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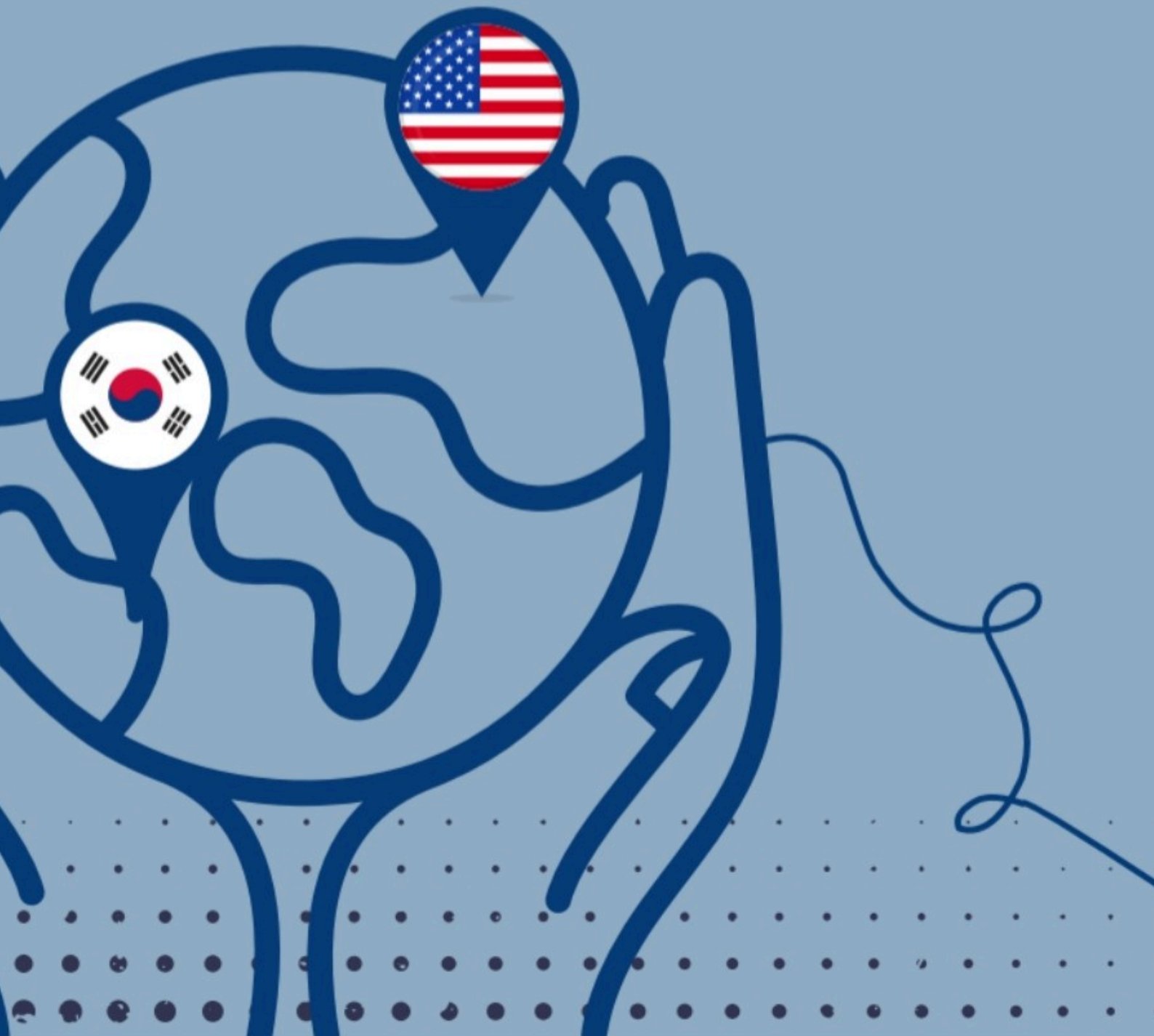

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Politics & Democracy

Cultural Content of the July 4th Independence Day Celebrations

From the Perspective of High School Students & Cultural Content Formation and Contribution

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1. Introduction

Bang! Crackle! Fizz!

A loud firework pierced through my ears. I was watching the beautiful fireworks with my friends as usual. Our quiet neighborhood was as loud as downtown that night. Along the beachside streets, small groups of people gather to watch fireworks bursting across the night sky, while in the park, a little girl wearing a sparkling stars-and-stripes headband runs around with her younger brother, who waves a glowing light stick. On balconies, families and friends drink beer and enjoy barbecue parties, and the sounds of loud music here and there make it clear that the whole town is celebrating. For days, even a month or two, shops along the streets have been decorated with goods covered in the American flag, announcing big sales in bold letters. Every house has hung the flag, and today even the cars driving by display it. Indeed, today is July 4th: America's Independence Day. In this context, I examined the Independence Day celebrations that we encounter every year from the perspective of cultural content, and considered how they might be expanded.

2. The Cultural Meaning of Independence Day

In the U.S., July 4th is observed as Independence Day to commemorate the official ratification of the Declaration of Independence in 1776. On this day, the 13 American colonies officially declared their independence from British rule. The Declaration, primarily written by Thomas Jefferson, explained why the colonies chose to separate and emphasized the values of freedom and equality. The day became a symbol of American liberty, and celebrations with fireworks, parades, and patriotic displays began shortly after. It was officially designated as a federal holiday in 1870, and today, July 4th is recognized as one of the major national holidays in the U.S.

In Western Europe, republicanism emerged through centuries of civil wars, social conflicts, and fierce struggles between monarchs, nobles, and citizens (E. J. Hobsbawm, E. J. 1965). In contrast, America received its republican order suddenly and externally through revolution. This historical difference profoundly shaped the turbulence and dynamism of American politics. Without genuine social consensus and experience, only the institutional framework was transplanted hastily. As a result, in the years following independence, America faced extreme ideological conflicts between the Federalists and Anti-Federalists, which ultimately escalated into the tragedy of the Civil War and recurring power struggles. However, through the Civil War, political power was distributed even to the so-called proletariat class, and this was a very significant event in world history. Political democratization was introduced earlier than anywhere else in the world, 250 years ago (Arnold Hauser, 1953).

The origins of Independence Day can be traced to the American Revolution. By the time the Continental Congress approved Richard Henry Lee's proposal for independence on July 2nd, 1776, efforts to break away from British rule were already underway. On July 4th, 1776, the Continental Congress officially approved the Declaration of Independence, primarily drafted by Thomas Jefferson. This

groundbreaking document proclaimed the thirteen American colonies as independent states, free from British rule, and articulated fundamental ideals of liberty, equality, and self-governance.

In the U.S., Independence Day is marked by a variety of festivities. Communities across towns and cities host parades featuring local organizations, marching bands, and elaborately decorated floats. Friends and family often gather to enjoy meals outdoors, such as barbecues and picnics, spending quality time together. Additionally, open-air concerts and community festivals are held widely, providing enjoyment and activities suitable for people of every age group.

However, the most iconic and eagerly anticipated aspect of Fourth of July celebrations is undoubtedly the fireworks display. As dusk settles, the night sky ignites with dazzling pyrotechnic shows, painting a spectacular canvas of light and color. These displays, ranging from small neighborhood gatherings to grand municipal spectacles, symbolize the "rockets' red glare, the bombs bursting in air" mentioned in "The Star-Spangled Banner," a nod to the struggle for independence. These Independence Day celebrations embody cultural symbolism and, in this way, form their own type of cultural content.

3. The Cultural Meaning of Independence Day

A frame refers to the system of knowledge stored in human memory that represents general knowledge about an object, situation, event, or action (Piaget, J. 1950). Especially in frame semantics (Fillmore, 1977), the frame refers to the experiential knowledge structure needed to understand the meaning of a word (Fillmore, Charles J. 1977. 55-79). Based on experiential semantics, frame semantics considers the frame as the experiential knowledge structure required to interpret the meaning of a word. This knowledge structure is expressed as a combination of elements forming the frame.

When humans face a new situation or problem, they rely on these knowledge structures stored in memory—that is, frames—to perceive the environment and to choose strategies in response (Fillmore, 1977, p. 124). In everyday communication, frames play an important role, and they can develop or be modified alongside human cognitive growth and changes in the surrounding environment. Thus, in communication, frames serve a crucial role (Fillmore, Charles J. 1977. 55-79).

However, in the construction of frames, culture-specific elements that reflect unique cultural characteristics are also included. Therefore, since knowledge systems can be represented not only by linguistic text but also by images, they can be called cultural image frames (CIF). In other words, a frame can be built upon both universal elements and cultural elements reflecting cultural specificity. While Fillmore described the Universal Frame, each culture can form its own Cultural Image Frame (CIF), which can be contrasted as shown in the table below.

Fillmore&s Universal Frame	Cultural Image Frame (CIF)
Single Frame	Multiple Frames
Universal Frame	Culture-specific frame
Text-based conceptual frame	Image-based visual frame

When the cultural context in which sign systems and structures develop interact, meaning is generated, created, and formed in relation to the text. The sign system that observes and describes semantic phenomena encompasses not only linguistic elements but also non-linguistic elements, including painting, digitalized paintings, and photography (YONG-BOK SHIN, *Tamlon*, Gyeonggi: Dolbegae, 2015. p.27). Through the workings of such a sign system, images as texts—so-called cultural images—can be produced. On the other hand, cultural content absorbs media in the process of cultural production and consumption, relying not only on texts but also on media.

In relation to this, W.J.T. Mitchell emphasized the importance of visual experience from the perspective of the &pictorial turn& (Mitchell, W.J.T., 1994, p.13). Similarly, the phenomenon of visuals spreading throughout culture is often referred to as the &visual turn& (Jay, Martin, 2002). The key point is that the production and consumption of stories have been shifting away from text-centered media to image-centered media. Film, broadcasting content, animation, and advertisements are examples, as well as spatial content such as theme parks, museums, and festivals. In addition, new media content such as games and applications also demonstrate this trend. Storytelling in these contexts is not limited to the structure of stories or textual experiences alone. Visual expression is not simply a tool for conveying content but also a medium that can directly shape and immerse meaning.

In the process by which the meaning or message of such content is delivered to users through the act of seeing, facilitated by visual engagement, the story of the content becomes differentiated. From the standpoint of consumption, this influences the user's experience. Especially with the spread of digital media, storytelling has become a dominant trend. In the context of digital culture, digital storytelling not only strengthens interactivity but also actively leads cultural consumption in this direction.

Cultural images can be incorporated into educational programs to provide learners with engaging and immersive experiences. Serving as a source of inspiration and connection across various contexts, these images can also reinforce the branding of towns or cities while fostering the distinctive identity of local communities. Through digital documentation, landmarks, historical sites, natural landscapes, regional specialties, notable individuals, and traditional games can be recorded as examples of cultural imagery. Preserving such representations helps strengthen a region's

cultural identity, enhancing the impact of local branding efforts. When regional culture significantly shapes public preference for local brands, this influence often translates into strategies like marketing or campaigns centered on cultural imagery.

Independence Day events can be seen as immersive experiences where meaning is expressed through non-verbal elements such as parades, fireworks, and various festival activities. From this perspective, the celebrations themselves represent a form of rich cultural content. Participants and attendees, including U.S. citizens, can generate cultural imagery motifs by sharing personal narratives that reflect their own experience. By utilizing modern media tools, even high school students are able to actively convey their viewpoits on Indepencence Day, thereby contributing to the creation of a wider cultural image associated with holiday.

The twenty-first century is characterized as the *era of culture*. Society is undergoing a shift from a rational, human-centered perspective to one that emphasizes emotional engagement; from a production-focused economy to a consumption-driven cultural model; and from a period dominated by print media to one shaped by digital technology. Within this context, the significance of cultural imagery has risen sharply, making cultural branding a key element of national branding strategies. In a broader sense, cultural branding involves applying traditional branding principle, which were primarily economic in nature, to the domain of cultural values. It functions as a symbolic framework intentionally designed to convey cultural elements that hold economic significance to audiences both at home and abroad. Put differently, cultural branding encompasses branding practices rooted in culture, the arts, and the humanities. For instance, Independence Day and its associated commemorative events can be viewed as a unique cultural brand representing the U.S.

The assets of a cultural brand can be classified into three dimensions: cultural brand awareness, cultural brand associations, and perceived quality of culture, among which cultural imagery constitutes the most essential element (SEONG-WON YEOM & KYOUNG-SOO OH, 2003). Since cultural branding serves as an evaluative model of cultural imagery, the creation of iconic brands, as Douglas B. Holt (2004, p.5) argues, represents a core strategy of cultural branding. Cultural icons are products or symbols that individuals employ as means of self-expression or as references for articulating their identity. For instance, John Wayne and The Beatles can be regarded as quintessential cultural icons, while McDonald's and Coca-Cola serve as representative examples of iconic brands. In the context of Independence Day, parades, fireworks, and concerts may be understood as iconic elements that embody the cultural brand.

To build a cultural brand, it is essential to present cultural assets and potential in a way that conveys a consistent meaning within the associated imagery. This underscores the importance of a well-considered cultural branding strategy. From this perspective, the ways in which cultural imagery is expressed and valued were closely examined, employing a "text-based scientific media analysis" approach to understand how such imagery is interpreted and perceived. This comprehensive method allows cultural images to be treated as coherent texts and supports systematic evaluation. Through steps including the analysis of textual functions, assessment of verbal and non-verbal elements, integration of textual information, and extraction of final imagery, the methodology reveals the semiotic relationships and meaning connections among the diverse cultural components that make up the imagery. Ultimately, framing Independence Day as a cultural brand can be achieved effectively through audience-centered storytelling that creates and communicates new cultural images.

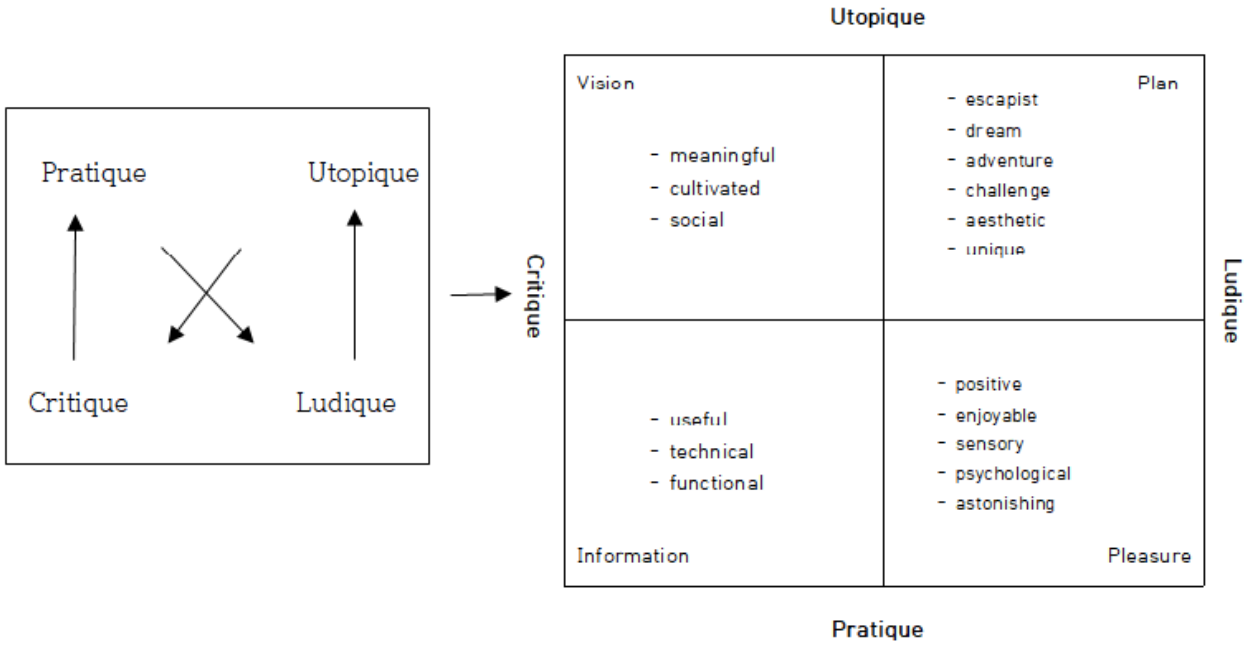
4. The meaning of Independence Day in a student's everyday life

As a child, I thought it was natural to hang the American flag on Independence Day. But now, as a high school student, I realize this act is anything but natural.

At school, I study the rights afforded to citizens in a democratic society, including the right to vote, freedom of speech, and the right to gather peacefully, yet I seldom fully grasp the extent to which these freedoms impact my everyday life. Yet today, watching the flags flutter on Independence Day, I understood that these freedoms and rights are not free gifts from the past, but were won through the sacrifices and courageous choices of countless people.

In discussions with my friends about Independence Day, I came to feel deeply that my ability to attend school, dream of the future, and plan my own path is itself the legacy of July 4th.

However, the cultural texts produced through the interplay of cultural codes may vary depending on the cultural audience, and the resulting cultural texts may differ in their semantic domains and value as derived from the semiotic analysis of cultural imagery. In this context, Semprini's Semiotic Mapping Structure provides a valuable analytical tool for elucidating these variations(Semprini, A. 1992)



Semprini's semiotic mapping structure, when adapted to the framework of cultural value, forms four semantic domains: vision, plan, pleasure, and information. These domains correspond to the four conceptual quadrants of Floch's semiotic square—Utopique, Ludique, Pratique, and Critique (Jean Marie Floch, 2002). In other words, when a semiotic system interacts with the cultural context in which it is manifested, processes of meaning generation and textual relationships are established. The semiotic system that observes and describes these phenomena is not limited to linguistic elements but also encompasses non-verbal elements, including events such as parades, fireworks, and musical performances considered in this study. Through the operation of such a semiotic system, images as texts, that is, cultural imagery—can be produced. In the digital era, it is anticipated that visual narrative formats within semiotic systems will increasingly dominate frameworks for global perception (YONG-BOK SHIN, 2015). Students play a crucial role, particularly because they can function not just as participants but as active contributors within online and social media spaces. Through digital communities and social platforms, they are able to communicated with both specific groups and broader audiences. These interactions allow individuals to express their views freely on personal interests

or social issues. As a result, such activities enable student to actively shape the cultural imagery related to Independence Day and contribute to the development of its cultural branding.

5. Conclusion

Building on cultural anthropology's cross-sectional approach to studying culture and cultural studies' longitudinal perspective, research on cultural content has grown increasingly significant in the twenty-first century. Over the past two decades, cultural content has been examined from the standpoint of *langue*, representing the structural and systematic dimensions of culture, as well as *parole*, which emphasizes its performative and practical manifestations. This line of research has offered fresh insighs across a wide range of areas, including cultural archetypes, codes, spatial contexts, technologies, digital media, storytelling, content creation and planning, and management and marketing. In particular, studies focusing on cultural content as *parole* often analyze specific categories—such as publications, audiovisual media, game-based content, and festival-related materials-individually, highlighting the need to treat findings for each genre as distinct and independent.

However, cultural content can be understood both as an independent genre in its own right and as a dynamic process operating as a whole. This dual nature underscores the significance of methodologies for cultural analysis. Since the modern era, the systematic study of culture has its origins in cultural anthropology. As a subfield of anthropology, cultural anthropology examines the histories and contemporary practices of diverse peoples worldwide, ranging from historical periods beyond the scope of archaeology to the present, through comparative and social-scientific methods.[1] In this context, Edward Burnett Tylor defines culture or civilization, from the perspective of ethnographic study, as a complex and comprehensive whole encompassing knowledge and beliefs, art, law, morals,

1 SANG-BOCK HAN, MOON-UNG LEE, & KWANG-EOK KIM. (2011). Cultural Anthropology. Seoul: Seoul National University Press, p. 11.

customs, and any other capabilities and habits acquired by humans as members of society.[2] In the latter half of the twentieth century, cultural studies emerged, building on the establishment of the Center for Contemporary Cultural Studies (CCCS) at the University of Birmingham, United Kingdom. Scholars such as Stuart Hall and John Fiske distinguished between high culture and popular culture, subsequently focusing their research on the latter. A variety of studies examined television culture along with associated semiotic systems, exploring how cultural meanings extended across different social classes and were reinterpreted within diverse socio-economic contexts. This line of research was further reinforced by integrating insights from early semiotics, linguistic frameworks, cultural political economy, and structuralist approaches. By combining these perspectives, scholars were able to uncover the underlying power dynamics in popular culture, analyze ideological mechanisms, and investigate the behavior and reception of cultural audiences.

As the twenty-first century began, the fields of cultural anthropology and cultural studies gradually developed into the study of cultural content. This area of research builds on the disciplinary foundations of cultural anthropology and the interdisciplinary legacy of cultural studies, while also examining forms of cultural existence that earlier approaches could not fully capture. Cultural content research is closely linked to scholarship that bridges multiple academic domains. For many people in the U.S., July 4th is a day to honor the commitment and efforts of the Founding Fathers, as well as countless others who played a role in safeguarding the nation's freedom. Across the country, the day carries significant meaning, serving as a moment to reflect on the principles of democratic governance, individual liberty, and the pursuit of well-being, while commemorating those whose dedication and sacrifices helped secure these freedoms. This is precisely why Independence Day has emerged as a prominent subject for research in the field of cultural content studies.

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2 Edward B. Tylor, *Primitive Culture* Vol. 1, London: John Murray, 1871, p. 1.

Reconstructing Liberation Day: Memory, Archive, and National Identity in Contemporary Korea

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I. Introduction

This year marks the 80th anniversary of Korea's liberation, a significant national holiday commemorating the country's release from Japanese colonial rule. Despite its importance and long-standing recognition as a legal public holiday, this year's 80th Liberation Day observance was largely overshadowed by President Lee Jae-myung's public appointment ceremony, which drew little attention and saw low attendance. Historically, regional Liberation Day events have often been incorporated into other cultural programs, while central government ceremonies have tended to be modest and held indoors. For many people, August 15 has increasingly come to be seen as just a day off, with its historical meaning fading from public awareness.

However, this year I experienced the day differently. Early in the morning, I noticed countless Taegeukgi flags swaying strongly in the wind outside. Although I have celebrated August 15 every year, being a high school student now made me question its significance beyond a simple holiday. The definition I learned in textbooks—that it marks the day Korea was freed from Japanese colonial rule—felt less personally meaningful than before. Watching my family hang the Taegeukgi together, I reflected on the origins of the freedoms and rights I enjoy today in Korea and the circumstances that made them possible. Perhaps days like this serve as an opportunity to engage with history more thoughtfully through our everyday experiences, rather than merely relying on textbook knowledge.

2. Reflection on the Historical Meaning of Liberation Day

Humans have lived in groups for a very long time. For 100,000 years, people lived in bands, and for 10,000 years, in tribes. The formation of states is a much more recent development, lasting only a few thousand years. In today's state systems, the foundations of political structures and institutions were formed mainly in Europe after the Middle Ages. In particular, Niccolò Machiavelli, regarded as a pioneer of modern Western political science, has had a lasting influence for hundreds of years. His ideas and efforts to transform a divided Italy into a centralized state eventually became established as the political theory of the republic. However, Machiavelli was also a serious historian, as shown in his works 『Istorie Fiorentine (1525)』 and 『Discorsi sopra la Prima Deca di Tito Livio (1517)』. Under the command of Pope Clement VII from the Medici family, he wrote 『Istorie Fiorentine』 while carefully balancing the Medici family's current position with how future generations would judge them. Machiavelli pointed out that the Medici's rule caused factionalism, weakened public interest, and reduced national power, suggesting that the Medici were partly responsible for Florence's crisis. He cautiously argued that a centralized republican government could strengthen the state. Although he could not directly express his opinions under the strong Medici authority, his historical records effectively became textbooks for political theory, greatly influencing modern and contemporary political systems. Over hundreds of years, these ideas were theorized and applied, especially in modern and contemporary political history. Historically, power shifted from monarchs to nobles, and then, through events like the French Revolution, republican authority was granted to the people.

Machiavelli's ideas were accepted in a modern sense almost immediately in Korea in 1945. Every citizen gained the right to vote, regardless of whether they were a king, noble, bourgeois, or proletariat, realizing the constitutional value of popular sovereignty. Unlike Europe, this did not require 17th-century civil wars or extreme measures like the guillotine, nor the massive bloodshed seen in the U.S. Civil War to grant political power to ordinary people. During the U.S. military government period after liberation, the American political system was applied directly to Korea. Before

and after liberation, the authority of Emperor Shōwa of Japan was immense, based on imperialist power, and individuals had to be ready to sacrifice their lives for the emperor. After liberation, however, all citizens became sovereign.

However, in Korea, a republic was introduced amid conflicts between left-wing and right-wing forces, and during the U.S. military government period, a right-wing political foundation was established in South Korea. Over time, rapid economic growth, democratization, and a political culture of coexistence developed. The meaning of 8.15 Liberation Day goes beyond merely gaining independence from Japan; it also implies the political landscape that emerged after liberation. This political significance continued through the 6.25 War and shaped the country's current political structures. It is essential to consider how these political legacies can be preserved and developed in the future. This study seeks clues through archival research.

3. Theoretical Basis of the Archive

1) Preserving the Present for the Past

As Jacques Derrida discussed in his 1994 lecture at the Freud Archives in London, the archive can be understood in relation to memory, traces, and trauma. The archive he described originates from memory and experiences accompanied by trauma. Derrida suggested that archive fever naturally emerges when trauma is embedded, similar to the phantom limb phenomenon, where one perceives a limb as still present even after its amputation. This archive fever reflects a desire to uncover what has disappeared or been secretly concealed within the archive (Derrida, J. "Archive Fever: A Freudian Impression." Translated by E. Prenowitz. Diacritics (1995), pp. 9–63).

In contemporary society, national tragedies profoundly disrupt the everyday lives of citizens. Events such as the Sewol Ferry Disaster in 2014 or the Itaewon incident in 2022 exemplify such disruptions. In response to these ruptures, people exhibit various reactions, among which the 'call to remember' is particularly representative.[1]

The 'call to remember' prompts relevant institutions to collect materials related to disasters, which ultimately coalesce into an archive (disaster collecting). [2] This method of data collection alters the conventional approaches to historical preservation and reveals the interplay of power between the state, local governments, and their joint initiatives.[3]

The disaster collecting method, as a new approach to archival data collection, was systematized interdisciplinarily following the September 11 attacks in the United States. [4] Even in American history, this approach was distinctive and commemorative, prompting institutions such as the Smithsonian to convene and discuss methods for archival data collection. As a result of these discussions, it was agreed that, unlike the previous practice where institutions independently deliberated for considerable time on whether to collect materials, data should be collected immediately. This sense of immediacy became standardized because historically valuable materials paradoxically needed to be removed immediately for disaster recovery and restoration. In the case of archives, the criteria for historically valuable materials were newly defined, thereby creating a rupture in conventional collection norms. Typically, collecting institutions strive to acquire materials in their original state and preserve them over long periods. In contrast, archives collect materials in a destroyed state, often covered in dust. Furthermore, in the digital age, this collection and storage process has increasingly been conducted online. In summary, archival collection methods consist of: (i) immediate collection, (ii) the collection of materials in a destroyed state, and (iii) the digital collection of

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1 Luc Boltanski, Distant Suffering: Morality, Media and Politics, (Cambridge, England: Cambridge University Press, 1999) and Mary Ann Doane, "Information, Crisis, Catastrophe," in The Logics of Television: Essays in Cultural Criticism, ed. Patricia Mellencamp (Bloomington: Indiana University Press, 1990): 222–239.

2 September 11 Digital Archive, http://www.911digitalarchive.org. Hurricane Digital Memory Bank, http://www.hurricanearchive.org.

3 Timothy Recuber, "Consuming Catastrophe: Authenticity and Emotion in Mass-mediated Disaster" (PhD diss., City University of New York, 2011).

4 Courtney J. Rivard, ARCHIVING DISASTER: A COMPARATIVE STUDY OF SEPTEMBER 11, 2001 AND HURRICANE KATRINA, UNIVERSITY OF CALIFORNIA, 2012.

contributions from the general public. Additionally, the fact that archives, media, and their operations contribute to the formation of national communal consciousness represents a unique characteristic of archives.

2) Ethnography of the Archives

Research on archives is being conducted from an interdisciplinary perspective, integrating archive theory and memory studies.[5] In contrast, political science actively engages with the issue of power intervention mentioned above, particularly analyzing how various forms of power operate in the process of archive formation.[6] Such analyses focus on how power operates through various social structures, including recognition, gender, class, sexual orientation, and nationality.[7] In this regard, the archive clearly constitutes a political science concern. Researchers focus on the ethnography of archives to explore how power operates within archival spaces. Such studies do not merely extract archival materials but are grounded in analyzing the logic of archive formation and the types of content it produces. For this purpose, archives should be approached not primarily as collected materials but as epistemological experiments. [8] Therefore, the analysis of archives should focus on establishing a framework that considers what is documented and represented, which competitions are rewarded during the process of archive creation, which narratives cannot be told, and which stories cannot be mentioned (Stoler, A. L., ibid). This analytical approach has been collectively conceptualized as the 'Ethnography of the Archive.'[9]

3) Theories of Memory

Since the 1980s, there have been ongoing efforts to establish memory studies as a distinct field within historiography. This includes the work of French historian Pierre Nora, particularly his concept of 'Lieux de Mémoire,' which, based on a critical perspective toward the methodological rationality and veracity of historical knowledge, highlights the intrinsic value of memory.[10] In this context, as knowledge

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5 Gómez-Barris, 2009 ; Havel, B. F. "In Search of a Theory of Public Memory: The State, the Individual, and Marcel Proust." Ind. LJ 80 (2005): pp. 605–1189.

6 Gordon, Avery F. Ghostly Matters: Haunting and the Sociological Imagination. University of Minnesota Press, p. 3, 1996.

