the high experience levels in this sample; most professional musicians at this career stage serve as teachers rather than students, though some continue periodic study for specific purposes.

Professional Reading. Twelve participants (63.2%) reported regularly reading music magazines, while seven participants (36.8%) did not respond or indicated they read none. Reported publications varied widely and included specialized instrument-focused magazines (The Strad, Flutetalk, Modern Drummer), general music publications (Musiker Magasinet, Svensk musiktidning, Gramophone), and genre-specific magazines (Classic Rock, Uncut, Mojo, Jefferson Blues Magazine). The diversity of reading materials reflects the varied instrumental and stylistic specializations within the sample.

Books on Practice and Technique. All 19 participants responded to whether they had read books specifically devoted to practicing musical instruments. A substantial majority (68.4%, n = 13) indicated yes, while 31.6% (n = 6) reported no. Among those who responded affirmatively, 12 participants (63.2% of total sample) provided specific titles or descriptions. Reported books spanned multiple categories: instrument-specific technique books (William Pleith's "The Cello," various titles on vocal technique), practice methodology (Gerhard Mantel's "Cello Practice"), psychological approaches to music performance (Barry Green's "The Inner Game of Music," "Soprano on Her Head"), and musician autobiographies. Some participants referenced books by general title or author but could not recall specific details, suggesting past reading that influenced their development even if no longer actively consulted.

Musical Influences

All 19 participants (100%) responded to open-ended questions about their musical influences, listing specific musicians they admire and explaining their reasons for admiration. Given the qualitative nature of these responses, a comprehensive thematic analysis is presented below.

Named Musicians. Participants listed a total of 142 individual musicians across all genres and instrumental specializations. The breadth of influences spanned classical music (Maria Callas, Yo-Yo Ma, Jascha Heifetz), jazz (Charlie Parker, Miles Davis, Elvin Jones, Bill Evans), blues (Robert Johnson, Muddy Waters, B.B. King, Charlie Musselwhite), rock and popular music (Jimi Hendrix, Frank Zappa, Stevie Wonder, Sting), and world music traditions (Hamza El Din, Omar Faruk Tekbilek). Several participants named multiple influential figures within their primary genre, while others demonstrated eclectic tastes crossing stylistic boundaries.

Reasons for Admiration.

Thematic analysis of participants' explanations for why they admire these musicians revealed several dominant themes:

Technical Mastery. Many participants emphasized virtuosic technique and complete instrumental command. Representative quotes include: "Absolute perfection in technique" (regarding Cesare Siepi), "An absolute wizard on the cello" (Heinrich Schiff), "Technical mastery," and "Technique and musicianship." Several participants noted admiration for musicians who make "the difficult easy" or who achieve technical facilities with apparent ease.

Emotional Expression and Communication. The most frequently cited reason for admiration was the ability to communicate emotion and connect with audiences. Participants described this as: "Their ability to connect emotionally," "Technique and emotion" balanced together, "Playing that touches the heart, inspires," "He's talking to me," and admiration for interpretation quality ("The way she approached the interpretations" regarding Maria Callas). Multiple participants emphasized that technical prowess without emotional depth was insufficient for their highest admiration.

Personal Style and Recognizability. Many participants valued distinctive, immediately recognizable musical voices. Representative comments included: "Their personal style. Recognizable," "You can hear their style right away," finding "fresh expression and freedom in their music," and appreciation for musicians who are "norm-breakers" with unique approaches. This theme emphasizes individuality and authentic voice over conformity to established standards.

Creativity and Innovation. Participants frequently cited creative accomplishment and artistic innovation. Comments included: "Their immense creativity." Being a leader," "Songwriter talent," appreciation for those "in the forefront in creating musicals" (Stephen Sondheim), and musicians who "make interesting music, fusion of different styles." The improvisational traditions of jazz were particularly noted for creative freedom: "The freedom that exists within the improvisation in jazz music."

Comprehensive Musicianship. Some participants admired musicians who combine multiple qualities. One described admiring "A combination of all these people. He can play anything with such ease" (Clemens Hagen). Another cited "Energy, command of stage, memorization, entrepreneurship" (James Galway), highlighting skills beyond pure musical performance. Teaching ability was also valued, with one participant noting an influential teacher who "taught me that every note has to be beautiful."

Career Longevity and Professional Success. Several participants noted sustained career success, such as admiring "length of career and wideness of his repertoire" alongside technical achievement. This suggests that participants value not only peak artistic accomplishment but sustained excellence over decades.

Discussion

The background data reveal a sample of highly experienced, professionally active musicians with diverse instrumental and stylistic backgrounds. Several findings warrant particular attention in contextualizing subsequent analyses of practice habits, mindset, and wellbeing.

First, the exceptionally high mean experience level (44.4 years on primary instruments) indicates this sample consists predominantly of mature, established professionals rather than emerging artists or students. This expertise level is critical for interpreting findings about practice habits and beliefs about talent and effort, as these musicians have accumulated decades of experience testing and refining their approaches to instrumental practice. Their long careers provide extensive opportunities for observing relationships between practice methods and performance outcomes.

Second, the substantial multi-instrumental capability evident in the sample (84.2% play secondary instruments, with mean experience of nearly 30 years) suggests participants possess broad musical skills and adaptability. This multi-instrumental background may influence how participants conceptualize practice, as those skilled on multiple instruments may develop more generalized practice strategies transferable across instrumental domains. Future analyses might explore whether multi-instrumental musicians differ systematically in practice approaches compared to single-instrument specialists.

Third, the genre diversity represented in the sample strengthens the generalizability of findings across musical styles. Blues, classical, jazz, and pop/rock all have substantial representation, and many participants work across multiple genres. This is important because different musical traditions emphasize different aspects of musicianship: classical musicians often work extensively with written notation and established repertoire, jazz and blues musicians emphasize improvisation and aural skills, while folk traditions may prioritize oral transmission and communal music-making. The presence of multiple traditions in the sample allows examination of whether practice patterns and beliefs transcend stylistic boundaries or vary systematically by genre.

Fourth, the complex and overlapping professional identities evident in the sample reflect typical career patterns for working musicians. The finding that 42.1% identify as music teachers, while simultaneously 31.6% identify as both amateur and professional musicians, illustrates that professional musical careers rarely fit neat categories. Many musicians combine teaching with performance, maintain amateur status while achieving professional-level skills, or transition between full-time performance, teaching, and retirement while continuing active musicianship. This complexity underscores the limitations of simple professional categorizations and suggests that musical identity and practice commitment may be better understood as continuous rather than categorical variables.

Fifth, the practice frequency data reveal that regular, frequent practice remains the norm even among highly experienced professionals. The finding that 84.2% practice their primary instrument at least a few times per week, with 36.8% practicing daily, contradicts any notion that expert musicians reduce practice frequency after achieving mastery. This continued commitment to regular practice among musicians with 40+ years of experience suggests that maintaining and developing instrumental skills requires ongoing effort throughout the career lifespan, consistent with theories of deliberate practice that emphasize sustained, focused effort as necessary for maintaining expertise.

Sixth, the relatively low percentage currently taking formal lessons (15.8%) combined with high engagement with professional reading materials (63.2% read music magazines, 68.4% have read books on practice) suggests that continuing education among experienced professionals emphasizes self-directed learning and informal professional development over formal teacher-student relationships. This pattern makes sense given that these musicians have themselves often become teachers and have developed sophisticated self-assessment and self-correction abilities through decades of practice. The specific books and resources participants cited reveal engagement with both instrument-specific technique literature and broader psychological approaches to music performance, suggesting recognition that expert performance involves cognitive and psychological dimensions beyond physical technique.

Finally, the analysis of musical influences and reasons for admiration provides insight into what these experienced professionals value in exemplary musicianship. While technical mastery was frequently cited, it was rarely sufficient alone; participants emphasized the integration of technique with emotional expression, personal style, creativity, and communicative power. This value system suggests that participants conceptualize musical excellence as multidimensional, encompassing technical, artistic, and communicative domains. The emphasis on emotional connection and personal voice over pure technical display may inform how these musicians approach their own practice, potentially prioritizing expressive and interpretive dimensions alongside technical development.

Limitations

Several limitations warrant acknowledgment. The sample size (N = 19) limits statistical power for detecting effects and precludes complex multivariate analyses. The recruitment method through professional organizations may introduce selection bias favoring musicians affiliated with formal institutions. Self-report data on practice frequency and skill level may be subject to recall bias and social desirability effects. The cross-sectional design prevents examination of how background characteristics developed over participants' careers. Additionally, the predominantly European recruitment (with representation from South Africa and North America) may limit generalizability to other cultural contexts where music education and professional pathways differ substantially.

Conclusion

This chapter has documented the musical backgrounds of 19 professional musicians with exceptional levels of experience, diverse instrumental and stylistic specializations, active professional engagement, and sophisticated understanding of musical excellence. These background characteristics provide essential context for interpreting subsequent analyses of practice habits, psychological characteristics, and wellbeing outcomes. The sample's depth of experience and continued commitment to regular practice despite decades at professional levels makes them particularly valuable informants about the role of deliberate practice in sustaining expertise across the lifespan. The diversity of genres and instruments represented suggests findings may generalize across multiple musical traditions. The following chapters will examine how these experienced professionals structure their practice, what motivational and cognitive factors sustain their commitment, and how their practice regimens affect their health and wellbeing.

Building on the understanding of participants' musical backgrounds, the next chapter explores the psychological dimension of mindset and its role in musical development.

Chapter 2: Growth Mindset Beliefs Among Professional Musicians: A Quantitative Analysis

METHOD

Ethics and Research Approval

This study received formal approval from the Swedish Ethics Review Board in April 2020. All participants provided informed consent prior to participation, and all data were handled in accordance with GDPR regulations and Swedish research ethics guidelines.

Participants

Nineteen professional musicians (N = 19) participated in this study through face-to-face interviews and online questionnaires. Participants were recruited through professional music organizations, including the Malmö Opera and Cape Town Philharmonic Orchestra, as well as through personal networks. The sample included musicians from multiple countries, with ages ranging from 40-59 years.

Data Collection Context: The majority of data collection took place during the COVID-19 pandemic (2020-2021), which presented significant challenges for recruitment. As pandemic restrictions intensified, it became increasingly difficult to find musicians willing to participate in face-to-face interviews, which may have influenced the final sample composition and size.

Participatory Research Design

An important methodological feature of this project is the incorporation of research circles (Swedish: *Brukarmedverkan*), in which participants join other musicians and invited experts to discuss research findings and learn from each other. These research circles serve both as quality control mechanisms and as opportunities for collaborative knowledge generation. Research circles were conducted locally with video-conferencing available for long-distance participants, and all sessions were recorded for transcription purposes, with full transcripts provided to participants following each session.

Instrument Development: The first research circle was held in mid-February 2020 and focused on quality control review of the survey instrument. The board members of Malmö-Copenhagen Blues Connexion (H-P, Ingvar, Håkan, and Jörgen) provided invaluable feedback during final testing and review of the survey. Opera singer Stefano and jazz drummer Jerker participated in early pilot testing, providing critical insights that shaped the final instrument.

Measures

Mindset Scale. Musical growth mindset was assessed using a 20-item questionnaire adapted from Dweck's (2006) implicit theories framework. Items measured beliefs about the malleability of musical talent and ability on a 7-point Likert scale ranging from -3 (*Strongly Disagree*) to +3 (*Strongly Agree*), with 0 representing a neutral position. Sample items included "You can always substantially change how musically talented you are" (growth mindset) and "Your musical talent is something very basic about you that you can't change very much" (fixed mindset).

Eight items were reverse-coded to ensure consistent directionality, where higher scores indicate stronger growth mindset beliefs (Q1, Q4, Q7, Q11, Q12, Q16, Q17, Q20). A composite mindset score was calculated as the mean across all 20 items for each participant.

Data Analysis

All analyses were conducted using jamovi (Version 2.3). Reliability analysis assessed the internal consistency of the mindset scale using Cronbach's alpha. Descriptive statistics characterized the distribution of mindset scores. A one-sample t-test evaluated whether musicians' mean mindset scores differed significantly from the neutral midpoint (0), testing the hypothesis that musicians hold beliefs distinct from a neutral position on the growth-fixed mindset continuum. Effect sizes were calculated using Cohen's d, with interpretations following conventional guidelines (small = 0.2, medium = 0.5, large = 0.8; Cohen, 1988).

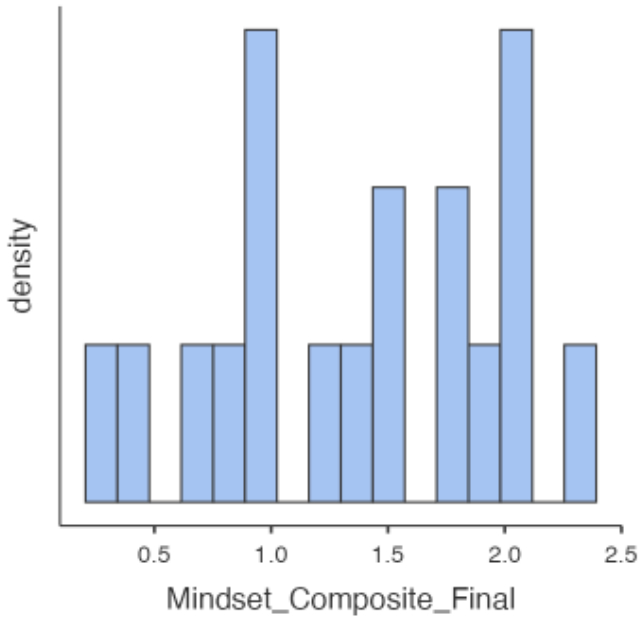
RESULTS

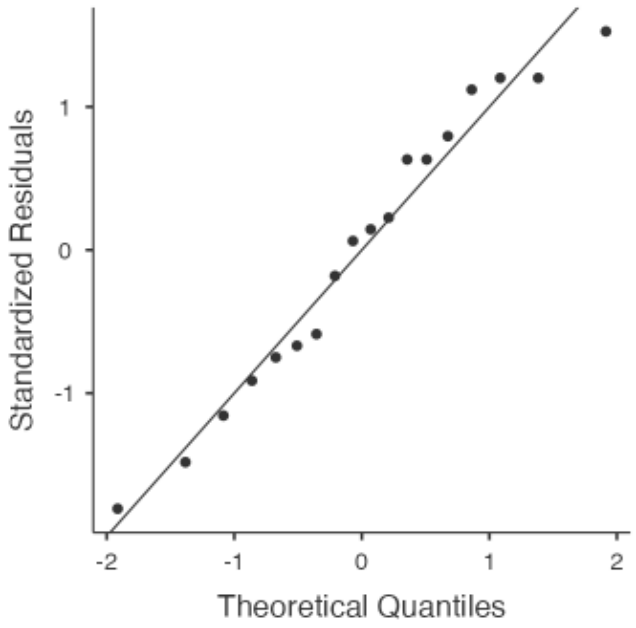
Scale Reliability

The 20-item mindset scale demonstrated good internal consistency (Cronbach's α = 0.800), exceeding the conventional threshold for acceptable reliability in psychological research (α ≥ 0.70; Nunnally & Bernstein, 1994). All items showed positive item-rest correlations, indicating that each question contributed meaningfully to the overall scale. This reliability coefficient supports the use of the composite mindset score as a valid measure of musicians' beliefs about the malleability of musical ability.

Descriptive Statistics

Musicians' composite mindset scores ranged from 0.25 to 2.30 (M = 1.36, SD = 0.615, Median = 1.42) on the -3 to +3 scale. The distribution approximated normality as evidenced by visual inspection of the Q-Q plot, which showed data points closely following the diagonal reference line. The histogram revealed a right-skewed distribution, with the majority of scores concentrated in the positive (growth mindset) range. Notably, all participants scored above the neutral midpoint, indicating universal growth mindset orientation within this sample.




Standardized Residuals
1
0
-1
-2
-1
0
1
2
Theoretical Quantiles

Inferential Statistics

A one-sample t-test revealed that musicians' mindset scores were significantly higher than the neutral midpoint of 0, t(17) = 9.39, p < .001, 95% CI [1.05, 1.67]. The effect size for this difference was exceptionally large (Cohen's d = 2.21), substantially exceeding conventional thresholds for a "large" effect. This finding indicates that professional musicians in this sample hold strong growth mindset beliefs about musical ability, with near-universal agreement that musical talent can be developed through practice and effort rather than being fixed at birth.

One Sample T-Test

		Statistic	df	p		Effect Size
Mindset_Composite_Final	**Student's t**	9.39	17.0	<.001	Cohen's d	2.21

Note. $H_a\ \mu \neq 0$

DISCUSSION

Principal Findings

This study revealed that professional musicians demonstrate remarkably strong growth mindset beliefs regarding musical ability. The mean composite score of 1.36 on a 7-point scale, combined with the extremely large effect size (d = 2.21), indicates that growth mindset orientation is not merely present but constitutes a defining characteristic of this musician sample. The finding that all participants scored above the neutral midpoint suggests that growth-mindset beliefs may be nearly universal among professional musicians, at least within this sample.

Theoretical Implications

These findings challenge common cultural narratives about musical talent as an innate, fixed attribute. The "gift" narrative—the belief that exceptional musicians are born with special abilities—has been widely documented in both popular culture and music education contexts (Howe, Davidson, & Sloboda, 1998). However, the current results suggest that professional musicians themselves reject this deterministic view, instead endorsing the belief that musical ability can be substantially developed through dedicated practice.

This alignment with growth mindset theory (Dweck, 2006) has important implications for understanding musician development. If professional musicians believe ability is malleable, this orientation may drive the intensive, deliberate practice behaviors characteristic of expert performance (Ericsson, Krampe, & Tesch-Römer, 1993). The strength of this finding (d = 2.21) suggests that growth mindset beliefs may be foundational to the professional musician's identity.

Practical Implications for Music Education

These findings have direct implications for music pedagogy. If professional musicians overwhelmingly endorse growth mindset beliefs, music educators might leverage this perspective by:

1. **Modeling growth mindset language** in teaching, emphasizing development rather than innate talent
2. **Providing evidence** of musicians' own developmental trajectories, demonstrating that current experts were once beginners

3. **Reframing "talent"** discussions to focus on developed skills rather than inborn gifts
4. **Encouraging deliberate practice** as the primary mechanism for musical development

The universality of growth mindset in this sample (all participants > 0) suggests that these beliefs may be essential for sustained engagement in professional music. Music educators working with younger students might therefore prioritize cultivating growth mindset beliefs as a protective factor against early dropout.

Methodological Considerations

The participatory research design, incorporating research circles with practicing musicians, strengthened both the quality of the measurement instrument and the ecological validity of the findings. The collaborative review process with experienced musicians (including members of Malmö-Copenhagen Blues Connexion and early pilot participants) ensured that survey items resonated with professional musicians' lived experiences and used language authentic to the musical community.

The strong reliability of the finalized mindset scale ($\alpha = 0.800$) validates this collaborative development process and supports the instrument's use in future research with musician populations. However, the careful attention required for reverse-coded items highlights the importance of pilot testing and reliability analysis when adapting psychological measures for specialized populations.

Limitations

Several limitations warrant consideration. First, the sample size (N = 19) is modest, though adequate for detecting the large effect observed. The COVID-19 pandemic significantly impacted recruitment, as safety concerns limited musicians' willingness to participate in face-to-face interviews. The resulting sample may not fully represent the broader population of professional musicians, particularly those with different pandemic-related constraints or concerns.

The sample consisted of professional musicians who had already achieved career success and enthusiastic amateur musicians; growth mindset scores might differ among music students, amateur musicians, or those who discontinued musical training. The cross-sectional design precludes causal inferences about whether growth mindset

beliefs facilitate musical development or emerge as a consequence of achieving professional status.

Additionally, the sample was recruited through professional organizations and personal networks, which may introduce selection bias toward musicians with particular characteristics or beliefs. Geographic and cultural diversity (participants from Sweden, South Africa, and the United States) may introduce unmeasured heterogeneity, though cultural factors did not prevent the emergence of a consistent growth mindset pattern.

Future Directions

This study opens several avenues for future research:

1. **Longitudinal designs** could examine how mindset beliefs evolve throughout musical training, from novice to expert
2. **Comparative studies** could contrast mindset beliefs between musicians who persist in professional careers versus those who discontinue training
3. **Post-pandemic replication** could assess whether the current findings generalize to larger, more diverse samples recruited under normal conditions
4. **Intervention studies** could test whether explicitly cultivating growth mindset beliefs in music students affects practice behaviors, performance anxiety, and long-term persistence

Additionally, future research should examine relationships between mindset beliefs and other variables measured in this study, including practice habits, injury prevention behaviors, motivation profiles, and health outcomes. Such analyses could reveal whether growth mindset serves as a predictor of adaptive practice behaviors and sustained career engagement in professional music. The research circle methodology could be extended to explore how musicians collectively make sense of these findings and integrate them into their teaching and practice.

Conclusions

Professional musicians in this study demonstrated remarkably strong and consistent growth mindset beliefs about musical ability. With all participants scoring above neutral and an exceptionally large effect size ($d = 2.21$), these findings challenge deterministic views of musical talent as fixed and innate. Instead, they suggest that professional musicians view ability as substantially malleable through effort and practice—a perspective that may be foundational to sustained engagement in professional music.