7 Frymer, Strolovitch, and Warren, "New Orleans Is Not the Exception," p. 38.

8 Stoler, A. L. "Colonial Archives and the Arts of Governance." Archival Science 2, no. 1 (2002): pp. 87–109.

9 Stoler, A. L. *ibid,*

became reduced to mere information and history faced a crisis, memory emerged as a crucial mechanism for connecting the past to the present.[11] Nora's theory,[12] even prior to the establishment of this theory, the precursors of memory theory can be traced back to Albash in the 1920s and Yeats in the 1960s.[13] Based on Nora's research, Germany established principles of memory formation within philosophy, pedagogy, rhetoric, and literary theory. At the same time, an approach emerged that sought to move beyond the oppositional structure of memory and history, locating its theoretical foundation in collective memory formed through the interrelations of space, time, and community. [14] According to this theory, all memories are essentially collective memories. This concept of memory has influenced archives in the following ways.

The 'call' that shapes the ethnography of archives is not only concerned with analyzing the power involved in assigning meaning to the past but also exerts a significant influence on contemporary understanding and future trajectories. [15] In the process of forming an archive, the selection, collection, arrangement, narration, preservation, and accessibility of materials are closely intertwined with socialization processes such as memory and forgetting, inclusion and exclusion, as well as the power structures embedded within these processes. [16] In this context, an archive can be understood as a space where competing memories and bodies of knowledge converge. [17] Due to the power struggles over what is remembered and how it should be remembered in archives, a convergent approach to memory studies has emerged, moving beyond traditional historical methods.

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10 Jin-sung Jeon, "History and Memory: Recent Discussions on Lieux de Mémoire in Germany," Journal of Western History, Vol. 72, Korean Association for Western Historical Studies. 2002, p. 168.

11 Jan Assmann, Das kulturelle Gedächtnis Schrift, Erinnerung und politische Identität in frühen Hochkuluren(München, 1992), Vorwort.

12 Nora, P. "Between Memory and History: Les Lieux De Mémoire." *Representations*, no. 26 (1989), pp. 7–24.

13 Jin-sung Jeon, ibid, p. 171.

14 Ho-geun Choi, "Collective Memory and History," History Education, Korean Association for History Education, Vol. 85, 2025. 2003, pp.159-189.

15 Stoler, A. L. "Colonial Archives and the Arts of Governance." *Archival Science 2*, no. 1 (2002), pp. 87–109.

16 McKemmish, S., A. Gilliland-Swetland, and E. Ketelaar. "Communities of Memory': Pluralising Archival Research and Education Agendas." Archives and Manuscripts 33, no. 1 (2005), p. 146

17 McKemmish, Gilliland-Swetland and Ketelaar, 2005

Memory scholars argue that it is impossible to apprehend the past objectively and that understanding its precise meaning requires grounding in memory theory. In particular, when history is recorded from a third-person perspective, memory is always narrated by the primary experiencer of the events. [18] Therefore, memory scholars emphasize the direct relationship between memory and identity.[19] This emphasis is further reinforced through the collective, social, and cultural dimensions of memory.

Regarding the collective aspect of memory, memory does not reflect an individually predetermined psychology from birth but is formed collaboratively through interactions as members of society.[20] Individual memory is always shaped within a social context, and personal forgetting is the process of overlooking one's role as part of that social construct. [21] Memory does not merely recover what is absent from the social fabric; rather, it is a process of reconstructing it anew. Consequently, the social dimension always signifies the present. Based on this theoretical framework, memory scholars have investigated the relationship between collective memory and identity formation. According to their research, collective memory can be understood as a non-linear account of the past. [22] The present is constituted by incorporating past experiences and future expectations. A reciprocal understanding of the past contrasts with the traditional view of history, which is transmitted unilaterally from the past. To analyze the complex structures and relations of power, it is crucial to consider memory in spaces where it competes. In these sites of contestation, the cultural elements of memory play a vital role. [23] Furthermore, to understand what meaning should be ascribed to the past, the cultural elements of memory must encompass the following four key points:

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18 Poole, R. "Memory, History and the Claims of the Past." Memory Studies 1, no. 2 (2008): 149.

19 Thelen, David. "Memory and American History." The Journal of American History 75, no. 4 (March 1, 1989): pp. 1117–1129.

20 Halbwachs, Maurice. On Collective Memory. 1st ed. University Of Chicago Press, 1992.

21 Halbwachs, *ibid.*

22 *Jelin, E. State Repression and the Labors of Memory. Univ Of Minnesota Press, 2003.*

23 Marita Sturken, 2002 ; Gómez-Barris, M. Where Memory Dwells: Culture and State Violence in Chile. Univ of California Pr, 2009.

ⅰ) The past should be understood not unilaterally or linearly, but spirally. In certain respects, the past exists in the present and thereby shapes the future.

ⅱ) Remembering the past must always be culturally embodied. Culture is not merely something that is formed; it is a site of contestation.

ⅲ) The meanings attributed to past events directly influence the formation and maintenance of individual or collective identities.

ⅳ) Through a reciprocal understanding of the past, along with its culturally constituted features, cultural memory is embedded within specific power structures. Therefore, research on the past necessitates a detailed analysis of power relations.

4) Image Theory

The period during which archives as images became widely disseminated can be considered to be between World War I and World War II (1919–1931). This was due to the increase in image reproduction through cameras and the development of mass media, including newspapers. In this context, the artistic practices of Dadaist artists can be understood alongside the proliferation of propaganda images at the national level. In postwar Europe, efforts to construct narratives through the collection and arrangement of photographic images became established as a method within the visual arts. [24]

From the 1960s, with the full-fledged development of electronic media and the emergence of conceptual art that foregrounded art as a system of information processing, it became evident that artworks could exist at the level of ideas, independent of physical supports. By the 1990s, contemporary art theory, encountering the internet and digital concepts, began to reconsider notions that had traditionally been central to art, such as creation, authorship, and originality. This shift inclined toward producing new narratives through the re-editing or re-contextualization of existing images, highlighting the imperative for contemporary art to recall and re-examine past images and archives. [25]

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24 Ah-reum Woo, "A Study on Early Image Archive Art: Focusing on the Interwar Period between World War I and II," Journal of the Society for the History of Western Art, Vol. 48, The Society for the History of Western Art. 2018, p.132.

Since the 2000s, the archive has emerged in visual arts as both a strategy and a form of rhetoric. As Allan Sekula discussed in The Body as Archive, archival considerations have played an important role in media studies of photography, particularly in the politics of the body, where photographs have been used to create typologies. Yeon-sim Jeong (2013) argued that history should not be understood merely as a linear series of events; instead, it encompasses indeterminate experiences and temporal complexity, which can also be linked to digital experiences. He observed that the expansion of digital culture has prompted artists to pay closer attention to history, memory, and archives. Furthermore, Jeong suggested that the return of images and narratives does not necessarily create something entirely new but rather reconfigures existing narratives and images through innovative archival strategies to generate alternative stories and perspectives (Yeon-sim Jeong, "Contemporary Art and Archive Fever since the 2000s," Misul Segye, January 2013, p. 88). Jeong further argued that the archive has become a form of rhetoric in contemporary art. While traditional exhibition archives, such as retrospectives of past artists, presented documentation in a static form, contemporary artists strategically organize their archives as process-oriented frameworks. These archives function as guides for interaction between artists and viewers, emphasizing the archive as a site of creation and communication rather than merely a record of past works. In this sense, the archive is not a document testifying to dead art of the past but an indicator of contemporaneity in the now-time. [26]

However, beginning in the early 1990s, the digitization of artworks commenced, driven by the need to reduce catalog printing costs and to address the limitations on public access to catalogs. [27] Heidi N. Abbey, regarded as a pioneer in the study of art archives, pointed out that art archives hold priority over the collected artworks themselves and that the archive constitutes a form of reality in its own

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25 Ah-reum Woo, ibid, p.148.

26 Yeon-sim Jeong, ibid. p.91.

27 Taylor, Janet H., and Joe Ryan. "Museums and Galleries on the Internet." Internet Research; Bradford, vol. 5, no. 1, 1995, p. 80 Griffiths, Antony. "Collections Online: The Experience of the British Museum." Master Drawings, vol. 48, no. 3, 2010, p. 357

right [28] and Based on scientific technologies such as the Internet, museums have been able to communicate the value of their archives to the public in the fastest and most effective manner. [29] Museums no longer remain mere repositories of artworks; instead, they recognize artworks as active resources. [30] Abbey focused not on creating digital surrogates of artworks but on providing information related to the archive. Meanwhile, Roth-Katz highlighted the shift of museums making their archives accessible online and examined the policies driving this transformation. [31] It was viewed as aiming to provide visitors with prior information about the museum in order to enhance their intention to visit the museum later. [32] This was understood as a form of marketing tool.[33] The above approach can be regarded as one of the factors that influence and facilitate the utilization of artworks held by museums and archives.

Furthermore, the creation of art archives requires the prior digitization of artworks, and a plan has been proposed to guide the workflow for this digitalization process.[34] The plan includes digitizing trivial items from artists' files as well as records that, although difficult to access and discover, hold value for researchers. Based on this theory of digitization and accessibility, most museums now make their collections available to the public in the form of digital archives. [35]

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28 Abbey, Heidi N. "Does a Decade Make a Difference? Comparing the Web Presence of North American Art Museum Libraries and Archives in 1999 and 2011." Art Libraries Journal; Cambridge, vol. 37, no. 3, 2012, p. 34.

29 *ibid,* p. 39.

30 *ibid* p. 35.

31 Roth-Katz, Esther. "Access and Availability: A Study of Use Policies on Art Museum Library Websites." Art Documentation: Journal of the Art Libraries Society of North America, vol. 31, no. 1, Spring 2012, p. 123

32 *ibid,* p. 127.

33 *ibid,* p. 124.

34 Smith, Kai Alexis. "Digitizing Ephemera Reloaded; A Digitization Plan for an Art Museum Library." Art Documentation: Journal of the Art Libraries Society of NorthAmerica, vol. 35, no. 2, Fall 2016. p. 329

35 Samantha Deutch of the Frick Art Reference Library and Sally McKay of the Getty Research Institute Special Collections Services, 2016, p.34

Menil Collection[36] or Getty Research Portal[37], major museums utilizing such programs include the Centre Georges Pompidou and the Musée National d'Art Moderne[38] and personal exhibition spaces for Dada artist Marcel Duchamp[39] or Andy Warhol are also archived in this manner.

At present, publicly accessible digital archives are primarily realized in the form of images, and the aspect of these archives functioning as a medium in their own right has been relatively overlooked. Nevertheless, research focusing on archives of image-based artworks has been gradually accumulating. [40] Furthermore, research has continued that explores images of archived artworks formed through photographic media based on scientific and technological methods. [41] Through this process, past images are summoned into the present, allowing interaction between the images and imagination.[42]

However, outside the realm of art archives, research focusing on images generated by archives has been gaining attention. [43] This study is grounded in the premise that archives record the processes through which artworks are formed, rather than the artworks themselves. [44] Thus, archives possess the capacity to infer other cases based on a single instance, a function that is essential not only for historical research but also intrinsically connected to the very nature of archives. [45] Based on this logical framework, it is argued that the previously formed collections of images can also be utilized within the industrial sector. [46]

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36 Gottlieb-Miller & Wolf, *ibid,* p. 335.

37 Gottlieb-Miller & Wolf, *ibid,* p. 335.

38 https://www.centrepompidou.fr/en/

39 Affron & Anderson, 2016, p. 4

40 Linda H. Armitage and Peter G.B. Enser, Analysis of user need in image archives ,Journal of Information Science, Volume 23, Issue 4

41 Julia Thomas, Getting the picture, Word and image in the digital archive, European Journal of English Studies Volume 11, 2007 - Issue 2, PP.193-206.

42 Nam-si Kim, "Past Images in Archive Art: Focusing on Walter Benjamin's Concepts of 'Trümmer' and 'Scherbe,'" Journal of Aesthetics and Arts Studies, Vol. 49, Institute of Aesthetics and Arts Studies. 2016, pp. 29-54.

43 Prince, 2012, p. 55 ; Naik et al., 2014, 2017 ; Isola et al., 2014 ; Doersch et al., 2015 ;

44 Derrida J (1996) Archive Fever: A Freudian Impression. Chicago: University of Chicago Press.

45 Farge A and Davis NZ (2013) The Allure of the Archives (T. Scott-Railton, Trans.). 1st ed. New Haven: Yale University Press

46 Kartikeya Date, Yael Allweil, Towards a new image archive for the built environment

4. Liberation Day Events and Archives

Jenkinson(1937) defined an archive as "a place where Public Records(records) or Historical Materials(documents) are preserved, and the preserved Historical Records(records) or Materials(documents)"(Jenkinson, H., 1937). Schellenberg(1956) also described archival science based on the concept of documents mentioned above(Schellenberg, T. R., 1956, p. 14). An archive can be defined as a place or the records themselves where materials of lasting value are systematically preserved(Cook, T., and J. M Schwartz. 2002, p. 171). As seen from its Greek origin, archon(archon), the origin of record management comes from legal evidence that represents a small elite group or supports state administration(Featherstone, Mike. 2006, pp.591-596). For example, in ancient Greece, rulers stored court records in the meeting place of judges called Aeropago, and in Roman times, records were kept in temple archives, managed by the financial officer Quaestor(Featherstone, p.591). In Korea, after the enactment and enforcement of the 「Act on Public Records Management」 in 1999, record keeping became official. Record management is legally regulated to ensure transparent and responsible administration in public institutions, guaranteeing citizens' right to know and facilitating communication. However, interdisciplinary discussions raise questions about whether public sector records alone can fully capture our lives, emphasizing that private sector records should also be included if record keeping serves as evidence of actions(SUNMYUNG KWONK, SEUNGHWI LEE, 2009).

Liberation Day events and meaningful archives relate closely to Terry Cook's concept of archives. According to Cook, an archive can be conceptualized as a specially recorded memory production about a specific person, group, or culture(Terry Cook, 2011, p. 601). As Derrida mentioned in his 1994 lecture at the Freud Archives in London, archives can be connected to memory, traces, and trauma. The archive Derrida referred to originates from memories and experiences accompanied by trauma. Just as phantom limb pain occurs when a missing arm or leg is still perceived as present, archival fever naturally arises when trauma exists. Archival fever reflects the desire to find what has disappeared or been secretly hidden

in the archive(Derrida, J. 1995,, pp. 9–63). National disasters like the Sewol ferry tragedy in 2014 or the Itaewon incident in 2022 caused major disruptions to citizens' daily lives. People responded in various ways, among which the call to remember(the call to remember) was a representative reaction(Luc Boltanski, 1990, pp. 222-239). The call to remember encourages related institutions to collect materials about the disaster, ultimately creating an archive[disater collecting](September 11 Digital Archive, http://www.911digitalarchive.org/). This method of data collection changes previous historical preservation methods and reveals the interactions of power between the state, local governments, and their joint projects(Timothy Recuber, 2011). In short, research on archives is progressing as a field combining archival theory and memory theory.

Meanwhile, political science actively studies the issue of power intervention. In particular, it analyzes how multiple powers operate in the creation of archives(Gordon, Avery F. 1996). From this perspective, archives are clearly a political matter. To explore how power operates in archival spaces, scholars focus on the ethnography of archives. Such research not only extracts the materials of the archive but also analyzes the logic of its creation and types of content. For this, archives should be approached as epistemological experiments(epistemological experiments) rather than merely the collected records themselves(Stoler, A. L. 2002, pp. 87–109). Therefore, archival analysis should focus on what is created, what is reproduced, which competitions are rewarded, which stories cannot be told, and which stories cannot be mentioned(Stoler, A. L. 2002). This entire analytical process is conceptualized as the ethnography of archives(Stoler, A. L. 2002).

5. Conclusion

Copying archive materials into other forms is not a new topic. The practice of creating digital copies using computers began in the early 1970s with Project Guttenberg, the first provider of electronic books (Project Guttenberg) (Crymble, 2021). Modern digital libraries trace their roots to the large-scale digitization of

archive materials. Witten and others included in the concept of digital libraries the concentrated collection of digital objects such as text, video, and audio, methods for accessing and searching collected materials, ways to organize and maintain the materials, and methods for selecting what to collect (Witten, I. H., Bainbridge, D., & Nichols, D. M. 2010, p.7). Such digital libraries can be considered a type of digital archive, or conversely, a digital archive can be seen as a digital library. Therefore, although called a library in name, a digital library can effectively be viewed as an 'archive'. In short, a digital archive is a digital reproduction of an archive (Dobreva, M. 2018. p.18). The advent of the digital information environment has accelerated the growth of archives beyond public institutions, including those operated by individuals or private organizations. Furthermore, based on systems capable of processing digital records, archives are expanding into digital spaces. Digital archives have become a prevailing trend, demonstrating advantages over traditional offline archives in terms of economic efficiency,[47] the ability to transcend spatial and temporal constraints. [48] Above all, the ease of distribution, processing, and preservation of information resources serves as a significant growth driver, contributing to the creation of added value in digital archives. [49] Building on this perspective, domestic research has also actively conducted empirical studies on digital archives, albeit on individual and micro-level aspects. For instance, Seo Hae-suk (2013) examined the necessity of constructing a Jindo Arirang Digital Archive and presented detailed procedures for its development, including target materials, collection methods, standardization, metadata selection, as well as processes and systems for establishing the digital archive. [50] Additionally, Shin Dong-hee and Kim Yoo-seung (2016) examined collection policy cases of digital archives both domestically and internationally. Based on elements such as mission, collection procedures, sources of records, scope of collection, copyright,

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47 김주관, "언어를 통한 문화교육 (2): 의사소통의 민족지학 방법의 적용",「언어와 문화」, 제4권 1호, 한국언어문화교육학회, 2008 p. 139.

48 최석현·박현숙·김명훈·전태일, "아카이브의 디지털 전시 활용효과 분석", 「한국기록학회지」, 제13권 호, 한국기록관리학회 p. 12.

49 곽승진·신재민, "디지털 콘텐츠 아카이빙 정책수립을 위한 문헌 및 사례 고찰", 「사회과학연구」, 제24권 1호, 충남대학교 사회과학연구소, 2013, p. 307.

50 서해숙, "진도아리랑 디지털 아카이브 구축의 필요성과 설계", 「인문콘텐츠」, 제29호, 인문콘텐츠학회, 2013,pp. 219-240.

collaboration and record-sharing policies, and decision-making processes, they established a collection policy tailored to the No Gun Ri Digital Archive. This study emphasized the necessity of collection policies suited to digital archives, distinct from traditional offline archives.[51]

Beyond simply collecting materials, archives preserve past memories and national characteristics, which help build the meaning of 8.15 Liberation Day and its events, while also protecting the importance of the liberation itself. From this perspective, using digital archives to manage materials related to 8.15 Liberation Day allows the government and private sectors to cooperate and gather diverse opinions and viewpoints. Additionally, in the 'Glocal Era,' where local culture and regional characteristics are valued, digital archives can combine regional cultures and create opportunities to develop them into a single cultural product.

51 Dong-hee Shin, Yoo-seung Kim "A Study on the Collection Policy of the Nogeun-ri Digital Archive," Journal of the Korean Society for Records Management, Vol. 16, No. 3., 2016. pp. 1-30.

2

Culture & Globalization

Pop Culture, USA: A Student's Guide to Where It Came From and How We Live It Now

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1. Introduction: A Hallway, a Soundtrack, and a Scroll

Popular culture operates as a shared system of reference built through mass circulation and participation. It moves quickly, spreads widely, and depends on recognition rather than originality alone. People do not simply consume pop culture. They quote it, repeat it, adapt it, and respond to it. In my view, that's why pop culture can feel like a second language at school: you can "speak" it instantly through a lyric, a meme, or a reference, and people understand you before you even explain yourself. Pop culture is one of the fastest ways students test identity safely. They try on humor, taste, and attitudes in public, then adjust based on how others react.

Many academic approaches to popular culture remain tied to modernist principles that prioritize originality, fixed authorship, and stable meaning. These frameworks struggle to explain cultural practices that depend on reuse and reinterpretation. In popular culture, works circulate less as isolated creations and more as references within a common symbolic pool. This doesn't make culture "less serious," but instead it makes meaning more social, because the point is not only what something is, but what people do with it together.

Classical representational structures continue to shape popular culture, but their role has shifted. Cultural products now function as material to be reused and recontextualized. Reuse signals expression or commentary rather than deception. For this reason, many remix practices sit outside narrow academic definitions of plagiarism. Over time, popular culture has developed relative insulation from

plagiarism claims, enabling large-scale cultural production built on repetition and variation. Personally, I see this as a kind of cultural commons. It is not ownership-free, but it is community-shaped, where influence is expected and "proof of impact" is how often something gets remade.

Music illustrates this logic clearly. Similar melodies and stylistic borrowing are often judged through transformation and context rather than novelty alone. Legal debates around music circulation, especially bootlegging, rely on infringement and fair use standards instead of categorical exemptions. Unreleased recordings have circulated widely without approval from artists or labels, prompting ongoing debate about authorship, ownership, and access (Farrugia & Gobatto, 2010). This debate is complicated, because artists want control, but fans treat access like a relationship. Sometimes closeness gets measured by how much of the "unseen" work you can hear and share.

When culture is understood as a way of life rather than a set of artworks, its boundaries expand (Williams et al., 1984). Popular culture manifests in daily routines, shared language, fashion, and online interaction. What once felt like "just stuff we like" increasingly resembles a living archive. Students hear it, watch it, wear it, discuss it, argue about it, and remake it. Tracing the origins of this system clarifies why it remains central to how students form identity and community today. For students, pop culture is also a map for navigating emotions and belonging. It can feel more immediate than school rules or formal advice, because it shows what people our age are laughing at, worried about, and proud of right now.

2. Roots: From Mass Media to the Youth Culture

The origins of popular culture can be traced to American broadcasting. Early television and 1930s radio exhibited a practice of replicating popular programs in franchise-based formats (Moran & Malbon, 2006; Bourdin, 2012). Franchising was facilitated through commercial rights packages and production support systems that circulated global program formats such as "Big Brother," "Pop Idol," and "Ugly

Betty" (Oren & Shahaf, 2012). In this period, the term "format" emerged as licensing shorthand in contracts to denote the knowledge embedded within a program, linking format owners with potential licensees (Bielby & Harrington, 2008). Producer Mark Goodson's format catalog became a source of international revenue (McDermott, 2004). Producers either devised formats independently or used formats licensed from other rights holders (Moran & Malbon, 2006). For example, Van den Ende collaborated with John de Mol to adapt existing formats and create new ones for both emerging and established European broadcasters (Magder, 2008). Format-based programs were not confined to television alone; they circulated across the internet, mobile phones, iPods, radio, advertising, telecommunications, and other platforms (Holmes & Jermyn, 2004; Hill, 2005; Murray & Ouellette, 2008). Contemporary society is now saturated by a continuous, expanding stream of popular culture.

American pop culture took shape when new technologies, such as radio, records, movies, and later television, turned local scenes into national habits. In the postwar decades, TV sets moved from storefront windows into living rooms, and the shows everyone watched became weekly rituals. At the same time, rock and roll blended rhythm and blues with country and gospel, giving teenagers a sound (and a spending power) of their own. Teen-focused radio, "American Bandstand," and Top 40 countdowns helped standardize tastes across a vast country. The pattern that emerged persists: the convergence of new media technologies and youth audiences produces cultural systems defined by rapid circulation, cross-genre interaction, and participatory engagement.

Since the year 2000, audiences have become increasingly fragmented, media ownership and regulatory conditions have shifted, and new media platforms have emerged as major competitors for audience attention (Napoli, 2011). Napoli argues that the state of the audience is defined by fragmentation, interaction, and increased autonomy, and that changes in media consumption are expressed through "narrative

complexity and ambiguity" alongside the "extension of narrative experiences associated with any media product beyond the primary medium in which it was produced" (Napoli, 2011, p. 155).

3. Remix DNA: From Hip-Hop's Bronx Spark to Today's Creator Culture

Another turning point begins at a back-to-school party in the Bronx, where DJs looped breakbeats and MCs energized the crowd. Hip-hop was not just music but a toolkit, including beats, rhymes, dance, fashion and graffiti, built for participation. That DIY spirit explains much of American pop culture today. Students do not simply consume; they duet, stitch, sample, and comment.

Mass media are no longer confined to the unique characteristics of individual platforms. Instead, they extend beyond these boundaries, reflecting the growing influence of audiences who engage with content in active and participatory ways rather than merely consuming it. In practice, consumers reshape and reinterpret media independently. Through creative appropriation, audiences assign meaning and value to content actively. This trend illustrates a defining feature of contemporary popular culture: the replication of media without dependence on original sources.

A music track does not assume a fixed form at the moment of its release; instead, it undergoes continuous transformation through dance trends, user-made edits, fan-recorded videos, and remixes. This participatory dynamism forms the foundation for a broad range of cultural production, including independent producers working on personal laptops, critical discussion and interpretation of media texts, and fan-informed insights or theories that may influence creative choices during the production process.

In the field of music, bootlegs are typically defined as recordings reissued illegally or without authorization, often encompassing rare or out-of-print material. In the current digital era, music fans can record and access previously unreleased tracks more quickly and easily than was possible before the internet revolution. Listeners no longer rely exclusively on officially released albums or expend significant effort to obtain unauthorized recordings. Digital technologies now enable nearly anyone to access unreleased tracks and live concert bootlegs online in a short time frame (Farmer, 2015).

According to Stanford's d.school, the initial stage of the design process is empathy, a foundational principle of human-centered design (Bootcamp Bootleg, 2013). Television fashion shows such as "Fashion Star" and "Project Runway" incorporate empathy at the core of the fashion design process. Designing for consumers requires a deep understanding of who consumers are and what matters most to them, strengthening empathy toward the audience. Stanford's d.school also emphasizes that for designers to cultivate empathy, they must understand the context of consumers' lives, engage in interactive experiences, and immerse themselves in lived realities (Bootcamp Bootleg, 2013). This approach underscores the value placed on niche markets and customized designs that address specific consumer needs. These consumer expectations form a broader backdrop for bootlegging practices. From the audience perspective, bootlegging of popular icons reflects a legitimate expectation of engagement, while for manufacturers, responding to these demands can be interpreted as an extension of empathetic engagement with their audience.

4. Right Now: How Students Really Consume

Streaming has become the default screen. Class group chats light up over new episodes, and spoiler rules operate as a social contract.

Phones now function as cultural hubs. Short-form video is where songs break, jokes spread, and micro-communities form around interests ranging from vintage fashion to anime edits. “I saw it on my For You page” has effectively become the new word of mouth.

Music operates within the context of a playlist-driven economy. Learners often engage with tracks first through short snippets, then expand their exploration to full albums, lyric videos, and live performance clips. In this framework, playlists function as intimate personal journals, and sharing them can carry a sentiment similar to composing a personal letter.

Gaming has increasingly developed a social dimension. After completing homework, players form squads, and voice chat functions as a virtual space for social interaction. School e-sports teams and community gaming programs organized through local centers provide structured practice sessions and scrims (rehearsal matches), approached with the same familiarity and seriousness as traditional seasonal sports.

Podcasts and video essays have become valuable companions in the learning process. Activities such as long walks, commuting by bus, or participating in late-night study sessions are increasingly intertwined with deeper engagement with content creators, cultural context, and the technical craft behind films, music, and games.

Fashion manifests as expressions of fandom through clothing. Items such as secondhand apparel, team jackets, band T-shirts, and weekend cosplay serve as markers of the personal narratives and cultural affinities that students value.

At the same time, memes foster a new form of digital literacy. Students interpret tone, timing, and intertextual cues with the same fluency that earlier generations applied to reading newspaper headlines, often tracing the origin of a joke within seconds.

Among the various forms of cultural expression, music remains the art form most closely connected to students. While 1960s songs such as "She Loves You" and "Help" conveyed emotions in a direct and explicit manner, modern pop music often expresses a more intricate emotional spectrum, where joy and sorrow intersect in subtle ways. Kendrick Lamar's "Luther" illustrates this tendency through nuanced storytelling and multilayered emotional depth:

Hey, Roman numeral seven, bae, drop it like it's hot
If this world was mine, I'd take your dreams and make 'em multiply
If this world was mine, I'd take your enemies in front of God
Introduce 'em to that light, hit them strictly with that fire

In a similar vein, the lyrics of Morgan Wallen's "Last Night" carry nuanced implications that invite listeners to take an active role in interpreting the song and engaging with it through imaginative modes of consumption:

Last night we let the liquor talk
I can't remember everything we said, but we said it all
You told me that you wish I was somebody you never met
But, baby, baby, something's tellin' me this ain't over yet

Music has become a repository of its cultural moment, capturing economic conditions, social anxieties, individualism, and narcissism. Students turn to varied genres to explore identity and find solace. Popular music transforms unsettling

or negative emotions into artistic expression while fulfilling both aesthetic and emotional functions. At times, it also generates insights more commonly associated with classical humanities texts.

From a broader perspective, popular music and culture should be viewed as more than commodities for consumption. They operate through dynamic audience participation, with social media serving as a key medium that facilitates the development of new cultural forms. In contemporary contexts, many students resonate not only with songs that express happiness but also with those that convey sorrow or emotionally intricate states, using these works to explore and shape their own identities.

5. Campus Scenes:
Spaces Where Popular Culture is Enacted and Practiced

Building on the previous discussion, while popular music channels and shapes collective public psychology and the emotional tenor of an era, other forms of popular culture similarly operate as conduits that reflect the zeitgeist, with the capacity to translate these reflections into meaningful experiences for individuals navigating challenging lives. Among students, this role is particularly evident and is often realized within the routines and rhythms of daily school life.