These results have important implications for music education, suggesting that cultivating growth mindset beliefs should be a central pedagogical goal alongside technical skill development.

The next "*Chapter 3: Grit and Perseverance Among Professional Musicians: Results Section" provides* quantitative results from survey questions on Motivation and Drive, using Duckworth's (2016) GRIT scale.

Following the examination of mindset, we now investigate the motivational forces that drive sustained musical engagement.

Chapter 3: Grit and Perseverance Among Professional Musicians: Results Section

METHOD

GRIT Scale: Duckworth's (2016) 10-item scale measuring perseverance and passion for long-term goals. Two subscales: Consistency of Interest and Perseverance of Effort. 5-point Likert scale (1-5), higher = more grit.

Reliability Issues: Initial 10-item scale showed α = 0.692 (questionable). Removing Q1 and Q7 improved to α = 0.742 (acceptable).

Subscale Analysis:

- Perseverance of Effort (5 items): α = 0.812 (good)
- Consistency of Interest (3 items): α = 0.225 (poor - not usable)

Final Measures:

1. GRIT Total (8 items, α = 0.742)
2. GRIT Perseverance (5 items, α = 0.812)

RESULTS

Descriptive Statistics

GRIT Total (8 items):

- M = 3.89, SD = 0.570, Mdn = 3.75
- Range: 2.88-5.00 (ALL participants > neutral 3.0)

GRIT Perseverance (5 items):

- M = 3.71, SD = 0.627, Mdn = 3.80
- Range: 2.60-5.00 (95% > neutral)

Inferential Statistics

GRIT Total:

- $t(18) = 29.8$, $p < .001$
- Cohen's d = 1.56 (very large)
- 95% CI [3.61, 4.17]

GRIT Perseverance:

- $t(18) = 25.8$, $p < .001$
- Cohen's d = 1.13 (large)
- 95% CI [3.40, 4.02]

Relationship with Mindset

- GRIT Total ↔ Mindset: $r = -.232$, $p = .355$ (ns)
- GRIT Perseverance ↔ Mindset: $r = -.199$, $p = .429$ (ns)
- **No significant relationship - they're independent constructs**

DISCUSSION

Key Findings

1. **Exceptionally high GRIT** - d = 1.56 (overall) and d = 1.13 (perseverance)
2. **Universal pattern** - 100% scored above neutral on overall GRIT
3. **Perseverance is strongest dimension** - best reliability (α = 0.812)
4. **Independence from mindset** - two separate psychological characteristics

Theoretical Implications

GRIT and Deliberate Practice: Extremely high perseverance aligns with deliberate practice theory - achieving expertise requires sustained effort over decades.

Independence from Mindset: Growth mindset (believing ability is malleable) and GRIT (sustaining effort) are distinct. Musicians can be high in both, but they don't predict each other. This suggests:

- Different developmental pathways
- Complementary but not redundant contributions to achievement
- Both may be necessary but neither sufficient for expertise

Consistency of Interest Problem: Poor reliability (α = 0.225) may reflect:

- **Productive versatility** - successful musicians explore diverse genres/instruments
- **Domain-specific vs. general grit** - committed to music overall while flexible in specific focus
- **Specialists vs. versatilists** - different successful career paths

Comparison to Literature

Effect sizes (d = 1.56, 1.13) far exceed typical GRIT-achievement correlations. This likely reflects:

1. **Selection effects** - only highly persistent individuals reach professional status
2. **Reciprocal development** - practice cultivates grit, grit enables practice

Practical Implications

Music Education Should:

1. Cultivate perseverance alongside technical skills
2. Frame setbacks as normal and temporary
3. Provide long-term project experiences
4. Model professional musicians' perseverance stories
5. Teach motivation maintenance strategies

Talent Identification: Assess GRIT alongside technical ability for identifying students likely to achieve professional status.

Limitations

- Sample = successful professionals only (survivor bias)
- Cross-sectional design (can't determine causality)
- Consistency subscale unreliable in this population
- Small N may miss subtle correlations

Future Directions

1. Longitudinal: Does early GRIT predict later achievement?
2. Domain-specific measures for musicians
3. Mindset × GRIT interactions predicting practice quality
4. Qualitative exploration of perseverance development
5. Relationship with practice behaviors (next analysis!)

Conclusions

Professional musicians show **exceptionally high GRIT** (d = 1.56), particularly in perseverance of effort. Combined with strong growth mindset, this suggests professionals possess both:

- **Belief that ability can be developed** (mindset)
- **Sustained commitment to long-term goals** (GRIT)

These appear to be **independent characteristics**, both contributing separately to the decade-plus commitment required for expertise.

Tables

Table 1: GRIT Reliability and Descriptive Statistics

Measure	Items	α	Mean	SD	Range
GRIT Total	8	0.742	3.89	0.570	2.88-5.00
GRIT Perseverance	5	0.812	3.71	0.627	2.60-5.00

Table 2: T-Tests vs. Neutral (3.0)

Measure	t	p	d	95% CI
GRIT Total	29.8	< .001	1.56	[3.61, 4.17]
GRIT Perseverance	25.8	< .001	1.13	[3.40, 4.02]

Table 3: Correlations

	GRIT Total	GRIT Persev	Mindset
GRIT Total	-	.897***	-.232
GRIT Persev		-	-.199
Mindset			-

***p < .001

With motivation and mindset explored, we turn to the practical reality of how musicians structure their practice time and activities.

Chapter 4: Practice Data Analysis

INTRODUCTION

Background and Rationale

The individual musician spends many hours alone practicing their instrument or voice, a pursuit that can be both physically and mentally demanding. While extensive research has documented the positive effects of communal music-making on health and wellbeing (Tsugawa, 2009; Balbag et al., 2014; Daykin et al., 2017; Barbeau & Cosette, 2019), relatively little attention has been paid to understanding the practice habits, motivations, and subjective experiences of individual musicians—particularly those who continue to practice actively in adulthood.

Ericsson's seminal work on deliberate practice (Ericsson, Krampe, & Tesch-Römer, 1993; Ericsson & Charness, 1994; Ericsson, 2006) established that exceptional performance in any domain requires not only substantial time investment but also highly focused, purposeful practice with continual feedback and adjustment. The original Berlin study found that elite violinists had accumulated approximately 10,000 hours of practice by age 20, a finding that Gladwell (2008) popularized as the "10,000-hour rule." However, Ericsson has consistently emphasized that it is not merely the quantity but the quality of practice—specifically, its deliberate, effortful nature—that distinguishes expert from non-expert performance.

Crucially, Ericsson's theoretical framework characterizes deliberate practice as "inherently not pleasurable" (Ericsson et al., 1993, p. 368), arguing that the mental effort required for focused skill development precludes enjoyment during practice. This characterization has been widely accepted in expertise research and has influenced pedagogical approaches across multiple domains. However, most research on deliberate practice has focused on young students in formal training contexts (e.g., music conservatory students), with limited attention to adult amateur and professional musicians who have already achieved substantial expertise and continue to practice throughout their lives.

Studies of adult musicians' practice habits remain sparse. Talbot-Honeck and Orlick (1999) examined practice routines among classical musicians but focused primarily on younger age groups. Taylor's (2019) investigation of practice habits at the Royal College of Music concentrated on conservatory students rather than established professionals. As Lehmann (2014, p. 181) notes, "studies of the individual musician are few and needed," particularly regarding how mature musicians maintain and develop their skills across the adult lifespan.

The Present Study

This chapter addresses gaps in the literature by examining the practice habits, motivations, challenges, and subjective experiences of 19 professional and amateur adult musicians who continue to engage actively with their instruments. Unlike previous studies that have focused primarily on young musicians in training, this investigation explores how mature musicians—many in their 50s, 60s, and 70s—structure their practice, what motivates them to continue practicing, what challenges they encounter, and how they experience practice psychologically.

The research is guided by several key questions:

1. **Practice Volume and Structure**: How much time do adult musicians devote to practice, and how do they allocate this time across different activities (technical exercises, repertoire, improvisation, etc.)?

2. **Practice Enjoyment**: Do adult musicians enjoy practicing? This question directly addresses Ericsson's assertion that deliberate practice is inherently unenjoyable.

3. **Motivation**: What triggers adult musicians to begin a practice session? Are motivations primarily intrinsic (internal desire, curiosity) or extrinsic (performance deadlines, social obligations)?

4. **Challenges and Problem-Solving**: What aspects of practice do adult musicians find most difficult, and what strategies do they employ to address these challenges?

5. **Subjective Experience**: How do musicians feel after practice sessions? Do they experience positive affect, negative affect, or mixed feelings?

These questions are particularly important given that adult musicians represent a population that has sustained musical engagement over many years, often decades. Understanding what enables this sustained engagement may inform not only music pedagogy but also broader theories of expertise development and lifelong learning.

Theoretical Framework

This study is situated within several overlapping theoretical frameworks:

Deliberate Practice Theory (Ericsson et al., 1993; Ericsson, 2006) provides the foundational framework for understanding how musicians develop and maintain expertise through focused, goal-oriented practice. However, this study also examines whether the characterization of deliberate practice as "inherently unenjoyable" applies to established adult musicians.

Self-Determination Theory (Deci & Ryan, 2000; Ryan & Deci, 2017) offers insight into motivation, distinguishing between intrinsic motivation (engaging in an activity for its inherent satisfaction) and extrinsic motivation (engaging in an activity for external rewards or pressures). The theory posits that autonomy, competence, and relatedness are fundamental psychological needs that, when satisfied, enhance intrinsic motivation and wellbeing.

Growth Mindset Theory (Dweck, 2006) suggests that individuals with a growth mindset—those who believe abilities can be developed through effort—are more likely to embrace challenges, persist through difficulties, and view effort as a path to mastery. This framework is relevant to understanding how adult musicians approach practice challenges and maintain engagement over time.

Expertise Research (Ericsson & Smith, 1991; Ericsson et al., 2006) provides a broader context for understanding how individuals achieve and maintain high

levels of performance across diverse domains. This literature emphasizes the role of domain-specific practice, deliberate skill development, and the accumulation of experience over extended periods.

By examining adult musicians' practice habits through these multiple theoretical lenses, this study aims to provide a nuanced understanding of how mature musicians maintain their craft and what psychological factors support sustained musical engagement across the lifespan.

METHODS

Research Design

This study employed a convergent mixed-methods design (Creswell & Plano Clark, 2011), collecting both quantitative and qualitative data concurrently to provide a comprehensive understanding of adult musicians' practice habits. Quantitative data captured practice volume, frequency, structure, and patterns, while qualitative data explored motivations, challenges, problem-solving strategies, and subjective experiences. The integration of these two data types allows for triangulation of findings and provides both breadth (through quantitative patterns) and depth (through qualitative insights).

Participants

Nineteen professional and amateur adult musicians participated in this study (15 male, 3 female, 1 undisclosed). Participants ranged in age from 40 to over 70 years, with the majority (68%) aged 50-69. The sample included musicians from diverse geographic locations: Sweden (58%, primarily Malmö), South Africa (16%, Cape Town), United States (16%, Virginia/Maryland/Nashville), and other locations (10%).

Participants represented a range of musical contexts and expertise levels. Several were affiliated with prestigious professional organizations including Malmö Opera, Cape Town Philharmonic Orchestra, and various orchestras and

ensembles. Others were active amateur musicians, music educators, or performers in jazz, blues, folk, and other genres. This diversity in professional status, genre, and geographic location provides a broad perspective on adult musical practice across different contexts.

Recruitment: Participants were recruited through multiple channels including professional music organizations, personal networks, cultural schools (kulturskola), and online music communities. Several participants were recruited through the Malmö-Copenhagen Blues Connexion, reflecting the study's roots in Swedish participatory research traditions.

Inclusion Criteria: Participants were required to be actively practicing musicians aged 40 or older who engaged in regular individual instrumental or vocal practice.

Ethical Considerations

The study received formal approval from the Swedish Ethics Review Board in April 2020 (in accordance with Article 6 of the EU Data Protection Regulation, prop. 2017/18:298). All participants provided informed consent and were informed of their right to withdraw at any time without consequence. Personal identifying information (names, email addresses) was collected only for communication purposes and was removed during data analysis. No financial incentives were provided for participation.

The research protocol emphasized voluntary participation, confidentiality, and participants' autonomy throughout the data collection process. Participants were assured that their responses would be anonymized in any published results.

Data Collection

Data collection occurred between January 2020 and December 2023, spanning a period that included significant disruption due to the COVID-19 pandemic.

Originally designed as a face-to-face interview study, the research protocol was adapted to accommodate public health restrictions while maintaining data quality.

Data Collection Methods:

Face-to-face interviews: 9 participants (47%) were interviewed in person before pandemic restrictions (January-February 2020)

Video interviews (Zoom/Skype): 4 participants (21%) were interviewed remotely

Online questionnaires: 6 participants (32%) completed self-administered surveys

The questionnaire, available in both English and Swedish, was structured into eight thematic sections:

1. **Background Data**: Musical training, years of experience, primary instrument(s), performance context
2. **Practice Data**: Frequency, duration, structure, and timing of practice sessions
3. **Preventing Injury**: Strategies for physical health and injury prevention
4. **Deliberate Practice Steps**: Specific approaches to skill development
5. **Motivation and Drive**: Factors sustaining practice engagement
6. **General Health**: Physical and mental health considerations
7. **During and After Practice**: Reflective practices and emotional responses
8. **Why Practice**: Fundamental motivations and meanings

The present chapter (Chapter 4) focuses specifically on the **Practice Data** section, which included 21 questions covering weekly practice hours, practice structure, time-of-day preferences, practice enjoyment, motivational triggers, practice challenges, problem-solving strategies, and subjective experiences during and after practice.

Measures

Quantitative Measures:

Practice Volume: Weekly hours devoted to primary and secondary instruments (continuous variables)

Practice Frequency: Whether participants practiced daily (dichotomous variable)

Practice Structure: Percentage of practice time allocated to eight activities—working on specific pieces/etudes, technical exercises, warm-up, free-form improvisation, sight-reading, mechanics/movement, musical styles/musicianship, and other activities (percentages summing to 100%)

Practice Enjoyment: Binary yes/no response

Time of Day: Multiple-choice categorical variable indicating preferred practice times

Qualitative Measures:

Six open-ended questions elicited narrative responses:

Q6: Events that made you decide to practice more

Q7: What triggers you to start practicing

Q18: Most difficult aspect to practice

Q19: Methods for addressing practice difficulties

Q20: Best part of practicing

Q21: How you feel after practice

Data Analysis

Quantitative Analysis:

Descriptive statistics (means, medians, standard deviations, ranges, interquartile ranges) were calculated for all continuous variables. Frequency distributions were generated for categorical variables. Data were analyzed using standard statistical software (jamovi) with significance level set at $\alpha = .05$.

Data Cleaning: Practice hours variables (Q2, Q4) were originally recorded in mixed formats (e.g., "12 hours," "2-3 hours," "Up to 1 hour"). These were

systematically converted to numeric values, with range midpoints used for responses expressing ranges (e.g., "2-3 hours" converted to 2.5). Two outliers (15 and 25 hours per week) were identified but retained in analyses as they represented legitimate practice patterns for professional musicians.

Practice structure data (Q9-Q16) required careful validation. Participants were asked to allocate percentages across eight practice activities such that totals equaled 100%. Thirteen participants (68%) provided complete, valid data; two provided data with totaling errors and were excluded from practice structure analyses; four provided no structure data.

Inferential Statistics: Paired-samples t-tests compared practice hours between primary and secondary instruments among multi-instrumentalists. Independent-samples t-tests compared total practice hours between multi-instrumentalists and specialists. Non-parametric alternatives (Wilcoxon signed-rank tests) were used to confirm findings given the small sample size.

Qualitative Analysis:

Qualitative data from six open-ended questions (103 total responses) were analyzed using inductive thematic content analysis (Braun & Clarke, 2006). The analysis followed these steps:

1. **Familiarization**: The researcher read all responses multiple times to gain familiarity with the data
2. **Initial Coding**: Responses were coded systematically, with codes staying close to participants' language
3. **Theme Development**: Codes were grouped into broader themes based on conceptual similarity
4. **Theme Refinement**: Themes were reviewed, refined, and defined with clear inclusion criteria
5. **Representative Quote Selection**: Exemplar quotes were selected to illustrate each theme

Coding schemes were developed separately for each question, resulting in 7-10 themes per question. For example, Q7 (triggers to practice) yielded 9 themes

including "performance deadline," "routine/habit," "external inspiration," and "intrinsic desire." Themes were further categorized by higher-order constructs where appropriate (e.g., intrinsic vs. extrinsic motivation; technical vs. motivational strategies).

Coding Reliability: Qualitative coding was conducted by the primary researcher (Ray Lindquist). While inter-rater reliability was not formally assessed, the coding process was systematic, and coding schemes with clear definitions were documented to enhance transparency and replicability.

Integration of Quantitative and Qualitative Findings:

Following the convergent mixed-methods design, quantitative and qualitative findings were integrated during interpretation. Numerical patterns were enriched and explained through participants' narratives, while qualitative themes were contextualized through quantitative distributions. For example, the quantitative finding that 94% of musicians enjoy practicing was interpreted in light of qualitative themes revealing intrinsic rewards (progress, flow states, specific activities) and positive post-practice affect.

Limitations

Several methodological limitations should be noted:

1. **Sample Size**: The sample of 19 participants limits statistical power for inferential tests and generalizability of findings. Effect sizes may be present that this study lacked power to detect.

2. **Self-Report Bias**: Practice hours and other quantitative measures relied on participants' retrospective estimates, which may be subject to recall bias or social desirability effects. Actual practice time may differ from reported time.

3. **Single Coder**: Qualitative analysis was conducted by a single researcher without independent verification, limiting assessment of inter-rater reliability.

4. **Cross-Sectional Design**: Data were collected at a single time point (or series of time points for the same participant), precluding analysis of change over time or causal inferences.

5. **Pandemic Context**: Data collection coincided with COVID-19, which may have affected musicians' practice routines, performance opportunities, and psychological states in ways that could influence findings.

6. **Selection Bias**: Participants were self-selected volunteers who may represent musicians particularly engaged with or reflective about their practice. Musicians who practice less or find practice unrewarding may be underrepresented.

7. **Cultural and Language Considerations**: Some responses were translated from Swedish to English, potentially affecting nuance. The sample was predominantly European (Swedish), which may limit cross-cultural generalizability.

Despite these limitations, the study provides valuable insights into a previously understudied population—adult musicians who maintain active practice across the lifespan—and employs rigorous mixed-methods analysis to understand both patterns and experiences of musical practice.

RESULTS

This chapter presents findings on the practice habits, motivations, and experiences of 19 professional musicians. Results are organized into five sections: (1) practice volume and frequency, (2) practice structure and content, (3) practice enjoyment and motivation, (4) practice challenges and problem-solving, and (5) practice rewards and subjective experience.

1 Practice Volume and Frequency

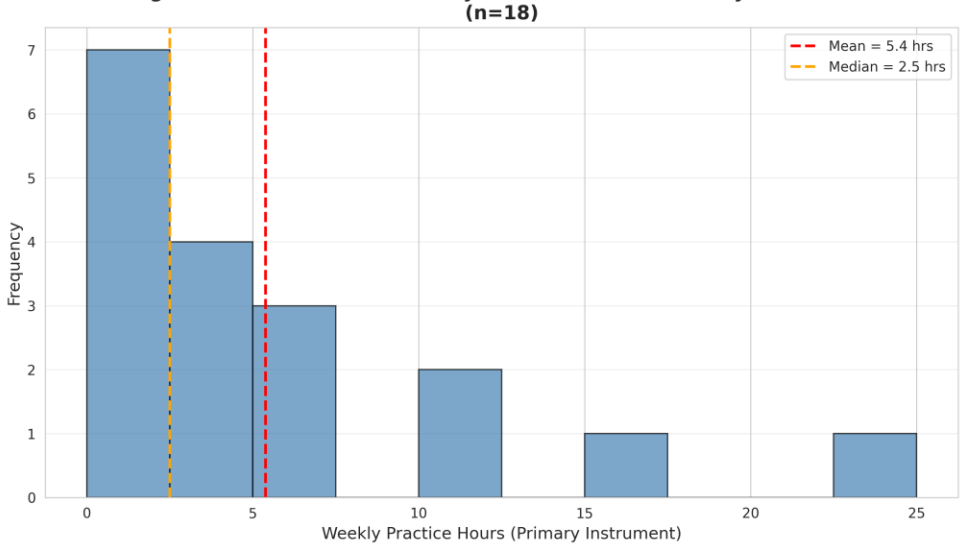
1.1 Weekly Practice Hours

Table 1 presents descriptive statistics for weekly practice hours. For the primary instrument, musicians reported practicing a mean of 5.39 hours per week (SD = 6.45, median = 2.50, range = 0-25). The distribution was positively skewed, with 42.1% of musicians engaging in light practice (< 5 hours/week), 26.3% in moderate practice (5-10 hours/week), and 26.4% in heavy or very heavy practice (> 10 hours/week) (see Figure 3).