- **Stages and spectator areas** . Halftime performances by marching bands, cheerleading mashups, theater students turning the auditorium into a Broadway-like space on weekends, and dance crews presenting trending choreography in the gym.

- **Clubs and laboratories** . Film clubs organize small festivals, digital media courses produce school news programs, and yearbook design draws on magazine-style aesthetics. Fashion clubs run projects focused on upcycling (repurposing materials), including student work on props and costume design.

- **E-sports and maker spaces** . Schools host competitive tournaments, technology labs double as editing studios, 3D printers generate props, and coding clubs develop rhythm-based games and tools for music visualization.

- **Local scenes** . DIY venues, cafés with open mics, thrift shops, and small theaters are where students test material, meet collaborators, and experience a sense of belonging beyond the algorithm.

- **Community calendars** . Comic cons, college radio fairs, museum teen nights, library zines, and school-produced fanzines offer low-cost, high-energy entry points into creative communities.

- **Popular culture is not a peripheral activity** . Instead it is a core mechanism through which students learn storytelling, build community, and explore identity. Its evolution began with mass media binding a vast country into shared conversation, and it continues as each generation adopts new tools and reshapes culture through participation.

6. Conclusion: Pop Culture's Rhythm Beyond the Bell

In conclusion, the rapid development of AI-driven reproduction technologies raises significant questions about the processes and frameworks of cultural creation. AI systems and devices are now embedded throughout everyday life. Within Western philosophical discourse, AI has often been framed as a conceptual domain rather than a tangible entity, while structuralist perspectives interpret AI as a distinct mode of replication. This interpretive tension has persisted since the 1970s, when postmodernist and post-structuralist approaches emerged in response to modernist traditions, shaping contemporary cultural agendas. AI doesn't just speed up culture. It changes the stakes of culture, because copying is no longer a skill only experts have. It becomes a basic option available to almost everyone. That shift makes it even more important to ask not only "Can we generate this?" but "Why are we generating it, and who benefits from it?"

Building on Lacan's framework (1977), which extended Freud's theory of the division between unconscious and conscious subjectivity, post-structuralist analysis demonstrates that subjectivity and identity are formed through interrelated registers: the Imaginary, the Symbolic, and the Real. These perspectives enable the perception of unconscious depth within visually represented surfaces, broadening interpretive possibilities for cultural and creative production in conjunction with AI. By contrast, when culture is viewed primarily through modernist representational frameworks, the analytical scope required to examine advances in reproduction technologies becomes more constrained. This matters for students specifically, because we already live in a world where images and edits can feel "more real" than reality. AI makes that blur even easier to produce and harder to question.

Post-structuralist theory, therefore, expands how cultural appropriation and replication are understood, particularly in digital environments where audiences actively reinterpret and recirculate cultural material. Acknowledging these dynamics highlights the structural role of participation in contemporary culture, while emphasizing the need for critical reflection on the implications of AI-driven replication. It remains essential for students and scholars to interrogate how culture is produced, circulated, and interpreted as emerging technologies continue to reshape creative and symbolic boundaries. From my perspective, the goal isn't to shame participation or remixing. Those are the heartbeat of pop culture. The goal is to build sharper habits of judgment, recognizing context, credit, manipulation, and intent. If pop culture is a living archive, then AI is a tool that can preserve it, distort it, or flood it. Our responsibility is learning how to tell the difference.

Violence in K-pop and Its Impact on Adolescent Development

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I. Introduction

As a teenager living in Korea, I've seen K-pop being indulged in youth culture, while further spreading out to the global market. However K-pop isn't all about music and dancing, but more of violence in popular culture these days. The recently released K-drama The Glory, which deals with the topic of extreme school bullying, sparked debate amongst the media regarding its impact on young viewers. This problem is also related to K-pop music videos' use of aggressive and provocative concepts to attract views. In a society where school violence is indeed a serious issue, such violent portrayals raise questions about whether repeated exposure will normalize harmful behaviors among teenagers.

Culture is made of many layers, is complex, and cannot be explained by only one meaning. Scholar Raymond Williams said that culture is "a very complex idea" (Williams, G. M., Tong, C., & Telang, S., 1984). He also defined culture as representing the 'spirit' that shapes the whole way of life of a people. From this view, K-POP's global influence is a very special phenomenon.

However, popular culture usually values commercial success more than originality or artistic quality. So, it is natural for different cultures to meet and affect each other. In this situation, copying or borrowing is not usually considered plagiarism. In popular culture, borrowing is common and can even help achieve commercial success. Because K-POP is part of popular culture, it is natural to wonder if it can

continue to have worldwide popularity. Especially after watching popular Netflix dramas like 'Kingdom' and 'Squid Game,' I think that the violent scenes in these shows might give people a negative impression of K-POP.

2. Techniques of Borrowing in Popular Culture and the Development of Mass Media

Since Aristotle's 'Poetics,' representation has been a core idea in the humanities for thousands of years (JONGHYUK AHN, 2019, pp.68-83). Also, the reason why various art forms like painting and music are recognized as art is based on representation. A work can be recognized as an independent medium only if the original and its unique features are present. For example, in painting, the landscape that the artist wants to show must be represented in the painting to be recognized as an artistic medium, and through this, its artistic value is judged. The same is true for sculpture, because it does not go beyond the features of the original, so there is no difficulty in recognizing its artistic medium. This idea of representation also applies to mass media.

Today, individuals have more choices in watching TV programs and can decide how they spend their time on TV. As cable channels have grown rapidly, many types of programs compete for viewers in niche markets(Hiebert & Gibbons, 2000). Looking back not only at the early TV era but also at the 1930s radio era, franchise-style programs(Moran and Malbon, 2006) included a full package of commercial rights and TV programs supporting names like Big Brother, Pop Idol, Ugly Betty(Storper, 2002). In this process, the term 'format' was used as a short word in license contracts to mean the knowledge provided. Producers either created their own formats or used formats licensed from other owners(Moran & Malbon, 2006). These format programs could be watched not only on TV but also on the internet, mobile phones, iPods, radio, advertisements, and other platforms(Holmes와 Jermyn, 2004). Franchises worked by renting service packages to guarantee profit for the broadcasters or production companies that licensed the formats. TV producers

and broadcasters tried to secure financial and cultural stability by using branded content(Fiddy, 1997). In this way, representation and borrowing techniques became widely used in mass media, helping popular culture grow quickly and expand its reach.

Since Descartes emphasized respect for humans, human-centered ideas have been important not only in philosophy but also in Kant's philosophy, which highlights human subjectivity after the modern era. These ideas formed the basis of capitalism and still influence many fields today. Human-centered thinking sees nature or technology as given and considers technology as something humans control. However, as science and technology advanced, technology began to influence humans, reversing this order. The blending of scientific development and human identity is one example. Because of this, the idea of new materialism(new materialism) has gained attention. Especially with the fast-changing digital media environment beyond TV, human interaction with digital media, watching TV through social media, media multitasking, and consumer-created platforms have become key areas of interest in new materialism. As internet use became common, computer-mediated communication(computer-mediated communication: CMC) spaces became areas that greatly influence adolescents. In the past, face-to-face communication(face-to-face) required being in the same space, but now people can communicate anytime with specific or non-specific audiences through communities or SNS, even if far apart. People can express their opinions freely while staying anonymous. The rapid development of digital technology, like smartphones, has encouraged these CMC environments. However, the spatial separation and anonymity in CMC can let individuals in the crowd be temporarily free from internalized moral rules and social restrictions. The way people become deindividuated(deindividuation effects) in virtual spaces can be explained with the Social Identity model of Deindividuation Effects(SIDE), where personal identity is weakened. Chassiakos et al (2016) explain that digital media development has strengthened individualization, and Jean M. Twenge (2017) argues that the iGen generation feels more comfortable online. In other words, as more people consume

popular culture through YouTube and other platforms, they can show deindividuation in virtual spaces and may be more exposed to and influenced by violence and sexual content.

3. Violence in K-POP

OTT platforms like Netflix have gained a very big influence in the media market during the COVID-19 pandemic. When Netflix enters a foreign country, it increases users by making and releasing original content locally, and at the same time, it proves its influence by showing content through a global network. However, Netflix does not go through the Korea Communications Standards Commission, so it is free from the rules that limit how content must be shown according to broadcasting standards, and it can plan and make content in many different styles. The high violence and sexual content in popular Netflix original series are also restricted for viewing overseas (SHINGYU KANG, 2022). Because of this, there is a discussion to expand the idea of broadcast scheduling, which only applies to live broadcasting under the Broadcasting Act, so that it can also apply to content scheduling in OTT services(NAMDU KIM et al., 2022). Also, a 'Audiovisual Media Service Act' that includes a definition of OTT is being prepared, and the Ministry of Culture, Sports and Tourism is focusing on the 'Film and Video Promotion Act' as the main law for media management(JONGSANG KOO, 2022). Apart from the law discussion, OTT platform content is reviewed by the Media Rating Board before release. In May 2023, the OTT self-rating system operator was selected, and from June, the 'OTT Self-Rating System' was started. This changed the system so that the Media Rating Board now watches content after it is released(JINAH KANG, 2022). After the 'OTT Self-Rating System' started, content restricted for teenagers went down a lot, but there were still many inappropriate cases, like sexual scenes or showing murders(SEULGI JANG, 2022). The problem is that with smartphones and streaming, this management system is not very effective. So, more effective rules for controlling sexual content and violence are needed, and it is very important to study the violence and sexual content in Netflix content.

Especially, the original Korean drama series 〈Kingdom〉 is an example of content that could not have been shown in Korea without Netflix(BYEONGJUN MIN·JEGYEONG GO·JAEYONG SONG, 2020). Korean dramas on OTT platforms show such violent worlds that the term 'K-Dystopia' has been used(DAUN LEE, 2023). Already shown on Netflix, Kingdom (2019), Sweet Home (2020), Juvenile Justice (2022), My Name (2021), Hellbound (2021), and Suriname (2022) show sadistic violence, and Squid Game was called a 'drama with terrible levels of violence' overseas(Leah Asmelash, 2021). Still, the Squid Game series continued in three seasons, increasing its influence. This shows that Netflix original content is not limited in topics or ways of expression and is made with a global view locally.

The negative effects of media violence and sexual content have been discussed for a long time. For example, the social learning theory says that just watching violent videos can make people copy violent actions(Bandura, 1977), and the information processing theory says that people can remember violent behavior as a way to solve problems and act it out in similar situations(Huesmann, 1988). Also, studies show that how violent behavior is shown in videos is related to its effect(Potter & Ware, 1987). Research says that contextual factors like the type of attacker or the reason for violence have more influence than quantitative factors like how often or how strong the violence is(YIJEONG CHOI, 2001 ; JINHEE KWAK, 2001). In this context, the danger of media violence in K-POP is beyond just the level of violence.

4. Analysis of Violence in K-POP Dramas

Netflix is not subject to the review of the Korea Communications Standards Commission, which allows it to escape the constraints of content regulation that require adjustments to levels of depiction in traditional broadcasting. This freedom enables Netflix to plan and produce content in a variety of styles. The high levels of violence and sexual content in Netflix's popular original series have also led to viewing restrictions overseas (SHINGYU KANG, 2022). In response to this phenomenon, discussions are underway to extend the concept of broadcasting

programming, which traditionally applies only to live broadcasts under the Broadcasting Act, to the spatial arrangement of content within OTT services (NAMDU KIM et al., 2022). Furthermore, a 'Audiovisual Media Service Act' is planned, which will include definitions of OTT services, while the Ministry of Culture, Sports and Tourism continues to focus on existing media legislation such as the 'Promotion of Films and Video Works Act' (JONGSANG KOO, 2022).

Separately from these legislative discussions, content on OTT platforms is subject to prior review by the Korea Media Rating Board. In May 2023, OTT self-rating operators were selected, and from June of the same year, the 'OTT Self-Rating System' was implemented, shifting the board's role to post-monitoring (JINAH KANG, 2022). Although the introduction of the OTT self-rating system has significantly reduced content restricted for youth, numerous inappropriate cases, such as exposure to sexual content and murder scenes, have still been reported (SEULGI JANG, 2022). A key issue is that smartphone use and streaming habits reduce the effectiveness of these regulatory systems. Therefore, more effective regulation of sexual and violent content is necessary, and analyzing the types and amounts of violence in Netflix's original Korean dramas is essential.

This study analyzes the types and frequency of violence in Netflix original Korean dramas. While prior research has extensively examined the effects of media violence, quantitative analyses of violent content have been relatively scarce, giving this study academic significance. Moreover, it can provide a basis for more precise legislative regulation in the future. The analytical unit used to measure violence in this study is PAT (perpetrator-act-target). While methods such as Gerbner's Violence Index (VI) count violent scenes or analyze violence on a scene-by-scene basis, focusing mainly on quantity, the PAT unit allows for a comprehensive evaluation of violent acts and the perpetrators involved, thus revealing contextual factors (Smith et al., 1998). Additionally, violent acts can be expanded to include not only physical violence but also verbal abuse and psychological pressure. A single PAT unit is counted whenever there is a change in any of the three components—perpetrator, act, or target—so multiple PAT units can be identified within a single scene.

When a violent scene occurs, the start time of the scene and the duration of the violent act in seconds are recorded, and the scene is first coded using the PAT (perpetrator-act-target) unit. Subsequently, contextual factors of the violence within each PAT are coded according to the coding guidelines. The PAT unit serves as the measure for violent scenes; for example, if verbal abuse escalates to physical violence, or if a single perpetrator attacks and then multiple perpetrators join in, a new PAT unit is identified whenever any of the three components—perpetrator, act, or target—changes. Coding for each category is conducted only within the respective PAT, allowing the coding values for the same character to differ across PAT units. Scenes that are ambiguous in terms of violence are also coded as violent. The analysis proceeds in five steps: Step 1) review the adult-recommended content video, Step 2) identify and determine PAT units, Step 3) code character-related factors within each PAT, Step 4) code the content of the violence within each PAT, and Step 5) code the consequences of the violence within each PAT.

To analyze the contextual factors of violence, violent scenes were classified into three dimensions: ① the characteristics of the characters and the relationships between them, ② the manner in which the violent acts are depicted, and ③ the consequences of the violent acts. First, the characteristics of the characters were coded according to gender, age, and personality type (hero/villain/complex). In cases where the character's identity was obscured, such as wearing a mask, they were classified as 'other.' The characteristics of characters were analyzed separately for perpetrators and victims. For the relationships between characters, coding focused on the effects emerging from the interaction of the characteristics of the perpetrators and victims involved in the violence. Power relations were coded as strong versus weak, and economically as rich versus poor. Relationships were assessed only within the respective violent PAT unit, allowing for changes across PATs; a character coded as poor in one PAT might be coded as rich in a subsequent PAT. The context in which the violent act is depicted was analyzed based on: justification (granted/not granted), specificity of depiction (concrete/abstract), intentionality (intentional/accidental), motivation (self-defense/anger and revenge/pursuit of pleasure/personal or group

benefit/accidental), and the use of humor (present/absent), following previous research. Regarding the consequences of the violent acts, coding included the success of the violence (successful/unsuccessful), the outcome (punished/ignored/rewarded/blamed), and the psychological impact on the victim. Psychological effects were examined in detail, including feelings of threat or fear, humiliation or shame, embarrassment, anger, frustration, and isolation. To address the research questions, the number of violent scenes (PAT units) and the duration of each violent scene (PAT playback length) were analyzed from Netflix original Korean drama series, as shown in 〈Table 1〉. Out of a total of 40 series (22 rated 19+, 18 rated 15+), excluding two series ("I Wish the World Would End Tomorrow" [15+] and "Morning Comes to the Mental Ward" [15+]), 38 series contained 252 segments with a total of 302 PAT units. The total playback time of violent scenes was 6,490 seconds, accounting for 28.4% of the total runtime of 22,800 seconds across 19 segments of the series. Although the number of PAT units was lower than expected, the average playback duration per violent scene was 21.5 seconds, indicating that individual violent scenes were relatively long.

(Table 1) Number of Violent Scenes (PAT Units)
and Playback Length of PATsin Netflix Original Korean Dramas

Title	Occurrence Segments / PAT (Unit: Count)	Violent Scenes (sec) / Percentage (%)	Occurrence Segments / Sexual Scenes (units)	Sensational Scenes (sec)
Kingdom: Season 1 (19)	4 segments / 8 PATs	120 sec / 21.1%		
Alone (15)	1 segment /2 PATs	30 sec / 5.3%	3 segments / 3 units	52 sec
Kingdom: Season 2 (19)	10 segments / 11 PATs	290 sec / 51%		
Extracurricular (19)	7 segments / 10 PATs	194 sec / 34%	7 segments / 7 units	22 sec
The School Nurse Files (15)	1 segment / 1 PAT	20 sec / 3.7%	1 segment / 1 unit	10 sec
Sweet Home: Season 1 (19)	7 segments / 8 PATs	184 sec / 32.3%		
Move to Heaven (19)	1 segment / 1 PAT	15 sec / 2.7%		
I Want the Earth to Die Tomorrow (15)			1 segment / 1 unit	4 sec
Kingdom: Ashin of the North (19)	11 segments / 14 PATs	307 sec / 64.9%	2 segments / 2 units	38 sec
D.P.: Season 1 (15)	11 segments / 14 PATs	315 sec / 55.3%	1 segment / 1 unit	5 sec
Squid Game (19)	8 segments / 12 PATs	221 sec / 38.8%		
My Name (19)	8 segments / 12 PATs	250 sec / 43.8%	1 segment / 1 unit	17 sec
Hellbound (19)	10 segments / 11 PATs	267 sec / 46.8%		

Title	Occurrence Segments / PAT (Unit: Count)	Violent Scenes (sec) / Percentage (%)	Occurrence Segments / Sexual Scenes (units)	Sensational Scenes (sec)
The Silent Sea (15)	7 segments / 7 PATs	155 sec / 27.2%		
All of Us Are Dead (19)	12 segments / 14 PATs	321sec / 56.3%	2 segments / 2 units	45 sec
Juvenile Justice (19)	3 segments / 3 PATs	58 sec / 10,2%		
Money Heist: Korea – Joint Economic Area (19)	9 segments / 11 PATs	242 sec / 42.5%	1 segment / 1 unit	30 sec
Black Knight (15)	4 segments / 5 PATs	98 sec / 17.2%	2 segments / 2 units	24 sec
The Good Family (19)	9 segments / 9 PATs	148 sec / 25.9%	1 segment / 1 unit	30 sec
Suriname (19)	15 segments / 20 PATs	432 sec / 75.8%		
Glitch (15)	3 segments / 3 PATs	72 sec / 12.6%		
Somebody (19)	3 segments / 3 PATs	65 sec / 11.4%	8 segments / 13 units	218 sec / 38.2%
The Fabulous (15)	2 segments / 2 PATs	17 sec / 2.9%	1 segment / 1 unit	8 sec
The Glory (19)	8 segments / 9 PATs	240 sec / 42.1%		
Love Revolution (15)	5 segments / 6 PATs	120 sec / 21.1%	3 segments / 3 units	90 sec
Queenmaker (15)	5 segments / 5 PATs	150 sec / 26.3%		
Delivery Man (15)	9 segments / 13 PATs	252 sec / 44.2%		

Title	Occurrence Segments / PAT (Unit: Count)	Violent Scenes (sec) / Percentage (%)	Occurrence Segments / Sexual Scenes (units)	Sensational Scenes (sec)
Hounds (19)	8 segments / 10 PATs	231 sec / 40.5%	3 segments / 3 units	90 sec
Celebrity (19)	3 segments / 3 PATs	81 sec / 14.2%	1 segment / 1 unit	26 sec
D.P.: Season 2 (15)	6 segments / 6 PATs	168 sec / 29.5%		
Mask Girl (19))	4 segments / 5 PATs	104 sec / 18.2%	3 segments / 2 units	38 sec
Into Your Time (15)	1 segment / 1 PAT	30 sec / 5.3%		
The Sound of a Thief's Blade (19)	12 segments / 21 PATs	327 sec / 57.3%		
Idoona (15)	3 segments / 3 PATs	68 sec / 11.9%		
Sweet Home: Season 2 (19)	12 segments / 15 PATs	338 sec / 59.3%	1 segment / 1 unit	25 sec
Gyeongseong Creature (15)	12 segments / 14 PATs	322 sec / 56.5%		
Seonsan (15)	6 segments / 6 PATs	122 sec / 21.4%	1 segment / 1 unit	8 sec
The Murderer's Dilemma (19)	8 segments / 10 PATs	198 sec / 34.7%	1 segment / 1 unit	12 sec
Dakgangjeong -Deep-fried and Braised Chicken (15)	4 segments / 4 PATs	68초 / 11.9%		

Next, an analysis was conducted on the characters involved in violent scenes from Netflix original Korean drama series, focusing on various contextual factors. Cases where characters were not clearly identifiable—such as property violence like building collapses or explosions, or instances where zombies or criminals collectively perpetrated violence—were excluded. Therefore, the analysis was conducted on a total of 302 PATs in which specific characters could be identified.

〈Table 2〉 Analysis of Violent Scenes in Netflix Series

	Victim								
Perpetrator		Male		Female		Other (Unclear)		Total	
		n	%	n	%	n	%	n	%
	남성	26	40.7	96	55.3	14	20.7	136	48.1
	여성	43	55.8	57	35.1	21	72.4	121	44.3
	기타 (불명확)	7	3.5	25	9.6	13	22	45	7.6
	성별 계	76	100	178	100	48	100		
	합계	76	30.5	178	61.5	48	7.8	302	100

〈Table 2〉 presents the analysis results regarding the characteristics of characters involved in violent scenes. First, examining the gender of perpetrators and victims, male perpetrators accounted for 48.1% (136 cases), female perpetrators for 44.3% (121 cases), and others for 7.6% (45 cases), indicating that male perpetrators appeared most frequently. Regarding victims, males numbered 76, females 178, and others 48, meaning that out of the total 302 PATs, males accounted for 30.5%, females 61.5%, and others 7.8%. The 'other' category included cases where the gender was unspecified or multiple characters were involved. Specifically, examining the gender

combinations of perpetrators and victims, male perpetrators targeting female victims occurred most frequently, with 96 instances, accounting for 55.3% of female victim cases.

5. Conclusion

This study showed how violence indulged in Korean pop-culture, especially in Netflix and K-dramas, and why this issue matters amongst teenagers. K-pop and K-media are not simple forms of entertainment for Korean teenagers, but rather an everyday part of people's lives globally. It does the work in shaping our values, emotions, and perceptions of the world. In a country where school violence is a serious issue, the depiction of violence in popular media cannot be ignored.

Among the various human senses that perceive information, vision accounts for approximately 70%, and the stimulating effect of visual elements is known to have a greater impact compared to other sensory stimuli (Kwon, Shim, & Jeong, 2013). In today's context, where video content is produced and distributed in diverse ways, arbitrarily inserted violent depictions can influence viewers both rationally and emotionally. MANWOO KWON, JAEWOONG SHIM, HONGIN JEONG (2014) used eye-tracking devices and measured participants' brainwaves to examine gaze concentration when viewing violent scenes according to age (high school/college) and gender. The results showed that female high school students' gaze lingered longer on points where blood flowed in shooting scenes, and high school participants generally exhibited higher gaze concentration than college students, indicating that the degree of attention to violent scenes varies by age. Furthermore, brainwave observations indicated that younger females are more sensitive to violent scenes and experience negative cognitive effects. Based on this preceding research, a frequency analysis of the outcomes of violent acts can be conducted. The analysis includes the success of violence (success/failure/ambiguous) and the consequences

of violent acts (reward/ignored/punishment/criticism/other). An important factor in this analysis is the psychological impact on the victim, including feelings of threat, humiliation, frustration, or non-response.

As such, this study analyzed the level of violence in original Korean dramas streamed on Netflix. Because domestic laws and regulations are not strong enough, the violence shown in these dramas has been gradually increasing. Considering that students are easily exposed to such content through social media, it is now very important for people involved with K-POP and related media to work on keeping these contents safe and appropriate. At the same time, efforts to produce dramas that highlight the beauty of Korea and culture should continue.

3

Global Economy

Localization as Marketing Strategy of a Global Firm

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1. Introduction

Today's firms operate in a globalized economic environment shaped by neoliberal policy and highly competitive markets. Companies are increasingly adopting sustainable management as a core survival strategy. At the same time, uncertainty in the external environment continues to rise. As competition between firms intensifies, identifying the sources of organizational competitiveness, and understanding why those sources generate advantage, has become a strategic necessity for market survival and for securing long-term competitive positioning (Hamel & Prahalad, 1993). Strategic Theory for Firm Competitiveness has therefore attracted renewed attention. In particular, the identification of managerial resources that enable the creation of differentiated products or services is critical (Penrose, 1959).

The resource-based view originated with economist Edith Penrose (1959) and was later formalized as the Resource-Based View (RBV) by Wernerfelt (1984), who introduced the theory to the field of strategic management. The conceptual framework of this research is grounded in RBV theory. Wernerfelt developed a resource-based theory of the firm, asserting that organizational competitiveness and sustainability depend on the resources owned and controlled by the organization (Wernerfelt, 1984).

The resource-based view further argues that competitive advantage is shaped by managerial resources, including physical, human, organizational, and financial assets (Wernerfelt, 1984; Penrose, 1959; Barney, 1991). Penrose emphasized physical and human resources, while later research expanded the taxonomy to include organizational and financial resources (Barney, 1991; Barney & Hesterly, 2010; Barney & Hesterly, 2012). Greene et al. (2015) similarly categorize physical, financial, technical, human, and organizational resources as core components of firm-level resource endowments.

The essence of RBV is that strong market performance does not stem solely from superior product or service quality, but more fundamentally from the organization possessing the managerial resources required to produce differentiated and high-performing offerings. Resources are inputs that support an organization's daily operations (Amit & Schoemaker, 2012). Within RBV, firms achieve sustainable competitive advantage when they successfully manage or acquire resources and deploy them effectively (Barney & Hesterly, 2012; Collis & Montgomery, 1995). The resource-based view places particular emphasis on causal differences in firm performance, including input superiority in product or service creation (Collis & Montgomery, 1995).

In this context, the purpose of this study is to examine how localization strategies can be integrated within global corporations. The study also considers how localization can address constraints in global firms' overseas business practices, while supporting infrastructure development for future expansion. This includes strategic collaboration with local firms holding strong market positions in relevant domains.

Accordingly, this research analyzes how global companies can achieve local success and generate co-growth with domestic firms through localization strategies, interpreted through a resource-based perspective. Grounded in localization strategy

theory, the study seeks to clarify the strategic mechanisms that influence the success or failure of global management approaches. This research will also investigate how the resource-based framework can be applied to interpret and explain global firms' localization strategies.

The RBV framework applied in this study provides a conceptual lens for understanding how resource acquisition and deployment contribute to business outcomes. Prior research identifies managerial resource attributes as including resource endowment, utilization, and resource value, which collectively shape business performance. Building on this foundation, this study will explore whether global firms can effectively utilize local resources in overseas markets, how interactions among resource attributes influence performance, and what organizational efforts are required to strengthen outcomes.

1. Abstract

This paper examines localization strategy as a marketing mechanism for global firms entering overseas markets, analyzing how internal resources and capabilities drive performance differences under shared external pressures. The study adopts the Resource-Based View (RBV) as its primary theoretical lens (Barney, 1991; Wernerfelt, 1984; Day, 1994), contrasting this with market-dominance models rooted in industrial organization theory (Porter, 1980; Williamson, 1991). Localization is framed as a strategic trade-off between resource investment and retained control under conditions of uncertainty (Anderson & Gatignon, 1986; Agarwal & Ramaswami, 1992).

To test the relationships between localization capability, localization control, and business performance, the study conducted a one-month online survey of 84 employees in Korea working within the overseas division of a U.S. global corporation. Data were analyzed using SPSS 26.0, incorporating frequency analysis, correlation tests, and multiple regression to assess explanatory strength, residual

independence, and multicollinearity. Results indicate that the four criteria of localization capability (product, industry, firm, and environmental factors) and the four criteria of localization control (resource, technical, capital procurement, and personnel control) each show statistically significant positive relationships with business performance ($p < 0.05$). Model diagnostics support the independence of residual terms ($DW \approx 2$) and acceptable multicollinearity thresholds ($VIF < 10$).

The paper concludes that localization performance depends on firm-level coordination systems and internal capability accumulation, emphasizing that competitive localization outcomes are shaped by resource configuration, learning processes, and cross-functional routines, rather than by individual managerial roles alone.

2. Theoretical Background

1. Marketing Strategies for Global Companies' Overseas Expansion

1) Localization Strategies for Global Companies

Global companies operating overseas are commonly divided into three structural categories: firms that maintain foreign operations as branches, firms that convert those branches into local subsidiaries, and firms that operate as branches while incorporating local capital investment. Johnson & Johnson, Roche, Merck, Pfizer, and Eli Lilly exemplify the first category, where governance and resource control remain centralized within the parent company. The second category includes firms established through joint ventures between global corporations and local partner companies, often to secure market access or regulatory alignment. The third category involves branch operations supported by allocated investment from local banks, enabling expansion without full subsidiary conversion. Variations on these models are becoming increasingly common as global firms adapt to local market systems.

First, as global companies expand into overseas markets, they intensify sales growth by operating dedicated brand stores on online malls and hosting live shopping broadcasts with influencers. As economic development accelerates in foreign markets, those markets expand, and partnership transactions between global firms and local companies become more frequent. For example, global firms identify emerging trends and explore commercial opportunities through partnership meetings while advancing localized operating models. As more firms target overseas consumers, systematic research on branding strategies becomes more urgent.