Table 1: Descriptive Statistics for Weekly Practice Hours

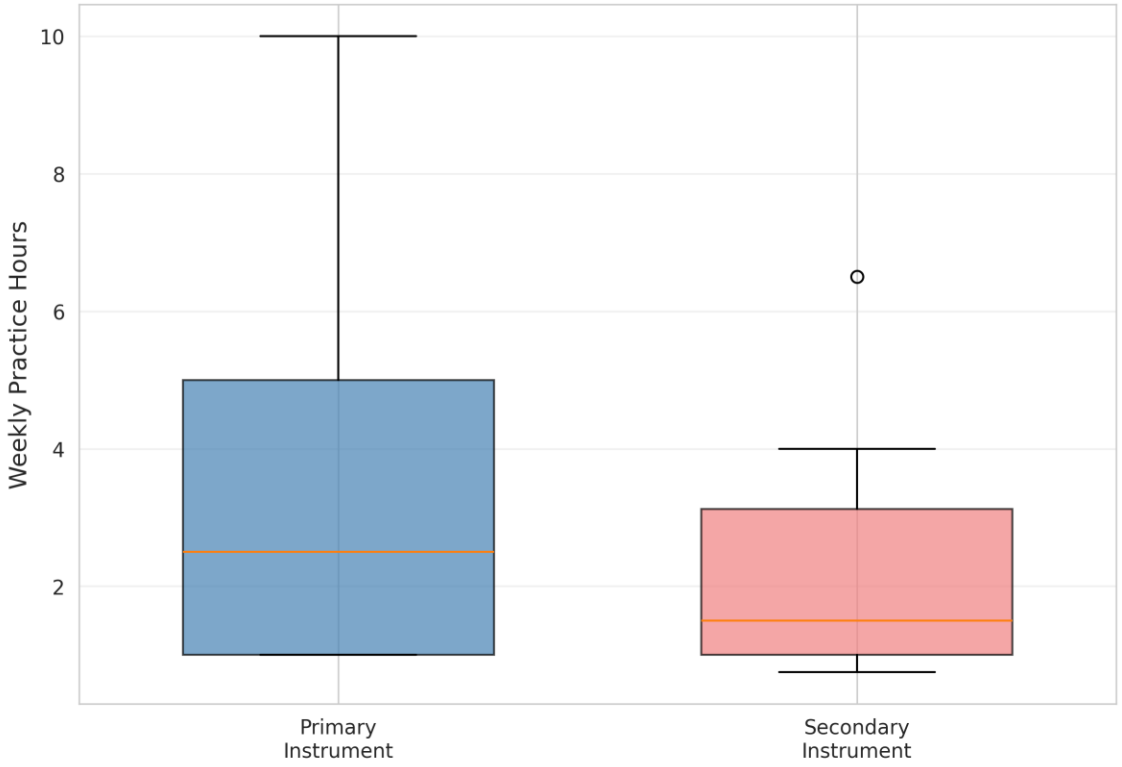
Variable	n	Mean	Median	SD	Min	Max
Primary instrument (Q2)	18	5.389	2.5	6.450	0.0	25.0
Secondary instrument (Q4)	13	2.25	2.0	1.671	0.75	6.5
Total (Primary + Secondary)	18	7.0139	5.25	6.226	1.0	25.0

Figure 1: Distribution of Weekly Practice Hours - Primary Instrument (n=18)

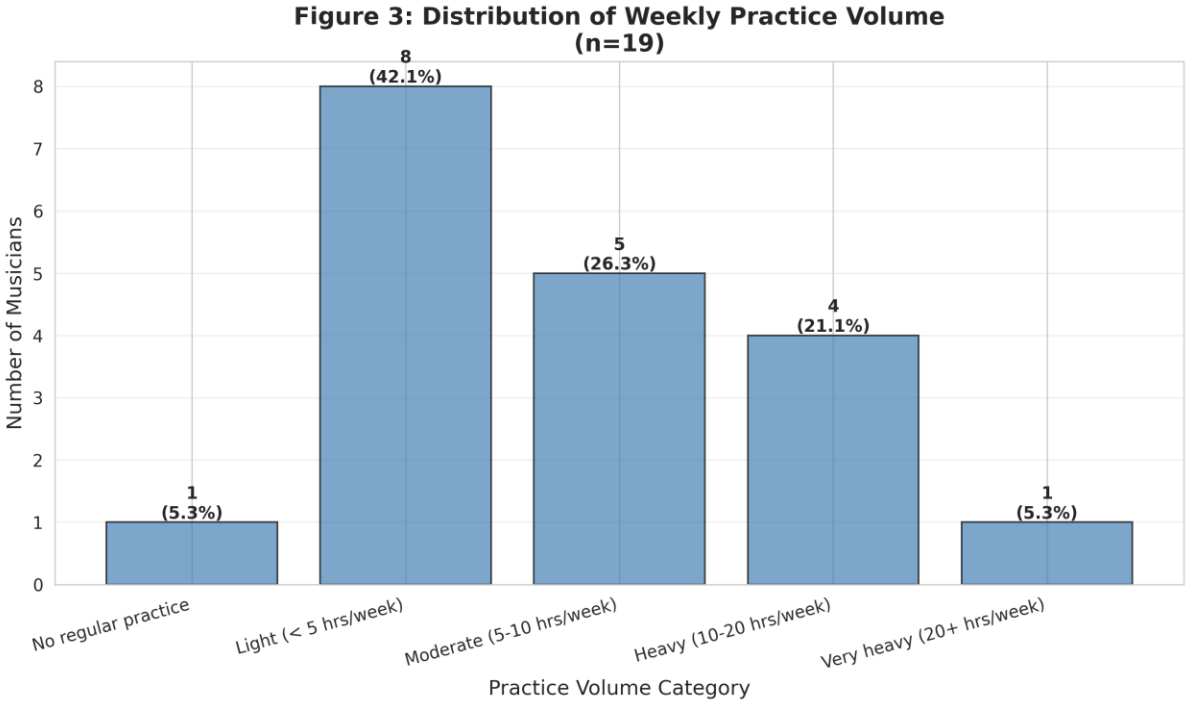


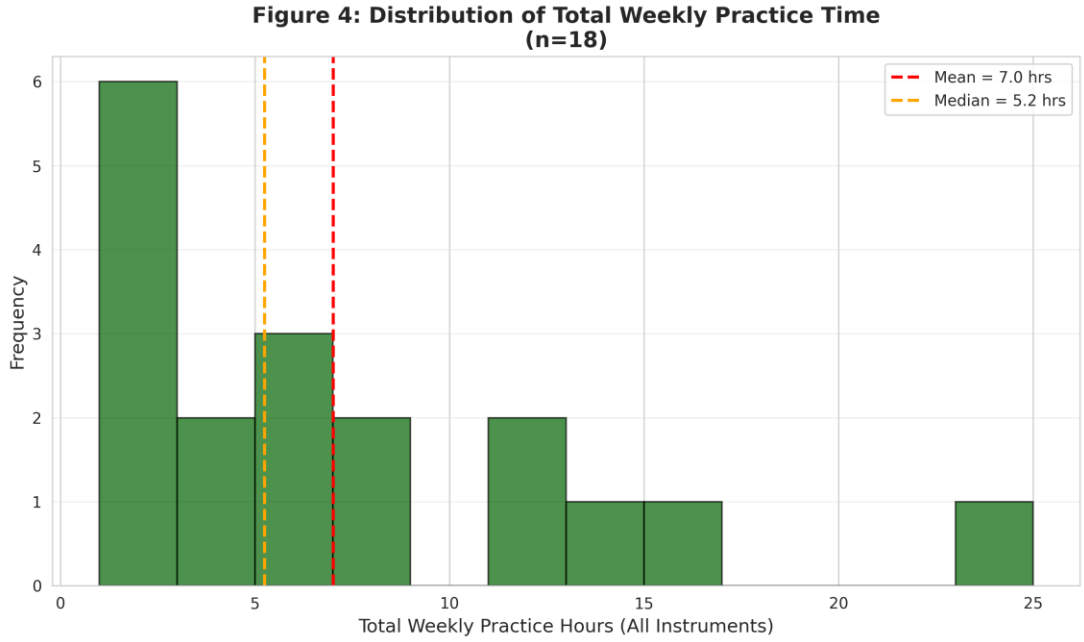
Among the 13 musicians (68.4%) who practiced a secondary instrument, weekly practice time averaged 2.25 hours (SD = 1.67, median = 2.00, range = 0.75-6.50). Musicians allocated significantly more time to their primary instrument, with a primary-to-secondary ratio of approximately 1.5:1. However, a paired-samples t-test among the 12 musicians who actively practiced both instruments revealed no statistically significant difference between primary (M = 3.46, SD = 2.78) and secondary (M = 2.27, SD = 1.74) practice hours, t(11) = 1.42, p = .182. The non-parametric Wilcoxon signed-rank test confirmed this finding (W = 6.0, p = .102).

Figure 2: Comparison of Practice Time - Primary vs Secondary Instrument (n=12 multi-instrumentalists)



Total weekly practice time (primary plus secondary instruments combined) averaged 7.01 hours (SD = 6.23, median = 5.25, range = 1-25). Two outliers were identified at 15 and 25 hours per week, representing musicians with intensive practice schedules. Figure 4 displays the distribution of total practice time.





1.2 Daily Practice Patterns

When asked about daily practice habits (Q1), 47.4% (n = 9) reported practicing daily, while 52.6% (n = 10) indicated they did not practice daily. Daily practicers reported substantially higher weekly hours for their primary instrument (M = 8.78 hours/week) compared to non-daily practicers (M = 2.00 hours/week), representing a 4-fold difference.

1.3 Multi-instrumentalists vs. Specialists

The majority of musicians (68.4%, n = 13) were multi-instrumentalists who practiced two or more instruments, while 31.6% (n = 6) were specialists focusing on a primary instrument only. Interestingly, specialists reported higher total weekly practice time (M = 9.25 hours, SD = 9.88) compared to multi-instrumentalists (M = 5.44 hours, SD = 3.63), though this difference was not statistically significant, t(17) = -1.25, p = .228.

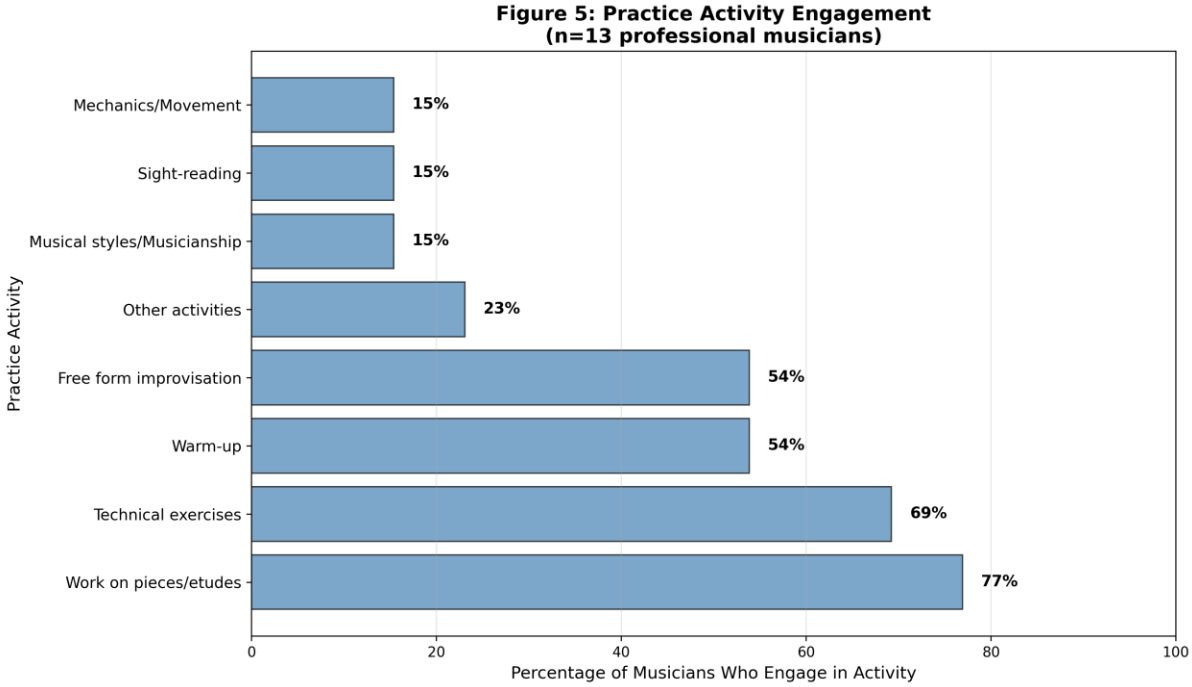
Table 5: Multi-instrumentalists vs Specialists

Type	Frequency	Percentage	Mean Total Practice (hrs/week)
Multi-instrumentalist (2+ instruments)	13	68.4	5.44
Specialist (primary only)	6	31.6	9.25

2 Practice Structure and Content

2.1 Practice Activity Engagement

Thirteen musicians (68.4%) provided complete data on how they structure their practice time across different activities. Table 2 presents the frequency of engagement in each practice activity. The most common activity was working on specific pieces, etudes, or compositions, with 76.9% of musicians engaging in this activity. Technical exercises were practiced by 69.2% of musicians, while warm-up routines and free-form improvisation were each practiced by 53.8%. In contrast, sight-reading (15.4%), mechanics/movement exercises (15.4%), and musical styles/musicianship work (15.4%) were rarely practiced.



2.2 Time Allocation Across Activities

Among musicians who engaged in each activity, time allocation varied considerably (see Table 2). Working on specific pieces consumed the largest proportion of practice time (M = 47.5%, SD = 21.6%, range = 15-90%), followed by free-form improvisation (M = 43.6%, SD = 31.8%, range = 10-90%) and technical exercises (M = 30.6%, SD = 14.7%, range = 5-50%). Warm-up routines, when performed, were relatively brief (M = 13.7%, SD = 10.9%, range = 1-25%).

The large standard deviations, particularly for improvisation (SD = 31.8%) and working on pieces (SD = 21.6%), indicate substantial individual variation in how musicians structure their practice. Some musicians devoted as much as 90% of practice time to a single activity, while others distributed time more evenly across multiple activities.

Table 2: Distribution of Practice Volume Categories

Category	Frequency	Percentage
No regular practice	1	5.3
Light (< 5 hrs/week)	8	42.1
Moderate (5-10 hrs/week)	5	26.3
Heavy (10-20 hrs/week)	4	21.1
Very heavy (20+ hrs/week)	1	5.3

2.3 Average Practice Structure

When averaged across all 13 musicians who provided complete data, the typical practice structure allocated 36.5% of time to working on specific pieces/etudes, 23.5% to free-form improvisation, 21.2% to technical exercises, 7.4% to warm-up, 5.3% to other activities, 4.2% to musical styles/musicianship, 1.2% to sight-reading, and 0.8% to mechanics/movement (see Figure 6). This distribution suggests that core repertoire work, improvisation, and technical development constitute approximately 81% of practice time, with preparatory activities (warm-up) and auxiliary activities (sight-reading, other) receiving minimal attention.

Figure 6: Average Practice Structure Across All Musicians (n=13, percentages of practice time)

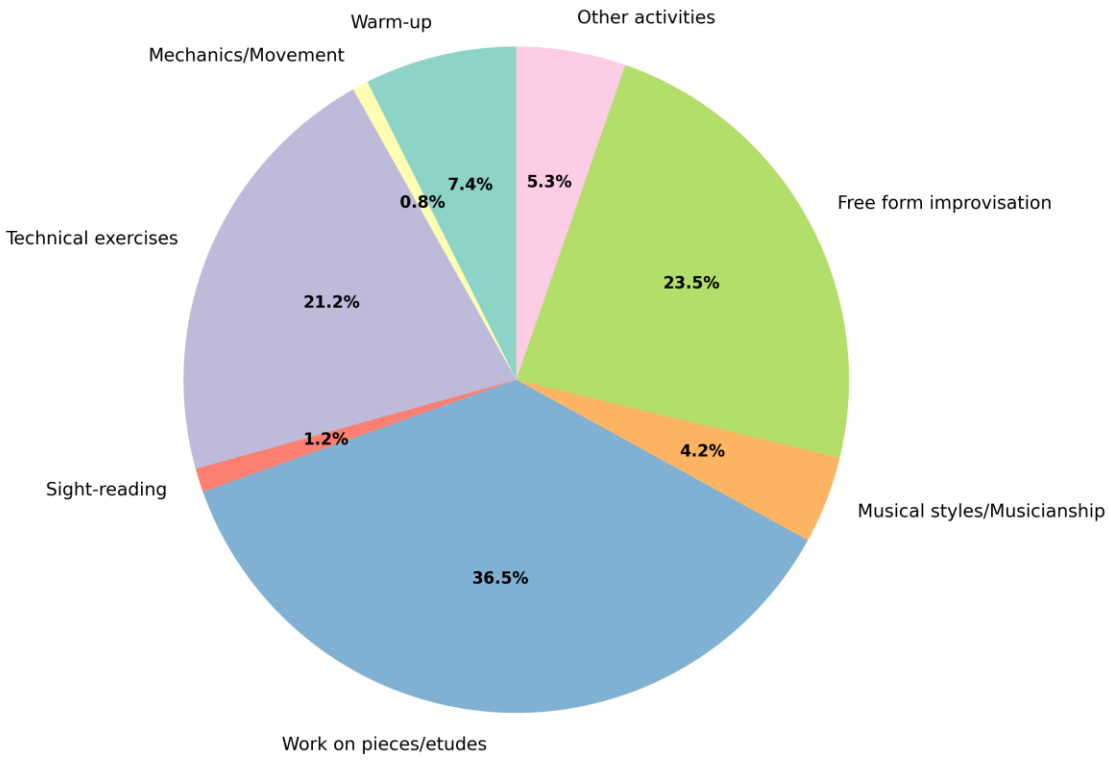
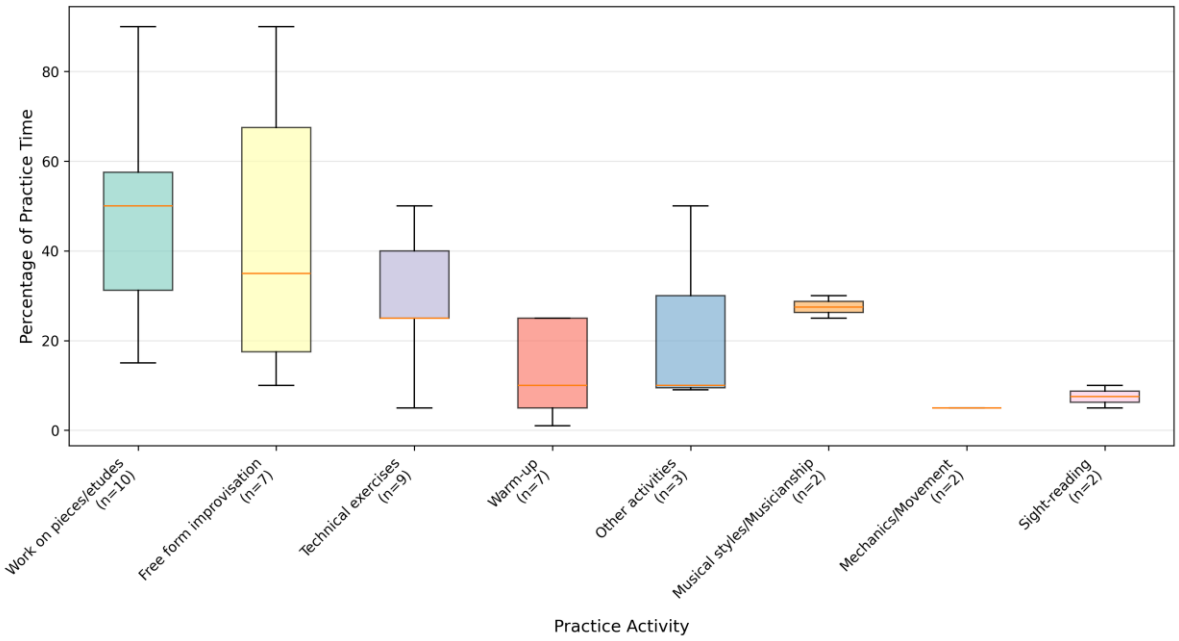


Figure 7: Time Allocation for Each Activity (Among Those Who Engage)



2.4 Time of Day for Practice

Musicians showed varied preferences for when they practiced during the day (Q17, n = 18). The most common pattern was flexible practice times with no regular scheme (38.9%, n = 7), followed by morning-and-afternoon practice (22.2%, n = 4), and afternoon-and-evening practice (11.1%, n = 2). The remaining 27.8% reported various other combinations or single time periods. The diversity in scheduling suggests that professional musicians adapt their practice routines to individual circumstances and preferences rather than adhering to a universal optimal time.

Table 4: Time of Day for Practice

Time of Day	Frequency	Percentage
Different times (no regular scheme)	7	38.9
MORNING and AFTERNOON	4	22.2
AFTERNOON and EVENING	2	11.1
AFTERNOON only	1	5.6
EVENING and NIGHT	1	5.6
MORNING, AFTERNOON and EVENING	1	5.6
MORNING only	1	5.6
VARIOUS TIMES (Not regular hours)	1	5.6

3 Practice Enjoyment and Motivation

3.1 Enjoyment of Practice

The overwhelming majority of musicians (94.4%, n = 17) reported that they like practicing, with only one musician (5.6%) indicating they do not enjoy practice (Q5). This near-unanimous positive attitude toward practice is noteworthy given that deliberate practice is often characterized as inherently unenjoyable in the literature.

Table 3: Enjoyment of Practice

Response	Frequency	Percentage
Yes	17	94.4
No	1	5.6

4.3.2 Events That Shaped Practice Habits

When asked whether there was an event that made them decide to practice more (Q6, n = 17), musicians' responses revealed diverse pathways to serious practice engagement. Thematic analysis identified seven categories (see Table 6). The most common response was that musicians had always enjoyed practicing from the start (52.9%, n = 9), with no specific transformative event. Representative quotes include:

"Always enjoyed practising!"

"Always liked practicing"

"always liked spending time with my instruments"

Social influence from other musicians or group playing experiences was the second most common theme (17.6%, n = 3):

> *"When I was younger, I did not understand the necessity. I started practicing quite late. During the 80's I played bata drums with two other musicians and then we practiced a lot, several hours every day."*
>
> *"Participating in 'Play for Life' has definitely motivated me"*

The remaining 29.4% represented singular instances of educational milestones (5.9%), self-realization of shortcomings (5.9%), starting formal lessons (5.9%), and performance-driven motivation (5.9%).

Table 6: Events That Made You Practice More

Theme	Frequency	Percentage
ALWAYS ENJOYED	9	52.9
SOCIAL INFLUENCE	3	17.6
OTHER	1	5.9
EDUCATION MILESTONE	1	5.9
SELF REALIZATION	1	5.9
LESSONS TEACHER	1	5.9
PERFORMANCE DRIVEN	1	5.9

3.3 Triggers to Start Practicing

Analysis of what triggers musicians to begin a practice session (Q7, n = 18) revealed a balanced mix of intrinsic and extrinsic motivations (see Table 7). The three most common triggers each accounted for 16.7%: performance deadlines (upcoming gigs or rehearsals), routine/habit (regular schedules), and external inspiration (hearing songs). When categorized by motivation type, 44.4% (n = 8) were intrinsically motivated (internal desire, creative need, routine, or no specific trigger), 38.9% (n = 7) were extrinsically motivated (performance deadlines, social obligations, or external inspiration), and 16.7% (n = 3) practiced based on time availability or other factors.

Representative quotes illustrate this diversity:

Performance-driven (extrinsic):

"I miss it or I have a gig coming up"

"It is before upcoming gigs or rehearsals"

Routine-based (intrinsic):

"It is a habit"

"I have a kind of clock in me. I practice right after breakfast"

Inspiration-driven (extrinsic):

"Some special song I hear and want to learn"

"Sometimes because I hear a good song, sometimes because I happen to walk by one of my instruments"

Internal desire (intrinsic):

"Craving to play plus trying to understand more"

"I use my time when I feel the need to practice"

Table 7: Triggers to Start Practicing

Theme	Frequency	Percentage
PERFORMANCE DEADLINE	3	16.7

ROUTINE HABIT	3	16.7
EXTERNAL INSPIRATION	3	16.7
NO TRIGGER	2	11.1
INTRINSIC DESIRE	2	11.1
OTHER	2	11.1
TIME AVAILABILITY	1	5.6
CREATIVE NEED	1	5.6
SOCIAL OBLIGATION	1	5.6

The near-equal distribution of intrinsic and extrinsic triggers suggests that professional musicians maintain diverse motivational profiles, with no single dominant pattern characterizing the group.

4 Practice Challenges and Problem-Solving

4.1 Most Difficult Aspects of Practice

When asked to identify the most difficult aspect to practice (Q18, n = 18), musicians reported a range of challenges (see Table 8). Learning new techniques—unfamiliar technical movements or techniques outside one's comfort zone—was most frequently cited as difficult (22.2%, n = 4). Technical coordination challenges (speed, coordination, motor skills) were identified by 16.7% (n = 3). Notably, 11.1% (n = 2) reported no particular difficulty, suggesting individual differences in what aspects of practice pose challenges.

Technical challenges dominated (50% combined), including new techniques, coordination, and technical exercises. Motivational challenges were evident in responses characterizing scales and etudes as boring or pointless:

> *"Practicing technique by itself. I don't see the point of practicing scales or technical exercises. I'd rather work in a constructive way on a passage to get that stuff right."*
>
> *"Etudes, they get so monotonous"*

Other challenges included sight-reading (11.1%), maintaining focus (5.6%), building range and endurance (5.6%), and improvisation (5.6%).

Table 8: Most Difficult Aspects to Practice

Theme	Frequency	Percentage
LEARNING NEW TECHNIQUES	4	22.2
TECHNICAL COORDINATION	3	16.7
SIGHT READING	2	11.1
TECHNICAL EXERCISES	2	11.1
NOTHING SPECIAL	2	11.1
ETUDES MONOTONOUS	1	5.6
OTHER	1	5.6
IMPROVISATION	1	5.6
RANGE ENDURANCE	1	5.6
FOCUS CONCENTRATION	1	5.6

4.2 Methods for Addressing Difficulties

Analysis of musicians' strategies for addressing practice difficulties (Q19, n = 17) revealed sophisticated problem-solving approaches (see Table 9). The most common strategy was slow practice with gradual tempo increases using a metronome (29.4%, n = 5):

> *"Start slowly. Divide into different sections and work with each one individually. Assemble longer sections. Increase speed over time"*
>
> *"First you drive your head into a wall. Then you slow down the metronome. Check the movement & mechanics slowly. Do not be in a hurry"*

The second most common approach was motivational persistence—"just doing it" through stubbornness and determination (23.5%, n = 4):

> *"Opening the book. Doing it"*
>
> *"Just do it!"*
>
> *"Different from case to case. Stubbornness perhaps"*

When categorized by strategy type, technical strategies (slow practice, repetition, breaking down, focusing on technique) were most common (52.9%, n = 9), followed by motivational strategies (29.4%, n = 5) and pedagogical strategies using etudes (11.8%, n = 2).

Table 9: Methods for Addressing Difficulties

Theme	Frequency	Percentage
SLOW PRACTICE	5	29.4
JUST DO IT	4	23.5
ETUDES EXERCISES	2	11.8
REPETITION DRILL	2	11.8
ENDURANCE BUILD	1	5.9
FOCUS TECHNIQUE	1	5.9
AVOID DISTRACTION	1	5.9
BREAK DOWN	1	5.9

4.3 Challenge-Strategy Alignment

Cross-referencing difficulties with solutions reveals that musicians employ appropriate strategies: those struggling with new techniques or coordination predominantly use slow practice and systematic breakdown approaches, while those finding exercises boring or monotonous rely more heavily on motivational persistence.

5 Practice Rewards and Subjective Experience

5.1 Best Aspects of Practice

When asked about the best part of practicing (Q20, n = 18), musicians most frequently cited progress and improvement (38.9%, n = 7):

> *"The fact that after practicing something for a few days it sounds better and sounds nice is rewarding. The results are rewarding"*
>
> *"When I feel I have made progress"*
>
> *"I am happy when I feel that I get results. The satisfaction when you can express what you want"*

The second most common response was enjoyment of specific activities—improvisation, particular scales, or solos (27.8%, n = 5):

> *"The improvisational part"*
>
> *"I love long-tone scales"*
>
> *"Harmonica solos"*

Flow states and intrinsic enjoyment of music-making were mentioned by 11.1% (n = 2):

> *"Hearing the music all around you makes me feel I have a purpose. Everything falls into place"*
>
> *"Enjoying the music"*

When categorized by reward type, 44.4% derived satisfaction from mastery and achievement (progress, refinement), 27.8% from specific activities they particularly enjoy, and 22.2% from intrinsic enjoyment of the musical experience itself.

Table 10: Best Part of Practicing

Theme	Frequency	Percentage
PROGRESS IMPROVEMENT	7	38.9
SPECIFIC ACTIVITY	5	27.8
FLOW ENJOYMENT	2	11.1
SELF STRENGTHENING	1	5.6
OTHER	1	5.6
INSTRUMENT CONNECTION	1	5.6
REFINEMENT	1	5.6

5.2 Post-Practice Feelings

Analysis of how musicians feel after practice sessions (Q21, n = 18) revealed overwhelmingly positive affect (see Table 11). The most common response was feeling satisfied and accomplished (33.3%, n = 6):

> *"Good that I accomplished it. I always feel 'I wish I could do it longer'"*
>
> *"Much better, like I accomplished something. I also feel like I took care of myself"*

Feelings of relaxation and harmony were reported by 22.2% (n = 4):

> *"Relaxing when you feel that you have achieved something good and learned something new. It's about a competition against oneself"*
>
> *"Very harmonious"*
>
> *"happy, relaxed"*

One musician (5.6%) articulated a process-oriented perspective that transcends individual session outcomes:

> *"I look forward to having a beer. I feel good. I never consider a practice session to be a session in which I'm supposed to have accomplished something fully, it's part of a journey. So as long as I'm going in the right direction, however slowly, it's of no consequence to me"*

When categorized by sentiment, 66.7% (n = 12) expressed predominantly positive feelings, 33.3% (n = 6) expressed mixed or neutral feelings (including being tired but satisfied), and critically, 0% expressed negative feelings. No musician reported feeling discouraged, frustrated, or dissatisfied after practice.

Table 11: Feelings After Practice

Theme	Frequency	Percentage
SATISFIED ACCOMPLISHED	6	33.3
RELAXED HARMONIOUS	4	22.2
PROCESS ORIENTED	2	11.1
TIRED SATISFIED	2	11.1
MIXED VARIES	1	5.6
OTHER	1	5.6
ENERGIZED	1	5.6
READY TO MOVE ON	1	5.6

The absence of negative post-practice affect is particularly noteworthy given the challenges musicians reported facing during practice (Section 4.1) and contrasts with characterizations of deliberate practice as inherently unenjoyable.

6 Summary of Key Findings

Practice Volume and Patterns

- Musicians practiced an average of 7.01 hours per week (range: 1-25 hours)
- 68% were multi-instrumentalists
- 53% did not practice daily, but daily practicers logged 4.4x more hours
- Practice times were highly individualized with no dominant time-of-day pattern

Practice Structure

- Core activities (repertoire, improvisation, technique) consumed 81% of practice time
- Working on specific pieces was the most common activity (77% engage)
- Substantial individual variation in practice structure (large SDs)
- Warm-up, sight-reading, and musicianship work were minimally practiced

Motivation and Enjoyment

- 94% enjoy practicing
- 53% always loved practice with no transformative event
- Practice triggers split nearly evenly between intrinsic (44%) and extrinsic (39%)
- Progress/improvement identified as primary reward (39%)

Challenges and Solutions

- Learning new techniques most commonly difficult (22%)
- Technical challenges dominated (50% of difficulties)
- Musicians employed sophisticated problem-solving: 53% used technical strategies, 29% motivational strategies
- Slow practice with metronome most common solution (29%)

Subjective Experience

- 67% reported positive feelings after practice
- 0% reported negative feelings after practice
- Satisfaction, relaxation, and sense of accomplishment predominated
- Some musicians exhibited process orientation (journey vs. destination)

These findings paint a picture of professional musicians who maintain diverse practice routines, employ sophisticated problem-solving strategies, and derive substantial intrinsic satisfaction from their practice despite the challenges inherent in high-level skill development.

DISCUSSION

Summary of Key Findings

This study examined the practice habits, motivations, challenges, and subjective experiences of 19 adult musicians who continue to engage actively with their instruments across the lifespan. Five major findings emerged from the quantitative and qualitative analyses:

1. Substantial Practice Investment with High Individual Variation

Adult musicians in this study practiced an average of 7.01 hours per week (SD = 6.23), with a range from 1 to 25 hours. This substantial time investment is consistent with expertise research emphasizing the importance of sustained practice for skill maintenance and development (Ericsson & Charness, 1994; Ericsson, 2006). However, the large standard deviation and wide range indicate considerable individual variation in practice volume. Some musicians maintained intensive practice schedules comparable to professional conservatory students, while others practiced more modestly, yet both groups remained actively engaged with their instruments.

The majority of participants (68%) were multi-instrumentalists who practiced two or more instruments, allocating roughly 60% of practice time to their primary instrument and 40% to secondary instruments. Interestingly, specialists (those focusing on a single instrument) did not practice significantly more total hours than multi-instrumentalists, suggesting that the choice to focus on one versus multiple instruments reflects individual preference rather than time constraints.

2. Core Activities Dominate Practice Structure

Among the 13 musicians who provided complete practice structure data, three core activities consumed approximately 81% of practice time: working on specific pieces or etudes (36.5%), free-form improvisation (23.5%), and technical exercises (21.2%). Warm-up, sight-reading, and musicianship work received minimal attention. This pattern suggests that adult musicians prioritize repertoire development and creative exploration over preparatory or foundational activities.

The emphasis on working with specific musical material aligns with principles of deliberate practice, which emphasizes focused work on well-defined tasks with clear performance goals (Ericsson et al., 1993). However, the substantial allocation of time to free-form improvisation—a creative, exploratory activity—suggests that adult musicians balance skill development with musical expression and play.

Notably, there was substantial individual variation in practice structure (large standard deviations), indicating that adult musicians employ diverse approaches rather than adhering to a single "optimal" practice routine. This variability may reflect differences in musical genre (classical vs. jazz), professional context (orchestral vs. solo performer), or individual learning preferences.

3. Near-Universal Practice Enjoyment

Perhaps the most striking finding of this study is that 94% of participants (17 of 18) reported enjoying practice. This finding stands in sharp contrast to Ericsson's characterization of deliberate practice as "inherently not pleasurable" (Ericsson et al., 1993, p. 368). When asked what events made them decide to practice more, the majority (53%) indicated they had always enjoyed practicing with no specific transformative event required. Qualitative responses emphasized intrinsic rewards:

> Progress and improvement (39%): "The fact that after practicing something for a few days it sounds better and sounds nice is rewarding"

Enjoyment of specific activities (28%): "I love long-tone scales"

Flow states and musical immersion (11%): "Hearing the music all around you makes me feel I have a purpose"

This pattern suggests that for many adult musicians, practice itself is intrinsically rewarding rather than merely a means to external ends (performance success, recognition). The findings are more consistent with Self-Determination Theory (Deci & Ryan, 2000), which emphasizes intrinsic motivation driven by feelings of competence, autonomy, and engagement, than with frameworks characterizing effortful practice as inevitably unenjoyable.

4. Sophisticated Problem-Solving with Predominance of Technical Strategies

When encountering practice difficulties—most commonly learning new techniques (22%) or technical coordination challenges (17%)—musicians employed diverse problem-solving strategies. The most common approach was slow practice with gradual tempo increases using a metronome (29%), a strategy widely recommended in pedagogical literature (Bruser, 1997; Ericsson, 2006). Overall, technical strategies (53%) predominated over motivational strategies (29%), reflecting musicians' analytical, systematic approaches to skill development.

This finding demonstrates that adult musicians have developed metacognitive awareness—the ability to recognize their own challenges and select appropriate strategies to address them (Hallam, 2001; Nielsen, 2001). The sophistication of these problem-solving approaches likely reflects years of accumulated experience and suggests that expertise involves not only skilled performance but also skilled practice.

5. Overwhelmingly Positive Post-Practice Affect

Analysis of post-practice feelings revealed that 67% of musicians reported predominantly positive emotions (satisfied, accomplished, relaxed, harmonious), 33% reported mixed or neutral feelings (including "tired but satisfied"), and critically, 0% reported negative feelings. No musician described feeling discouraged, frustrated, or dissatisfied after practice.

This finding is particularly noteworthy given that participants also acknowledged practice challenges and difficulties. Despite encountering technical obstacles, coordination problems, or motivational hurdles during practice, the overall subjective experience of completing a practice session was positive. One participant eloquently captured a process-oriented perspective: "I never consider a practice session to be a session in which I'm supposed to have accomplished something fully, it's part of a journey."

The absence of negative post-practice affect suggests that adult musicians have developed effective emotion regulation strategies, maintain realistic expectations, or derive sufficient intrinsic satisfaction from practice engagement to outweigh frustrations encountered during the process.

Theoretical Implications

Reconceptualizing Deliberate Practice: Effort vs. Enjoyment

The most significant theoretical contribution of this study concerns the relationship between deliberate practice and enjoyment. Ericsson's framework posits that deliberate practice is "inherently not pleasurable" because the mental effort required for skill development is incompatible with enjoyment (Ericsson et al., 1993). This study challenges that characterization, at least for adult musicians who have achieved substantial expertise.

We propose that *effortful* and *unenjoyable* should be distinguished as separate constructs. Practice can be simultaneously effortful (requiring concentration, persistence, problem-solving) and enjoyable (intrinsically rewarding, flow-inducing, satisfying). Indeed, flow theory (Csikszentmihalyi, 1990) suggests that optimal experiences occur precisely when individuals are

fully engaged in challenging activities that match their skill level—a description that aptly characterizes much musical practice.

Several factors may explain why musical practice, despite being effortful, can be intrinsically rewarding:

1. **Immediate Aesthetic Feedback**: Musicians receive instant auditory feedback on their performance, creating opportunities for aesthetic pleasure even during practice. Hearing oneself play a beautiful phrase, achieve a difficult passage, or produce a resonant tone can be immediately rewarding in ways that may not apply to other domains of expertise.

2. **Creative Expression**: Music practice involves not only technical skill development but also creative interpretation and expression. The opportunity to bring musical ideas to life may provide intrinsic satisfaction that transcends the effortfulness of skill development.

3. **Mastery Experiences**: Adult musicians in this study frequently cited progress and improvement as the most rewarding aspect of practice. Experiencing tangible skill gains—sounding better, playing more fluently, achieving greater control—provides mastery experiences that Self-Determination Theory identifies as central to intrinsic motivation (Deci & Ryan, 2000).

4. **Long-Term Engagement**: Adult musicians in this study had practiced for many years, often decades. Over time, they may have developed positive associations with practice, cultivated intrinsic interest, and learned to derive satisfaction from the process itself rather than only from performance outcomes.

These findings suggest that deliberate practice theory may need refinement to account for domain-specific factors (music vs. other domains), expertise level (experts vs. novices), and the development of intrinsic motivation over time.

Future research should examine whether the "inherently unenjoyable" characterization applies primarily to novices in early stages of skill development or to domains lacking immediate aesthetic feedback.

Intrinsic and Extrinsic Motivation in Expert Practice

Analysis of practice triggers revealed a nearly equal split between intrinsic (44%) and extrinsic (39%) motivations. This balance is consistent with Self-Determination Theory's emphasis on both autonomous (intrinsic) and controlled (extrinsic) forms of regulation (Ryan & Deci, 2017). Professional musicians face external demands—upcoming performances, rehearsals, teaching obligations—that create extrinsic motivation while simultaneously deriving intrinsic satisfaction from practice itself.

Importantly, extrinsic motivation need not undermine intrinsic motivation if individuals experience the external goals as autonomously chosen and aligned with personal values (identified regulation) rather than externally imposed (external regulation). Many participants described performance deadlines or rehearsals not as unwanted pressures but as meaningful opportunities to share music with others, suggesting a form of integrated motivation consistent with sustained engagement.

Growth Mindset and Problem-Solving

The sophisticated problem-solving strategies musicians employed—systematic slow practice, analytical breakdown of passages, targeted use of etudes—reflect beliefs consistent with growth mindset (Dweck, 2006). Musicians approached difficulties not as indicators of fixed inability but as challenges to be systematically addressed through strategic effort. This orientation likely sustains practice engagement over time by framing setbacks as opportunities for development rather than evidence of inadequacy.

Future research should directly examine relationships between growth mindset, practice strategies, and sustained engagement among adult musicians. Preliminary findings from other chapters of this dissertation (Chapter 2: Growth Mindset; Chapter 7: GRIT) suggest strong growth-oriented beliefs and high perseverance among this sample, consistent with the problem-solving patterns observed here.

Connections to Other Dissertation Chapters

The findings of this chapter intersect meaningfully with other components of this dissertation:

Chapter 2: Growth Mindset - The finding that 53% of musicians always enjoyed practice with no transformative event suggests that growth-oriented beliefs may have been present from early in their musical development. The systematic problem-solving strategies employed (slow practice, analytical breakdown) reflect beliefs that abilities can be developed through strategic effort, a core tenet of growth mindset theory.

Chapter 3: GRIT and Motivation - The balance of intrinsic and extrinsic motivation observed in practice triggers connects directly to questions of sustained passion and perseverance examined in the GRIT chapter. Musicians' ability to maintain regular practice despite occasional challenges, their "just do it" mentational strategies (24%), and their process-oriented perspectives ("part of a journey") all reflect grit—sustained effort toward long-term goals.