A core component of branding is brand name selection. Most research on brand naming has been conducted in Western contexts, particularly the US and Europe, and has focused on Western languages, especially English. The relevance of Western brand models in the culturally and linguistically distinct Asia-Pacific environment has been questioned by Western scholars (Johnson, 1987; Simon & Palder, 1987; McDonald & Roberts, 1990). Localization strategies include the formation of local firms by individual global firms, a model that can be evaluated in contrast to centralized global operations when assessing market competitiveness. Extending brand infrastructure into local digital retail systems and influencer commerce enables firms to build recognition and durable market presence in foreign consumer networks. These activities correspond to global firms' broader management strategy in foreign markets, where resource control, brand diffusion, and localized commercial infrastructure shape competitive outcomes more than terminology alone.

However, for global firms advancing into foreign markets, customized regional strategies can expose structural weaknesses when applied inconsistently across regions. A global branch strategy in which the firm acquires equity in a local partner can mitigate these limitations. This strategy expands a firm's operational capacity through alignment with local market conditions, enabling sustainable and organic growth. It also supports the development of localized infrastructure that can scale alongside future expansion in overseas markets.

This includes cooperation with established local firms that hold strong positions in the relevant business sector. Local equity investment can provide access to managerial resources controlled by the partner firm, strengthening localization by embedding the global firm within local management networks, production systems, and distribution channels. These networks may include localized branches, offices, suppliers, and commercial partnerships that influence competitive outcomes.

Local partner firms contribute unique strengths shaped by regional characteristics, history, and market structure. Localization strategies can satisfy local resource and management requirements while enabling long-term competitive positioning. Birger Wernerfelt's Resource-Based View emphasizes that firms compete through the resources they own or control, not simply through market presence. Jonathan Morris highlights the link between localization strategy and management performance, illustrated through case studies of Sony and Honda (Morris, 1991).

In Morris's analysis, Sony strengthened localization by integrating resource systems including raw material procurement, production, sales, human resources, and research and development. This integration supported sustained management performance and long-term infrastructure alignment, reinforcing the argument that localization strategy interacts directly with managerial resource control and competitive outcomes.

2) Resource-Based Strategy Theory for Marketing Competitiveness of Global Firms

Research by Rumelt et al. (1994) outlines strategic actions that shape firm competitiveness, including objective setting, product and service selection, policy design, product range decisions, diversification, and diversification thresholds. These actions form a firm's strategic grouping, reflecting how resources are selected, configured and prioritized for market positioning. For example, setting firm boundaries is a strategic decision tied to internal versus external resource

procurement, including decisions on ownership, capital allocation, production autonomy, and distribution systems. Organizational structure design is also a strategic action because it allocates and deploys resources, shaping operational capability and competitive outcomes. The design of structure influences how managerial resources are distributed, integrated, and converted into market competitiveness across global operations.

Meanwhile, until the 1970s, basic industrial organization theory concepts, such as entry barriers and collusion, were used to explain sustained excess profits. However, these concepts have clear limitations in strategic research. First, industrial organization theory characterizes competitive advantage as an external condition, defining it primarily through market dominance. In industrial organization theory, competitive advantage is framed as a function of market power, not internal capability.

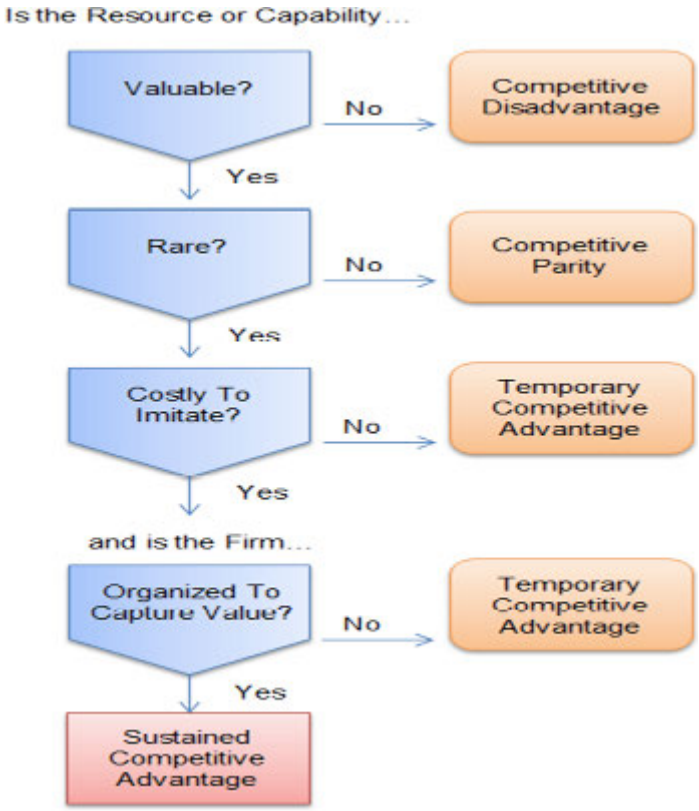
Prahalad and Hamel (1990) describe core competencies as a firm's knowledge, information, and corporate culture. Their definition implies that core competence cannot be reduced to a generic market resource or a simple combination of resources used to produce intermediate or final goods. The concept of core competencies therefore requires a capability-based perspective, focusing on how firms accumulate and configure internal resources over time.

A firm's core competencies must be distinguished from generic factor market resources. This distinction emphasizes that competitive advantage arises through endogenous capability development. From this perspective, the central questions become: how advantage arises, and how it is sustained. The theoretical challenges are commonly expressed through the terms "endogenous growth" and "sustainable competitive advantage" (Wernerfelt, 1984; Barney, 1991).

In short, the question becomes: How does competitive advantage arise, and how is it sustained? Endogenous firm growth theory was influenced by Penrose (1959), who viewed the company as a "bundle of resources" with potential productive capabilities. Penrose's framework emphasizes gradual expansion of production opportunities through the accumulation of productive resources, analyzed as endogenous growth, rather than through traditional equilibrium assumptions.

The term "resource-based" first appeared in strategic management research through Wernerfelt's 1984 work. Barney (1991) later specified the conditions under which firm resources contribute to competitive advantage. After refining his 1991 model, Barney introduced the VRIO framework in 1997, defined through Value, Rarity, Inimitability, and Organization (Barney, 1997). The degree to which the VRIO conditions are satisfied determines the level of a firm's competitive advantage.

The VRIO framework functions as a strategic test for determining whether a firm's internal resources hold competitive value. For example, resource ownership shapes whether a firm operates at a disadvantage, achieves competitive parity, or secures a temporary or sustained advantage. If a resource is missing, the firm operates at a competitive disadvantage. If the resource exists but is not scarce, the firm achieves parity. If the resource is imitable, the firm gains only a temporary advantage. If the resource is valuable and scarce but slow to acquire, the advantage increases over time (Dierickx & Cool, 1989; Arthur, 1989). He also notes that resources are shaped by social relationships, such as teamwork, and that the link between resources and firm performance remains conceptually ambiguous (Hambrick, 1987; Klein and Leffler, 1981). This underscores why long-term commitment to organizational resources is necessary, as established in prior research (Mancke, 1974; Lippman and Rumelt, 1982). In this context, the VRIO model was developed to describe the attributes of resources that generate competitive advantage. This study argues that applying the VRIO analytical framework is essential for securing sustained competitive advantage.



[Figure 1] Flow to Identify Resources and Capabilities

Figure 1 illustrates a method for classifying sustainable competitive advantage by identifying the attributes of resources and capabilities. The framework assesses whether a resource or capability is valuable, rare, costly to imitate, and supported by organizational alignment. It also tests whether the firm is structured to capture the value generated by those resources. If a resource or capability is not valuable, it is classified as a source of competitive disadvantage. A valuable resource or capability is one that can generate profit or measurable commercial value for the firm. This definition links value to outcome, rather than to the resource alone. Flexibility and organizational design are assessed as enabling conditions that determine whether value is captured and sustained. Examples of resources include equipment and products (tangible assets), as well as brand value and employee teamwork (intangible

assets). The ability of the firm to capture value through structure, systems, and resource configuration determines whether the asset is classified as a sustainable competitive advantage.

According to Prahalad and Hamel (1990), capabilities are internal competencies possessed by a firm that both differentiate it from competitors and support competitive advantage, playing a key role in business success. Capabilities can be grouped into three areas: core technologies, core assets, and core activities. Examples of capabilities include marketing expertise, and coordination systems such as teamwork and knowledge integration within the organization. The cross-functional collaboration between software developers and commercial teams that underpinned eBay's early dominance in online marketplaces is one example of capability-based advantage. A firm's resources are divided into tangible and intangible assets. Financial, physical, supply chain, and geographic location resources are classified as tangible assets, while technology, brand equity, consumer insight, and relationship networks are classified as intangible assets. Competitive outcomes depend on how these assets are configured and deployed through organizational systems, not simply on the category they occupy.

Financial resources are the capital used to realize the firm's strategy. This includes investors, debt investors, strategic investors, bank money, and financial capabilities such as credit ratings. Physical resources refer to the firm's physical assets, such as factories, facilities, equipment, raw materials, and real estate. Regional location is crucial to the firm depending on the targeted consumer strategy. Human resources include both the amount of work and the quality of employees, including experience, relationships, and professional knowledge. Valuable human resources are not limited to entrepreneurs or senior managers. Human resources reflect individual characteristics, while organizational resources reflect group-level characteristics. Organizational resources include official reporting formats, planning systems, control and adjustment mechanisms, company culture, and internal and external relationships.

As a core competency, resources must possess distinct characteristics that create competitive advantage and support its sustainability. To maintain competitive advantage, the resource must be difficult for competitors to imitate, substitute, or replicate. This difficulty increases when the resource serves as the causal source of productive capability and long-term market positioning.

However, most core competencies accumulate internally rather than through trade, as they interact in complex ways and include unique tacit characteristics. This accumulation is cumulative, path-dependent, and shaped by a firm's specific experiences. Core competencies therefore possess distinctive traits. The capability-based perspective explains that internally accumulated capabilities form the foundation of long-term growth and sustained competitive advantage, and identifies the mechanisms through which these capabilities are developed.

On the other hand, if a firm's sustained growth and competitive advantage depend on its core competencies, its strategy relates to how it builds those competencies. Unlike Porter's (1980) market-based competitive strategy concepts, such as creating entry barriers, the competency-based perspective emphasizes the efficient use of existing production resources and the creation of new productive knowledge within the firm. Therefore, from a capability-based perspective, the strategic challenge becomes balancing static efficiency and dynamic efficiency. Here, consistency is central to understanding competitive strategy (Dosi et al., 1992; Teece et al., 1994). For a firm to continue accumulating productive capabilities, it is crucial to maintain consistency between existing operations and new activities. If this condition is not met, the firm's knowledge base may become fragmented, undermining long-term innovation capacity.

This paper focuses on resource-based theory to explore performance differences among firms. Performance disparities primarily arise from the heterogeneity of resources held by firms rather than from industry structure. The competitiveness of firms lies in possessing scarce and non-substitutable resources and capabilities. It emphasizes a firm's internal assets. The core of the resource-based perspective is

interpreting firms as unique bundles of tangible and intangible resources. This paper defines the resources of global firms and analyzes resource-based strategies through the deployment process. Based on the VRIO criteria (Barney, 1997), competitiveness is determined by the interaction of value, rarity, imitability, and organization as managerial resources. Resource-based analysis can be integrated with endogenous growth theory (Romer, 1986; Arrow, 1995), which holds that growth rates are endogenously determined by internal economic interactions, and with localization as an adaptation of resource-based theory (Caves, 1996). The following hypothesis is established.

Hypothesis 1: The higher the localization capabilities of global firms, the more positively they will influence business performance in overseas markets.

2.Dynamic Understanding of Global Companies' Localization Strategies and Resource-Based Strategies

1)Resource-Based Theory and the Dynamic Evolution of Corporate Capabilities

Resource-based theory focuses on existing, distinct resources, but does not explain how firms gain advantage by deploying those resources (Sheehan & Foss, 2007; Hoopes et al., 2003; Porter, 1991). Porter (1991) argued that resources and activities are inseparable, treating them as independent variables. Resource-based theory also provides limited explanation for the dynamic evolution of corporate capabilities, particularly as markets, technology, and localization pressures reshape how those capabilities are developed.

For a global company that lacks resources in foreign markets, there are multiple limitations, including legal and institutional regulations, constraints in sales techniques, and insufficient capital and manpower for developing and sustaining the firm's key capabilities. Under static analysis, global firms show insufficient capacity for sustained overseas expansion. This explains the need for research that accounts for the dynamic evolution of capabilities.

Organizational capability is understood as a coordination mechanism enabling the efficient and competitive utilization of a firm's tangible and intangible assets (Day, 1994). Resource-based theory has long explained organizational capability as a distinctive activity and learning capacity formed through specialized internal development, making it difficult to imitate and hard to transfer, and positioning it as a source of competitive advantage.

Resource-based theory, which treats external stakeholders and organizational capabilities as drivers, interprets cause and effect differently from natural resource-based theory, which frames environmental capability as a performance driver. Empirical cross-sectional studies based on resource-based theory remain static and do not explain the dynamism produced by the accumulation of internal capabilities. Changes in the external environment prompt shifts in strategic resource allocation, influencing how firms perceive, interpret, and respond. However, dynamic research on strategic responses remains scarce. In this context, the accumulation of organizational capabilities by global firms expanding overseas supports firm performance. There are also pathways to modify resources in ways that expand firm capabilities in foreign markets.

2)Limitations and Overcoming Resource-Based Theory

Resource-based theory assumes resources are distributed heterogeneously. When these resources are valuable, scarce, difficult to imitate, and hard to transfer, they become the source of sustainable competitive advantage (Barney, 1991). The logic that differences in resources and capabilities within a firm lead to different strategic decisions under identical environmental pressures is a concept environmental management borrows from resource-based theory (Backman et al., 2015).

However, a significant number of scholars, including Porter (1996), Priem and Butler (2001), and Foss and Knudsen (2003), have highlighted flaws and internal contradictions within resource-based theory. These critiques argue that the model

allows further refinement and that operational definitions of key concepts remain unsettled. Later studies reduced ambiguity by systematically analyzing prior empirical work through major corporate theory concepts (David & Han, 2004; Newbert, 2007).

Resource-based theory does not measure the characteristics of resources. However, research has accumulated that focuses on the influence of individual resources on achievement, based on resource differences. A focus is needed on how individual resources relate to internal firm conditions, not just external comparison. This is particularly true for global pharmaceutical firms.

The RBV theory serves as a theoretical tool for analyzing the performance of companies entering overseas markets. In this study, which analyzes the unique resources held by companies and examines global performance centered on those resources, it is necessary to consider the performance created by individual resources alongside internal firm circumstances. This study empirically tests whether the localization strategies of global firms in overseas markets are valid through a resource-based lens. The dynamics of how causes and effects evolve over time can be interpreted through the RBV, which ties capability accumulation to competitive outcomes. The RBV holds that organizational capability and firm performance shape localization strategy when the resource interaction is valuable, rare, difficult to imitate, and supported by structure. It argues that localization strategies are strengthened when internal capabilities accumulate through firm-specific learning and coordination.

Corporate capability refers to the ability to create new value by integrating, recombining, and redistributing the diverse resources a firm possesses. This capability, combined with the firm's routines, serves as a source for achieving organizational goals (Eisenhardt & Martin, 2000; Sapienza et al., 2006). Marketing capability can be viewed as a core capability of a firm, as research shows it positively influences firm performance (Jeon & Gleiberman, 2017). Intangible resources, such as accumulated overseas experience and firm-specific knowledge within a corporate

group, are typically accessible only to member firms. Firms within a corporate group can therefore pursue internationalization strategies more aggressively than standalone firms. Global experience and shared knowledge within corporate networks build core competencies that support member firm performance in overseas markets (Ernst, 2003, 2005; Lee & Park, 2007).

3) Control Based on Resource-Based Theory

To provide a valid causal explanation, it is necessary to control for multiple independent variables (Becker, 2005; Kerlinger & Lee, 2000). Because pure and quasi-experimental designs are difficult to conduct in the social sciences, survey-based non-experimental research employs techniques to control for extraneous variables. One common method involves incorporating control variables into the research model (Becker, 2005; Bernerth & Aguinis, 2016; Park et al., 2010). Control variables are included to isolate the unique effect of an independent variable on a dependent variable, yielding more accurate and conservative estimates of the relationship between the independent and dependent variables, and strengthening generalizability (Spector & Brannick, 2011). This process also allows the relationship between control variables and dependent or independent variables to be identified (Kerlinger & Lee, 2000). In this context, franchise size and international experience can be used as control variables.

The most frequently mentioned concept in overseas expansion research is control. Defined as "the ability to influence systems, management practices, and decision-making," control profoundly impacts the trajectory of overseas operations. Control is central to overseas expansion research because it is often the primary, and sometimes the sole, factor shaping risk and return. A high level of control, typically involving direct capital investment or equity ownership, increases both potential returns and exposure to risk. Conversely, a low level of control, commonly seen in licensing or licensing agreements, reduces resource input to limit risk, but also requires firms to accept lower returns. Companies calibrate different levels of control

to limit resource input while balancing returns and risk in overseas operations. This emphasis on control aligns with the classical risk-adjusted return perspective (Anderson & Gatignon, 1986).

With this concept, corporate governance is a structure of control, and control consists of ownership and decision rights (Jell-Ojobor & Windsperger, 2014). While some equate control with ownership because control primarily derives from ownership, ownership and control can be separated, a distinction that is especially common in the service industry (Brouthers et al., 2003). This study adopts the position that control encompasses both ownership and decision rights. It extends the discussion by framing foreign market entry as a trade-off between control and resource investment under conditions of risk, uncertainty, and potential return (Anderson & Gatignon, 1986).

Song and Lee (2017) classified overseas market entry modes based on the level of headquarters control over local partner entities, categorizing them into investment modes (direct entry and joint ventures), alliance modes, and transactional modes. This holds true even when the market is not a viable alternative, because transactions can be infrequent and create incentives for opportunism (Agarwal & Ramaswami, 1992). Opportunism arises in part because perfect contracts are impossible to draft and evaluating partner performance is inherently difficult (Williamson, 1991). In these conditions, sole investment, which allows assets and technology to be integrated and operated internally, is often preferred (Agarwal & Ramaswami, 1992). Licensing agreements require fewer monitoring personnel than direct investment. Licensing is therefore more attractive than direct investment in markets where partner monitoring costs are high. Studies also show that licensing is favored over direct investment when entering countries with higher levels of institutional trust (Shane, 1994).

However, as behavioral uncertainty increases, firms often prefer sole investment

to secure control and reduce transaction costs (Brouthers & Brouthers, 2003). Yet, service industries, where production and distribution occur simultaneously and rely heavily on people, carry strong human characteristics, creating higher internal organizational costs that make overseas management more difficult than in manufacturing settings (Erramilli & Rao, 1993). In service firms, internal organizational costs arising from cultural differences or geographic distance may outweigh the transaction cost savings associated with sole investment. Therefore, contrary to Williamson's (1991) argument, service firms tend to avoid sole investment when behavioral uncertainty increases (Erramilli & Rao, 1993). Service firms that perceive high behavioral uncertainty frequently prefer joint ventures over sole investment (Brouthers & Brouthers, 2003), a pattern also reflected in other empirical studies (Agarwal & Ramaswami, 1992; Erramilli & Rao, 1993).

(1) Institutional Framework and Level of Control

Environmental uncertainty refers to the degree to which a country's political, legal, cultural, and economic environment threatens the stability of business operations (Gatignon & Anderson, 1988). In markets where environmental uncertainty is high, firms may prefer sole investment because it enables faster adjustment through directives, while joint ventures require partner consensus, which can slow strategic response (Williamson, 1991). Conversely, when environmental uncertainty is high, adaptability becomes crucial, and joint ventures may be preferred because they allow more operational flexibility than sole investment models (Agarwal & Ramaswami, 1992; Erramilli & Rao, 1993). When the institutional foundation is weak, joint ventures are often used to access local resources and networks. However, as institutions develop, market efficiency improves, and mergers and acquisitions become a more common pathway for accessing resources than joint ventures (Meyer et al., 2009).

Meyer et al. (2009) proposed five institutional factors influencing service firms' choice of entry mode: 1) business freedom, 2) trade freedom, 3) property rights, 4) investment freedom, and 5) financial freedom. Among these, the protection of property rights is one of the most relevant factors for global firms.

Studies on the competitive advantage of food service companies identify intellectual assets such as brands and recipes as key factors influencing competitiveness (Seo & Lee, 2012; Yang & Shin, 2012). For these assets to be effectively maintained, systems for protecting intellectual property rights are critically important. Assets like brands are vulnerable to damage from partners' opportunistic behavior (Bang & Lee, 1998).

(2) Market Potential and Level of Control

Many researchers emphasize that a region's economic development is a key factor in evaluating and selecting overseas markets for long-term business success (Rahman, 2006). For corporate growth, capital investment is typically directed toward countries where consumers can afford a firm's products and services (Alon & McKee, 1999; Alon, 2006). Countries with higher economic growth are associated with lower exposure to economic and business risk (Herrmann & Datta, 2002). This increases the incentive for direct market entry and reduces the strategic reliance on joint ownership with local partners. In cases where market potential is high, franchise headquarters may prefer investment modes that retain market control rather than share profits through consensus-led ventures (Baena, 2013; Agarwal & Ramaswami, 1992). Even when economies of scale are limited, overseas entry strategies still favor investment modes that support long-term market presence (Agarwal & Ramaswami, 1992).

A study on the overseas market entry modes of service firms targeting service industries such as IT, finance, consulting, accounting, and law found that firms tend to choose entry modes with higher control levels when market attractiveness,

measured by market size and growth rate, is high (Sarapovas et al., 2016). Regarding entry modes based on control levels, multinational manufacturers tend to choose direct investment as international experience accumulates. They prefer direct investment when they have extensive international experience and significant manufacturing experience in the target country (Gatignon & Anderson, 1988). The relationship between international experience and control is primarily explained by uncertainty. When international experience is limited, firms perceive uncertainty more acutely, overestimate risk, and underestimate expected returns. Consequently, they avoid significant resource commitments and do not secure operational control (Johanson & Vahlne, 1977). As experience increases, firms gain market knowledge, become less sensitive to uncertainty, estimate risk and returns more accurately, and gain confidence in managing overseas operations.

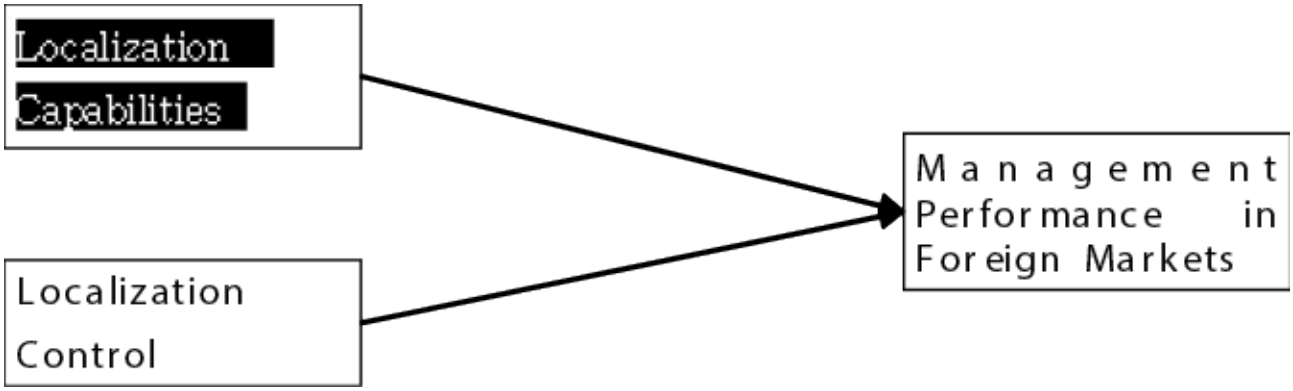
On the other hand, there are arguments that international experience does not affect control. Some studies propose that international experience does not explain the choice between direct investment and joint ventures (Kogut & Singh, 1988), while other research suggests it is not a determining factor in entry mode selection (Sharma & Johanson, 1987).

Furthermore, some studies argue for a negative relationship between international experience and the pursuit of control. There are cases in which companies first entered overseas markets through wholly owned investment, then later shifted to shared ownership structures. Some European multinational corporations tend to prefer joint ventures over wholly owned investments, linking this preference to greater proficiency in managing foreign partners, a capability developed through extensive overseas experience. Based on prior research, the following hypotheses can be formulated.

Hypothesis 2: The higher the level of localization control exercised by global firms, the more positive (+) the impact on management performance in overseas markets.

3. Research Method

1. Research Model



[Figure 2] Research Model

2. Survey Instrument

Richmond D. Robinson (1964) argued that multinational corporations can increase localization by tailoring marketing programs to the social and political factors of the host country. Localization strategies must therefore account for social and political risk as external environmental factors. George Weissman (1967) also argued that products sold in overseas markets show significant differences in consumer preference and demand patterns, requiring firms to differentiate products through research into local consumption behavior. Quelch and Hoff (1986) proposed that localization levels are shaped by cross-country differences and competitive intensity for products sold in the host market. They argued that when local market competition is intense, firms increase localization to differentiate products.

Robert D. Buzzell (1968) argued that legal and environmental regulation undermines standardization strategies, and that the proportion of localization rises alongside the scale of regulatory pressure. Cavusgil, Zou, and Naidu (1993) identified drivers of product and marketing localization, grouped into product/industry factors, firm-level factors, and host country environmental factors. They defined product/industry factors as including technology orientation and product type. Firm-level

factors included internationalization level, export volume targets, and entry mode. Host country environmental factors included legal regulation, competitive intensity, and product familiarity. They conducted empirical research using this framework.

Table 1. Variables in the Survey Instrument

Variable	Construct	Measurement Method	Previous Studies	Number of Items
Localization Capability	Product Factors Industry Factors Corporate Factors Environmental Factors	5-point Likert Scale	Cavusgil, Zou, and Naidu (1993)	17
Localization Control	Resource Control Technical Control Capital Financing Control Personnel Control		Verbeke, A. (2013).	10
Management Performance	Sales Operating Profit Market Share Intellectual Property Rights		Michalisin (2000) Covin (2001)	10
Demographic Characteristics	Gender, age, length of service, department, position	Nominal Scale	-	5
Total				42

3. Data Collection and Analysis

This study conducted an online survey targeting 84 employees working in Korea as part of the overseas organization of a U.S. global corporation. The survey was administered online for one month, from August 1 to 31, 2025. After explaining the study's purpose to participants and obtaining written consent, the research was conducted. The collected survey data were statistically analyzed. Statistical analysis was performed using SPSS 26.0. Frequency analysis was used to assess the demographic characteristics of the sample. Correlation analysis was conducted to examine the relationships between variables. Regression analysis tested the study's hypotheses and evaluated the degree of influence between variables. Statistical tests were performed using SPSS 26.0.

4. Analysis Results

1. General Characteristics of Research Participants

The basic characteristics of respondents in this study are shown in Table 3 below. The sample indicates that men use shared vehicles more frequently than women, and that a significant proportion of Generation Z respondents are students.

Table 2. Demographic Characteristics

Variable	Category	Frequency	Percentage
Gender	Male	63	60.3
	Female	21	39.7
Age	20s	22	26.2
	30s	27	32.1
	40s	19	22.6
	50s	11	13.1
	60s and older	5	6.0
Years of Service	3 years or less	15	17.8
	3 to 5 years	29	34.5
	5–7 years	26	31.0
	7–10 years	10	12.0
	10 years or more	4	4.7
Department	Production	28	33.3
	Marketing	31	36.9
	Management	11	13.1
	Sales	9	10.7
	Purchasing	5	6.0
Position	Staff	16	19.0
	Assistant Manager	28	33.3
	Section Chief	24	28.6
	Director	10	12.0
	Executive	6	7.1
Total		84	100

2. Correlation Analysis

Correlation analysis is a statistical technique used to verify the linear relationship between two variables, with the degree of correlation expressed as the correlation coefficient. This is commonly referred to as Pearson's correlation coefficient analysis. The correlation coefficient is a standardized measure assessed by its absolute value, which ranges from -1 to 1. A value between 0 and 0.3 indicates a weak correlation, 0.3 to 0.7 indicates a moderate correlation, and 0.8 to 1 indicates a strong correlation. Pearson's correlation coefficient not only assesses the strength of the relationship between independent and dependent variables, but also identifies multicollinearity issues among independent variables. To assess the relative relationships between localization capability, localization control, and business performance, correlation analysis examined the associations among these variables. The results showed a significant positive (+) correlation between localization capability and business performance. A significant positive (+) correlation was also observed between localization control and business performance.

Table 3. Correlation Analysis

Category	Localization Capability	Localization Control	Business Performance
Localization Capability	1		
Localization Control	.297**	1	
Management Performance	.301**	.403**	1

3. Verification of Research Hypothesis

Regression analysis is primarily used to analyze data measured on interval or ratio scales. It examines how independent variables affect dependent variables and how the dependent variable changes as the independent variable increases. Regression analysis is commonly divided into simple linear regression and multiple regression. Simple regression is used when there is only one independent variable, while multiple regression is used when there are two or more independent variables.

If the verification results in multiple regression are significant and the F-value is also significant, it indicates that the independent variables are meaningful explanatory factors for the dependent variable. In multiple regression, a higher R^2 value indicates greater explanatory power. Qin (2015) proposed criteria for interpreting explanatory power, where 0.19 indicates low, 0.33 indicates moderate, and 0.67 indicates high explanatory strength.

The DW value is a measure used to verify the independence of residual terms and assess whether the research model satisfies residual independence. DW values approximate 0 when positive autocorrelation is present, approximate 4 when negative autocorrelation is present, and approximate 2 when residuals are independent. The VIF value is an indicator for assessing multicollinearity. Higher VIF values indicate clearer multicollinearity, and values below 10 are generally considered acceptable.