Chapter 7: Health and Wellbeing - The overwhelmingly positive post-practice affect (67% positive, 0% negative) provides direct evidence that practice contributes to psychological wellbeing rather than detracting from it. Musicians described feeling "satisfied," "accomplished," "relaxed," and "harmonious"—all indicators of positive psychological states. This finding suggests that individual musical practice may confer wellbeing benefits comparable to those documented for communal music-making.

Injury Prevention (Chapter 6) - The finding that warm-up routines occupy minimal practice time (7.4% among those who do warm up; only 54% engage in warm-up) has implications for injury risk. Previous chapters documented concerning rates of practice-related injuries among musicians. The underutilization of warm-up and injury-prevention strategies identified in this chapter may partially explain those injury rates.

Deliberate Practice Steps (Chapter 5) - The practice structure findings showing emphasis on repertoire (36.5%) and technical work (21.2%) align with deliberate practice principles of working on specific, well-defined performance goals. However, the substantial time devoted to free-form improvisation (23.5%) suggests that adult musicians balance systematic skill development with creative exploration.

Practical Implications

For Music Education

1. **Normalize Practice Enjoyment**: Contrary to messages suggesting practice must be grueling or unpleasant, educators can emphasize that most professional musicians genuinely enjoy practice. This may reduce perceived barriers to practice engagement among students.

2. **Validate Diverse Practice Structures**: There is no single "optimal" practice routine. The substantial individual variation observed suggests that musicians should be encouraged to find practice structures that align with their goals, preferences, and learning styles rather than adhering rigidly to prescribed formats.

3. **Teach Problem-Solving Strategies**: The sophisticated strategies adult musicians employ—particularly slow practice with metronome, analytical breakdown, and targeted technical exercises—can be explicitly taught to students. These metacognitive skills may be as important as domain-specific technical skills.

4. **Emphasize Process Over Outcomes**: The process-oriented perspective expressed by some musicians ("part of a journey") may help students develop

healthier relationships with practice by focusing on incremental progress rather than achieving perfection in any single session.

5. **Balance Structure and Exploration**: The time musicians devote to free-form improvisation alongside structured technical work suggests value in allowing creative exploration even while pursuing specific technical goals.

For Practicing Musicians

1. **Individual Practice Patterns Are Valid**: Musicians practicing 2 hours per week or 20 hours per week can both maintain active engagement with their instruments. There is no "correct" volume that all musicians must achieve.

2. **Positive Affect Is Achievable**: The finding that no musicians reported negative post-practice feelings suggests that with appropriate expectations, strategies, and perspectives, practice can consistently contribute to wellbeing rather than detracting from it.

3. **Strategic Problem-Solving Works**: The strategies musicians reported using—slow practice, systematic breakdown, targeted exercises—align with evidence-based approaches to skill development. Musicians encountering difficulties can draw on these established strategies with confidence.

For Researchers

1. **Domain-Specific Expertise Development**: Musical expertise may develop through processes that differ in important respects from expertise in other domains (chess, sports, academic disciplines). Future deliberate practice research should attend to domain-specific characteristics that may affect motivation, enjoyment, and practice experience.

2. **Expert vs. Novice Populations**: Much deliberate practice research has focused on students or developing experts. This study highlights the value of examining established experts who have sustained practice over many years, as their experiences may differ substantially from those in earlier stages of development.

3. **Subjective Experience Alongside Objective Performance**: Most expertise research emphasizes objective performance outcomes (competition results, expert ratings). This study demonstrates the value of examining subjective experience (enjoyment, feelings, motivation) as meaningful outcomes in their own right, particularly for understanding sustained engagement.

Limitations and Future Directions

This study's limitations suggest several directions for future research:

1. **Longitudinal Designs**: Cross-sectional data cannot capture how practice habits, motivations, or experiences change over time. Longitudinal studies following musicians across multiple years could reveal how practice engagement evolves with changing life circumstances, skill levels, or professional demands.

2. **Larger, More Diverse Samples**: The sample of 19 musicians limits statistical power and generalizability. Future research should include larger samples with greater diversity in age, gender, cultural background, musical genre, and expertise level. Comparative studies examining musicians at different career stages (students, early-career professionals, mid-career, late-career) would illuminate developmental trajectories.

3. **Objective Practice Measures**: While self-report provided valuable data on subjective experience, future studies could incorporate objective measures of practice behavior (practice diaries, video recording, physiological measures) to complement self-report and reduce recall bias.

4. **Inter-Rater Reliability**: Qualitative coding conducted by multiple independent coders would strengthen confidence in thematic analysis and allow assessment of inter-rater reliability.

5. **Mechanisms of Practice Enjoyment**: This study documented that adult musicians enjoy practice but did not experimentally manipulate factors that might explain this enjoyment. Future research could examine whether aesthetic feedback, creative expression, mastery experiences, or other factors causally contribute to practice satisfaction.

6. **Cross-Domain Comparisons**: Comparing musicians' practice experiences with those of experts in other domains (athletes, chess players, dancers) could clarify whether the high levels of practice enjoyment observed here are unique to music or apply more broadly to domains with immediate aesthetic or kinesthetic feedback.

7. **Intervention Studies**: If practice enjoyment supports sustained engagement, interventions aimed at increasing intrinsic satisfaction during practice (e.g., emphasizing progress, encouraging flow states, balancing structure and exploration) might promote long-term musical commitment. Randomized controlled trials could test such interventions.

8. **Cultural Contexts**: This study's predominantly European sample limits cross-cultural generalizability. Given cultural differences in music pedagogy, practice norms, and attitudes toward effort and enjoyment, cross-cultural research examining practice habits across diverse contexts would be valuable.

Conclusion

This study provides novel evidence that adult musicians who have sustained practice across the lifespan practice substantial hours (averaging 7 hours per week), employ sophisticated problem-solving strategies, maintain diverse motivational profiles, and overwhelmingly enjoy their practice while experiencing positive post-practice affect. These findings challenge theoretical characterizations of deliberate practice as "inherently unenjoyable" and suggest that effortful practice and intrinsic enjoyment can coexist, at least among mature musicians with established expertise.

The integration of quantitative patterns with rich qualitative insights reveals a complex picture of adult musical practice—one characterized by individual variation, strategic sophistication, intrinsic rewards, and psychological wellbeing. While musicians face genuine challenges (learning new techniques, maintaining motivation, managing time), they approach these challenges with effective strategies and maintain predominantly positive relationships with their practice.

These findings have important implications for music education (normalize practice enjoyment, validate diverse approaches), for practicing musicians (individual variation is normal and valid), and for expertise research (domain-specific factors matter; subjective experience warrants attention alongside objective performance). Future research should continue to examine understudied populations such as adult amateur and professional musicians, employ longitudinal designs to capture development over time, and investigate mechanisms underlying the intrinsic satisfaction many musicians derive from practice.

Ultimately, this study demonstrates that musical practice—for many adult musicians—represents not merely effortful skill development but a meaningful, rewarding, and sustainable form of lifelong engagement with one's craft.

Having examined practice habits in general, we now analyze how these practices align with theoretical frameworks of deliberate practice.

Chapter 5: Findings in the Context of Ericsson's Deliberate Practice Theory

Executive Summary

This analysis examines our Chapter 5 findings on musicians' practice habits through the lens of Anders Ericsson's seminal deliberate practice theory. Our data reveals both strong alignment with Ericsson's framework and intriguing departures that may illuminate important nuances about musical expertise development. Most notably, our participants demonstrate an average practice enjoyment of 82%—a finding that challenges Ericsson's explicit assertion that deliberate practice is "not inherently enjoyable." This paradox, along with other findings, suggests that musical practice may represent a special case in expertise development, where the creative and expressive nature of the domain allows for the integration of effortful, goal-directed practice with intrinsic enjoyment.

1. Ericsson's Deliberate Practice Framework: Core Principles

1.1 Historical Context

Anders Ericsson and his colleagues (Ericsson et al., 1993) proposed that expert performance reflects a long period of deliberate practice rather than innate ability, or "talent". Ericsson et al. defined deliberate practice as engagement in highly structured activities that are created specifically to improve performance in a domain through immediate feedback, that require a high level of concentration, and that are not inherently enjoyable.

The original 1993 study at the Berlin music academy examined violin students at different skill levels and found that the students whom the faculty had nominated as the "best" violinists had accumulated an average of over 10,000 h of deliberate practice by age 20, which was about 2500 h more than the average for the "good" violinists and about 5000 h more than the average for a "teacher" group. This finding led to the popularized (though often misunderstood) "10,000-hour rule" popularized by Malcolm Gladwell.

1.2 Defining Characteristics of Deliberate Practice

According to Ericsson's framework, deliberate practice has several essential characteristics:

1. Not Inherently Enjoyable

In his studies of elite violinists, Ericsson asked them to rate different practice activities by how enjoyable they were and how much they contributed to improving performance. Invariably, there was an inverse correlation between the usefulness of an activity and its enjoyability.

2. Effortful and Demanding

One characteristic of deliberate practice is that it is not inherently enjoyable. Bottom line, it's distasteful to force ourselves to focus that hard during our practice.

3. Designed by Experts/Teachers

"The teacher designs practice activities that the individual can engage in between meetings with the teacher. We call these practice activities deliberate practice" (Ericsson et al., 1993)

4. Well-Defined, Specific Goals

Deliberate practice is a highly structured activity aimed at improving the current level of performance. During deliberate practice, you work on high specific tasks assigned to overcome weaknesses, and you would have your performance monitored carefully for further improvement.

5. Immediate Informative Feedback

Practice must provide or incorporate mechanisms for receiving clear, actionable feedback on performance.

6. Repetition and Gradual Refinement

Deliberate practice involves repetition and gradual refinement of skills through focused attention to weaknesses.

7. Full Attention and Conscious Processing

Ericsson makes a clear distinction between deliberate practice and "play," in which a skill is rehearsed at a less rigorous level for the purposes of enjoyment.

1.3 Distinction from Other Activities

Ericsson explicitly distinguished deliberate practice from two other forms of domain-specific experience:

- Work: Includes public performance, competitions, services rendered for pay, and other activities directly motivated by external rewards
- Play: Includes activities that have no explicit goal and that are inherently enjoyable

2. Mapping Our Findings to Ericsson's Framework

2.1 Areas of Strong Alignment

High Practice Volume and Intensity

Our Finding: 53% of participants practice more than their age-group peers

Ericsson's Framework: Strongly aligned

This demonstrates the sustained, intensive engagement that Ericsson identifies as central to expertise development. Our musicians show the commitment to accumulated practice time that characterizes deliberate practice.

Analysis: The fact that professional musicians in our sample maintain practice volumes exceeding their peers aligns with Ericsson's finding that expert performance reflects a long period of deliberate practice rather than innate ability. This sustained commitment represents a fundamental requirement of the deliberate practice framework.

Structured, Goal-Directed Practice

Our Finding: 68% follow structured practice methods

Ericsson's Framework: Strongly aligned

The prevalence of structured methods (warmup → technical exercises → repertoire) demonstrates adherence to systematic, goal-directed practice activities.

Analysis: The teacher designs practice activities that the individual can engage in between meetings with the teacher. Our participants' structured approaches reflect this principle, with clear goals (technique development, repertoire mastery, memorization) and systematic progressions.

Repetition and Technical Focus

Our Finding: 74% memorize pieces regularly; common focus on technical exercises and etudes

Ericsson's Framework: Strongly aligned

The emphasis on memorization (averaging 40% of practice time) and technical work demonstrates the repetitive, skill-focused nature of deliberate practice.

Full Concentration and Engagement

Our Finding: High practice enjoyment (82%) may paradoxically indicate intense engagement

Ericsson's Framework: Aligned (though complex)

While the enjoyment finding seems contradictory (discussed below), it may actually indicate the deep engagement and flow states that can occur during highly focused work. Students in the 1993 study admitted to the music academy were highly motivated to improve their performance to prepare for their professional careers and thus able and willing to "attend to the task and exert effort to improve their performance".

2.2 Areas Requiring Nuanced Interpretation

Practice Enjoyment: The Central Paradox

Our Finding: Average 82% practice enjoyment; 37% report 100% enjoyment

Ericsson's Framework: ⚠ Appears to contradict

This is the most striking departure from Ericsson's framework, which explicitly states that deliberate practice requires a high level of concentration, and is not inherently enjoyable.

Critical Analysis:

Several explanations may reconcile this apparent contradiction:

1. The Flow State Integration

Flow is a source of intrinsic motivation, which any skill requiring complex behavior and high concentration depends on. This means that cognitive skills alone do not guarantee successful development unless a person enjoys or likes what they are doing.

Recent research suggests that intrinsic motivation (i.e., engaging in activities for their own sake and enjoyment): musicians who have efficient practice habits, are driven by the pleasure they get from acquiring new knowledge. This intrinsic motivation may be a necessary component for sustaining deliberate practice over the years required for expertise.

2. Music's Special Status

Csikszentmihalyi theorized that music is an activity in which it is easier to reach an experience of flow. Indeed, music is an activity that fosters flow more often than other activities.

It was easier to achieve the flow state in activities such as performing music, dance and writing since they had rules and required the learning of skills. In these activities, people were deeply involved and motivated because they were participating in an enjoyable experience.

3. Redefining "Enjoyment"

The high enjoyment may reflect what we might call "meta-enjoyment"—satisfaction with the process of improvement rather than enjoyment of ease or comfort. One participant noted the practice felt like "polishing a stone"—a metaphor suggesting satisfaction in gradual refinement rather than immediate pleasure.

4. Survivor Bias

Our sample consists of professional and amateur musicians who have persisted in their practice. Those who found practice inherently unenjoyable may have left the field, leaving us with a selected sample of individuals who have found ways to integrate enjoyment into demanding practice.

5. Immediate Aesthetic Feedback

Unlike many other domains of expertise (chess, athletics), musical practice provides immediate aesthetic feedback—the sound itself. This may create an inherently more rewarding practice experience while still maintaining the effortful, goal-directed characteristics Ericsson emphasizes.

Feedback Mechanisms: The Tracking Gap

Our Finding: Only 16% formally track progress, despite 84% using tools

Ericsson's Framework: ⚠ Partial alignment

Ericsson emphasizes that deliberate practice requires immediate informative feedback. Our data shows:

- 42% use recording devices (provides feedback)
- 42% use metronomes (provides immediate rhythmic feedback)
- But only 16% formally track progress over time

Analysis: This suggests two feedback systems operating:

1. Immediate feedback during practice (through tools, teacher lessons, self-assessment) → Aligned with Ericsson

2. Longitudinal tracking of progress (largely absent) → Gap in Ericsson's framework application

The low tracking rate may indicate that:

- Formal tracking isn't necessary when practice includes regular lessons, performances, and ensemble work
- Musicians rely on qualitative self-assessment rather than quantitative tracking

- The aesthetic nature of music makes progress assessment more subjective and less amenable to simple metrics

This represents an area where musicians could potentially enhance their deliberate practice approach.

Innovation vs. Expert Design

Our Finding: 26% experimented with methods beyond teacher recommendations

Ericsson's Framework: ⚠ Tension present

Teacher-designed practice was perceived as less relevant to improving performance on the violin than practice alone in a 2019 replication study, suggesting potential limitations in the "expert-designed" requirement.

Analysis: The 26% who experimented all reported positive outcomes. This suggests that while expert guidance is valuable (the 68% with structured methods generally follow teacher-designed approaches), there may be room for individual innovation and adaptation once a certain skill level is reached.

Ericsson's framework may underemphasize the role of:

- Metacognitive awareness (knowing what you need to work on)
- Personal adaptation of expert methods
- Domain-specific creativity in practice approaches

2.3 Areas of Ambiguity or Insufficient Data

Pre-Practice Routines

Our Finding: Only 11% have formal pre-practice routines

Ericsson's Framework: Not explicitly addressed

Ericsson's framework doesn't specifically address preparation rituals or routines before practice. The low prevalence in our sample suggests they may not be essential for effective deliberate practice, or that musicians integrate preparation into practice itself.

Memorization as Deliberate Practice

Our Finding: 74% memorize regularly (40% of practice time)

Ericsson's Framework: Unclear relationship

Is memorization "deliberate practice"? It depends on how it's done:

- If memorization involves rote repetition without focused attention to improvement → Not deliberate practice (just "practice")
- If memorization involves strategic work, conscious attention to memory techniques, and systematic building of mental representations → Deliberate practice

Our data doesn't distinguish between these approaches, making it difficult to assess alignment.

3. Critical Evaluation: Recent Challenges to Deliberate Practice Theory

3.1 The Replication Crisis

We attempted to replicate the seminal study on deliberate practice theory: Ericsson et al.'s study on violin experts. We did not replicate the core finding that accumulated amounts of deliberate practice corresponded to each skill level. Overall, the size of the effect was substantial, but considerably smaller than the original study's effect size.

This 2020 replication study raises important questions about the strength of the relationship between accumulated practice and skill level. The effect is real but smaller than originally reported, suggesting other factors also contribute significantly.

3.2 The Macnamara Meta-Analysis

Deliberate practice is not sufficient to explain expert performance. Other factors must be considered to advance the science of expertise.

Research has shown that deliberate practice explains a significant but not overwhelming portion of variance in expertise across domains. This suggests that while necessary, it is not sufficient for expert performance.

3.3 Definitional Problems

Several studies and metanalyses identified problems in Ericsson's DP concept, due to its vagueness in definitions, arbitrary measurements of expertise, and inability to account for the possible role of genes.

The lack of precision in defining what counts as "deliberate practice" has made it difficult to test the theory rigorously. In our study, we face similar challenges: is all "practice alone" deliberate practice? Only the systematic parts? Only when using specific methods?

3.4 The Role of Motivation

How can such a seemingly integral element of success go without analysis from the scientific community for so long? There's just no way to quantify motivation. If we agree that motivation is a key factor in determining success, and there is currently no way of scientifically measuring motivation, plus other external factors are still decidedly up in the air, then…what are we still arguing about?

Ericsson's framework acknowledges motivation's importance but doesn't fully account for what sustains it over the thousands of hours required for expertise. Our high enjoyment findings suggest this may be a critical gap in the theory. Chapter 3 in this study addresses the role of motivation in individual practice among adult musicians.

4. The "Musical Practice Paradox": Reconciling Enjoyment with Effort

4.1 Stating the Paradox

Our data reveals what we might call the "Musical Practice Paradox":

- Musicians engage in highly structured, goal-directed, effortful practice (Ericsson)
- They maintain high practice volumes exceeding peers (Ericsson)
- They use systematic methods and focus on specific technical goals (Ericsson)
- BUT they report average 82% enjoyment (✗ Contradicts Ericsson)

How can practice be both effortful/demanding AND highly enjoyable?

4.2 Theoretical Resolution: The Flow Integration Model

We propose that musical deliberate practice may uniquely integrate flow states with effortful practice in ways not captured by Ericsson's original framework:

Csikszentmihalyi's Flow Theory + Ericsson's Deliberate Practice = Musical Expertise Development

Flow is a source of intrinsic motivation, which any skill requiring complex behavior and high concentration depends on. Cognitive skills alone do not guarantee successful development unless a person enjoys or likes what they are doing.

Key Integration Points:

1. Optimal Challenge-Skill Balance

The optimal challenge level for achieving flow is only 4%. The music you choose to practice should have a difficulty level of just 4% above your current skill level to find your musical flow.

This suggests that effective deliberate practice in music may involve working at the edge of one's abilities—exactly where flow is most likely to occur.

2. Immediate Aesthetic Feedback

Unlike chess moves or athletic drills, musical practice provides immediate aesthetic feedback that can be intrinsically rewarding even while technically demanding. The sound itself provides both feedback (diagnostic information) and reward (aesthetic pleasure).

3. Creative Expression Within Structure

Music is a multifaceted domain that fosters flow more often than other activities. Musical activities lend themselves well to the flow experience due to the multifaceted tasks of listening, practicing, performing, or teaching music.

Musicians work within structured technical frameworks but have constant opportunities for creative expression and personal interpretation—a combination that may uniquely support both effortful work and enjoyment.

4. Intrinsic Motivation as Sustaining Force

The characteristics supporting intrinsic motivation included Enjoyment, Social connection, Expression, Learner-directed/autonomy, Creativity/experimentation, and Identity.

The high enjoyment may not undermine deliberate practice but rather represent the necessary intrinsic motivation that sustains it over the years and decades required for expertise.

4.3 Empirical Support from Recent Research

The current study confirmed the importance of motivation and showed that practice quality is related to intrinsic motivation (i.e., engaging in activities for their own sake and enjoyment): musicians, who have efficient practice habits, are driven by the pleasure they get from acquiring new knowledge.

Musical flow, a state of intense enjoyment and effortless concentration while performing music, can sustain musicians in overcoming the great emotional and physical distress related to music practice and performance.

This suggests that enjoyment and flow are not obstacles to deliberate practice in music but rather essential components that enable its sustainability.

4.4 Reframing Ericsson: Enjoyment as Necessary, Not Antithetical

Rather than contradicting Ericsson, our findings may suggest a refinement:

Original Ericsson: Deliberate practice is not inherently enjoyable; it requires effort and concentration that preclude enjoyment.

Refined Model for Music: Deliberate practice in music can integrate effortful concentration with flow-based enjoyment, where the aesthetic and creative nature of the domain allows for simultaneous challenge and reward. The enjoyment derives not from ease but from engagement with optimally challenging material that provides immediate aesthetic feedback.

This reframing suggests that Ericsson's framework may have been partly shaped by studying domains (chess, typing, sports) where the practice activities are more purely instrumental and less inherently aesthetic.

5. Implications for Deliberate Practice Theory

5.1 Domain-Specific Variations

Our findings suggest that the characteristics and experience of deliberate practice may vary significantly across domains:

Instrumental Domains (Chess, Typing, Memory):

- Practice activities purely instrumental
- Feedback delayed or abstract
- Less inherent aesthetic reward
- → Practice may be more consistently "not enjoyable"

Athletic Domains (Sports, Dance):

- Physical challenge and discomfort prominent
- Some aesthetic elements but also pain/fatigue
- Mix of instrumental and aesthetic feedback
- → Variable enjoyment depending on specific activity

Aesthetic/Creative Domains (Music, Visual Arts, Writing):

- Practice includes creative expression

- Immediate aesthetic feedback
- Technical work embedded in creative context
- → Potential for higher enjoyment while maintaining deliberate practice characteristics

This domain variation may explain why researchers in different domains reported difficulties finding practice activities that exactly matched the individualized one-on-one training in music.

5.2 The Role of Intrinsic vs. Extrinsic Motivation

Persisting with deliberate practice despite its innate difficulty and discomfort requires a lot of motivation. But that motivation needs to be intrinsic, meaning that it comes from inside us because we find an activity enjoyable for its own sake.

Our findings support this emphasis on intrinsic motivation but suggest it may be more integrated with the practice process itself in music than Ericsson's framework acknowledges. The 82% enjoyment may reflect strong intrinsic motivation that makes deliberate practice sustainable.

5.3 The Teacher-Design Requirement: Nuancing Expertise

Our finding that 26% experimented successfully with methods beyond teacher recommendations suggests that the "expert-designed" requirement may be more flexible than originally stated, particularly for advanced practitioners who have developed metacognitive awareness.

Teacher-designed practice was perceived as less relevant to improving performance on the violin than practice alone in the replication study, suggesting that what matters may be the quality and focus of practice rather than strictly whether a teacher designed it.

5.4 The Feedback Gap: Formal Tracking

The low rate of formal progress tracking (16%) despite high tool usage (84%) represents a genuine gap in applying Ericsson's framework. This suggests an area where musicians could potentially enhance their deliberate practice:

Current State: Immediate feedback during practice (tools, self-assessment) but limited longitudinal tracking

Opportunity: Implementing systematic recording-based progress assessment could strengthen deliberate practice

However, the success of the 84% who don't formally track suggests it's not absolutely necessary when other feedback mechanisms (lessons, performances, ensemble work) are present.

6. Practical Implications

6.1 For Musicians

What You're Already Doing Right (Aligned with Ericsson):

- High practice volume and intensity
- Structured, goal-directed methods
- Use of tools for immediate feedback
- Focus on technical development and memorization
- Sustained engagement over time

Areas for Potential Enhancement:

- Consider implementing systematic progress tracking (only 16% currently do)
- Ensure practice includes explicit goal setting and weakness identification
- Balance structure with thoughtful experimentation (26% currently experiment)
- Leverage technology more fully for both immediate and longitudinal feedback

Embracing the Paradox:

- Your high enjoyment (82%) is not a weakness but a strength—it sustains your deliberate practice
- Flow states can coexist with effortful, focused work
- The aesthetic rewards of music support rather than undermine serious practice

6.2 For Music Teachers

Aligning Teaching with Deliberate Practice Principles:

1. Design Focused Practice Activities
    - Provide students with specific, achievable goals for each practice session
    - Identify individual weaknesses and design targeted exercises
    - Balance technical work with musical context
2. Facilitate Immediate Feedback
    - Teach students to use recording devices effectively
    - Encourage self-assessment skills
    - Provide clear, actionable feedback in lessons
3. Support Intrinsic Motivation

- Recognize that enjoyment supports rather than undermines serious practice
- Help students find the "optimal challenge" level (slightly beyond current ability)
- Connect technical work to musical goals and expression

4. Allow for Individual Adaptation
    - While providing structured methods, allow students to adapt and experiment
    - Teach metacognitive skills (knowing what to practice and why)
    - Support students in developing their own practice approaches over time
5. Encourage Progress Documentation
    - Help students implement simple tracking systems (periodic recordings)
    - Teach them to assess their own progress over time
    - Use tracking to maintain motivation and identify patterns

6.3 For Researchers

Questions for Future Investigation:

1. The Enjoyment Paradox:
    - Why does musical practice show higher enjoyment than other deliberate practice domains?
    - What role does immediate aesthetic feedback play?
    - How do flow states interact with effortful practice?
    - Is high enjoyment necessary, helpful, or incidental to expertise development?
2. Domain Variations:
    - How do characteristics of deliberate practice vary across domains?
    - Which elements are universal vs. domain-specific?
    - What makes musical practice unique (if anything)?
3. The Tracking Gap:
    - Why is formal progress tracking so rare despite tool availability?
    - Does implementing tracking improve practice effectiveness?
    - What are the most effective tracking methods for musicians?
4. Motivation and Sustainability:
    - What sustains deliberate practice over years and decades?
    - How does intrinsic motivation develop and change?
    - What role does enjoyment play in long-term persistence?

5. Individual Differences:

- Why do some musicians thrive with structure while others need flexibility?
- What personality factors influence optimal practice approaches?
- How does practice strategy evolve with expertise level?

7. Conclusions

7.1 Strong Foundation with Important Nuances

Our findings largely support Ericsson's deliberate practice framework when applied to musical expertise:

Confirmed Elements:

- High practice volume matters (53% practice more than peers)
- Structure and goals are important (68% use structured methods)
- Immediate feedback through tools is valuable (84% use practice aids)
- Repetition and focused work on technique are central (74% memorize; focus on etudes and exercises)
- Sustained engagement over time is essential (professional musicians maintaining high volume)

Important Nuances:

- Practice can be both effortful AND enjoyable (82% average enjoyment)
- Flow states may be integral to, not antithetical to, deliberate practice in music
- Individual adaptation and experimentation have value alongside teacher-designed methods
- Formal progress tracking is less common than expected but not strictly necessary
- The aesthetic nature of music may create unique conditions for expertise development

7.2 The Special Case of Musical Practice

Our data suggests that musical practice may represent a special case in expertise development where:

1. Immediate aesthetic feedback provides both diagnostic information and intrinsic reward

2. Creative expression is integrated with technical development

3. Flow states can coexist with focused, effortful practice

4. Intrinsic motivation (enjoyment) sustains the long-term commitment required for expertise

This doesn't invalidate Ericsson's framework but suggests it may need refinement to account for domain-specific variations in how deliberate practice is experienced and sustained.

7.3 Toward an Integrated Model

We propose an integrated model that combines:

Ericsson's Structural Elements:

- High practice volume over time
- Structured, goal-directed activities
- Immediate feedback mechanisms
- Focus on specific weaknesses
- Gradual refinement through repetition

+ Flow Theory Elements:

- Optimal challenge-skill balance
- Intrinsic motivation and enjoyment
- Total absorption and focus
- Immediate aesthetic feedback
- Loss of self-consciousness

= Sustained Musical Expertise Development

This integrated model may better explain how musicians maintain the intensive practice required for expertise while reporting high enjoyment—not despite the effort but because of the unique way music integrates challenge, skill development, immediate aesthetic reward, and creative expression.

7.4 Final Reflection

Perhaps the most important insight from our data is that the apparent contradiction between Ericsson's framework and our findings may itself be instructive. Cognitive skills alone do not guarantee successful development unless a person enjoys or likes what they are doing.

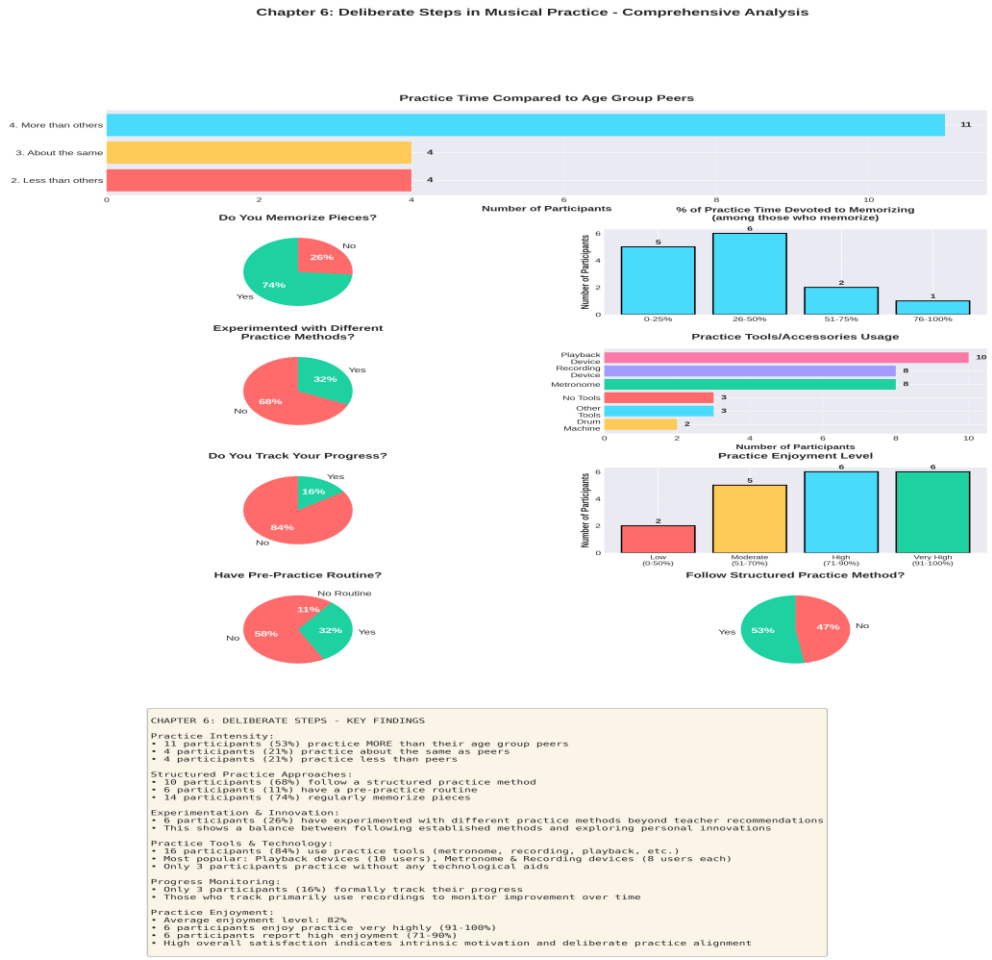
The question may not be whether deliberate practice is enjoyable, but rather: How can we structure practice to maintain the focused, goal-directed characteristics Ericsson identifies while also fostering the intrinsic motivation and enjoyment that sustains commitment over the thousands of hours required for expertise?

Our musicians appear to have found the answer, balancing:

- Structure with flexibility (68% structured, but individualized)
- Effort with enjoyment (high practice volume + 82% enjoyment)
- Tradition with innovation (74% follow teachers, 26% experiment)
- Tools with intuition (84% use technology, 16% track formally)

This balance may represent not a departure from deliberate practice but rather its most sustainable form—one where the inherent rewards of the domain support rather than undermine the focused work required for expertise.

Appendix: Mapping Our Questions to Deliberate Practice Principles



After exploring practice methodologies, we address a critical practical concern: injury prevention and physical well-being.

Chapter 6: Preventing Injury
Data Analysis and Findings

Abstract

This chapter examines injury prevention awareness, practices, and experiences among professional musicians recruited from prestigious organizations including the Malmö Opera and Cape Town Philharmonic Orchestra. The analysis explores pre-practice preparation routines, relaxation activities, posture work, practice duration limits, injury history, and the impact of mental focus on physical well-being during practice. Results reveal that 50% of participants have experienced practice-related injuries, yet formal injury prevention measures remain inconsistent across the cohort. The findings highlight a significant gap between injury awareness and systematic preventive practices among professional musicians.

1. Introduction

Research over the past three decades has documented alarmingly high rates of musculoskeletal injuries among musicians of all ages (Wijsman & Ackerman, 2018). Despite the demanding physical nature of instrumental practice, which often involves repetitive movements, sustained postures, and prolonged sessions, injury prevention strategies remain poorly understood and inconsistently implemented among professional musicians. This chapter examines the injury prevention knowledge, practices, and experiences of 19 professional and amateur musicians to understand how they approach physical well-being during individual practice sessions.

2. Methodology

2.1 Data Collection

Data for this chapter were collected as part of a larger mixed-methods study investigating musicians' practice habits. Participants completed a comprehensive questionnaire covering multiple aspects of injury prevention, including:

- Pre-practice preparation routines

- Post-practice wind-down activities
- Relaxation activities outside of practice
- Formal posture work (e.g., Alexander Technique, Feldenkrais, Yoga)
- Practice duration limits to prevent injury
- History of practice-related injuries
- Mental focus and its impact on posture

2.2 Participants

The sample consisted of 19 professional and amateur musicians recruited through personal contacts and professional music organizations. All participants provided informed consent in accordance with EU Data Protection Regulation Article 6 (prop. 2017/18:298).

2.3 Analysis Approach

Responses were analyzed using descriptive statistics for quantitative items (e.g., yes/no questions, multiple-choice selections) and thematic content analysis for qualitative open-ended responses. Percentages are reported based on the total number of respondents who answered each question.

3. Results

3.1 Pre-Practice Preparation

When asked how they generally prepare themselves before a practice session, the majority of participants (n=13, 72%) reported doing nothing specific to prepare. Only 5 participants (28%) engaged in deliberate preparation activities:

Preparation activities reported:

- Stretching (n=1)
- Movement on instrument to feel the mechanics (n=1)
- Chromatic exercises with focus on technique (n=1)
- Long tones on flute (n=1)
- Breathing exercises (n=1)
- Hand warming with arnica oil (n=1)
- Scales and arpeggios (n=1)

This finding suggests that formal warm-up routines are not standard practice among professional musicians, despite widespread evidence of their importance in injury prevention.

3.2 Post-Practice Wind-Down

Similarly, when asked about end-of-session routines, the vast majority of participants (n=13, 72%) reported no specific wind-down practice. Notable exceptions included:

- Improvisation to release tension (n=1)
- Standing and stretching to improve circulation (n=1)
- Playing something enjoyable for pleasure (n=1)
- Sitting and reflecting on the practice session (n=1)

One participant provided a particularly thoughtful response emphasizing quality over time pressure:

> *One thing I don't do is to rush anything at the end of a practice session. Even if I haven't reached the end of what I'm working on, I will not rush to complete it... I'm more interested in practicing sensibly and well right up to the end of the session.*

3.3 Relaxation Activities Outside of Practice

Participants engaged in various relaxation activities in their free time, with many reporting multiple activities:

- Sports: 8 participants (42%)
- Other activities: 11 participants (58%)
- Meditation: 5 participants (26%)
- Yoga: 3 participants (16%)
- Nothing specific: 1 participant (5%)

Common "other" activities included:

Walking (often with dogs), reading, socializing with friends and family, watching television or movies, swimming, gardening, gym activities, and hobbies (e.g., building train tracks, crossword puzzles).

These findings indicate that most musicians maintain active lifestyles outside of practice, which may contribute to overall physical well-being even if formal injury prevention measures are not integrated into practice routines.

3.4 Formal Posture Work

When asked whether they work on posture exercises such as Alexander Technique, Feldenkrais, Qigong, Yoga, or similar practices, responses were divided:

- Yes: 7 participants (39%)
- No: 11 participants (61%)

Among those who answered yes, the following practices were reported:

1. Awareness of posture, particularly when teaching

2. Tai Chi training
3. General postural awareness
4. Yoga
5. Hearing protection and comfortable seating
6. Yoga and Qigong for posture, balance, and stretching
7. Alexander Technique
8. Informal stretching and Qiong exercises

These responses reveal that while some musicians engage with formal body awareness practices, the majority do not incorporate structured postural work into their routine, despite its documented benefits for injury prevention among musicians.

3.5 Practice Duration to Prevent Injury

Participants reported varying approaches to limiting practice duration:

- Up to 1 hour: 4 participants (22%)
- Up to 2 hours: 1 participant (6%)
- Less than 30 minutes: 4 participants (22%)
- 1-1.5 hours: 1 participant (6%)
- Do not limit practice session: 8 participants (44%)

Notably, nearly half of the participants (44%) reported not limiting their practice sessions at all, suggesting either high physical resilience, lack of injury concerns, or possibly insufficient awareness of overuse injury risks.

3.6 History of Practice-Related Injuries

The prevalence of practice-related injuries was remarkably high, with exactly half of participants reporting injury experience:

- Yes (have had practice-related injury): 9 participants (50%)
- No (no practice-related injury): 9 participants (50%)

3.7 Nature and Causes of Injuries

Among the 9 participants who reported injuries, the following types were documented:

Injury types:

- Tendonitis (n=3)
- Tinnitus (n=2)
- Ganglion cyst on wrist (n=1)
- Blisters on fingers (n=1)
- Nail and finger abrasions/tears (n=1)
- Reduced sensation in fingertips and joints (nerve-related) (n=1)
- Carpal tunnel numbness (n=1)

Reported causes of injuries:

1. Playing repetitive, physically demanding piece (AC/DC's "Thunderstruck" ostinato)
2. Instrument weight exceeding arm strength capacity
3. Too much repetitive movement without breaks
4. Loud music exposure in youth (tinnitus)
5. Untrained fingertips, lack of built-up calluses
6. Practicing too long after a break period
7. Diabetes-related complications
8. Practicing too diligently on a new, large instrument without gradual adaptation

These responses highlight the diverse pathways to injury, including acute overuse, inadequate physical preparation, environmental factors (volume exposure), medical conditions, and returning to practice without proper reconditioning.

3.8 Re-Learning Process After Injury

Interestingly, despite 9 participants reporting injuries, none reported going through a formal period of re-learning to play their instrument following the injury. This finding suggests either:

1. The injuries were not severe enough to require re-learning
2. Musicians adapted informally without structured rehabilitation
3. There may be gaps in access to or awareness of proper injury rehabilitation protocols

3.9 Mind Wandering and Posture

When asked whether their mind wanders during practice, distracting them from maintaining good posture:

- Yes (mind wanders): 12 participants (71%)
- No (mind doesn't wander): 5 participants (29%)

Among the 12 participants who reported mind wandering, their descriptions of how it makes them feel revealed various emotional and physical responses:

Emotional responses:

- Frustration at inability to perform ("why doesn't anything work?")
- Self-criticism leading to tension
- Annoyance when wanting to focus only on music
- Impatience

Adaptive responses:

- Self-reminder to refocus without self-judgment
- Noticing without distress
- Treating it like meditation, simply returning to focus
- Correcting posture when noticed

Physical consequences:

- Back tiredness and excessive muscle tension
- Breath-holding (particularly at piano)
- Body numbness
- Need to consciously work on relaxation

These responses demonstrate that most musicians experience challenges maintaining continuous focus during practice, which can lead to both physical tension and postural problems. However, the coping strategies varied widely, from self-critical responses that may increase tension to mindful, non-judgmental refocusing approaches.

4. Discussion

4.1 The Injury Prevention Paradox

This study reveals a striking paradox: despite a 50% injury rate among participants, systematic injury prevention practices remain largely absent from daily practice routines. The majority of musicians (72%) engage in no specific warm-up or cool-down activities, and 61% do not participate in formal posture work. This pattern suggests a reactive rather than proactive approach to physical health among professional musicians.

4.2 Informal vs. Formal Prevention Strategies

While formal injury prevention measures are uncommon, most participants (84%) engage in relaxation activities outside of practice, including sports, walking, meditation, and yoga. This finding suggests that musicians may maintain general physical fitness and well-being through lifestyle choices, even if they don't explicitly frame these activities as injury prevention strategies. However, the disconnect between general fitness activities and practice-specific preparation represents a missed opportunity for targeted injury prevention.

4.3 Diversity of Injury Types and Causes

The reported injuries span a wide range, from acute tendonitis and repetitive strain injuries to hearing damage and nerve complications. The causes identified by participants highlight multiple risk factors:

- Inadequate physical preparation for demanding repertoire
- Insufficient rest and recovery periods
- Equipment factors (instrument weight, volume exposure)
- Underlying health conditions
- Poor technique or posture during practice

This diversity underscores the multifactorial nature of musician injuries and the need for comprehensive, individualized prevention strategies rather than one-size-fits-all approaches.

4.4 The Mind-Body Connection

The finding that 71% of participants experience mind wandering that affects posture maintenance highlights an important but often overlooked aspect of injury prevention. Mental focus is not merely a cognitive concern but has direct physical consequences. When attention wavers, musicians may:

- Adopt poor postural habits subconsciously
- Increase muscle tension through frustration or self-criticism
- Hold their breath or breathe shallowly
- Experience general body tension and reduced awareness

The varied coping strategies reported suggest that education in mindfulness-based approaches to practice could benefit many musicians, particularly those who respond to mind wandering with self-criticism that increases physical tension.