1) The Relationship Between Localization Capabilities and Business Performance

To examine the relationship between multinational corporations' localization capabilities and management performance, specifically to test Hypothesis 1 (H1: The higher the localization capabilities of global companies, the more positive the impact on management performance in overseas markets), multiple regression analysis was conducted. The results show that the F-value reached statistical significance at 21.754 ($P < 0.000$), indicating that the regression equation is significant. The four localization capability criteria product factors, industry factors, corporate factors, and environmental factors explain 26.7% of the variance in business performance. The DW value of 2.015 approximates 2, indicating residual independence in the model. The R^2 and adjusted R^2 values, 0.280 and 0.267 respectively, show no substantial difference, supporting the internal consistency of the model. Verification for multicollinearity shows that all VIF values were below 10, indicating no multicollinearity issues.

Table 4. Regression Analysis Results Between Localization Capabilitie and Business Performance

Model	Unstandardized Coefficient		Standardized Coefficient	t	Significance Probability	VIF
	B	Standard Error	β			
(Constant)	.879	.258		3.412	.001	
Product Factor	.062	.051	.065	1.232	.219	1.083
Industrial Factors	.057	.051	.060	1.108	.269	1.157
Corporate Factors	.266	.051	.284	5.231	.000	1.144
Environmental Factors	.174	.053	.177	3.265	.001	1.144
R-squared				.281		
Adjusted R^2				.267		
F				21.754		
Significance Probability				.000		
Durbin-Watson				2.015		
Dependent variable				Business Performance		

The results for the four criteria of localization capability show that the P-values for the product factor, industry factor, firm factor, and environmental factor are all less than 0.05, indicating that each is statistically significant at the 95% confidence level.

2) Relationship between Localization Control and Business Performance

To examine the relationship between multinational corporations' localization control and management performance, specifically to test Hypothesis 2 (H2: Higher localization control by global firms will have a positive (+) effect on management performance in overseas markets), a multiple regression analysis was conducted. The results showed that the F-value reached statistical significance at 12.040 ($P < 0.000$), indicating that the regression equation is significant. The four localization control criteria resource control, technical control, capital procurement control, and personnel control explain 16.2% of the variance in customer reuse intention. The DW value of 1.864 is close to 2, indicating residual independence in the research model. The R^2 and adjusted R^2 values are 0.177 and 0.162 respectively, showing no meaningful difference, supporting the soundness of the study's research model. Verification for multicollinearity shows that all VIF values are below 10, indicating no multicollinearity issues. The P-values for the four localization control criteria resource control, technical control, capital procurement control, and personnel control are all less than 0.05, indicating statistical significance at the 95% confidence level.

Table 5. Regression Analysis Results Between Localization Control and Management Performance

Model	Unstandardized Coefficient		Standardized Coefficient	t	Significance Probability	VIF
	B	Standard Error	β			
(Constant)	1.036	.273		3.799	.000	
Resource Control	.073	.053	.077	1.356	.176	1.083
Technical Control	.071	.054	.076	1.300	.195	1.157
Capital Raising Control	.112	.054	.120	2.072	.039	1.144
Personnel Control	.208	.056	.214	3.696	.000	1.074
R-squared			.177			
Adjusted R^2			.162			
F			12.041			
Significance Probability			.000			
Durbin-Watson			1.864			
Dependent Variable			Business Performance			

5. Conclusion

This study investigates whether global firms can utilize local resources in overseas markets, and examines how interactions between managerial resource attributes influence business performance. However, traditional resource-based theory explains resource heterogeneity but offers limited explanation for how advantage is gained through resource deployment, or how capabilities evolve dynamically (Sheehan & Foss, 2007; Hoopes et al., 2003; Porter, 1991). Static resource-based models also provide limited explanatory power for capability evolution under conditions of regulatory pressure, capital constraints, and cross-market competition.

Later research proposes that organizational capabilities allocate, coordinate, and integrate tangible and intangible resources, shaping competitive outcomes when internal systems support value capture and learning (Day, 1994; Weerawardena et al., 2007). Corporate networks also influence how market entry strategies balance control, monitoring cost, and capability confidence as international experience accumulates (Johanson & Vahlne, 1977; Shane, 1994). Entrepreneurial behavior correlates with capability development, especially when internal routines integrate cross-functional resources in localized markets (Eisenhardt & Martin, 2000; McDougall et al., 2003; Teece, 2007). Entrepreneurial logic and operational structure operate at different strategic levels, but interact to strengthen firm capabilities over time (Teece, 2007).

The study evaluates foreign market entry as a trade-off between control and resource investment under uncertainty (Anderson & Gatignon, 1986). Research on service industries also suggests that joint ownership is preferred when internal organizational costs outweigh transaction efficiencies (Brouthers & Brouthers, 2003; Erramilli & Rao, 1993). Market potential influences the choice of entry mode, especially when trust infrastructure reduces monitoring cost (Sharma & Johanson,

1987; Herrmann & Datta, 2002). Institutional strength reshapes resource acquisition strategy, often favoring mergers and acquisitions over consensus-led joint ventures when market efficiency improves (Meyer et al., 2009).

Analysis of overseas expansion cases identifies success drivers such as localized marketing, strategic location selection, preparation, partner selection, and innovation-led commercial strategy. Conversely, insufficient preparation, weak localization alignment, legal disputes, and unclear resource configuration can undermine capability confidence and slow competitive positioning (Kim, 2015).

The implications of this study are twofold. First, competitive localization outcomes depend on the innovation capacity of organizational capabilities and internal resource coordination, not simply on terminology such as external market dominance. Second, entrepreneurial logic is not limited to individuals; it is embedded across organizational routines, systems, and firm-level capability design, influencing long-term localization performance in overseas markets (Mueller et al., 2012; Cole, 1946; Simon & Palder, 1987; McDonald & Roberts, 1990; Park & Kim, 2002).

Appendix 1

Survey Questionnaire

Hello.

Thank you so much for taking the time out of your busy schedule to complete this survey.

This questionnaire was created purely for research purposes, with the theme "Localization as Marketing Strategy of a Global Firm." There are no right or wrong answers to the questions you are answering. Our goal is to hear your opinions, so please answer honestly. Your valuable research will serve as the foundation for future research on companion dogs.

Your responses are used just for statistical analysis, and individual responses will be kept confidential. Additionally, your responses are protected by law and will be kept anonymous and used solely for research purposes. If you have any questions regarding this survey, please contact us using the contact information below.

Thank You.

2025. 12

Researcher : 000 (Attending 000)

*** The following questions are general. Please mark (√) the number that applies to you.**

1. What is your gender?

① Male ② Female

2. What is your age?

① 20s ② 30s ③ 40s ④ 50s ⑤ 60s and older

3. Length of service at your current organization:

① Less than 3 years

② 3–5 years

③ 5–7 years

④ 7–10 years

⑤ 10 years or more

4. Your department:

① Production

② Marketing

③ Administration / Management

④ Sales

⑤ Purchasing / Procurement

5. Your job position:

① Staff

② Assistant Manager

③ Manager

④ General Manager / Department Head

⑤ Executive

*** The following questions concern your company's localization capabilities.Please indicate the number that best matches your opinion, taking into consideration your company's localization capabilities, by marking √ or ○.**

NO	Survey Questions	①	②	③	④	⑤
1	Level of possession of technology development capabilities					
2	Level of securing dedicated personnel					
3	Level of possession of R&D capabilities					
4	Level of possession of core technologies					
5	Level of experience in technology development					
6	In-house production capability					
7	Level of production operation capability					
8	Level of production inspection and quality control activities					
9	Level of management of production processes					
10	Degree to which customer requirements are reflected in product development					
11	Level of marketing responsiveness to environmental changes					
12	Degree of flexibility in adjusting marketing strategies in response to market changes					
13	Level of operation of diversified marketing channels					
14	Degree to which the corporate or product brand is utilized in business operations					
15	Level of ability to deliver a consistent brand meaning					
16	Degree to which the brand is treated as a corporate asset					
17	Level of securing dedicated staff to support the corporate or product brand					

① Strongly Agree ② Agree ③ Normal ④ Disagree ⑤ Strongly Disagree

*** The following questions concern your company's localization control.Please indicate the number that best matches your opinion, taking into consideration your company's organizational capabilities, by marking √ or ○.**

NO	Survey Questions	①	②	③	④	⑤
1	Our company possesses the capability to integrate resources in response to changes in the external environment or corporate strategy.					
2	Our company possesses the capability to reallocate resources in response to changes in the external environment or corporate strategy.					
3	Our company possesses the capability to integrate technologies in the process of implementing localization strategies.					
4	Our company possesses the capability to reallocate and utilize technologies in the process of implementing localization strategies.					
5	The local subsidiary implements personnel selection and development practices by localizing the headquarters' standard approaches					
6	The local subsidiary implements capital financing methods by localizing the headquarters' standard approaches.					
7	The local subsidiary implements major R&D activities by localizing the headquarters' standard approaches.					
8	The local subsidiary implements major production processes and technologies by localizing the headquarters' standard approaches.					
9	The organizational structure of the local subsidiary is implemented by localizing the headquarters' standard structure.					

① Strongly Agree ② Agree ③ Normal ④ Disagree ⑤ Strongly Disagree

*** The following questions concern your company's performance. Please indicate the number that best matches your opinion by marking √ or ○.**

NO	Survey Questions	①	②	③	④	⑤
1	Sales growth rate					
2	Operating profit growth rate					
3	Market share					
4	Inventory turnover rate					
5	Number of patent and intellectual property rights (IPRs) applications					
6	Number of registered patents and intellectual property rights (IPRs)					
7	Number of new product developments					
8	Number of improvements to existing products					
9	Number of improvements to existing processes					
10	Number of domestic and international quality certifications					

① Significantly decreased ② Decreased ③ Remained about the same / No change ④ Increased ⑤ Significantly increased

Data Capitalism Viewed through In-App Purchases A Case Study of Google

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I. Introduction

Although I encounter numerous applications as a daily smartphone user, I never stopped to think about how my money and data are subject to unfair extraction from these platforms. However, with the ever-growing rise of AI, I began to sense the influence of big-tech companies trickle down into everyday life, and grew increasingly aware of how conveniently I was positioned in the ecosystem run by the tech giants, where a few clicks could easily make me a pawn in their profit-driven system. As a consumer living in digital capitalism, I wanted to understand how I am being taken advantage of, rather than remaining a blind consumer. This curiosity sparked the research topic: what the economic structures are behind in-app purchases, particularly how they are designed to perpetuate a cycle where both consumers and developers remain trapped in systems that benefit conglomerates that bypass regulations.

The growth of the gaming market shows no signs of slowing down. People of all ages and genders are increasingly absorbed in gaming. In the past, players had to visit PC cafes to play, but now they can simply download games such as Architect: Land of Exiles and Lineage to enjoy them on their mobile phones, anytime, anywhere. Game developers have further expanded their market reach by making their programs available for download through Google. However, when applications are downloaded via the Google Play Store, a certain commission fee is charged.

Payments made within the application are referred to as 'In-App Purchase (IAP)'. In South Korea, Google imposes up to a 30% In-App Purchase fee. However, even when using third-party payment systems, a commission of approximately 26% is applied.

2. In-App Purchases on Global Platforms

One of the world's leading software companies, Oracle, has described data as 'a new form of capital, equivalent to financial capital, in the creation of new products and services '[1]. This statement highlights the emergence of a new political and economic order in which both corporations and government institutions recognize data as a form of capital—producing, collecting, and distributing it accordingly. Today, information and digital platforms have become the core pillars of the digital economy. The concentration of data and capitalism has combined to give global enterprises such as Google and YouTube overwhelming market dominance. In contrast, domestic firms in South Korea are experiencing a decline in influence, and related competition law conflicts have become increasingly frequent. This phenomenon resonates with the arguments of New Brandeisianism, a legal movement advocating for stronger regulation of monopolistic practices. A representative example of this tension is found in the issue of In-App Purchases (IAPs).

Global platform users commonly pay to download premium mobile applications or to access additional content within apps. Typically, such payments are processed through the payment systems provided by the respective app marketplaces. However, in recent years, multinational online platform companies have begun imposing additional fees during the In-App Purchase process. This practice has raised concerns about the extraterritorial application of international trade agreements such as Free Trade Agreements (FTAs), as their normative influence increasingly extends beyond national legal systems. For example, Google Play restricts In-App

1 OracleANZ (2015) What is data capitalism. YouTube, 24 September. Available at: https://www.youtube.com/watch?v¼ffMi-JwotiM (accessed 9 December 2024).

Purchases to its proprietary payment system and imposes a 30% commission fee, equivalent to that charged for store purchases. Similarly, Apple's App Store requires all mobile applications to use its In-App Purchases system and applies the same 30% commission. This 30% commission is disproportionately high compared to the approximately 10% transaction fee typically charged by content service providers. Moreover, the compulsory use of In-App Purchases systems limits consumers' freedom of payment choice and restricts market entry for alternative payment service providers. Consequently, these monopolistic practices by global online platform corporations have resulted in price increases, restricted consumer choice, and barriers to market entry for smaller players. To address these concerns, Article 50(1)(9) of the Telecommunications Business Act of South Korea prohibits app market operators from 'unfairly abusing their bargaining position to force content providers to use a specific payment method when brokering mobile content transactions.' However, online platform companies have effectively circumvented this regulation by introducing so-called 'third-party payment systems' but charging nearly identical commission fees (approx. 26%)—a practice that negates consumer benefit. The existing regulatory framework that prohibits coercing specific payment methods, therefore, has clear limitations. To remedy these shortcomings, several amendments to the Telecommunications Business Act (Bill Nos. 2210597, 2210514, 2209151) are currently pending in the National Assembly. Thus, a conflict has arisen between the normative power of international trade law, which enters into force domestically through international treaties, and the provisions of the Telecommunications Business Act, which seek to extend domestic regulations beyond national boundaries. This conflict is expected to persist in the foreseeable future.

3. Data capitalism

Various studies have been actively exploring the political and economic relationship between data and capitalism. Representative concepts include 'surveillance capitalism' (Foster & McChesney, 2014; Zuboff, 2015), 'informational capitalism' (Fuchs, 2010), 'communicative capitalism' (Dean, 2005), 'platform capitalism' (Srnicek, 2016), and 'iCapitalism' (Duff, 2016). These studies share three major perspectives:

(ⅰ) Data is a highly valuable asset and a core element of value creation (Arvidsson, 2016; Roderick, 2014; Srnicek, 2016);

(ⅱ) The collection and utilization of data has deep and extensive effects on the behavior of corporations and governments (Bouk, 2017; Fourcade & Healy, 2017; Zuboff, 2016); and (ⅲ) Data systems are inherently structured by relations of inequality, extraction, and exploitation (Fourcade & Healy, 2013; Poon, 2016; Thatcher et al., 2016). Fourcade and Healy (2017) argue that modern organizations are now driven by what they call the 'data imperative'—the demand to extract data from every possible source by every possible means. In their view, 'recording and studying people's everyday activities—even the most mundane ones—has become the norm rather than the exception'. Fulfilling this data imperative requires more than the passive collection of information; it entails the active production of data (IBM, 2014). This process necessarily involves the datafication and surveillance of people, places, processes, objects, and the relationships among them (van Dijck, 2014).

One of the world's largest software companies, Oracle's 'Big Data Strategist' has stated that "Data is a new kind of capital, on par with financial capitalism, in creating new products and services" (OracleANZ, 2015). This points to a new political and economic transformation in which data is generated, collected, and circulated as capital. As corporations and government agencies begin to treat data as a form of capital, there arises a growing need to examine the characteristics and functions of data capitalism. When reading news articles or business reports about data, it is difficult to find one that does not describe data as 'the new oil.' For this

reason, data is classified as a digital raw material necessary for the production of commodities—that is, as constant capital. In addition, data can also be classified as a product of digital labor—produced through the various activities that generate data, such as posting on Facebook, searching on Google, or exercising with a Fitbit (Fuchs, 2014; Till, 2012). The adage regarding 'free' services provided by digital platforms remains relevant: 'If you're not the customer, you're the product.' In other words, by using platforms and devices, individuals are transformed into commodities in the form of personal data, which are then sold to advertisers and data brokers. In the era of mass media, this phenomenon was referred to as the "audience commodity" (Smythe, 1981), whereas in the era of social media, it has been described as the "data double" (Haggerty and Ericson, 2000). In summary, while data itself is not money, it is a form of capital rooted in potential economic value. Data capital is more than knowledge about the world; it consists of digitally recorded, machine-readable, and easily aggregated and transferable personal information. Like social capital or cultural capital, data capital can be converted into economic capital under certain conditions. However, the value derived from data does not necessarily—or primarily—manifest in monetary form. Data capitalism is institutionalized within information infrastructures that collect, store, and process data—namely, smart devices, online platforms, data analytics systems, network infrastructure, and server farms. Importantly, these characteristics of data capitalism enable the continuous collection and circulation of data, and thus, the process of data collection can be compared to the logic of capital accumulation described by Marx.

It is also important to note that data is used to profile and target individuals. The business models and services of data-driven companies employ personal information to generate value propositions that lead, in one way or another, to greater profit and/or power. This method of value extraction echoes the principles of Taylorism, which began in the early 1900s with time and motion studies of factory workers. Today, this logic has evolved into what is known as digital Taylorism, exemplified

by Amazon's patented wristband. The device is designed for warehouse workers, tracking the position of their hands in real time and providing tactile feedback when their movements are deemed inefficient (Novak, 2018).

4. Harmonization of International Trade Law and Competition Law

1. Key Issues

International treaties, which constitute international law, are inherently dual in nature. On the one hand, they impose binding obligations on states based on mutual agreements or conventions; on the other hand, because international treaties lack direct enforcement mechanisms, individual states may withdraw their consent or refuse to fulfill their commitments. Furthermore, since international treaties possess universal characteristics and non-reciprocal features, they are prone to conflict with national sovereignty. Such tensions equally manifest within the sphere of international trade law. Although international trade law influences domestic proceedings, courts remain cautious about granting it constitutional status. Moreover, as the regulatory framework of international trade law consists primarily of cooperative provisions rather than mandatory ones, the regulatory objectives of individual nations' competition laws play a critical role as guiding principles. For instance, consider the case in which South Korea seeks to regulate excessive commission fees charged by global platform operators such as Google or Apple for In-App Purchases through third-party payment systems by amending the Telecommunications Business Act. In such cases, conflicts may arise between the relevant provisions of international trade law and competition law, potentially raising issues regarding the constitutional provisions governing economic regulation.

The core question, therefore, is whether regulatory measures can secure legitimacy under international trade law when targeting global platform operators' specific conduct, and whether the objectives of competition law, when serving as the basis

for such regulation, can achieve international universality and mutual consent. Accordingly, the following section explores regulatory approaches for integrating competition law elements into the framework of international digital trade.

2. Regulatory Approaches

1) Incorporation into International Trade Norms and Their Effectiveness

Since the entry into force of the General Agreement on Tariffs and Trade (GATT) in 1947 and the establishment of the World Trade Organization (WTO) in 1995, international norms governing trade liberalization have been shaped primarily around the WTO framework. The WTO places equal emphasis not only on trade policy but also on competition policy aimed at fostering a fair competitive environment. Consequently, discussions have emerged regarding the need for the international integration of competition norms. However, in practice, only the United States and the European Union (EU) have applied their respective competition laws extraterritorially, and a comprehensive international framework for competition regulation through global organizations has yet to be established. In the absence of a multilateral consensus, individual countries have enacted and enforced their own competition laws to address anti-competitive conduct such as the abuse of market dominance by global enterprises. Nonetheless, achieving universality and mutual international consent in such regulatory efforts remains a significant challenge. In particular, the current WTO agreements contain no explicit provisions prohibiting the forced use of In-App Purchases systems. Given these practical constraints and the absence of binding international treaties under public international law, it becomes necessary to examine bilateral treaties or chapters on competition within Free Trade Agreements (FTAs) as alternative frameworks. For example, under the Competition Chapter of the Korea-U.S. FTA[2], each party is required to prohibit anti-competitive business conduct, establish a competition authority responsible for enforcement, and ensure that judicial remedies or sanctions are available for violations of competition

2 https://www.fta.go.kr/webmodule/_PSD_FTA/us/doc/kor/44-16Competition.pdf

law. This suggests that an international trade law basis exists for prohibiting and legally remedying the coercive imposition of In-App Purchases systems by global platform operators. However, when such operators introduce an In-App Purchases system that permits third-party payment, it remains uncertain whether this conduct would constitute a violation of the competition-related provisions under the FTA. Therefore, even if South Korea were to impose administrative fines through amendments to the Telecommunications Business Act targeting global platform operators' use of third-party In-App Purchases systems, the extent to which such regulatory measures could gain international legitimacy and consent remains uncertain.

2. Ex-ante Competition Regulation

In 2018, the European Union implemented the EU Council Regulation aimed at strengthening transparency obligations and procedural fairness for online platform and search engine operators. This regulation was designed to prevent unfair trading practices that may arise in P2B (Platform-to-Business) transactions between online platforms and the businesses that use them. Subsequently, in December 2020, the EU enacted the Digital Services Act (DSA) and the Digital Markets Act (DMA), thereby further reinforcing the legal framework to ensure fair competition and transparency within digital markets[3]. The DMA adopts an ex-ante regulatory approach, designating platform operators of a certain scale as Gatekeepers[4]. Accordingly, designated companies are required to comply with all obligations under the Digital Markets Act (DMA) within six months and subsequently submit a detailed compliance report to the European Commission, explaining how they have fulfilled these obligations. If a company fails to comply, it may be subject to a fine of up to 10% of its total worldwide annual turnover, and in cases of repeated infringements, the fine may increase to up to 20%[5]. As a result, U.S. companies such as Google and Apple

3 https://digital-markets-act.ec.europa.eu/index_en

4 On September 6, 2023, the European Commission designated six companies — Alphabet, Amazon, Apple, ByteDance, Meta, and Microsoft — as Gatekeepers. (https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4328)

5 https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4328

have been required to allow various app markets and payment methods beyond their own, thereby promoting price competition. Consequently, competing operators have voluntarily reduced their app market commission fees. These measures constitute ex-ante regulation, as they impose obligations on 'Gatekeepers' without requiring case-by-case proof of abuse. In accordance with this regulation, the European Commission officially launched an investigation in October 2020 into the Apple App Store for forcing the use of its In-App Purchase system. In such traditional antitrust investigations, the burden of proof lies with the regulator, not on the parties involved, making enforcement slow and difficult. However, this ex-ante regulatory approach still has limitations, as it cannot fully eliminate the risk of false positives (over-regulation of non-dominant firms) and false negatives (under-regulation of dominant ones). Nevertheless, such ex-ante regulation provides a legal basis for regulating not only a global platform operator's own platform but also In-App Purchases methods that utilize third-party payment systems.

Meanwhile, in the United States, the American Innovation and Choice Online Act regulate self-preferencing practices, in which companies favor their own products or services at the expense of competitors[6]. Moreover, the Open App Markets Act (OAMA)[7] is carefully designed legislation that applies to companies with more than 50 million users (subscribers). This Act restricts such companies from imposing specific fees on In-App Purchases and prohibits them from requiring that apps be distributed exclusively through a single App Store within their operating systems[8]. The purpose of this legislation aligns with the provisions of Article 50 of the current Telecommunications Business Act in South Korea.

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6 Mark Lanterman, HOW THE AMERICAN CHOICE AND INNOVATION ONLINE ACT MAY AFFECT CYBERSECURITY, Bench and Bar of Minnesota July, 2022

7 Open App Markets Act, S 2710, 117th Congress (2021-2022): 〈 https://www.congress.gov/bill/117th-congress/senate-bill/2710/text 〉.

8 Gregory Stamatopoulous, ENDING DUOPOLIES: HOW THE OPEN APP MARKETS ACT COULD CHANGE THE DIGITAL AND LEGAL LANDSCAPE FOR BIG TECH, Michigan Bar Journal, 103-APR 16

5. Conclusion

The foregoing analysis examined the conflict between global platform operators' practices of leveraging monopolistic positions to charge high fees through In-App Purchases and the prohibition of mandatory In-App Purchase systems under Korea's Telecommunications Business Act, in the context of international trade norms and extraterritorially applicable competition law regulations. Additionally, we explored the proposed amendments to the Telecommunications Business Act in light of potentially anti-competitive practices by global platform operators. The issue is that even if the proposed amendments to the Telecommunications Business Act currently pending in the National Assembly are enacted, the conflict is unlikely to be fully resolved without comprehensive ex-ante regulation comparable to the European Union's Digital Markets Act. Given that fines-related litigation is an ex-post remedy and proving violations in court is often difficult, even if the law is enacted and regulations are implemented, dispute resolution will likely be delayed for a considerable period. Furthermore, the OAMA's failure to advance through Congress illustrates the political limitations of competition law-based regulation. Legal measures alone are much too weak to combat the monopolistic structures of the digital economy; without addressing the underlying economic incentives of data capitalism, consumers, let alone small businesses, have no chance against conglomerates.

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Art & Cultural

The Expansion of Artistic Media and Collaborators

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1. Introduction

Art in America is a monthly art magazine first published in 1913 by Sanda J. Brant, focusing on both American and international art scenes, particularly those centered around the New York art world and major art fairs. The magazine introduces works that have gained critical attention within the contemporary art community and publishes its content through its online platform as well. Recently, a thought-provoking article was featured on this platform.

Most of the -isms that once characterized 20th-century artistic movements—such as Cubism, Surrealism, Fauvism, Abstract Expressionism, and Minimalism—have largely faded from view. Likewise, manifestos have become increasingly uncommon. Yet artistic movements, or more accurately, artistic tendencies, continue to emerge—often shaped by ongoing discussions and debates about the role of art in society, as well as by the constantly shifting social and material landscape.

Artists today, in place of traditional modes of artistic practice, are increasingly positioning themselves as scholars within the current trend often referred to as 'biennial art.' In doing so, they have actively adopted the nonfiction format, engaging in the exploration of facts through an artistic attitude grounded in the principle that anything is possible. Rather than being confined by academic disciplines or institutional norms, these artists pursue inquiry with a spirit of openness and experimentation. As Claire Bishop has observed, contemporary artists

have come to question the authority of master narratives constructed by scientists, scholars, and journalists, while simultaneously identifying themselves as another kind of researcher. This tendency can be seen across a range of works by artists and collectives such as Forensic Architecture, Walid Raad, and Gala Porras-Kim. From the standpoint of a student, such tendencies were not easily comprehensible. Therefore, I have examined various discourses surrounding artistic media as a means of establishing a foundational understanding of the current directions in contemporary art. In other words, this study serves as a preliminary inquiry into the evolving tendencies of artistic media today.

2. The Expansion of Artistic Materiality and Its Discourse

1. Modernism and Postmodernism

In art, the concept of medium is a polysemous notion that is interpreted differently across various fields. The German media philosopher Dieter Mersch, in his book Medientheorien zur Einführung (Introduction to Media Theories), observes that "without media, it is impossible to perceive things; yet defining the concept of media itself remains a challenging task." [1] Nevertheless, in the context of art, media can be defined either as a fundamental constituent element of an artwork or as a categorical framework encompassing the genre to which the work belongs. [2] According to this definition, only when mediality is acknowledged can a work be situated within the category of art. Since Aristotle introduced the concept of mimesis, discussions on the mediality of art have evolved based on his notion of representation. Even during the spatial transition of media—from the vertical plane of the wall to the horizontal surface of paper—the structure of representation remained strictly preserved. However, after 1830, the emergence and expansion of the proletarian class brought the ideology of "art for art's sake" into crisis,

1 Jin-yeop Kim, "Into the New Laocoön: On Greenberg's Art Criticism," Aesthetics, Vol. 26 (Korean Society for Aesthetics). 2009, pp. 237-238.

2 Jin-sil Lee, "The Automatism and Autonomy of Artistic Media: Stanley Cavell's 'Automatism' and Rosalind Krauss's 'Technical Support,'" Aesthetics, Vol. 89, No. 2 (Korean Society for Aesthetics). 2023. 6, p. 126

leading naturalism and romanticism to broaden the artistic horizon. Underlying these transformations was the expansion of artistic media itself. [3] In particular, during the intense critical debates of the 1970s, discussions surrounding artistic media drew significant public attention, leading to a further expansion of the concept of mediality. At the forefront of this discourse was Rosalind Krauss, who, though initially aligned with the tenets of Modernism, redefined the notion of media through self-reflective inquiry. She shifted its focus from representation to a structuralist framework, thereby providing a theoretical foundation for the experimental practices of contemporary artists. [4] Unlike Clement Greenberg, who grounded his theory of media expansion in the principles of Modernism, Rosalind Krauss made a significant contribution to broadening the scope of art through a strong philosophical foundation. Her core theory shifted the focus from the medium itself to the mode of expression, thereby destabilizing the rigid structure of Modernism established by Greenberg from within, and ultimately positioning her as a forerunner of Postmodernism. [5] In the discourse on the expansion of artistic media, the Modernist position—which holds that an artistic medium cannot be recognized unless it is connected to its inherent material characteristics and specific properties—fundamentally aligns with Aristotle's perspective, which regarded the framework of mimesis (representation) as an absolute aesthetic principle.[6] Ultimately, Modernism can be regarded as a faithful successor to the aesthetic perspective of Aristotle. In contrast, Postmodernism, which emerged in opposition to Modernism, sought to dismantle the mythic structure of Modernism by incorporating the philosophical ideas of Georges Bataille. Drawing upon a structuralist framework, Bataille introduced the concept of the informe to challenge the rigid formal patterns

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3 Arnold Hauser, The Social History of Art, Vol. 4, trans. by Nak-cheong Baik and Mu-woong Yeom (Seoul: Changjakgwa Bipyeongsa) pp. 14-33.