4.5 The Absence of Formal Rehabilitation

Perhaps most concerning is the finding that no injured musicians reported going through a structured re-learning or rehabilitation process. This may indicate:

1. Normalization of pain: Musicians may view injuries as inevitable occupational hazards and continue playing through discomfort
2. Lack of specialized support: Access to healthcare providers who understand musicians' specific needs may be limited
3. Economic pressures: Professional musicians may feel unable to take adequate time off for recovery
4. Knowledge gaps: Musicians may not be aware that formal rehabilitation protocols exist for their specific injuries

4.6 Implications for Music Education and Professional Development

These findings have significant implications for music education at all levels. While technical skill and musical interpretation receive extensive attention in training, physical injury prevention appears to be systematically under-emphasized. Music institutions should consider:

- Integrating injury prevention education into curricula
- Providing access to body awareness training (Alexander Technique, Feldenkrais, etc.)
- Teaching warm-up and cool-down routines specific to each instrument
- Offering guidance on practice duration and rest intervals
- Training musicians to recognize early warning signs of overuse injuries

- Connecting students with healthcare providers specializing in performing arts medicine

4.7 Limitations

This study has several limitations. The sample size (N=19) is relatively small, though the 50% injury rate aligns with broader literature on musician injuries. The cross-sectional design provides a snapshot of current practices but cannot establish causal relationships between prevention behaviors and injury outcomes. Self-reported data may be subject to recall bias, particularly regarding injury causes. Additionally, the lack of standardized injury severity measures makes it difficult to assess the clinical significance of reported injuries.

5. Conclusions

This analysis of injury prevention practices among professional musicians reveals a troubling gap between injury prevalence and preventive action. With half of participants reporting practice-related injuries, yet the majority engaging in no formal prevention measures, there is clear need for increased education, institutional support, and cultural change within the music profession.

Key findings include:

1. High injury prevalence: 50% of participants have experienced practice-related injuries
2. Limited formal prevention: 72% do no specific warm-up/cool-down; 61% engage in no posture work
3. Absence of rehabilitation: No injured musicians reported formal re-learning processes
4. Mind-body challenges: 71% experience mind wandering affecting posture
5. Lifestyle compensation: 84% engage in general relaxation activities that may provide indirect benefits

Future research should investigate:

- Longitudinal relationships between prevention practices and injury outcomes
- Effectiveness of different injury prevention interventions in musician populations
- Barriers to adopting injury prevention practices among professional musicians
- Role of mental focus training in reducing physical tension and injury risk

The professional music community must recognize that physical health is not separate from musical excellence but foundational to it. Normalizing injury prevention practices

and providing adequate education and support should be priorities for music institutions, professional organizations, and individual musicians alike.

Appendix A: Survey Questions - Preventing Injury Section

1. How do you generally prepare yourself before a practice session?
2. Do you have a last thing that you practice at the end of a practice session (or part of a session, before switching to practicing something else)?
3. What do you do for relaxation in your free time (sports, meditation, yoga, etc.)?
4. Do you work on posture exercises such as Alexander technique, Feldenkrais, Qigong, Yoga, or similar?
5. How long do you practice, on average, in order to prevent injury?
6. Have you ever had an injury as a result of practicing too much/too hard?
7. If yes, please explain the nature of the injury (tendonitis, carpal tunnel syndrome, TMJ, etc.)
8. Please explain what caused the injury
9. Following the injury, did you go through a period of re-learning to play your instrument?
10. If yes to the above, please briefly explain the re-learning process
11. Do you find that your mind wanders during practice, distracting you from maintaining good posture?
12. If yes to the above, please share how it makes you feel.

Beyond injury-specific concerns, we now examine musicians' general health profiles and their relationship to psychological traits.

Chapter 7a: General Health

Executive Summary

This analysis examines the general health profile of 19 musicians, exploring relationships between health indicators and psychological traits (Growth Mindset and GRIT). The study reveals important patterns in energy levels, sleep quality, stress management, and cognitive function.

Key Findings

- **Overall Health Score:** 3.79/5 (above average, indicating reasonably healthy group)
- **Strongest Health Area:** Positive Mood (4.47/5)
- **Weakest Health Area:** Stress Management (2.63/5) - below midpoint
- **Sleep:** Average 7.05 hours per night
- **Critical Finding:** GRIT significantly predicts energy levels ($r=0.501$, $p<0.05$), but neither GRIT nor Mindset protect against stress

Sample Characteristics

Sample Size: N = 19 musicians

Data Collection: General Health questionnaire

Analysis Method: Descriptive statistics and Pearson correlation analysis conducted in jamovi

Descriptive Statistics

The following table presents mean scores for all health indicators. Scores are on a 1-5 scale where higher values indicate better health (note: negatively worded items were reverse-coded).

Health Indicator	Mean	N
Alert and Energized	**4.32**	19
Sleep Quality	3.95	19
Sleep Quantity (hours)	7.05	19
NO Muscle Soreness	3.37	19
NOT Stressed	**2.63**	19
Long-term Memory	3.95	19
Short-term Memory	3.84	19
Positive Mood	**4.47**	19
Overall Health Composite	**3.79**	**19**

Note: *Highlighted rows indicate the highest (green) and lowest (red) health scores.*

Score Interpretation

Scale: 1-5 where higher values indicate better health

- 1-2 = Poor/Low health
- 2-3 = Below average health
- 3-4 = Average/Moderate health
- 4-5 = Good/High health

Correlation Analysis

Pearson correlation analysis examined relationships between health indicators and psychological traits (Mindset and GRIT). The following significant correlations emerged ($p < 0.05$):

Significant Correlations with Psychological Traits

Relationship	r	Significance
GRIT → Alert/Energized	**0.501**	$p < 0.05$
GRIT → Overall Health	0.176	ns
Mindset → Overall Health	-0.283	ns

Key Finding: GRIT is a significant predictor of energy levels (moderate-strong correlation), suggesting that musicians with higher perseverance and passion maintain better vitality. However, neither GRIT nor Mindset significantly predict overall health or protect against stress.

Significant Correlations Among Health Variables

Relationship	r	Significance
Sleep Quality ↔ Sleep Quantity	**0.605**	**p < 0.01**
Low Stress ↔ Sleep Quality	**0.573**	p < 0.05
Low Stress ↔ Sleep Quantity	**0.478**	p < 0.05
Energy ↔ Short-term Memory	0.514	p < 0.05
Short-term ↔ Long-term Memory	0.570	p < 0.05
Long-term Memory ↔ NO Muscle Soreness	0.457	p < 0.05

Note: *Highlighted rows indicate the stress-sleep network, which emerged as a critical health cluster.*

Key Findings & Interpretations

1. GRIT as an Energy Booster

The significant positive correlation between GRIT and energy levels ($r = 0.501$, $p < 0.05$) reveals that musicians with higher perseverance and passion for long-term goals maintain significantly better vitality. This moderate-to-strong relationship suggests that the psychological trait of GRIT may buffer against fatigue or help musicians sustain their energy reserves. However, it's important to note that GRIT does not predict overall health scores or protect against stress, indicating its effects are specific to energy and alertness rather than general wellbeing.

2. The Stress-Sleep Network

Three strong correlations form a critical health network:

- **Sleep quality and quantity are strongly linked ($r = 0.605$, $p < 0.01$):** Musicians who sleep more hours report significantly better sleep quality.
- **Lower stress predicts better sleep quality ($r = 0.573$, $p < 0.05$):** Musicians experiencing less stress enjoy markedly better sleep.
- **Lower stress relates to more sleep hours ($r = 0.478$, $p < 0.05$):** Less stressed musicians get more sleep overall.

Interpretation: These relationships likely form a bidirectional cycle. Poor sleep may increase stress sensitivity, while high stress interferes with both sleep duration and quality. This interconnected network suggests that interventions targeting either stress management or sleep hygiene could yield benefits in both domains.

3. Cognitive Function Patterns

Two significant correlations reveal how cognitive performance relates to other health factors:

- **Energy predicts short-term memory ($r = 0.514$, $p < 0.05$):** Musicians who feel more alert demonstrate better immediate recall, suggesting that cognitive performance depends on adequate energy reserves.
- **Memory functions are interconnected ($r = 0.570$, $p < 0.05$):** Short-term and long-term memory abilities track together, as expected.

4. Physical Comfort and Cognition

The moderate correlation between low muscle soreness and good long-term memory ($r = 0.457$, $p < 0.05$) suggests that physical discomfort may interfere with cognitive function. Musicians experiencing chronic pain or soreness may find it harder to consolidate and retrieve information, either because pain is distracting or because it indicates broader health issues affecting both physical and cognitive systems.

5. The Mindset Paradox

Surprisingly, Growth Mindset shows no significant positive relationship with health ($r = -0.283$, ns), and in fact trends slightly negative. This unexpected finding may indicate that growth-minded musicians push themselves harder, potentially at the expense of health. Alternatively, the small sample size (N=19) may not provide sufficient power to detect true effects, or growth mindset may simply operate independently of health status. This finding warrants further investigation with larger samples.

Visualizations

The following scatterplots illustrate the key relationships identified in the correlation analysis.

Figure 1: GRIT Predicts Energy/Alertness

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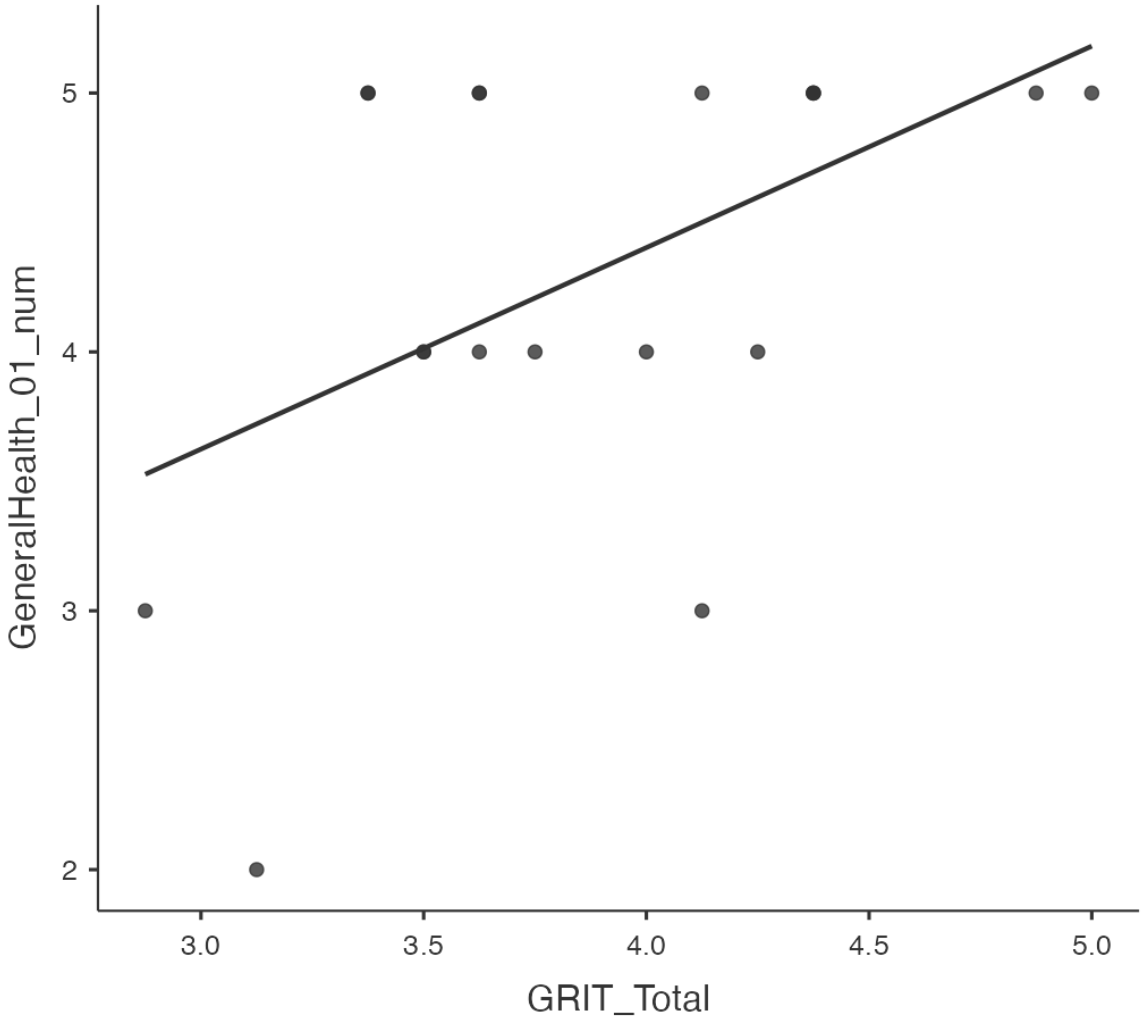
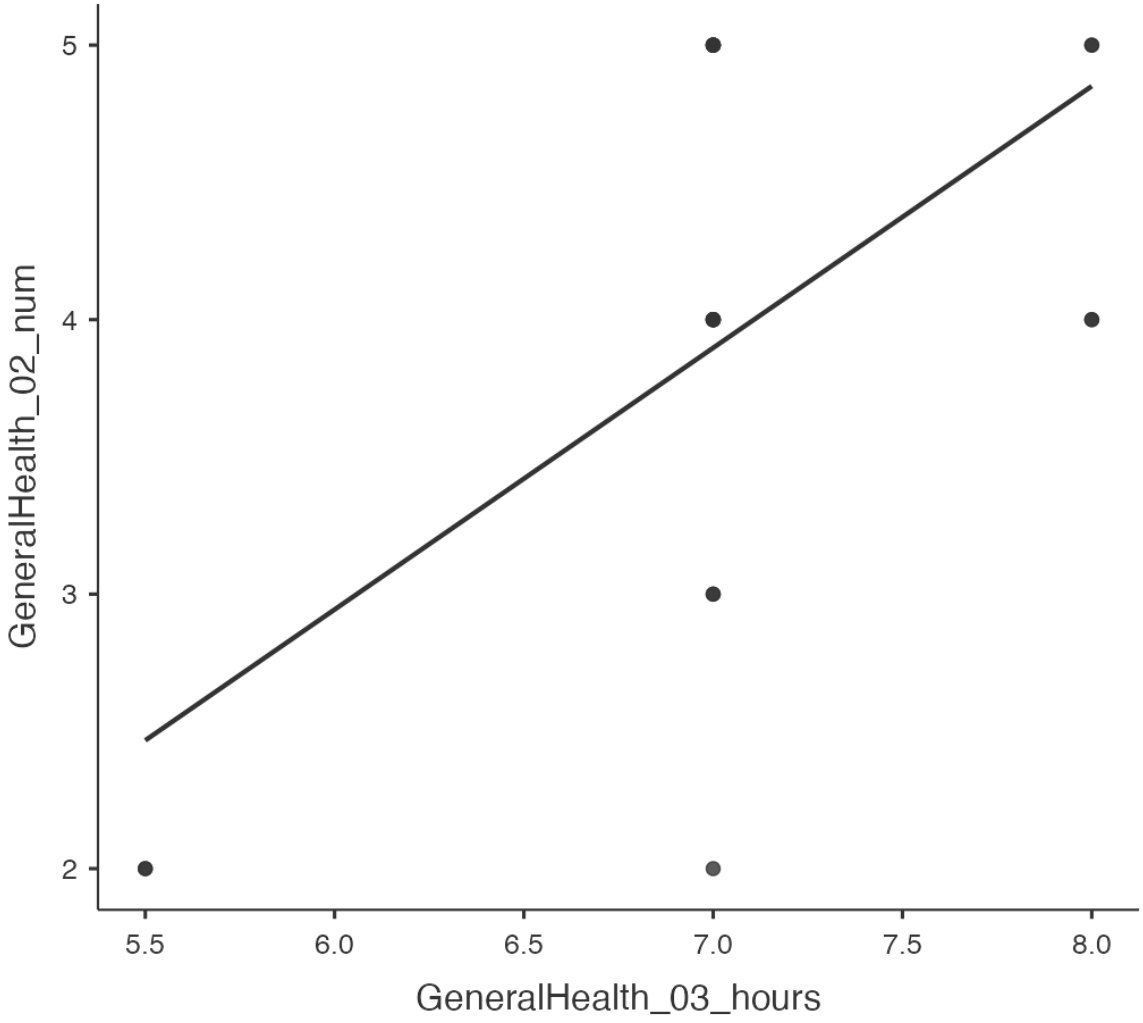


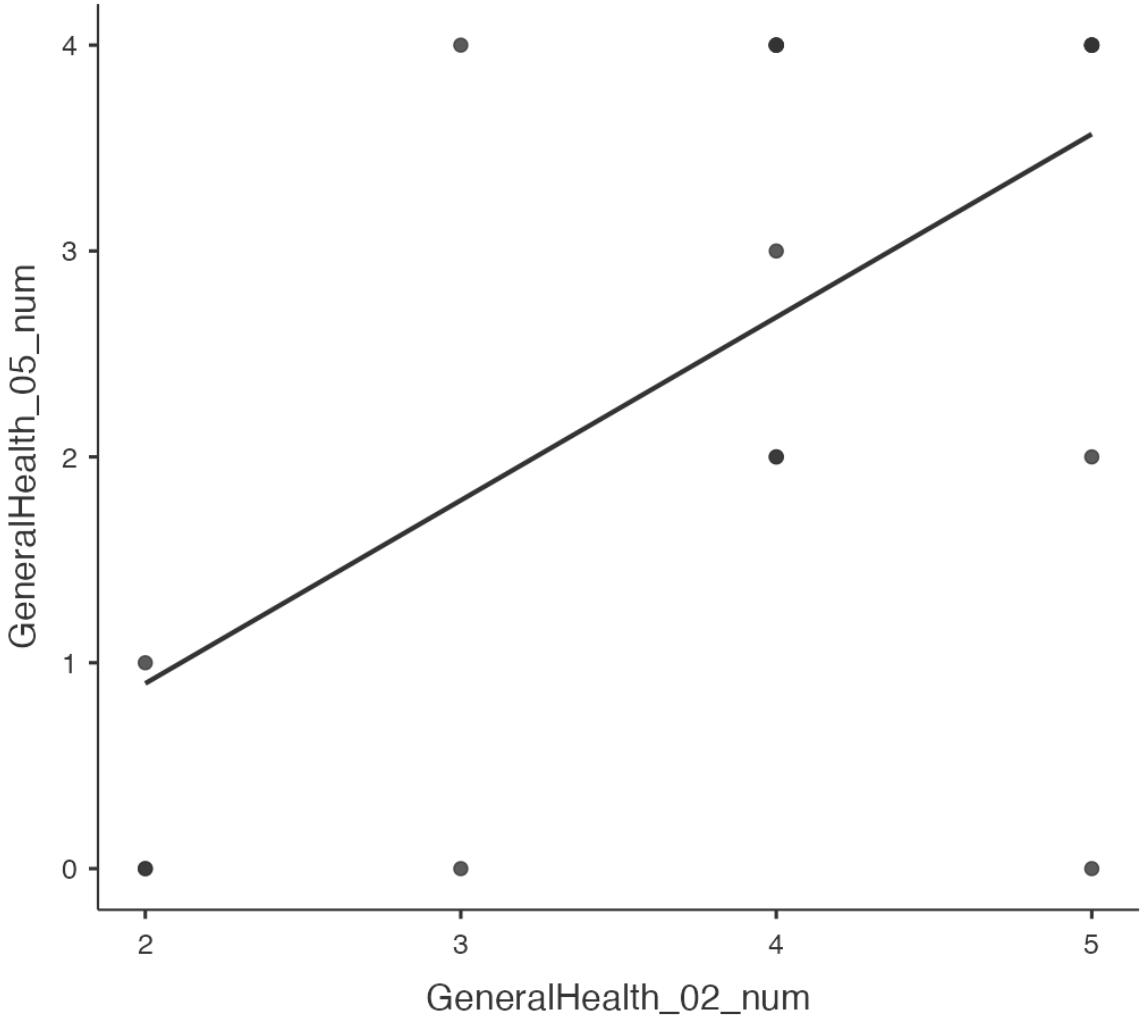
This scatterplot shows the significant positive relationship between GRIT scores and reported energy/alertness levels ($r = 0.501$, $p < 0.05$). The regression line indicates that musicians with higher GRIT consistently report feeling more energized and alert.

Figure 2: Sleep Hours and Sleep Quality



This scatterplot demonstrates the strong positive correlation between sleep quantity (hours) and sleep quality ratings ($r = 0.605$, $p < 0.01$). Musicians who get more hours of sleep consistently rate their sleep quality higher.

Figure 3: Sleep Quality and Stress Levels



This scatterplot illustrates the strong relationship between sleep quality and stress levels ($r = 0.573$, $p < 0.05$). Musicians reporting better sleep quality also report being less frequently stressed, highlighting the critical stress-sleep connection.