4 Sjoukje van der Meulen, The Problem of Media in Contemporary Art Theory (1960-1990), Columbia University, 2009. p. 14.

5 Jong-chul Choi, "Immortal Love: For the 'Expanded Domain' of Media," Journal of Aesthetics and Arts Studies, Vol. 57 (Korean Society for Aesthetics and Arts Studies, 2019), pp. 217-245.

6 Jin-yeop Kim, "Into the New Laocoön: On Greenberg's Art Criticism," Aesthetics, Vol. 26 (Korean Society for Aesthetics). 1999, pp. 1-22.

of Modernism, even within domains that appear unrelated to representation. Through his notions of base materialism, horizontality, and formlessness, Bataille offered an alternative perspective for interpreting Modernist art, thereby expanding the theoretical boundaries of artistic discourse.[7] From this perspective, Surrealism and the related Abstract Expressionism are argued to be well suited to formless structures. From a physical standpoint, a work can be decomposed into minute constituent elements, thereby preserving the conceptual framework of reproducibility. When the characteristics of reproduction without an original are incorporated into an artistic medium, there are virtually no constraints in recognizing certain artistic practices as legitimate media. Debates surrounding these media were rigorously contested, with Modernism and Postmodernism each advancing their own theoretical arguments.

2. Discussion of Mediality in Post-Structuralism – Focusing on the Readymade

1) Manet's Unfinished Work - <The Masqueraded Ball at the Opera>

[Figure 1] Édouard Manet, The Masqueraded Ball at the Opera, 1873, oil on canvas, 59.0 × 72.5 cm

7 Young-baek Jeon, "Art History of the Expanded Domain," Journal of Contemporary Art History, Vol. 15 (Korean Society for Contemporary Art History). 2003, pp.111-144.

[Figure 2] Édouard Manet, The Swallow, 1873, oil on canvas, 65 × 81 cm

In 1874, Manet's submissions to the Salon, The Masqueraded Ball at the Opera and The Sparrows, were rejected on the grounds of being unfinished. In response, Stéphane Mallarmé immediately published a defense of Manet, arguing, "If all the elements of a painting are in harmony and it possesses a beauty that could be easily destroyed by additional layers of paint, how can it be considered unfinished?" This argument implied that for the jurors, entrusted with the duty of determining the authenticity of a painting, there was little to say beyond declaring a work either a 'painting' or 'not a painting,' and ultimately, the judgment of whether a work was good or bad should be left to the public (Greenberg, Clement. Art and Culture: Critical Essays. Boston: Beacon Press, 1989).

According to Mallarmé, the role of the jurors was limited to providing so-called "official evaluations," while all other judgments should be entrusted to the free assessment of the public. Manet was aware that the jurors might consider his works too unfinished to be called paintings, yet he himself regarded them as completed works. Having already experienced the Salon des Refusés and craving public recognition, he submitted The Masqueraded Ball at the Opera, which might have been judged unfinished, in order to engage the audience in the retrospective experience of approaching a work later than its creator and to solicit their reflective participation. At that time, the Salon maintained a strong conviction regarding the

quality of The Masqueraded Ball at the Opera sufficient to justify its rejection. For Manet, however, beyond such external certainties, there existed—and was necessary—a personal conviction to regard the work as a 'painting.'

Due to the rejection of Manet's works at the 1874 Salon, Stéphane Mallarmé's defense at the Salon des Refusés, the Impressionist exhibition held at Nadar's studio that same year, and various other alternative events, these artists were ultimately expelled from the Salon in 1884. In response, the expelled artists organized their own Salon des Indépendants in April of that year, in opposition to the French Artists' Association, and subsequently established the Independent Artists' Association in June. The annual slogan of this anti-Salon exhibition proclaimed it as an 'Exhibition Without Jury.'

2) Marcel Duchamp's Readymades - <Bottle Rack>, <Fountain>

[Figure 3] Marcel Duchamp, <Bottle Rack>, 1914, Galvanized iron, 57 x 36.5 x 36.5 cm

Readymade art originated with Marcel Duchamp in 1905, when he placed a bicycle wheel on a chair—a gesture that began as a kind of playful experiment. At the time he selected his first readymade, Duchamp had no particular reason for doing so, nor did he intend to exhibit it to the public or to convey any specific meaning. [8] However, the concept of the readymade became essential to describe a form

of art that was neither a work of art nor a sketch, and could not be classified under any term used in the conventional art world. Here, the readymade refers to industrially produced objects or everyday items, and readymade art signifies a negation of traditional artworks. In other words, Duchamp's readymade art pursued a negation that completely deconstructed the aesthetic values assigned by social institutions and traditional art. Within this logical framework, he believed that the world of nothingness revealed at the extreme limits of art enables complete mental freedom. This negation functioned as a potential catalyst for the emergence of autonomous art. Duchamp marked a decisive turning point in the readymade concept with the presentation of Fountain in 1917, which had a significant impact on the development of contemporary art. As noted, the readymade originated in conceptual art, passed through Modernism, and was eventually retroactively applied by Thierry de Duve, such that even works by Manet came to be included within the category of readymades.

[Figure 4] Marcel Duchamp, <Fountain>, 1917, Glazed ceramic coated with black paint, 61 cm × 36 cm × 48 cm (Photo: Stieglitz)

8 Byung-gil Choi, ibid, pp. 266-269.

In 1917 in New York, under the banner of the avant-garde movement and modeled after the French Salon des Indépendants, an "Independent Exhibition" was held with the motto of having no jury and no prizes. Duchamp, who was the chair of the exhibition committee, anonymously submitted a urinal under his own concept, naming it 〈Fountain〉. As a result, 〈Fountain〉 was rejected on the grounds of lacking specificity, and Duchamp soon resigned from his position as committee chair. Subsequently, he revealed a series of events through another anonymous contribution. In response, the committee evaded responsibility, claiming that what exists between art and art is not art, but merely a kind of theatrical gesture. Exhibition committee members were, whether they liked it or not, compelled to judge whether "this is art" or "this is not art," and neither the committee nor anyone else could determine whether the object itself required direct attention or whether it was enabled by a tradition; nevertheless, the urinal ultimately became the subject of aesthetic judgment.

Even within an organization cloaked in the name of the avant-garde, the situation of the 1884 Salon des Indépendants in Paris was repeated. Duchamp's readymades issued a challenge to the many works endowed with authority according to his own method. Yet, there were limits to how Duchamp's readymades could remove existing artworks from history, and ultimately, history determined the existence of art.

Joseph Kosuth declared that, following Marcel Duchamp's 1914 presentation of his first pure readymade, Bottle Rack, all art had become fundamentally conceptual in nature. Even so, this process of conceptualization did not fully emerge until after Abstract Expressionism, when the logic of Modernism began to be invoked to assert the status of art rather than appeal to the traditions of Western painting for the sake of artistic quality. The boundary distinguishing logic and tradition, or status and quality, corresponds to the line between a painting and a "good painting," and it is when this boundary is clearly articulated that the conceptualization of the readymade also becomes evident. Such readymades could only reappear within the history of Modernist painting in specific contexts where the conflict between Modernist painting and Minimalism had intensified. In any case, Kosuth's 1960s

critique of readymades from the 1910s clearly provided a point of departure for reinterpreting the issues of specificity and generality. From the perspective of reception and interpretation, the evaluations of Duchamp's readymades by Kosuth and Clement Greenberg, along with Thierry de Duve's critical reinterpretation, challenged and disrupted the questions of specificity and generality that had defined art for approximately thirty years after 1930. This, in turn, catalyzed the opposition between Formalism and Conceptual Art, as well as between performance and art. Duchamp's Fountain, in particular, retrospectively provided ample impetus for this discourse. Fifty years later, Kosuth attempted a reinterpretation of Duchamp's readymades, revealing that all art is essentially conceptual. In a context where the tension between Modernist painting and Minimalism had intensified following Abstract Expressionism, as the empty canvas began to assert the framework of Modernist painting, Kosuth shifted the essence of art from a matter of form to a matter of function, thereby dissolving established boundaries and lines. As a result, Kosuth offered a crucial point of departure for reinterpreting conventional notions of specificity and generality.

Marcel Duchamp, who provoked widespread controversy, abruptly abandoned painting in 1912 and shifted his focus to art in a broader sense. Art, for him, did not necessarily entail active creative production; it was no different from playing chess. Contemporary opinion regarded his leap from the particular to the general as sudden. However, since Duchamp no longer engaged in conventional artistic production and merely generated issues, the transition from specificity to generality was by no means self-evident.

Prior to Duchamp, artistic activity was often conceptualized in terms of 'imitation,' whereas after Duchamp it has been understood through the concept of 'appropriation.' That is, when existing works or images are utilized without a clearly articulated artistic intentionality, the term 'imitation' is applied; once artistic intentionality is clearly asserted, the term 'appropriation' is employed.

3) Empty Canvas and the Information Room

Clement Greenberg, a leading figure of Modernism, argued that aesthetic judgment is not formed through the conscious application of specific criteria or rules, but rather develops unconsciously and intuitively through direct experience of the artwork. According to Greenberg, because a certain degree of consensus regarding the quality of a work emerges over time, aesthetic judgment approximates objective judgment. In 1962, Greenberg, upon encountering an aluminum canvas, could envision the potential of an empty canvas but could not recognize it as a painting. One reason for this was his lack of prior experience of such a canvas as a painting. He stopped just short of labeling the empty canvas as a "painting" and declaring it successful, leaving any judgment of its quality to hypothetical or future viewers. In that moment, he became aware of the boundary distinguishing logic and tradition, or status and quality. For Greenberg, specificity acted as a constraining limitation, and he ultimately perceived the limits inherent in the empty canvas.

[Figure 5] Robert Ryman, <Archive>, 1979, oil on steel, 34.29 cm × 30.16 cm × 1.27 cm

[Figure 6] Robert Ryman, ≪Untitled≫1965, enamel on Bristol board, 19.7 x 20.6 cm

Even within this theoretical framework, in the intense context of the post–Abstract Expressionist conflict between Modernist painting and Minimalism, the empty canvas was able to emerge within the history of Modernist painting. This is a point that Greenberg himself acknowledged. To call an empty canvas a "painting" is to recognize the sole convention that has survived over some 500 years of tradition, and Greenberg considered this convention to be essential. Fried, who worked between Mallarmé and Greenberg, astutely referred to the potential for an empty canvas to become a successful painting in the future, bypassing immediate aesthetic judgment.

[Figure 7] Joseph Kosuth, <Information Room>, 1970, newspaper, books, table, chair, lightbox, ephemeral materials, variable dimensions (Photo: Jay Canter)

In 1970, Joseph Kosuth, in his performance work Information Room, defined the artist not simply as a person who paints, but as one who gathers various information and generates new ideas, enacting this role through the use of a table and books instead of a traditional easel, brush, or palette. According to him, a conceptual artist works through meaning rather than material elements such as form or color. Conceptual artists represented by Kosuth were symbolized by immateriality and pure intellectuality, and among the ways to express immateriality was the use of readymades, which involved repurposing preexisting manufactured objects. Through this approach, Kosuth broke down the boundary between everyday life and art, raising fundamental questions about "what art is" within the development of contemporary art, and was recognized for opening new horizons in the field. [9] Joseph Kosuth revealed that all art is essentially conceptual and argued that Marcel Duchamp's readymades shifted the essence of art from a matter of form

9 Su-cheol Lee, Hye-jin Kwon, "An Analysis of Conceptual Art in the Works of Joseph Kosuth," Journal of Korean Society of Design Culture, Vol. 18, No. 4, Korean Society of Design Culture, 2012, pp. 379-381.

to a matter of function. Until Kosuth's intervention, Duchamp's readymades had remained dormant within the art world for approximately fifty-five years. According to Kosuth, it is not aesthetic judgment but the contextual framework of the readymade that determines its artistic status. He further claimed that Duchamp's first pure readymade conferred a generalizing identity upon art itself. In this way, Kosuth equates art with theory, and his art theory is fundamentally institutional. His approach is always circular and critically interrogates the authority of institutional frameworks.

3. Understanding the Mediality of Art and Collaborators

1. Understanding Discussions on Mediality

Clement Greenberg defined Modernism not as a movement but as a tropism, ultimately regarding it as the product of taste judgments oriented toward aesthetic value. For Greenberg, the pinnacle of Modernist painting is the pursuit of flatness, which he argued prevents art from being assimilated into non-artistic functions. He understood Marcel Duchamp's readymades not as aesthetic or artistic objects, but purely as cultural and social phenomena. However, Greenberg considered the relationship to art not merely in terms of status but in terms of quality, and within this framework, Duchamp's Fountain was situated in an aesthetic context that was largely unsurprising. In other words, Duchamp's Fountain was subsumed within a context of expectation based on prior experiences of surprise, forming a context determined by aesthetic judgment.

However, Greenberg concedes with regard to the blank canvas. The blank canvas can also be regarded as a type of readymade. As an industrially produced material available for purchase as an art supply, it qualifies as a specific readymade. Even before the artist's hand touches it, the blank canvas already belongs to the tradition of painting, specifically the Western tradition established since the Renaissance. While the blank canvas serves merely as a prepared support for the artist's brushstrokes, it simultaneously belongs to the convention formed since the

Renaissance—that paintings are made on canvas. For Greenberg, failing to call the blank canvas a painting would mean accepting the historical convention that it is merely a commodity. Conversely, calling the blank canvas a painting acknowledges that this convention is the only one to have survived over some five hundred years of tradition. Based on this, Greenberg argued that the blank canvas reveals the essence of painting. Yet, while he claimed that the blank canvas exposes the essence of painting, he did not observe any transformation of essence conferred by a particular perspective. He regarded flatness and its limits, once concretized in the readymade canvas, as essential conventions. Although perceived as mere conventions, they were accepted as conventions that could not be discarded without altering the essential nature of the medium.

Meanwhile, Thierry de Duve questioned the fact that the experience of calling a work a "painting" is entirely different from evaluating it as a "qualified painting." He argued that Édouard Manet's experience and aesthetic judgment were situated within the anticipated retrospective perception of the audience, effectively soliciting this retrospective public opinion. He added that such retrospective judgment arises because audiences always encounter a work later than the artist. This retrospective perspective remains a crucial issue in both modernist and avant-garde art.

De Duve further argued that there is a sameness in terms of what he called "fame-based judgment" between Manet evaluating A Bar at the Folies-Bergère as a tableau and the jurors judging it as a painting. The confidence in recognizing a fixed canvas as a painting and comparing it to past masterpieces is possible precisely because these two experiences are not considered entirely distinct. He continued that Manet's A Bar at the Folies-Bergère had become an unquestionable past masterpiece, and the blank canvas could also be measured against past masterpieces due to the historical context of modernist painting. Consequently, every move by a modernist painter to validate the aesthetic legitimacy of convention is inevitably determined by public approval. The readymade is neither painting nor sculpture. Nor does it combine characteristics of both genres. It is, simply, art itself.

The above logical foundation led Duchamp to pursue extreme experimentation. Although he served as the juror for an exhibition held under the banner of the avant-garde movement, Duchamp anonymously submitted a urinal, which he titled Fountain. As a result, Fountain was rejected, and Duchamp resigned from his position as juror. The exhibition organizers were compelled, whether they wished to or not, to declare that the work was either 'art' or 'not art.' However, the convention that a painting must be executed on canvas stretched tightly over a wooden frame does not possess ontological authority. As evidenced by the later gradual replacement of this convention with the practice of painting on wooden panels, such conventions are not essential. The substitution of panel painting by easel painting follows the same logic, and going back to the Renaissance, detaching murals to pursue the flatness of a planar surface was likewise non-essential. These conventions are historical rather than ontological; they are specific in that they are concretized within tradition rather than inherent in the essence of the medium.

The artistic status of the readymade is determined not by aesthetic judgment but by the context in which the readymade is situated. This view is shared by both formalist Clement Greenberg and conceptual artist Joseph Kosuth regarding Duchamp's readymades. For both groups, an artwork is essentially a proposition presented within the context of art.

However, the claim that Greenberg and Kosuth endorsed Duchamp while asserting that no aesthetic judgment is required to recognize the urinal as art—and that Duchamp himself desired this—is not tenable. Even the urinal requires aesthetic evaluation, and we bear the responsibility to judge it aesthetically. From the perspective of Minimalism or Conceptual Art following the blank canvas, something may be art without being a painting, yet without the once-painting blank canvas, it cannot become art. The blank canvas occupies the intersection between Modernism as a self-critical tendency and Formalism as a tendency oriented toward self-critical aesthetic value.

As conventions were gradually discarded, Modernist painting approached the realization of the blank canvas. Yet, the closer this realization became, the less capable it was of promising the future. In 1962, the blank canvas appeared on the verge of realization, and thus the end of Modernist painting seemed imminent. Modernist painting, in 1962, finally submitted entirely in its essence. From Duchamp's perspective, the blank canvas was a painting yet to come; in 1914 and again in 1962, the blank canvas was a readymade, but within Modernist painting, it was simultaneously a readymade and a painting yet to be created. Lacking the conceptual tools to explain an already completed painting, the blank canvas could only be awkwardly legitimized.

2. Collaborators

An archive can be realized as painterly images derived from an art archive. For example, the installation and performance works of Yinka Shonibare [10], Renée Green, and Raisa Kabi의 were conceived with the intention of conveying a feminist perspective through the archive. The material properties of textiles, the affective qualities of the archive, and the meanings sustained through tropes are integrated and developed in works such as Space Walk(2002)[11] and the Commemorative Toile series (1991–present) [12] [13]

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10 *Yinka Shonibare Artist Interview*, Video (London: Arts Council Collection, 2017), https://www.youtube.com/watch?v=oCc4Pp0eIh0;

11 Yinka Shonibare, Space Walk, 2002, Pigment on cotton sateen and cotton brocade, fiberglass, resin, plastic., 264x168x168 in., 2002, Fabric Workshop and Museum.

12 Nina Sylvanus, *Patterns in Circulation: Cloth, Gender, and Materiality in West Africa* (Chicago ; London: The University of Chicago Press, 2016), 15.

13 Breinholt, Jacob (5 August 2009). 'Throwback Comeback: Stussy'. SoJones. Archived from the original on 13 March 2013. Retrieved 12 August 2009

[Figure] Space Walk - Orange Suit in the Fabric Workshop and Museum Archive

[Figure] The Crease of Commemorative Toile(Renée Green Artist Residency Box at the Fabric Workshop and Museum

Considering that it is a freak design and *Raisa Kabir*[14] implements the exemplification of the gender archive in an ongoing manner.[15] In a similar vein, artists have emerged who express the unique emotional experiences of being foreign

14 *Raisa Kabir, Warping the Borders, Fringes; Fractured, 2016*

15 *Materialising Gendered Archives: Weaving, Language, and the Global Textile Object*, Fabrikken for Kunst Og Design, 2020, https://www.youtube.com/watch?v=EwAX9m6GaTU.

immigrants as distinctive objects through the archive[16]. Historically, artists have also utilized archives as part of their efforts to gain insight into the status of women and integrate this understanding into their artistic practice.[17] Archives play a crucial role in an artist's selection of objects, the expression of artistic intent, and the execution of narrative functions.[18] The images embedded within the archive resonate with the fair-going public.[19] By mediating appropriated images, it demonstrates that digital archives can function as an artistic medium. The integration of archives and art clearly shows that this process can proceed continuously and expansively through appropriated images.

4. Conclusion

Krauss's critical theory can be summarized along two axes: expansion and deconstruction. The deeper one engages with her theory, the more one confronts questions about how far a medium can be expanded and how thoroughly modernism can be deconstructed. Krauss herself seems to employ a dialectical approach in her structuring, which allows for multiple interpretations within the scholarly community. This characteristic becomes even more pronounced when considering the boundaries of digital media theory and the discourse on surrealist genres.

In the study of contemporary art theory and media between the 1960s and 1990s, debates surrounding the concept of media—particularly between aesthetic media and technical media—ultimately converged on the interpretation of media itself. The prolific work of the 1960s art critic Clement Greenberg and media theorist Marshall McLuhan paved the way for the research of Friedrich Kittler and Rosalind Krauss in the 1980s. Art criticism has tended to regard Krauss as Greenberg's heir,

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16 *Kumarini Silva, "Oh, Give Me a Home: Diasporic Longings of Home and Belonging," SocialIdentities 15, no. 5 (September 1, 2009): 693–706, https://doi.org/10.1080/13504630903205332.*

17 Rashné Limki, "Representing Subjugation: Or, the Figure of the Woman in Partition History," Social Identities 26, no. 6 (November 1, 2020): 774–90, https://doi.org/10.1080/13504630.2020.1814717.

18 Lara Kriegel, *Grand Designs: Labor, Empire, and the Museum in Victorian Culture. Duke University Press, 2007.* https://doi.org/10.1215/9780822390534

19 Ann Laura Stoler, *Race and the Education of Desire: Foucault's History of Sexuality and the Colonial Order of Things (Durham: Duke University Press, 1995): p. 99.*

a perspective consistent with this historical trajectory. Broadly speaking, this can be seen merely as a difference in the interpretation of aesthetic media, without requiring strict categorical separation. Moreover, social, cultural, and economic transformations created conditions in which older notions of media could no longer be sustained. Greenberg in the 1960s and Krauss in the 1980s and 1990s inevitably adapted their perspectives on media according to the historical contexts in which they operated.

The Artistic Value of Gyeongju's Cultural Heritage

– Focusing on the Style of Silla Stone Sculptures –

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1. Introduction

As I entered my eleventh-grade year in 2025 and found myself immersed in one of the busiest periods of my life, I came across a video that made me stop in front of the television. It was the promotional video for the 33rd APEC Economic Leaders' Meeting, scheduled to be held in Gyeongju, South Korea. As Korean content continues to gain global influence, the video was produced by featuring key figures representing K-POP, K-FOOD, and K-BEAUTY. Among these, the most striking scene was the President appearing as an aircraft marshaller, symbolizing a commitment to welcoming and ensuring the safety of world leaders. This left a particularly strong impression on me.

So, what is APEC? The Asia-Pacific Economic Cooperation (APEC) is a regional economic forum established in 1989 to harness the growing interdependence of the Asia Pacific region. Its 21 member economies aim to generate greater prosperity for the people of the region by promoting balanced and inclusive growth, sustainable growth, innovative growth, and secure growth, while accelerating regional economic integration.

APEC works to ensure the smooth movement of goods, services, investment, and people across borders. Its members facilitate trade by simplifying customs procedures, creating a more favorable business environment, and aligning

regulations and standards across the region. Notably, APEC is the world's only global intergovernmental forum that seeks to reduce trade and investment barriers without legally binding obligations.

I believe that selecting Gyeongju as the host city for such a major international summit was an excellent decision. Gyeongju is home to numerous cultural heritage sites, including Bulguksa Temple and Seokguram Grotto, both designated as UNESCO World Heritage sites. It is a city that vividly showcases the beauty and artistic value of Korea's cultural legacy, making it an ideal venue for welcoming global leaders.

2. The Stone Buddha Statues of Namsan and Their Artistic Significance

With the APEC conference held in Gyeongju, the city's cultural heritage has been increasingly featured across various media platforms. Among these, the media art focusing on the Dabotap has left a particularly strong impression. This has led to renewed attention on the Silla stone sculptures and their stylistic characteristics, set against the backdrop of Gyeongju. Traditionally, the distinctive features of Korean art have been discussed in terms of its curvilinear beauty and the resulting formal uniqueness. This uniqueness suggests that Silla stone sculptures do not exist as isolated forms disconnected from external influences, but are rather closely tied to the origins of traditional aesthetic consciousness, while simultaneously embodying a unique sculptural identity that approaches objective truth through their artistic representation as aesthetic structures. The Silla stone sculptures, which highlight these characteristics, serve as a form of *visual language*, and through their curved structural beauty, it is possible to discern underlying aesthetic principles. In his evaluation of Korean art, Andre Eckardt (1884-1974) pointed out that, unlike the exaggerated and distorted artistic forms of China or the tension-filled compositions of Japanese art, the distinguishing value of Korean art lies in its naturalness and simplicity. Specifically, he noted that the pagodas of Silla were characterized by simplicity and unadorned modesty (Andre Eckardt, Young-pil Kwon trans., History

of Korean Art, Yeolhwadang, 2003, p. 109). In other words, simplicity acts as a significant formal principle that evokes refined aesthetic beauty. Based on this perspective, this study seeks to examine the stylistic characteristics and artistic value of the stone sculptures from the Three Kingdoms and Unified Silla periods, focusing on those found throughout the Gyeongju.

With the advent of the Unified Silla period, Buddhist art blossomed into a remarkable achievement. Following the political unification of the Korean Peninsula and the economic prosperity that followed, Buddhist art reached its zenith. Compared to the simple and grandiose art of the Three Kingdoms period, the art of the Unified Silla era became more ornate and delicate, ushering in what is regarded as the golden age of Korean art (Yeong-ho Jeong, 1982).

From the Three Kingdoms period, the techniques for working with high-quality stones such as granite were developed across the entire peninsula. This led to the proliferation of stone sculpture, and particularly, Stone Buddha Statues became renowned for their grandeur and exquisite craftsmanship. During this time, it became a trend to carve Buddhist statues, such as Buddhas and Bodhisattvas, whenever stone was encountered. These Stone Buddha Statues reflect a style that blends restraint and simplicity, emphasizing classical beauty through curved forms and lines, while also incorporating elements of naturalism, as well as a skillful use of technique that mirrors a broader naturalistic aesthetic. In this context, the Japanese artist Yanagi Muneyoshi (柳宗悅, 1889-1961) identified 'line' as a key formative characteristic of Korean art. The aesthetic qualities of line can be seen in the early examples of the Stone Buddha Statues of Namsan, and these characteristics were further refined and perfected in the later stone sculptures at Seokguram.

Gyeongju Namsan
Chilbulam (Hermitage with the Seven Buddhas) Stone Buddha Statues

The statues from the Unified Silla period are located on the steep slopes of the eastern and northern sides of the mountain, where a platform about 4 meters high was constructed. On this platform, seven Buddha statues representing the four cardinal directions were placed. The heads of the statues are characterized by short hair with prominent Yukgye (ushnish). In front of the rock where the triad of Buddhas is carved, a stone pilar is placed, on which the four directional Budddhas are also carved. These Buddhas are depicted seated upon lotus blossoms, with their hand gestures varying according to their respective directions. The garment draped over the left shoulder clings closely to the body, revealing the statue's contours. The right hand is placed on the knee, with the fingers pointing downward, while the left hand is gently positioned on the abdomen. The two attendant bodhisattvas are also depicted in standing form, with their size matching that of the main Buddha. The

robes worn by the main Buddha and the bodhisattvas envelop their bodies softly, with the shape of their figures subtly discernible. The statues of the triad all display a commanding presence, and the craftsmanship is of exceptional quality.

Gyeongju Namsan Yeoramgok Seated Stone Buddha

The statue, carved from granite, exhibits a smooth surface structure, and its chest contour and upright torso evoke the lingering influence of the Silla Golden Age sculpture, typified by the stone carvings of Seokguram. The robe (traditional garments worn by monks, such as Gasa or Jangsam) is a Tonggyeon-ui (garment draped over the shoulders.) The hem of the Dae-ui (the monk's robe worn during preaching or alms collection) hanging from the right shoulder does not fall directly, but is tucked slightly into the chest collar. The left shoulder's collar, on the other hand, folds in the middle and ripple like a wave. Between the chest collar, the inner garment, Eom-aeg-ui (a layer worn under the robe, draped from the left shoulder to the right armpit), and the chest band, are subtly carved in a slanted manner.

The hands, though proportionally large in comparison to the body, give a somewhat heavy appearance. The right and rests quietly on the abdomen, while the left hand descends straight beneath the crossed legs, forming the Chokji-in(hand gesture with the left hand on the knee and the right hand pointing downward toward the ground). The lower body in the seated posture is wide, imparting a sense of stability, but the umbrella-shaped folds between the legs seen in the Seokguram main Buddha are not expressed here. The folds carved along the arms and crossed ankles are represented as layered or raised lines that add a sense of depth, but the width of these lines remains consistent, indicating the early features of later Unifies Silla sculpture. These sculptural characteristics are also reflected in the 'Seokjo Yaksayeorae Jwasang (Yaksayeora Seated Stone Buddha)' at the entrance of Yongjanggol in Namsan. The two statues appear so similar in their draping style and body modeling that they could be attributed to the same sculptor. While the front view, with its relatively shallow carving, gives a smooth and elegant appearance, the back features the folds of the robe behind the shoulders in a more concise and distinct manner. The folds of the garment differ in height, creating a strong light-and-shadow effect. The fallen pedestal surrounding the statue displays a typical three-tiered lotus base, with strong three-dimensionality in the lower-facing Bognyeon (lotus petals pointing downward) and the rounded, soft Yangnyeon (lotus petals pointing upward). The central pedestal has been lost, but the details of the lotus petals remain vivid. The broken halo behind the statue is decorated with elegant curves, displaying motifs of flames, vines, rosettes, clouds, and flames, contributing to the grandeur and ornamental effect. The solid body modeling and stable posture of the statue maintain the characteristic feature of Silla's Golden Age sculpture. However, the relatively shallow detailing and the ornamental, decorative style of the halo suggest that this statue was likely created in the late 8th century.

Gyeongju Namsan Ipgok Seokbuldu (Head of the Stone Buddha)

The lower part of the statue, including the waist, some parts of the Gwangbae (nimbus), and both hands are damaged, making it impossible to determine its original form with certainty. However, the rectangular hole in the lotus-patterned Daejwa (pedestal) in front of the statue, where the feet of the Buddha were place, indicates that the statue was originally in a seated position. The head is adorned with a topknot-like hairstyle, which rises sharply, giving the statue a dignifies yet balanced and gentle expression. The neck is marked with three distinct lines, known as the 'Samdo (threefold necklace)', and the robe drapes over both shoulders. The nimbus, repesenting the light emanating from the Buddha's body, features carvings of a small Buddha seated on a lotus-patterned pedestal, with hands in the gesture

of prayer, and another depiction of the Buddha ascending into the sky. Overall, the sculptural style reflects a superb Yeorae Ipsang (Standing Stone Buddha) from the height of the Silla period.

Namsan Samneung-gye Seokjo Yeorae Jwasang (Seated Stone Buddha)

The head features small, conch-shell-shaped locks of hair, with a large topknot Yukgye (ushnisha) at the crown. The face is rounded and gentle, with the ears depicted in a short form. The folds of the robe draped over the left shoulder are simple yet beautifully rendered. The waist is slender, and the seated posture conveys a sense of stability. The Daejwa (pedestal) is divided into upper, middle, and lower sections, with intricate lotus patterns carved on the upper part. The octagonal middle stone bears simplified Ansang (eye-shaped symbols) on each face. The lower section consists of a simple octagonal base. Based on the lotus motifs and eye symbols carved into the octagonal lotus base, along with the dignified and stable posture, this piece is likely to have been created during the Unified Silla period, around the 8th to 9th centuries.

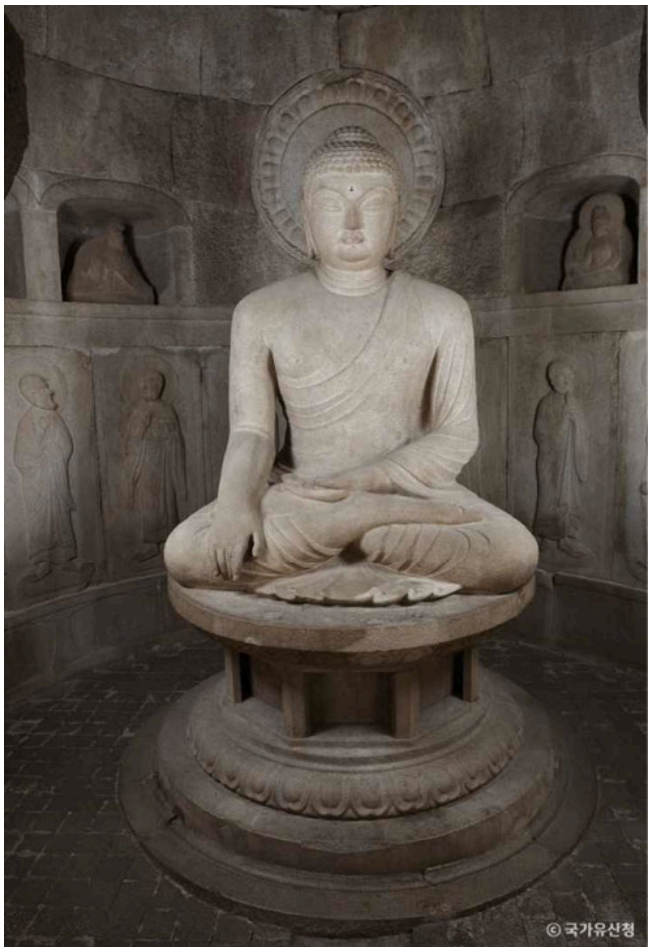
Wolsong Golgulam Ma-ae Yeorae Jwasang (Seated Rock-carved Buddha)

A prominent Yukgye (ushnisha) is depicted atop the head, and the facial features, including the eyes, nose, and mouth, are clearly defined, with the face showing a relatively full and rounded shape. The right hand is damaged, but based on the arm's posture, it appears to have been lowered. The left hand is depicted unusually small, with the palm facing upwards and the fingers of both hands pressed together in front of the chest. The body is carved in shallow relief, resulting in a flat appearance, while the folds of the robes draped over the shoulders and across the chest are expressed with multiple parallel lines that are evenly spaced and hang downward. Additionally, the continuous V-shaped folds on both arms and the stylized wave-like folds on the knees resemble the stylistic elements found in other sculptures from the late 9th century, such as the Suksosa Stone Virocana Buddha (867). The surrounding area of the head and body features flame motifs carved in relatively deep relief, which are part of the nimbus. This stone image displays characteristics typical of early Unified Silla period art in its tense facial expression and detailed features. However, the stylized folds of the robe and the relatively straight contours of the shoulders suggest

that the sculpture was created in the mid-9th century or later. Additionally, the area around the statue contains twelve large and small natural rock caves, making it an important reference for the study of rock-cut temples in Korea.

3. Stone Sculpture and Its Artistic Significance

The stone Buddha sculptures of the Unified Silla period effectively absorbed the styles and techniques of the Three Kingdoms period, building upon the technical foundations accumulated over time. By incorporating elements from the Tang dynasty and India's Gupta style, they established a new genre of stone sculpture. Particularly during the reigns of King Seongdeok and King Gyeongdeok in the 8th century, the construction of Bulguksa and Seokguram marked the golden age of Silla art. Japanese art historian Yanagi Muneyoshi (柳宗悅) identified distinctive features such as 'the waves of curves,' 'flowing lines,' and 'thin, elongated curves' in the Seokguram Buddha statue and Cheomseongdae observatory. He interpreted these characteristics as expressions of the unique temperament of the Korean people. According to him, the line signifies 'continuity,' symbolizing a beauty that seems to break yet remains unbroken. Furthermore, he explains how the formal element of the line evolves into an emotional aesthetic of 'sorrow' (Yanagi Muneyoshi, trans. Gil-jin Lee, Joseon and Its Art, Shin Gu, 1994, pp. 94–97). Yanagi also posits that this flowing line elicits a natural sense of beauty, even if not consciously intended. This aesthetic of flowing curves is clearly expressed in the stone sculpture styles of the time.



Seokguram

The main chamber of Seokguram features a circular hall design, a structural form also found in the ruins of India, Central Asia, Western Asia, and the Mediterranean region from that period. Notably, the seated Buddha at Seokguram and the Bodhisattva image at the Mahabodhi Temple in Bodhgaya, India, exhibit striking similarities not only in their iconography but also in their dimensions. However, in China, which is geographically closer to the Korean Peninsula, there are no examples of a circular floor plan combined with a domed ceiling, as seen in Seokguram. In comparison, while the circular hall format at Bamiyan does not feature a central Buddha figure, Seokguram innovatively places the Buddha at the center of a domed space. This feature aligns with the widespread use of dome architecture in the Western and Central Asian regions during the Parthian and Sassanian periods.

Bulguksa Dabotap

The Bulguksa Dabotap is classified as having a distinctive form among East Asian pagodas. It is particularly characterized by the 32 repetitive stepping stones, 40 bamboo joints, and the octagonal inner and outer circumferences, which stand out as unique features. The average height of the stepping stones is 21.64 cm, while the average height of one bamboo joint is 15.64 cm. The ratio between the stepping stones and the bamboo joints is such that for every 1 unit of stepping stone height, the bamboo joint is approximately 0.7. Furthermore, the diameters of the outer circumferences of the upper tier's ornamental stone base, the octagonal outer circumferences carved at the bottom of the middle lotus pedestal of the second tier, and the outer circumferences carved at the bottom of the base of the octagonal pagoda pillar of the second tier all measure 8-cheok (a traditional Korean unit of measurement).

Cheomseongdae (Observatory)

Cheomseongdae is a unique stone tower, built on a low, elongated base made of carefully hewn stones, with a round body placed atop it. The upper part of the tower features a square shape, while the lower part is round. In the middle of the structure, there is a square opening facing south, and the top of the tower is oriented towards the four cardinal directions.

The characteristics of the Silla stone sculpture style reveal a distinct contrast with the perfect realism, coolness, and strict expressiveness found in Chinese art. Instead of focusing on intricate details, the emphasis is placed on an overall impression, prioritizing human warmth over cold detachment, and favoring a natural contemplation over abstraction. This Korean naturalism forms the foundation of Silla's stone sculpture style. The capital of Silla, Gyeongju, is surrounded by a wide plain encircled by mountains. The terrain is predominantly aged, with gentle slopes formed over many years. The mountain slopes gradually become less steep, with

an inclination of about 50°, creating a soft, curved shape. Just as the mountains themselves are rounded, the style of stone sculptures is also characterized by roundness. This reflects a fundamental tendency toward natural purity, with minimal artificial influence, but at times, artistic beauty is elevated through deliberate interpretation. The essence of this beauty is expressed in the proportional harmony of the forms. For instance, the graceful lines seen in the Buddha statues of Seokguram are linked to the aesthetic of line found in Joseon Dynasty porcelain.

4. Conclusion

Autonomous vehicles, the Internet of Things, robots, and other AI-powered machines and systems have seamlessly integrated into our daily lives. The convergence of advancements in information and communication technology with the tenets of neoliberalism has brought about significant changes in the labor market, including job displacement and reduction, as well as the latent risks of rights infringements associated with artificial intelligence. These shifts force us to acknowledge the dual nature of AI's impact on our lives, both positive and negative. As a result, society finds itself in need of a deeper understanding and contemplation of AI. Academic discourse in fields such as cognitive science, philosophy of language, phenomenology, and ontology is evolving, addressing the broader questions surrounding the essence and existence of artificial intelligence, ultimately leading us to a reflection on the very worldview we live in. The perspective on AI extends beyond merely seeking solutions to the problems it gives rise to. It calls for a deeper inquiry into fundamental questions: "How can I live well in the age of artificial intelligence?" "How can my survival be ensured in this AI-driven world?" The task is to approach these existential questions through a thoughtful lens of reflection. In this regard, the prominent figure of the Silla Buddhist Renaissance, Wonhyo Great Monk (617–686), proposed a 'Harmonious Logic' to reconcile

opposing philosophical positions. By presenting a logical framework in which both contradictory claims can be simultaneously true and false, he offered a unique Buddhist worldview. Wonhyo explained Buddhist cosmology in the following way:

To be different is to be the same, and to be the same is to be different. Sameness is distinguished by difference, and difference is clarified through sameness.

In other words, sameness and difference are inseparable; they exist together and give each other meaning. This understanding resonates with the aesthetic of flowing lines seen in Silla stone sculpture, reflecting the interconnectedness of humans and nature. In this worldview, humans and nature are both parts and wholes, distinct yet interdependent — a manifestation of our holistic way of thinking. This holistic approach is also reflected in the aesthetics of Silla stone sculpture. The artistic style does not interpret the attributes of the cosmos from a human-centered perspective, but instead adopts an organic approach that acknowledges the differences in all things and seeks harmony. This view suggests that through artistic sublimation, parts and wholes do not strive for a metaphysical sameness or uniformity, but rather embrace the resonating differences within the whole, where each part contains the potential for another. This perspective, through the process of artistic sublimation, aims not at pursuing a metaphysical identity or uniformity between parts and the whole, but rather at embracing the resonating differences of each, encompassing them within the whole, where the whole itself contains the potential for another part.

I believe that reflecting on artificial intelligence through Wonhyo's Harmonious Logic offers a meaningful framework for the future. Rather than viewing AI solely as a threat to human existence or as a tool for unlimited progress, we are encouraged to recognize the coexistence of possibility and risk within it. Just as sameness and difference mutually define one another, humans and artificial intelligence need not exist in opposition, but in dynamic interdependence. Approaching AI with such a holistic perspective allows us not only to address its practical challenges but also to reconsider how humanity can coexist, adapt, and live well within an increasingly AI-driven world.

5

Education Systems

Educating a Multilingual Nation:An Overview of the U.S. Schools and Dual Language Immersion

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Abstract

Part 1: Structure and Trends in the U.S. Education System

1. Introduction

180 days out of every year, nearly 50 million students between the ages of 5 and 18 attend school daily across roughly 13,000 school districts in the United States (NCES, Public School Enrollment). From the early establishment of this nation in the late seventeenth and eighteenth centuries to the present-day twenty-first century, students have moved along a system that has countlessly evolved with the times (Race Forward; "A Short History of Education in the United States"). From the earliest small colonial schools to the existing K-12 national network, the U.S. education system has proven to shape the future of each and every generation (Race Forward). One might ask, what exactly is the U.S. education system? And one can respond that it encompasses various options of education including public, private, charter, and homeschooling, as well as postsecondary options such as community colleges and four-year universities (USINFO, "Structure of U.S. Education"). According to the National Center for Education Statistics, as of fall 2023 about 49.5 million students were enrolled in public pre-K through grade 12, a figure. This is a rough 2.5 percent lower than 2019 enrollment numbers (NCES, "Data Show Public School Enrollment

Held Steady Overall"). The contents of this paper will trace the milestones in the history of U.S. education, describe present-day structures of schooling, examine the roles of government and funding, and summarize more recent trends such as the COVID-19 pandemic, before finally closing with a brief reflection on the future of American education.

2. Historical Background

In the early seventeenth and eighteenth centuries, education in New England could be found in small, religiously oriented dame schools, illustrating the limited formal schooling at the time (Race Forward). A 1647 Massachusetts law emphasized literacy for both civic and religious purposes by requiring certain towns to establish elementary schools and Latin grammar schools (Race Forward). Reformers later pursued more systematic, tax-supported "common schools." Horace Mann was appointed in 1837 as the first secretary of the Massachusetts Board of Education. He worked to promote publicly funded common schools staffed by trained teachers (Race Forward; "Short History of Education in the United States"). After the Civil War, segregation played a key part in schooling developments. Laws in southern states restricted the education of enslaved people, and an 1864 policy banned the use of Native languages in many schools (Race Forward). The 1896 Supreme Court case Plessy v. Ferguson legalized "separate but equal" schooling for Black communities, entrenching de jure segregation until Brown v. Board of Education in 1954 declared state-mandated segregation unconstitutional (Race Forward; Education Resources, "Education History Timeline").

The twentieth century brought a rapid expansion of secondary education. The "high school movement" greatly increased the number of free public high schools, making secondary education accessible to a much larger portion of the population ("Short History of Education in the United States"). The Morrill Act of 1862 and subsequent land-grant legislation provided federal land for colleges focused on

agriculture and the mechanical arts, expanding access to higher education beyond traditional elite institutions (Education Resources, "Education History Timeline"). Large federal aid to schools serving low-income students became available with the Elementary and Secondary Education Act of 1965, which established Title I programs (Education Resources, "Education History Timeline"). Later federal laws such as the No Child Left Behind Act of 2001 and the Every Student Succeeds Act of 2015 continued to shape K–12 education by requiring annual testing in key grades but gradually returning more control to states (Education Resources, "Education History Timeline"). Developments over these centuries laid the foundation for the present-day K–12 and higher education systems.

3. Schooling Structure and Pathways

A typical U.S. progression runs from kindergarten to grade 12, a standard thirteen-year sequence starting around ages five or six and ending around age eighteen (USINFO, "Structure of U.S. Education"; EBSCO, "Secondary Education in the United States"). Elementary school often includes kindergarten through fifth grade, middle school or junior high consists of grades six through eight, and high school covers grades nine through twelve (USINFO, "Structure of U.S. Education"; Aralia Education, "United States Guide: The K–12 System").

Level	Grades	Approximate age group
Elementary school	K – 5	5 – 11
Middle school	6 – 8	11 – 14
High school	9 – 12	14 – 18

1) Public Schools and Magnet Schools

Around 90 percent of K–12 students in the United States attend public schools (NCES, Public School Enrollment). Most of these schools operate within approximately 13,000 public school districts, each following state academic

standards and administering statewide assessments (NCES, "Data Show Public School Enrollment Held Steady Overall"; USINFO, "Structure of U.S. Education"). Magnet schools are public schools that focus on particular themes, such as science, technology, the arts, or languages; they are generally tuition-free and often draw students from beyond neighborhood attendance zones (USINFO, "Structure of U.S. Education"; Aralia Education, "United States Guide: The K–12 System").

2) Private Schools

Roughly 10 percent of students attend private schools (NCES, Public School Enrollment). These institutions are funded largely by tuition—that is, money paid by families whose children attend the schools—along with private sources such as donations, endowments, and grants (USINFO, "A Diverse Educational System"). In "A Diverse Educational System," the U.S. information service notes that "four out of five private schools are run by religious groups," and these schools often combine regular academic courses with religious instruction (USINFO, "A Diverse Educational System"). Other private schools include specialized settings such as Montessori schools and nonsectarian college-preparatory schools (Aralia Education, "United States Guide: The K–12 System").

3) Charter Schools

Charter schools are publicly funded but independently operated under a charter approved by an authorizing body such as a state board or local district (NCES, Public School Enrollment). In most cases, charter schools have more flexibility in staffing and curriculum than traditional district schools, while remaining accountable for student outcomes under their charter agreements (USINFO, "A Diverse Educational System"; Aralia Education, "United States Guide: The K–12 System").

4) Homeschools

Alongside public and private schools, some families in the United States choose to educate their children at home. In homeschooling arrangements, parents or guardians take primary responsibility for planning and delivering instruction, often drawing on a mix of curricula and community resources (USINFO, "Overview of the U.S. Education System"). Requirements for notification, assessment, and record-keeping vary by state law, so homeschooling looks different across the country (NCES, "International Comparisons of Achievement"). National estimates place homeschooled students in the low- to mid-single-digit percentage range of the K–12-age population (NCES, Public School Enrollment).

Public schools in the United States are required to provide special education services to eligible students with disabilities under the Individuals with Disabilities Education Act (IDEA) (USINFO, "Structure of U.S. Education"). Nearly 7.3 million public school students ages three through twenty-one, around 15 percent of total public school enrollment, received special education services in 2021-22 (NCES, "Students with Disabilities"). Services may include specialized instruction, related therapies, and, in some cases, extended eligibility for services beyond the traditional high school years (NCES, "Students with Disabilities"; NIH, "Challenges Experienced by U.S. K-12 Public Schools"). Many states and districts also operate gifted and talented programs to serve students who need enrichment or accelerated learning; national estimates suggest that around 2.4 million students participate in such programs, although identification criteria and program models vary widely (USINFO, "Structure of U.S. Education").

In high school, students are typically expected to complete a certain number of credits across subjects such as English, mathematics, social studies, science, and electives in order to earn a high school diploma (USINFO, "Structure of U.S. Education"; EBSCO, "Secondary Education in the United States"). Some choose to pursue the General Educational Development (GED) certificate, an alternative

credential that lies outside the traditional high school path. The GED involves standardized tests in reading, writing, math, science, and social studies that together yield a high-school-equivalent credential (USINFO, "Structure of U.S. Education").

Advanced Placement (AP) and International Baccalaureate (IB) programs allow students to pursue college-level coursework in high school. AP classes are college-level courses taken in high school that can allow students to earn college credit or advanced standing, based on standardized exams administered at the end of the school year; AP programs originated in the mid-twentieth century and have grown to include dozens of subjects (College Board; EBSCO, "Secondary Education in the United States"). IB programs follow a coordinated, rigorous international curriculum, with many schools offering the IB Diploma Programme in grades eleven and twelve (International Baccalaureate Organization).

Postsecondary education after high school includes community colleges and four-year institutions. Community colleges typically offer associate degrees and certificates, often with open admissions and lower tuition, while four-year colleges and universities offer bachelor's degrees and higher degrees such as master's and doctorates (USINFO, "Structure of U.S. Education"). Many students begin their college application process in the fall of their senior year of high school, researching institutions, preparing application materials, and completing standardized testing as required (USINFO, "Structure of U.S. Education"; Aralia Education, "United States Guide: The K–12 System").

4. Role of Government

Education is primarily handled by states, but the federal government still plays an important supporting role. The federal share of K–12 funding is about 8 to 10 percent, with the remainder coming from state and local sources (NCES, Public School Enrollment). Federal programs that help shape the system include Title I, the

main ESEA/ESSA program for schools serving high concentrations of low-income students, and IDEA for special education, along with school nutrition programs and other targeted initiatives (Education Resources, "Education History Timeline"; USINFO, "Structure of U.S. Education"). The federal government also enforces civil rights laws that prohibit discrimination in schools receiving federal funds (USINFO, "Structure of U.S. Education").

States set their own academic standards, design statewide assessment systems such as California's CAASPP testing, and oversee accountability for schools (USINFO, "Structure of U.S. Education"). States allocate substantial funding to districts using formulas that consider enrollment, local wealth, and student demographic factors, and state education agencies collect data on student performance and graduation rates to inform policy decisions (NCES, Public School Enrollment; Education Commission of the States, "Governors' Top Education Priorities"). On a smaller scale, local school boards and district administrations hire staff, manage budgets, and implement education within their communities (USINFO, "Structure of U.S. Education"). There are about 13,000 public school districts across the country, each governed by an elected or appointed school board (NCES, "Data Show Public School Enrollment Held Steady Overall"). Local boards select curriculum materials consistent with state standards, maintain facilities and transportation, and adopt local policies that affect daily operations (USINFO, "Structure of U.S. Education").

Governance Levels and Responsibilities

Level	Responsibilities
Federal	Targeted aid and civil rights enforcement
State	Setting standards, tests, school funding formulas, licensure
Local	Staffing, facilities, daily operations and local policies

5. COVID-19 and Recent Trends

With the outbreak of the COVID-19 pandemic in spring 2020, the continuity and adaptability of the U.S. education system were tested in unprecedented ways. School buildings closed across the country, and many schools shifted to remote or hybrid forms of instruction for extended periods (Lake and Pillow 4-6; Brookings, "Alarming State of the American Student"). Public school enrollment fluctuated as some families moved to private schools or homeschooling, while others delayed kindergarten entry (K-12 Dive; NCES, "Data Show Public School Enrollment Held Steady Overall"). Between fall 2019 and fall 2023, public pre-K-12 enrollment declined from about 50.8 million to roughly 49.5 million, a drop of around 2.5 percent (K-12 Dive; NCES, "Data Show Public School Enrollment Held Steady Overall").

Research suggests that the pandemic caused significant learning disruptions. In The State of the American Student: Fall 2022, Robin Lake and Travis Pillow estimate that, on average, students lost about five months of learning in mathematics and four months in reading, with more than one million fourth graders estimated to be over two years behind in literacy (Lake and Pillow 5, 11). These losses highlight the vulnerability of preexisting achievement gaps and the difficulty of supporting students who were already struggling before the pandemic (Lake and Pillow 5-7; Brookings, "Alarming State of the American Student"). At the same time, national assessments such as the National Assessment of Educational Progress show that average reading and mathematics scores in grades four and eight remain below 2019 levels, and that a larger share of students are performing below the Basic level, especially in reading (NCES, 2024 NAEP Reading Assessment; NCES, 2024 NAEP Mathematics Assessment; Ignite Reading).

Special education and health-related services faced particular challenges. A 2022 study of U.S. K-12 public schools reported recurring difficulties in delivering therapies, individualized supports, and accommodations to students with disabilities and underlying health conditions during remote and hybrid instruction (Gilford et al.). Patterns across studies indicate that students from low-income families, students

with disabilities, and some racial and ethnic groups experienced greater disruption and slower recovery than many of their peers (Brookings, "Alarming State of the American Student"; Gilford et al.).

The pandemic also accelerated changes in technology use and instructional models. Schools expanded their use of digital tools, one-to-one devices, and learning platforms, and many experimented with blended learning and virtual classes (Lake and Pillow 8-10). Even as schools returned to full in-person instruction, digital resources and data systems became more deeply embedded in standards-aligned curricula, raising new questions about equitable access, screen time, and how to integrate technology into classroom practice (Brookings, "Alarming State of the American Student").

6. The Future and Conclusion

The National Center for Education Statistics projects that total public K-12 enrollment will decrease by close to 5 percent between 2020 and 2030, from about 49.6 million to 46.9 million students (NCES, Public School Enrollment; NCES, Projections of Education Statistics). Within this overall decline, some student groups, such as Black, American Indian, and Alaska Native students are projected to see enrollment decreases, while the number of Asian students is projected to increase modestly (NCES, Projections of Education Statistics). In the near future, recurring themes such as student mental and physical health, technology and phone-use policies, and the expansion of career and workforce pathways are likely to remain central in policy discussions (National Governors Association; Education Commission of the States, "Governors' Top Education Priorities").

Overall, these emerging themes suggest that while the basic structures of national education are likely to remain stable, states and districts will continue exploring varied approaches to curriculum, student support, and staffing within that framework (National Governors Association; Education Commission of the States). Over centuries, the U.S. education system has expanded from localized religious

dame schools to the nationwide network that supports millions of students today (Race Forward; "Short History of Education in the United States"). Structurally, this system has shown both continuity and change in its grade-by-grade progression, its mix of school types, and its enrollment and performance indicators, as seen in assessments such as NAEP and PISA (NCES, 2024 NAEP Reading Assessment; NCES, 2024 NAEP Mathematics Assessment; NCES, "PISA 2022 U.S. Results"). As the system continues to adapt while maintaining its core structure, generations of students will help shape the country's future. As Malcolm X observed, "Education is our passport to the future, for tomorrow belongs to the people who prepare for it today" (qtd. in "Education Is Our Passport to the Future"). The idea underscores how central schooling remains to both individual opportunity and national life.

Part 2: Dual Language Immersion in U.S. Schools

1. Introduction

Dual language immersion has developed alongside the U.S. K–12 system with structures, funding, and trends defined in the first half of this paper. This next half offers a different lens of how schools serve multilingual students (Slater et al., "The State of Dual Language Education in the U.S."). Instead of treating English proficiency as the sole goal, dual language programs aim to build bilingualism, biliteracy, and high academic achievement by utilizing both English and a partner language as mediums of instruction in a class setting (What Works Clearinghouse, Dual Language Programs Intervention Report). Examining the history of bilingualism in U.S. schools, the current distribution of dual language immersion programs, research on their outcomes, and the policies that shape access shows how these language choices in schooling reflect the broader questions of equity and opportunity for students across

the vast nation (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs; Slater et al., "The State of Dual Language Education in the U.S.").

2. History of Bilingualism in U.S. Schools

In the nineteenth and early twentieth centuries, a small number of communities operated public schools that taught in languages such as German, French, or Czech. This reflected the era of immigration and settlement in the United States (Slater et al., "The State of Dual Language Education in the U.S."). Over time, rising nationalism, wartime anxieties, and pressure to assimilate contributed to a shift toward English-dominant schooling. Due to this, the use of other languages in instruction became increasingly discouraged or banned in many states (Slater et al., "The State of Dual Language Education in the U.S."). For much of the twentieth century, English learners were typically placed in mainstream classrooms and expected to "sink or swim" in English, receiving little to no targeted support for developing in the academic language. It was a practice that displayed learning gaps and limited opportunities for students from linguistically different communities (Slater et al., "The State of Dual Language Education in the U.S.").

With the civil-rights era came the growing recognition that merely providing the same English-only instruction to students who were unfamiliar with the language and understanding of it was not educationally equitable. Court decisions and federal policies began to require school systems to take meaningful steps to help English learners access the curriculum. In result, supporting the growth of bilingual education programs that used students' home languages alongside English (Slater et al., "The State of Dual Language Education in the U.S."). Within these evolving policies, dual language immersion emerged as a model that aimed not only to help English learners acquire English but to develop full bilingualism and biliteracy for both native English speakers and speakers of other languages (Slater et al., "The State of Dual Language Education in the U.S."; What Works Clearinghouse, Dual Language

Programs Intervention Report). In this sense, dual language immersion represents a shift towards programs that seek to cultivate a "new generation of bilinguals" by building on, rather than replacing, students' home languages (Slater et al., "The State of Dual Language Education in the U.S.").

3. Dual Language Immersion and Where it Exists

Today, dual language immersion programs are commonly defined as long-term programs that provide at least half of instruction in a partner language such as Spanish while also teaching in English, with the goal that students meet academic standards in both languages (What Works Clearinghouse, Dual Language Programs Intervention Report). A majority of two-way programs are designed to enroll roughly equal numbers of native English speakers and native speakers of the partner language so that students can serve as language models for one another and share status in the classroom (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). Instruction tends to begin in the early elementary grades (as early as preschool and kindergarten) and continues for at least five to six years, making dual language immersion an integrated pathway through the K–12 system rather than a short-term intervention (What Works Clearinghouse, Dual Language Programs Intervention Report).

Although dual language immersion remains a small share of total U.S. enrollment, it has grown rapidly in recent years. A mapping effort by The Century Foundation and the Children's Equity Project identified more than 1,600 dual language immersion programs serving approximately 1.1 million students across thirteen states and the District of Columbia, with most programs offered in Spanish and English and smaller numbers in languages such as Mandarin Chinese or French (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). When compared to the tens of millions of students enrolled in U.S. public schools overall, these figures show that dual language immersion serves only a fraction of the K–12 population, yet it has become one of the most visible and fastest-growing approaches to educating

multilingual students (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs; Slater et al., "The State of Dual Language Education in the U.S.").

The distribution of dual language immersion programs across the country is uneven. Researchers describe it (the national landscape) as a "patchwork." In the patchwork, certain states and metropolitan areas host dense clusters of programs while many other regions have few to none at all (Slater et al., "The State of Dual Language Education in the U.S."). States such as California, Texas, Utah, and New York have developed relatively large numbers of programs, often concentrated in urban and suburban districts that serve significant populations of English learners, while numerous states in other regions have only a handful of dual language campuses (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). In addition, programs are often located in magnet schools or specialized academies, which can make access dependent on residence, transportation, and admissions processes rather than on student need alone (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs).

State policy helps explain some of these patterns. Utah has implemented a statewide dual language initiative that offers programs in multiple partner languages and provides central support for curriculum and teacher development, making it easier for districts to open new programs (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). California has moved from earlier restrictions on bilingual education toward an explicit policy of embracing bilingualism, with state leaders encouraging districts to expand dual language immersion and invest in bilingual teacher pipelines (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). Other states have taken more limited steps or have not yet adopted similar policies for tracking or supporting dual language programs, mirroring the broader variation in education priorities described in governors' recent addresses (National Governors Association; Education Commission of the States).