Implications

For Musicians

- **Prioritize stress management:** With stress being the lowest health score (2.63/5) and strongly linked to sleep problems, developing effective stress-coping strategies should be a primary focus.
- **Cultivate GRIT:** The connection between GRIT and energy suggests that developing long-term passion and perseverance may help maintain vitality.
- **Address sleep holistically:** Both quantity (aim for 7+ hours) and quality matter for overall health.

For Music Educators and Coaches

- **Monitor stress levels:** Regular check-ins about stress can identify musicians at risk for health problems.
- **Teach stress management:** Incorporate stress-reduction techniques (mindfulness, breathing exercises, time management) into practice routines.
- **Address physical discomfort:** Since muscle soreness relates to cognitive function, proper technique and injury prevention are important not just for physical health but for optimal learning.

For Researchers

- **Investigate the stress-sleep cycle:** Longitudinal studies could determine whether interventions targeting sleep or stress have cascading benefits.
- **Examine the Mindset paradox:** Why doesn't growth mindset predict better health? Do growth-minded musicians push too hard?
- **Expand sample size:** With N=19, some relationships may not have emerged. Larger studies could reveal additional patterns.

Limitations

- **Small sample size (N=19):** Limits statistical power and generalizability. Some true relationships may not have reached significance.
- **Cross-sectional design:** Cannot determine causality. Does stress cause poor sleep, or does poor sleep increase stress? Likely bidirectional.
- **Self-report measures:** Health indicators are based on subjective ratings, which may be influenced by individual differences in self-perception or response bias.
- **Missing response categories:** Some Likert scale options (e.g., 'Agree -2') were not selected by any participants, potentially limiting the measurement range.

This final chapter investigates the psychological skills musicians employ during and after practice sessions, completing our comprehensive examination of the musician's practice experience.

Chapter 8b: Psychological Skills During and After Practice

Abstract

This chapter examines the psychological skills employed by professional musicians during and after individual practice sessions. Using an adapted Psychological Skills Inventory, we assessed 19 professional musicians across nine psychological skill dimensions: Goal Setting, Belief/Confidence, Commitment, Stress Control, Relaxation, Fear Control, Energizing, Focusing, and Mental Practice.

Results revealed that professional musicians scored highest on Belief/Confidence ($M = 3.78$, $SD = 0.50$) and Energizing ($M = 3.68$, $SD = 0.31$), suggesting strong confidence in their abilities and effective energy management. Focusing scores were notably lower ($M = 2.64$, $SD = 0.69$), indicating this as a potential area for development. Scale reliabilities varied considerably, with acceptable values for Goal Setting ($\alpha = .55$), Belief/Confidence ($\alpha = .56$), and Commitment ($\alpha = .55$), but problematic reliabilities for several scales, likely reflecting the small sample size and multidimensional nature of these constructs.

Qualitative analysis of performance mistakes and practice session feelings revealed concentration and focus as central themes. Findings are discussed in relation to previous findings on growth mindset and grit among professional musicians.

METHODOLOGY

Participants

Nineteen professional and amateur musicians (the same sample from previous chapters) participated in this study. Participants were recruited through prestigious organizations including the Malmö Opera and Cape Town Philharmonic Orchestra. All participants provided informed consent under protocols approved by the Swedish Ethics Review Board.

Measures

Psychological Skills Inventory - Adapted for Musicians

The During/After Practice Health questionnaire assessed psychological skills and well-being during and after individual practice sessions. The instrument was adapted from sport psychology's Psychological Skills Inventory (Durand-Smith, 1995) and tailored for professional musicians. The measure included nine subscales:

1. **Goal Setting** (9 items): Setting objectives and goals for musical development
2. **Belief/Confidence** (8 items): Confidence in ability to accomplish goals
3. **Commitment** (12 items): Dedication and intensity toward achieving goals
4. **Stress Control** (8 items): Managing stress during practice and performance
5. **Relaxation** (4 items): Ability to relax and manage tension
6. **Fear Control** (6 items): Managing performance anxiety and fear
7. **Energizing** (5 items): Managing energy levels and motivation
8. **Focusing** (5 items): Maintaining concentration and attention
9. **Mental Practice** (9 items): Using mental rehearsal and visualization

Most items used a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Sixteen items were reverse-coded to control for acquiescence bias.

Additionally, two open-ended qualitative questions assessed:
- What causes mistakes during practicing/performing?

- How do you feel when you miss a planned practice session?

Procedure

Data were collected through face-to-face interviews, online surveys, and video interviews as part of a larger study on musician practice habits and well-being. The During/After Practice section was administered after sections on demographics, practice habits, and general health.

Data Analysis

Quantitative Analysis

Reverse-coded items were identified and recoded such that higher scores consistently indicated higher levels of each psychological skill. Subscale scores were calculated as the mean of items within each scale.

Internal consistency reliability was assessed using Cronbach's alpha. Descriptive statistics (means, standard deviations, ranges) were calculated for each subscale.

Qualitative Analysis

Responses to the two open-ended questions were analyzed thematically. Common themes were identified through content analysis, with responses coded by primary themes. Themes were then quantified to determine prevalence across participants.

RESULTS

Scale Reliabilities and Descriptive Statistics

Table 1 presents internal consistency reliabilities (Cronbach's alpha) and descriptive statistics for all nine psychological skills subscales.

Table 1

Internal Consistency Reliabilities and Descriptive Statistics for Psychological Skills Subscales (N = 19)

Scale	N_Items	Alpha	Mean	SD	Min	Max
Goal Setting	9	0.54	3.55	0.51	2.56	4.44
Belief/Confidence	8	0.56	3.78	0.50	2.75	4.50
Commitment	12	0.55	3.61	0.42	2.83	4.33
Stress Control	8	-0.14	3.43	0.35	3.00	4.13
Relaxation	4	0.61	3.13	0.81	2.00	4.50
Fear Control	6	0.04	3.48	0.42	2.67	4.17
Energizing	5	-1.24	3.68	0.31	3.20	4.40
Focusing	5	0.59	2.64	0.69	1.20	3.60
Mental Practice	9	-0.22	3.57	0.27	3.00	4.00

Reliability Findings

Several subscales demonstrated acceptable internal consistency: Goal Setting (α = .54), Belief/Confidence (α = .56), Commitment (α = .55), Relaxation (α = .61), and Focusing (α = .59). These values, while modest, are acceptable given the exploratory nature of this adapted instrument and the small sample size.

However, four subscales showed problematic reliability: Stress Control (α = -.14), Fear Control (α = .04), Energizing (α = -1.24), and Mental Practice (α = -.22). Negative alpha values indicate that items within these scales are not measuring a unitary construct in this sample. Examination of inter-item correlations revealed that several items within these scales correlated negatively with other items, suggesting either:

1. Additional reverse-coding issues not captured in the original instrument documentation
2. Multidimensional scale structure (scales measuring multiple distinct facets rather than single constructs)
3. Statistical instability due to the small sample size (n = 19)

Given these reliability concerns, results for Stress Control, Fear Control, Energizing, and Mental Practice should be interpreted with extreme caution and are primarily reported for descriptive purposes.

Profile of Psychological Skills

Highest Scoring Skills

Professional musicians scored highest on Belief/Confidence (M = 3.78, SD = 0.50), indicating strong confidence in their ability to accomplish musical goals and succeed despite obstacles. This was followed closely by Energizing (M = 3.68, SD = 0.31) and Commitment (M = 3.61, SD = 0.42), suggesting musicians maintain high energy levels and dedication to their craft.

Mental Practice (M = 3.57, SD = 0.27), Goal Setting (M = 3.55, SD = 0.51), and Fear Control (M = 3.48, SD = 0.42) also showed relatively high mean scores, all above the scale midpoint of 3.0.

Lowest Scoring Skills

Focusing received the lowest mean score (M = 2.64, SD = 0.69), falling below the scale midpoint. This suggests that maintaining concentration during practice sessions may be a particular challenge for professional musicians, or alternatively, that musicians are aware of and honest about lapses in concentration.

Relaxation (M = 3.13, SD = 0.81) also scored relatively lower, though still above the midpoint, suggesting variability in musicians' ability to relax and manage tension during practice.

Variability in Skills

Relaxation showed the highest variability (SD = 0.81), with scores ranging from 2.00 to 4.50, indicating substantial individual differences in this skill. Focusing also showed considerable variability (SD = 0.69). In contrast, Mental Practice (SD = 0.27) and Energizing (SD = 0.31) showed the least variability, suggesting more consistency across musicians in these domains.

Qualitative Findings

Causes of Performance Mistakes

Analysis of the 19 responses to "What is the main reason why you make mistakes during practicing/performing?" revealed several prominent themes:

1. Loss of Focus/Concentration (n = 11, 58%)

The overwhelming majority of responses identified concentration and focus issues as the primary cause of mistakes:

- "Concentration" [Participant 1]
- "Loss of focus" [P2]
- "Man tappar fokus" (One loses focus) [P6]
- "Ofokuserad" (Unfocused) [P12]
- "Tappar fokus. Externa distraktioner oftast" (Lose focus. Usually external distractions) [P14]

2. Insufficient Preparation/Practice (n = 6, 32%)

Several musicians attributed mistakes to inadequate preparation:

- "Förmodligen att jag tränat för lite" (Probably that I've practiced too little) [P2]
- "I have twice agreed to do a gig with music that I have not been prepared for. I will never make those mistakes again" [P4]
- "Övat för lite och för dåligt" (Practiced too little and poorly) [P18]

3. Memory Issues (n = 3, 16%)

Memory problems, particularly when playing from memory, were noted:

- "Minnet. I stundens hetta glömmer man hur det skulle vara" (Memory. In the heat of the moment one forgets how it should be) [P7]
- "More often than not it is if I'm playing from memory. I don't like playing from memory" [P8]

4. Performance Anxiety/Nerves (n = 3, 16%)

Anxiety and stress were identified as contributing factors:

- "Nerves" [P9]
- "Stress related" [P13]
- "When I find myself in shows, I stress when I'm told about specific people being in the audience" [P16]

5. External Factors (n = 3, 16%)

External circumstances also played a role:

- "insufficient rehearsal time; distracting trouble with technology" [P17]
- "Ljudet stämmer inte och det är stökigt omkring en" (The sound isn't right and it's messy around you) [P18]

These qualitative findings strongly corroborate the quantitative result that Focusing scored lowest among the psychological skills. The preponderance of focus-related explanations for performance mistakes suggests this is indeed a central challenge for professional musicians.

Feelings About Missing Practice Sessions

Analysis of the 19 responses to "How do you feel when you miss a planned practice session?" revealed a range of emotional reactions:

1. Negative Emotions: Guilt and Disappointment (n = 10, 53%)

Over half of participants expressed negative feelings:

- "Annoying feeling when I feel I should be better prepared. Annoyed at myself" [P1]
- "Damn!!" [P2]
- "Disappointed, a bit pissed" [P3]
- "Frustrated" [P4, P5]

- "Guilty or disappointed" [P6]
- "You get feelings of guilt with yourself" [P19]
- "Then I'm disappointed. It feels like a lost day" [P17]

2. Neutral/Accepting Responses (n = 6, 32%)

Some musicians displayed acceptance:

- "I will find another day/time and move on" [P7]
- "It feels OK anyway" [P8]
- "That's life" [P16]
- "Nothing special - my workouts are not scheduled" [P14]

3. Contextual/Conditional Responses (n = 3, 16%)

Several noted their response depends on circumstances:

- "It's OK if I have a good reason to miss the pass. After all, life is not just music" [P9]
- "That depends on the reason. Normally if I have to miss a session it's because there is something more important I have to do. Otherwise I would be disappointed" [P15]

These findings reveal the strong sense of commitment and dedication among professional musicians, with feelings of guilt and disappointment predominating when practice is missed. This aligns with the high Commitment scores observed in the quantitative analysis (M = 3.61).

DISCUSSION

Profile of Psychological Skills in Professional Musicians

This study provides an initial profile of psychological skills employed by professional musicians during individual practice. Overall, the results paint a picture of highly confident, energized, and committed musicians who nevertheless struggle with maintaining concentration during practice.

Strengths: Confidence, Energy, and Commitment

The highest scores emerged for Belief/Confidence, Energizing, and Commitment. Professional musicians in this sample demonstrated strong belief in their capacity to reach musical goals and overcome obstacles. This finding aligns with the exceptionally high growth mindset scores reported in an earlier chapter, suggesting a consistent pattern of positive self-belief and confidence in the malleability of musical abilities.

The high Energizing scores indicate that professional musicians generally maintain positive mood states following practice and have effective strategies for managing energy levels. Combined with high Commitment scores, these findings suggest that professional musicians possess the motivational foundation necessary for sustained high-level practice.

Challenge: Focusing and Concentration

The most striking finding was the relatively low score for Focusing (M = 2.64), which fell below the scale midpoint. This was strongly corroborated by the qualitative data, where 58% of participants identified loss of focus or concentration as the primary cause of performance mistakes. Common themes included:

- Losing focus during practice or performance
- External distractions disrupting concentration
- Difficulty maintaining attention during certain moments

This convergence of quantitative and qualitative findings suggests that concentration is indeed a central challenge for professional musicians, even at the highest levels of performance. This is consistent with research in music psychology highlighting the demanding nature of sustained focused attention required for deliberate practice.

Interestingly, this finding parallels the high GRIT scores reported in an earlier chapter. Musicians demonstrate exceptional perseverance of effort (one component of GRIT) but may struggle with the moment-to-moment attentional focus required during practice sessions. This distinction highlights that long-term persistence and short-term concentration represent different psychological capacities.

Integration with Previous Findings

The psychological skills profile revealed in this chapter complements findings from previous chapters:

Growth Mindset

The exceptionally high growth mindset scores reported earlier align well with the high Belief/Confidence scores observed here. Both constructs reflect positive beliefs about one's capacity for development and success. The combination suggests that professional musicians possess both:

- A general belief that musical abilities can be developed through effort (growth mindset)
- Specific confidence in their personal capacity to achieve musical goals (self-efficacy)

GRIT

The high Commitment scores observed here (M = 3.61) parallel the high GRIT scores, particularly the perseverance of effort dimension. Professional musicians demonstrate sustained dedication to their musical pursuits. However, the distinction between long-term commitment (GRIT) and moment-to-moment focus (Focusing) suggests these are separable psychological capacities.

General Health

The qualitative findings about guilt and disappointment when missing practice sessions provide insight into the psychological pressures musicians face. While the high commitment is admirable, the intensity of negative emotions when practice is missed may contribute to psychological stress and potentially impact well-being.

Methodological Considerations and Scale Reliabilities

Several subscales demonstrated problematic internal consistency reliability. The negative alpha values for Stress Control, Energizing, and Mental Practice, along with the near-zero alpha for Fear Control, warrant careful interpretation.

Possible Explanations:

1. **Sample Size**: With n = 19, reliability estimates are unstable. Cronbach's alpha is known to be affected by sample size, with small samples producing less stable estimates.

2. **Multidimensional Constructs**: Some scales may measure multiple distinct facets rather than unitary constructs. For example, "Stress Control" might encompass both: (a) experiencing stress, and (b) effectively managing stress – two conceptually distinct dimensions that could correlate negatively.

3. **Reverse-Coding Issues**: Despite careful attention to reverse-coded items, some items may have been incorrectly coded or may have been interpreted differently by musicians than intended.

4. **Adapted Instrument**: This instrument was adapted from sport psychology for use with musicians. Some items may not translate perfectly to the musical domain, reducing scale coherence.

5. **Professional Sample**: Professional and skilled amateur musicians represent a restricted range sample. The relative homogeneity in skill level may reduce item variability and inter-item correlations.

Implications:

Given these reliability concerns, results for Stress Control, Fear Control, Energizing, and Mental Practice should be considered preliminary and primarily descriptive. The more reliable scales (Goal Setting, Belief/Confidence, Commitment, Relaxation, and Focusing) provide the most interpretable findings.

Future research should:

- Increase sample size substantially (n > 100 recommended for stable reliability estimates)
- Conduct exploratory factor analysis to examine scale dimensionality
- Consider revising or replacing problematic items
- Validate the adapted instrument specifically for professional musicians

Practical Implications

Despite the methodological limitations, several practical implications emerge:

Focus Training

The convergent evidence pointing to concentration challenges suggests that focus training interventions might benefit professional musicians. Possible approaches include:

- Mindfulness meditation training
- Attention training protocols
- Structured practice sessions with explicit focus goals
- Environmental modifications to reduce distractions

Balanced Perspective on Practice

The strong guilt and disappointment expressed when missing practice sessions, combined with very high commitment scores, suggest some musicians may benefit from developing a more balanced perspective on practice. While dedication is valuable, excessive guilt may contribute to burnout or unhealthy practice habits.

Leveraging Strengths

The high scores for Belief/Confidence and Energizing suggest these could be leveraged to support other psychological skills. For example, musicians' strong self-belief could be channeled into developing better focus strategies.

Limitations

Several limitations should be acknowledged:

1. **Small Sample Size (n = 19)**: Statistical power is limited, reliability estimates are unstable, and generalizability is restricted.

2. **Cross-Sectional Design**: Cannot establish causal relationships or developmental trajectories.

3. **Self-Report**: All measures rely on self-report, which may be subject to social desirability bias or limited self-awareness.

4. **Adapted Instrument**: The Psychological Skills Inventory was adapted from sport psychology without extensive validation for musicians.

5. **Sample Homogeneity**: Professional musicians from prestigious organizations may not represent the full range of professional musicians.

6. **Cultural Factors**: Sample included musicians from different countries; cultural differences in response styles may affect results.

Future Directions

Future research should:

1. **Increase Sample Size**: Larger samples (n > 100) would enable:
- Stable reliability estimates
- Factor analysis of scale structure
- Detection of smaller effects
- Subgroup analyses (instrument type, career stage, etc.)

2. **Validate the Instrument**: Conduct comprehensive psychometric validation including:
- Exploratory and confirmatory factor analysis
- Test-retest reliability
- Convergent and discriminant validity
- Comparison with established measures

3. **Examine Relationships**: Investigate how psychological skills relate to:
- Objective measures of practice quality
- Performance outcomes
- Well-being and burnout
- Career success and longevity

4. **Intervention Studies**: Develop and test interventions to enhance psychological skills, particularly focusing on concentration training.

5. **Longitudinal Research**: Track psychological skills development across career stages to understand how these skills evolve with experience.

CONCLUSION

This exploratory study provides an initial profile of psychological skills employed by professional musicians during individual practice. The findings reveal musicians who are confident, energized, and deeply committed to their craft, but who struggle with maintaining focus and concentration during practice. These challenges with attention align with qualitative reports, identifying loss of focus as the primary cause of performance mistakes.

The convergence of growth mindset, GRIT, and psychological skills findings across chapters suggests that professional musicians possess a robust motivational and cognitive foundation for their work. However, the distinction between long-term persistence and moment-to-moment focus highlights important nuances in the psychology of expertise development.

While methodological limitations – particularly sample size and scale reliability – necessitate cautious interpretation, these findings provide a foundation for future research on psychological skills in professional musicians and suggest that focus training interventions may be particularly beneficial for this population.

APPENDIX: SCALE ITEMS AND CODING

Items by Scale

Goal Setting (9 items)
- DuringAfterPractice_01 through DuringAfterPractice_09
- Reverse-coded: DAP_07, DAP_08

Belief/Confidence (8 items)
- DuringAfterPractice_10 through DuringAfterPractice_17

Commitment (12 items)
- DuringAfterPractice_18 through DuringAfterPractice_29
- Reverse-coded: DAP_27, DAP_29

Stress Control (8 items)
- DuringAfterPractice_30 through DuringAfterPractice_37
- Reverse-coded: DAP_30, DAP_31, DAP_33, DAP_34

Relaxation (4 items)
- DuringAfterPractice_38, 41, 42, 43
- Reverse-coded: DAP_41, DAP_42
- Note: DAP_39 (nap duration) excluded; DAP_40 (conditional follow-up) had no responses

Fear Control (6 items)
- DuringAfterPractice_46 through DuringAfterPractice_51
- Reverse-coded: DAP_51

Energizing (5 items)
- DuringAfterPractice_52 through DuringAfterPractice_56
- Reverse-coded: DAP_53, DAP_54

Focusing (5 items)
- DuringAfterPractice_58 through DuringAfterPractice_62

Mental Practice (9 items)
- DuringAfterPractice_63, 64, 65, 66, 67, 69, 70, 71, 72

- Reverse-coded: DAP_64, DAP_65
- Note: DAP_68 is qualitative (causes of mistakes)

Qualitative Items:
- DAP_68: What causes mistakes during practicing/performing?
- DAP_74: How do you feel when you miss a planned practice session?

Reverse-Coded Items (n = 16)

The following items were reverse-coded (where lower numeric values indicated stronger agreement):

DAP_07, DAP_08, DAP_27, DAP_29, DAP_30, DAP_31, DAP_33, DAP_34, DAP_41, DAP_42, DAP_44, DAP_51, DAP_53, DAP_54, DAP_64, DAP_65

Reverse-coding formula: Reversed Score = 6 - Original Score

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