4. Outcomes of Dual Language Immersion

Dual language immersion programs pursue multiple goals at once: students should become bilingual and biliterate, meet or exceed academic standards, and develop cross-cultural competence (What Works Clearinghouse, Dual Language Programs Intervention Report). To support these aims, high-quality programs align curriculum in both languages to the state content standards. Given this, they provide explicit instruction in academic vocabulary and literacy and use classroom structures that encourage students to use both languages for meaningful communication and problem-solving (What Works Clearinghouse, Dual Language Programs Intervention Report). The central question for educators and policymakers is whether or not these same goals are realized for the students who participate.

Evidence summarized by the What Works Clearinghouse suggests that dual language programs can support strong long-term outcomes for English learners. The intervention report finds moderate evidence that participation in dual language programs has a positive effect on English literacy, noting that English learners in these programs may initially score below peers in English-only classrooms but tend to show stronger growth over time and can meet or surpass comparison groups in the upper elementary grades (What Works Clearinghouse, Dual Language Programs Intervention Report). Longitudinal analyses cited in this review indicate that, by the end of elementary school, English learners in dual language settings can perform as well as or better than similar students in English-only programs on standardized reading assessments, while also developing literacy in their home language (What Works Clearinghouse, Dual Language Programs Intervention Report; Slater et al., "The State of Dual Language Education in the U.S."). These findings are especially significant in light of the persistent achievement gaps documented by NAEP and other assessments, suggesting that dual language immersion may offer one pathway toward closing long-term disparities for multilingual learners (What Works Clearinghouse, Dual Language Programs Intervention Report).

Research also indicates that dual language immersion benefits native English speakers. According to the What Works Clearinghouse, native English-speaking students in dual language programs generally maintain English achievement comparable to peers in English-only classrooms. As a bonus, they gain substantially higher proficiency in the partner language than students who receive only traditional foreign-language instruction (What Works Clearinghouse, Dual Language Programs Intervention Report). In other words, learning academic content through two languages does not seem to harm English performance when programs are well and meaningfully designed. Instead, the shared learning allows students to add a second language without sacrificing outcomes in their first language. These results align with broader evidence that bilingualism can support cognitive flexibility and open additional educational and career opportunities, themes that connect to the economic and civic roles of schooling discussed earlier in the paper (EBSCO, "Economy and Education in the United States").

At the same time, scholars caution that not all students may be benefiting equally from dual language immersion. Analyses from the Civil Rights Project note that Black students, students with disabilities, and some other marginalized groups are under-represented in many dual language programs and in the research samples used to study them, making it difficult to know whether program benefits are truly equitable across subgroups (Slater et al., "The State of Dual Language Education in the U.S."). Researchers warn that, without intentional design, dual language programs can risk becoming boutique options that disproportionately serve more advantaged families, rather than tools for reducing long-standing educational inequalities (Slater et al., "The State of Dual Language Education in the U.S."). These concerns point directly to questions regarding access and policy.

5. Access and Policy Directions for Equity

Despite promising evidence on outcomes, access to dual language immersion remains uneven both across and within states (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). Analyses by The Century Foundation show that dual language programs are clustered in particular metropolitan areas and districts, leaving many communities with no nearby options, and that English learners are sometimes under-represented in two-way programs relative to their share of district enrollment (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). In some contexts, programs marketed as attractive enrichment options have drawn higher proportions of middle-class, English-dominant families, raising concerns that the students whose home languages anchor the programs may not have equal access to their potential benefits (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs; Slater et al., "The State of Dual Language Education in the U.S.").

Several structural barriers help explain these patterns. Dual language programs often have limited seats and may also rely on lotteries or application processes. Consequently, that can disadvantage families who lack information, time, or transportation to navigate these complex enrollment systems (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). Additionally, outreach materials and information sessions are not always provided in families' home languages- and program locations may require long commutes that are difficult for low-income households without reliable transportation (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). Districts and states also face a chronic shortage of certified bilingual teachers, a challenge that mirrors the staffing problems and resource disparities documented more broadly in the U.S. education system (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs; Lake and Pillow, The State of the American Student).

Recent policy recommendations focus on designing dual language expansion with an emphasis on equity. The Century Foundation urges districts and states to prioritize English learners' access when creating or enlarging programs. For example, reserving seats for students who speak the partner language at home and avoiding admissions practices that primarily benefit well-resourced families can help support greater access (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). They also recommend locating new programs in schools that already serve large numbers of English learners, rather than only in magnet schools that draw students away from those neighborhoods, and investing in "grow-your-own" initiatives, scholarships, and improved working conditions to expand the bilingual teacher pipeline (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs). These proposals align with broader state priorities around equity, teacher shortages, and workforce preparation identified in recent policy reports, suggesting that dual language immersion can be integrated into wider efforts to strengthen the K–12 system (National Governors Association; Education Commission of the States; Lake and Pillow, The State of the American Student).

6. Conclusion

Overall, dual language immersion illustrates how policy choices about language, access, and program design can either reinforce or challenge the inequalities that have long characterized American education (Slater et al., "The State of Dual Language Education in the U.S."). As states and districts continue exploring new approaches to curriculum, student support, and staffing within familiar structural frameworks, decisions about who can enter dual language programs and how those programs are resourced will help determine whether bilingualism becomes a widely shared public good and a more widespread opportunity within the U.S. K–12 system (Williams and Meek, Ensuring Equitable Access to Dual-Language Immersion Programs).

Special Education for Children from Multicultural Households: The Perspectives of High School Students

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1. Abstract

Due to the low birth rate and the tendency to avoid 3D (Difficult·Dirty·Dangerous) tasks, demand for foreign laborers is increasing. Foreign laborers are common in factories that may have difficulty finding local workers. Schools are not an exception, where I can see multiple races in some Korean local schools.

According to "Current status of foreign residents in local governments, 2024 (Ministry of the Interior and Safety)", the number of foreign residents in 2024 is 2,583,626, which increased 124,084 (5.0%) from 2,459,542 in 2023. Compared to the fact that the population in Korea has increased 0.06% from 51,774,521 in 2023 to 51,805,547 in 2024, the increase in the number of foreign residents is significant.[1] Considering that the number of undocumented foreign nationals was 397,522 in 2024,[2] the total number of foreign residents reaches 2,981,148. Korea is already entering a multiracial, multicultural nation by the standards of OECD.

The increase in the number of multicultural households naturally leads to an increase in the number of children from such households. The number of children from multicultural households is 315,398 in 2024, which increased 2.3% from

1 *Ministry of the Interior and Safety. (2025). Current status of foreign residents in local governments,* 2024.
2 *Korea Immigration Service (Ministry of Justice). (2025). 2024 Immigration Statistics Yearbook*

308,402 in 2023.[1] Surprisingly, school-aged children in Korea numbered 5,684,745 in 2024, which decreased 1.7% from 5,783,612 in 2023.[3] It was 5,551,250 in 2025, which also decreased 2.3% from 2024.[4]

On the contrary, school-aged children from multicultural households continue to increase. It was a 7% increase from 181,178 in 2023 to 193,814 in 2024. The proportion of students from multicultural households in 2024 accounts for approximately 3.8% of the total student population in Korea.[3] It was 202,208 in 2025, making a 4.3% increase from 2024. The proportion of students from multicultural households also increased to 4% in 2025.[4] This indicates that Korean school-aged children are decreasing while children from multicultural households are rapidly increasing.

Naturally, the number of children with special needs from multicultural households is increasing. Although there is a limited source that shows statistics of those children, according to the "2024 National Survey of Multicultural Families," the number of registered disabled persons in multicultural households was 6.4% in 2015, 5.8% in 2018, 7.3% in 2021, showing an increasing trend. This means that as many as 17,767 multicultural households include at least one family member with a disability. The proportion of children with a disability accounts for 19.9% of the registered disabled persons in multicultural households.[5] Considering their language barriers and difficulties in access to shared services and discrimination in society, there may be more than the announced number.

As the statistics above showed, a significant number of children with special needs from multicultural households are identified. However, there is limited research on this subject. There are some studies on the characteristics of their linguistic development and evaluation methods, but a limited number of studies were found on children with special needs from multicultural households. These children are often neglected in this highly competitive educational environment, when education plays a role as a pathway to college. Special education policies also mainly focus on

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3 *Ministry of Education. (2024). 2024 Basic Educational Statistics Survey.*

4 *Ministry of Education. (2025). 2024 Basic Educational Statistics Survey.*

Korean children who speak Korean and are familiar with Korean culture. Therefore, this study explores the characteristics of both multicultural households and children from these households through the experiences of experts in the field. Based on the data collected, the study intends to analyze the suitability of support programs for children with special needs from multicultural households. Finally, this study is attempting to establish an academic basis that can be used to build programs.

First, what are the differences between children from general families who need special education and children from multicultural households who need special education?

Second, how is the status quo of support for children with special needs from multicultural households in the revised 2019 'Nuri Curriculum'?

Third, what is the appropriate role of educators in program support for children with special needs from multicultural households?

2. Characteristics of Children from Multicultural Households

1) The Concept of Multicultural Households

Article 2, Paragraph 1 of the latest Multicultural Family Support Act (referred to as the "Multicultural Family Act"), revised in 2020, defines "multicultural family" as follows: "A family consisting of a marriage immigrant as defined in Article 2, Paragraph 2, Subparagraph 3 of the 'Basic Act on the Treatment of Foreigners in Korea' and a person who has acquired Korean nationality in accordance with Articles 2 through 4 of the 'Nationality Act'", "A family consisting of a person who has acquired Korean nationality in accordance with Articles 3 and 4 of the 'Nationality Act' and a person who has acquired Korean nationality in accordance with Articles 2 through 4 of the same Act".[5] This means that, according to the Multicultural Family Act, a multicultural family must include at least one Korean national.

5 Korea Ministry of Government Legislation. (2024). National Law Information Center. Retrieved July 3, 2025, from https://www.law.go.krbelow/

On the contrary, multicultural households refer to "A family that includes individuals from different cultural backgrounds such as nationality, race, and culture"(Son & Lee, 2015; Kang, 2020). Multicultural households are families with two or more cultural backgrounds, such as migrant worker families, international marriage families, and settler families(Kang, 2020). Therefore, multicultural households are communities that fall under the category of household, and they can be further categorized as seen in the table below.

〈Table 1〉 Types of multicultural households

International marriage households	Migrant worker households	Settler households
• Households formed by the marriage of a Korean male and a foreign female. • Households formed by the marriage of a Korean female and a foreign male.	• Households formed by the marriage of a foreign male and a foreign female laborer. • Households that moved to Korea after the marriage of a foreign male and a foreign female in a foreign country.	• Households formed by the marriage of a North Korean defector male and female • Households formed by the marriage of a North Korean defector male and a South Korean female or the marriage of a North Korean defector female and a South Korean male

※ Kim, Y. H. (2015). A Qualitative Case Study on the Experience of Supporting the Development of Young Children in Multicultural Families. (Doctoral dissertation, Dongshin University).

2) The Characteristics of Multicultural Households

Multicultural households experience various problems, including differences in language, culture, and food, unlike general Korean households(Kang, 2020). Although they are interested in raising children well and make great efforts, they tend to have a passive attitude toward their children's education and rely heavily on educational institutions, such as schools, due to limitations in their language ability.(Kim et al, 2012; Kang, 2020). Children from international marriage households lack language skills, possibly leading to difficulties in learning, confusion in identity, and bullying. Children from migrant worker households have language difficulties, low school enrollment rates, unfamiliarity with public education, and

a lack of pride in their mother's home country. Especially, children from settler households experience difficulties in language development, poor education, low school enrollment rates, and stereotypes and prejudices[6].

3) The Characteristics of Children from Multicultural Households

Children from multicultural households experience difficulties in language development, emotional development, and learning abilities due to the characteristics of family members, particularly their parents (Kang, 2011; Kang, 2020). The reasons for these difficulties include a dual-language environment in which the parents use two different languages, limited Korean language proficiency of parents, and relatively low economic stability. In addition, identity confusion due to different cultural backgrounds and prejudices from friends and classmates could be other reasons (Kim et al, 2012).

(1) Linguistic Aspect

Children's language ability is influenced by various factors. Although the children themselves were born in Korea, there are limitations in learning Korean. Inaccurate pronunciation of the mother is one of the factors that contribute to these limitations, as raising children is mostly done by a mother, and most of the time is spent with her(Kang, 2020). Naturally, this leads to comparatively weaker expressive language skills compared to receptive language skills. During the infant and toddler period, language development occurs through constant linguistic stimulation, which is seen in a typical family with Korean parents. However, there are quantitative and qualitative limitations in multicultural households (Kim et al, 2012).

6 Cho, Y. D. (2006). A survey on the educational status of children from multicultural families. Seoul: Ministry of Education and Human Resources Development.

(2) Emotional and Social Aspect

In the process of human development, the infant and toddler period is very important for emotional and social development. From a societal perspective, this period requires appropriate support for individuals to grow into healthy members of society, both mentally and physically. Children from multicultural households can recognize differences in appearance and culture compared to the general Korean households, and may experience difficulties in relationships with teachers or classmates at educational institutions, which negatively affects the ego development of children (Kim et al, 2012; Kang, 2020). Additionally, a foreign mother is likely to express her own emotions and desires negatively due to difficult experiences while adapting to a new culture and facing discrimination (Lee, 2011). Such an emotional expression can be a negative influence on the emotional and social development of the children.

4) The Characteristics of the Special Education Needed Children of Multicultural Households

Children from multicultural households who require special education experience discrimination during their education due to their cognitive and physical disabilities (Lee, 2012). 83.7% of multicultural household children are reported to experience linguistic disability. This makes it difficult for them to focus on education in schools, which leads to learning disorders and emotional disabilities. Most of their intelligence test scores are 70 or below, which indicates the possibility of intellectual disabilities (Shin, 2011). However, language development occurs at different rates across different domains. Even children from multicultural households can learn the everyday language relatively quickly, while academic language development occurs more slowly (Moran & Hakuta, 1995).

Additionally, educators have stereotypes or behavioral biases in general classrooms, which negatively affect special multicultural students. Due to this, special multicultural students can experience emotional difficulties and loss of trust in their teachers. Sometimes behavioral characteristics caused by cultural differences

can be mistaken for intellectual disability (Lee, 2012). When the children have disabilities, the cultural background of the parents influences the understanding of the cause and result of the disability. Meaningful differences across cultures were observed in the parents' understanding of disabilities(Lynch & Hanson, 2011). The expected physical, emotional, and social development levels at a certain age are different based on one's own culture. This results in cultural differences in the definitions of disabilities and the timing of disability identification. Therefore, educational placement of students with disabilities should not rely solely on recommendations and reviews that may be influenced by prejudices, but should be based on a clear history of the children. To achieve this, a multidimensional evaluation method is required(Yang, 2014).

3. Special Education for Children from Multicultural Households

1) Special Education for Children in the Revised 2019 Nuri curriculum

The Nuri Curriculum, the national curriculum of Korea, recommends that multicultural education be incorporated into the annual curriculum of early childhood education institutions as a cross-curricular approach, alongside character education, environmental education, safety education, sex education, international understanding education, and gender equality education. Furthermore, the curriculum emphasizes developing an attitude of life that respects and accepts differences in sex, religion, physical aspect, family, culture, without stereotyping(Ministry of Education, Science and Technology, 2012).

The revised 2019 Nuri curriculum proposes 'Child-centered and play-centered' education as a key principle targeting children aged 3-5. 'Child-centered and play-centered' programs enable children to learn through play activities in areas of their interest. It suggests that educators observe children, identify their interests, and promote suitable and diverse activities while acting as guides and facilitators(Kim, 2020).

In addition, the revised 2019 Nuri curriculum includes programs for children with special educational needs and emphasizes the importance of play in their education. For children with special needs, play is a key indicator of development during early childhood, and it provides a context for development and learning in other areas as well(Lee, 2020; Lifter, Mason, & Barton, 2011).

2) Special Education for Children from Multicultural Households

(1) The Concept of Special Education for Children from Multicultural Households

The field of multicultural education in our society is growing in demand due to the increasing number of multicultural households. Multicultural education refers to "education that aims for educational equality and, through curriculum reform, enables people from both mainstream and minority groups to develop multicultural competencies and achieve social justice"(Jang,2006). Jang(2006) also defines multicultural education as "Placing importance on interpersonal understanding and equality among individuals from different cultural backgrounds, reducing prejudices toward other cultures, and recognizing them as equal to one's own, and providing education on the knowledge, attitudes, and values to understand cultural diversity." [7].

Multicultural education is being enacted with a refined system established through the support plan from the government's educational institutions, including the Ministry of Education. Details include strengthening customized educational support for multicultural students, expanding the participation of school members in multicultural education, addressing educational blind spots for foreign students entering the country in the middle of the school year, and establishing a systematic framework for multicultural education[8]. Regarding early childhood education, it is suggested that the curriculum include multicultural education as part of

7 Jang, I. S. (2006). Multicultural education and curriculum in the United States. Journal of Curriculum Studies, 24(4), 27–53.

8 Ministry of Education. (2019). 2019 support plan for multicultural education. Seoul: Ministry of Education.

cross-curricular activities, according to the Nuri Curriculum, which has been implemented since 2012. The curriculum also emphasizes building attitudes that respect and accept various cultural differences without stereotyping[9].

Multicultural education in early childhood helps establish understanding and a respectful attitude toward different cultures. It is essential to foster sensitivity and social awareness naturally (Kang, 2020) in early childhood institutions, as this helps them understand cultural diversity in a rapidly transforming multicultural society.

(2) Children with Special Needs From Multicultural Households and Special Education Teachers

To provide education for children requiring special education from multicultural households, special education teachers must understand the characteristics of multicultural education and run their educational activities accordingly. This is because special education requires teachers to provide services tailored to individual characteristics and needs (Yang Chun-mi, 2014).

As the importance of play is being emphasized in the field of early childhood special education (Kang and Lee, 2015; Baek, 2009; Harper & McCluskey, 2003; Hestenes & Carroll, 2000), teachers in this field should be able to apply the principles and teaching strategies within specific daily routines based on an understanding of the "Revised 2019 Nuri Curriculum" when teaching children with special needs in the classes (Kang, 2020).

However, while the Revised 2019 Nuri Curriculum emphasizes that children should have initiative in play, children with special needs often have difficulties in taking initiative in play, and such a gap between the curriculum's intention and practical application has been observed (Oh, Noh, 2020). In other words, play is the core

9 Lee, H. S. (2017). An analysis of the formation process of multicultural education among early childhood special education teachers using grounded theory. Doctoral dissertation, Changwon National University.

of the curriculum, rather than merely an educational tool or method. However, in actual practice, play is often treated as a goal to be achieved or used as a tool to promote skill development in various developmental areas (Lee, 2020).

In this context, it has been identified that special education teachers have difficulties in implementing the play-centered perspective of the 2019 Nuri Curriculum in actual practice, which highlights child-led play rather than teacher-led activities. Additionally, special education teachers face difficulties in applying the general education curriculum to children with special needs due to the individual's educational needs. For this reason, special education teachers use various methods to integrate IEP(Individual Education Plan) with the general curriculum, depending on their judgment (Kim, Lee, 2013). They also have difficulties in developing and implementing IEP, which confuses the administrative support system. Due to these issues, this study aims to explore appropriate play support for children with special needs through qualitative research.

4. The Role of Special Education Teachers in Special Education for Children from Multicultural Households

1) Qualitative Research on Special Education Teachers in Special Education for Children from Multicultural Households

It is essential to interview teachers who teach children with special needs from multicultural households. Such interviews can help relevant authorities develop and implement appropriate systems, tools, and methods to support children's emotional and social development, including play activities and Korean language education. Based on the interviews, the results are presented in this study. The researcher conducted telephone interviews with six special education teachers who are currently working at a special education school in Incheon, as shown in 〈Table 2〉.

〈Table 2〉 In-depth Interview Participants

Teacher	Sex	Age	Final degree	Qualifications	Total educational experience	Total educational experience of children with special needs from multicultural households
A	Female	40s	M.S.	Special School (Kindergarten) Level 1	8Years 1 Month	4 Years
B	Female	30s	B.S.	Special School (Kindergarten) Level 1	6 Years 1 Month	3 Years
C	Female	30s	M.S.	Special School (Kindergarten) Level 1	8 Years 4 Month	4 Years 6 Months
D	Female	30s	B.S.	Special School (Kindergarten) Level 1	12 Years	3 Years
E	Female	30s	B.S.	Special School (Kindergarten) Level 1	5 Years	3 Years
F	Female	30	Master's student	Special School (Kindergarten) Level 1	5 Years 1 Month	3 Years

Telephone interviews with special education teachers were conducted, asking the following specific questions.

Question 1) How was your experience with a child with special needs from a multicultural household? (e.g., first impression, difficulties faced during the experience, changes from initial thoughts, etc.)

Question 2) What was your experience with the parents of a child with special needs from a multicultural household? (e.g., the need to compromise with parents due to different educational opinions, difficulties in communication with the primary caregiver due to limited Korean proficiency, anxiety caused by the indifference of a caregiver who is fluent in Korean, etc.)

Question 3) What was the play experience with a child with special needs from a multicultural household? (e.g., type of play, duration of play, peer relationships, etc.)

Question 4) What support did you provide to help the child with special needs from a multicultural family smoothly interact with peers?

2) Exploring Special Education Teachers' Experiences with Children from Multicultural Households

(1) Experiences with a child with special needs from a multicultural household

Children with special needs often show difficulties such as inattention, aggressive behavior, and frequent out-of-seat behavior (Kim, Jang, 2014). They may also exhibit hyperactivity, excessive noise-making, disruptive behavior, crying, impulsive behavior, and stereotyped behavior, including repetitive and meaningless behavior. In multicultural households, where one of the parents has a foreign nationality or has acquired Korean nationality through marriage, there are difficulties addressing the issues above due to their limited Korean language proficiency and different cultural perspectives. Teachers are well aware of these problems. Children from multicultural households tend to be easily distracted and engage little in classwork. In addition, their language skills in basic reading and writing are also delayed due to the language barrier, as one of their parents has limited proficiency in Korean. As a result, their academic performance is negatively affected not only in the Korean classes but also in other subjects. Compared to Korean children with similar special needs, children

from multicultural households may have more difficulties in the cognitive processing of information. This means that their everyday life in a public educational institution can be an ongoing challenge.

However, many people believe that special education can help address issues that are difficult to handle in the public education system. Special education also plays an important role in raising awareness of problems within the public education system. It works as a shelter for children who feel isolated and neglected within this system. Based on the experience of teachers, they view these children as students with special needs rather than students from multicultural households. This is because teachers pay more attention to their special needs than to students' multicultural backgrounds, as teachers spend a significant amount of time with these students in class. They think it is more helpful to teach students Korean rather than the language spoken at home. In reality, many parents from multicultural households choose to send their children to general public schools instead of special education schools. As a result, general education teachers often teach students with special needs from multicultural households.

(2) Experiences with the parents of a child with special needs from a multicultural household

Primary and secondary education in Korea has long been viewed mainly as a pathway to college. Strong academic pressure and a competitive culture are nationwide, although the competitive levels may vary by region. In such an educational environment, fathers from multicultural households often get to understand the high value of education in Korean society and realize that their children are at a disadvantage. Fathers tend to lead the family with authority rather than engaging in communication with their wives and children. For mothers with limited Korean proficiency, communication with the teachers can be challenging as they can not clearly express their concerns and understand the teachers' feedback. Cultural differences also make mothers anxious about communicating with teachers. In some cases, mothers return to their home countries, where they can receive

emotional support. Basically, mothers from multicultural households also desire new experiences and activities, emotional stability, and self-esteem; however, their dependency needs are significant due to the distrust and pressure that they face every day.

The mothers of children with special needs from multicultural households sometimes show impulsive behavior, such as suddenly returning to their home countries when facing overwhelmed situations. Some mothers feel difficulties in emotional control as they get older, displaying strong emotional reactions, or sometimes an adjustment disorder to the situation. In addition, their limited Korean language skills make building social relationships harder. Despite these challenges, many of them hope that their children can get along well with their peers. For this reason, children from multicultural households need various programs to develop social and language skills that help express their feelings, understand others, and receive emotional support. In this context, this study focuses on play-based support and involves the children's mothers as well.

3) Play-based Support for Children With Special Needs from Multicultural Households

(1) Exploring play in children with special needs from multicultural households

While general early childhood education emphasizes a constructivist philosophy, in which teachers act as facilitators and children take initiative, special education highlights a teacher-centered philosophy, where teachers lead the learning of new skills and guide directly(Hwang, Lee, 2022). However, the revised 2019 Nuri curriculum states that young children with special needs should be supported to participate in play equally with their peers (Ministry of Education, Ministry of Health and Welfare, 2019). According to this approach, children with special needs are recommended to be included in the general educational curriculum (Lee, Yoon, Ahn, Heo, Nah, 2021). Special education teachers play an important role in making this inclusion possible by adjusting(Ministry of Government Legislation, 2021)

educational environment, materials, and methods so that all children can participate in a general classroom environment, and establish appropriate plans to achieve this goal (Kim, Lee, 2013).

While special education teachers acknowledge the need for a teacher-led approach when educating children with special educational needs, they face limitations in applying the revised 2019 Nuri Curriculum in real education settings (Oh, Noh, 2020; Kang, 2020). There is confusion about what is appropriate play for children with special needs and how it should be supported (Lee, Lee, Kang, 2022; Kang, Cho, 2018). This is because children with special needs frequently have difficulties in finding play materials and understanding how to play. As a result, skilled teachers (Kim, Hwang, 2007), with sufficient experience and knowledge, are required to support their needs (Hand, Ko, Kim, 2019).

Implementing the idea of integrating education for children with special needs into the general early childhood education curriculum (National Institute for Special Education, 2020) largely depends on teachers' abilities. Teachers need sufficient experience and professional knowledge to adapt the general early childhood education curriculum and apply it to children with special needs (Kim, Lee, 2013). Therefore, it is important to explore whether special education teachers' views differ from public perceptions. The play of children with special needs from multicultural households is not special. They also like the same cartoon characters as their peers because they were born and raised in Korea. However, the play of children with autism may show its uniqueness, and it is difficult to attract the attention of other children due to their disability. In particular, they feel difficulties in interacting with peers.

Based on these issues, support is needed to implement SDI(specially designed instruction) for children with special needs to participate in the general curriculum(IDEA, 2004). SDI refers to the proper application of educational curricula that is helpful for the development of students with special needs. Furthermore, according to Article 20 of the Special Education Act, children with special needs in kindergarten may receive appropriate support to participate in the curriculum based

on the type and degree of disability, age, and both current and future educational needs. Along with this support system, effective curriculum organization and operation, appropriate teaching.learning methods, evaluation methods, and participation support should be established.

However, the requirements above and the support system are not fully suitable for the play experience of children with special needs from multicultural households. In an educational setting, their disabilities are more noticeable during play. Because the children are well aware of their inaccurate pronunciation, they are reluctant to participate in play activities. As a result, their play mainly consists of long and simple activities carried out alone. Overall, there is little difference between the play of children with special needs and that of children with special needs from multicultural households. The only difference is that disabilities are more noticeable due to language barriers and cultural differences.

(2) Play Supports for Children with Special Needs from Multicultural Households

According to the special education law, enacted in 2007, special education is defined as a service that provides a curriculum and related services targeted to meet the educational needs of students with disabilities (Article 2, Paragraph 1). Consulting and family support are also included as part of the services to efficiently implement special education(Article 2, Paragraph 2). Therapeutic education and vocational training were separated from special education, while academic education and related services were included in the scope. The special education law mentioned above includes various educational supports in the services, including family counseling, medical support, support staff, assistive technology devices, assistive learning devices, transportation, and access to information.

As a result, special education has shifted from an expert-centered approach to a consumer-centered one, and high-quality special education services are now provided to children with special needs and their family members. The importance

of family support in special education has increased (Kim,2007). This is because previous research on emotional aspects mentioned above can be applied to families of children with special needs from multicultural households.

The birth of a child with a disability often brings psychological and emotional instability to the family, particularly to parents, and such emotional states may negatively affect the child's upbringing. In this context, play support for children with special needs from multicultural households should focus on their interests and preferences to address their emotional states. Therefore, it is important to explore special child educators' experiences and perspectives on how play support can be provided, considering their emotional aspect.

First, providing sufficient play materials is a primary form of support for children with special needs from multicultural households. In addition, support in learning the main language is necessary for these children to interact efficiently with their peers in kindergarten. However, the general kindergarten system mostly does not support multilingual education. Therefore, customized support should be provided based on each child's disability characteristics and developmental levels.

In practice, a new educational approach based on the revised 2019 Nuri curriculum has been applied to children with special needs from multicultural households. The revised Nuri curriculum emphasizes 'Child-centered /Play-centered' education, which does not mean just leaving the children to play by themselves. It highlights the role of educators as guides and facilitators for the children to immerse themselves in the topic through various plays based on their interests and preferences (Ministry of Education and Ministry of Health and Welfare, 2019). To perform this role, teachers have to observe children to identify their interests and promote various activities accordingly (Kim, 2020).

There are some difficulties in applying the revised Nuri curriculum, as teachers have to support the play led by the children themselves. Research on the changes following the implementation of the revised Nuri curriculum has identified that the teachers felt difficulties in preparation rather than in understanding. They had

limited time to learn by experience, and there was a lack of sufficient training or materials to address the limitations (Lee.Lee 2021; Lee.Ha.Jeon. 2020; Jeong.Kwon, 2020).

However, the revised 2019 Nuri curriculum highlights that children with special needs from multicultural households should be able to participate in all activities within the general early childhood education curriculum, the same as children without disabilities (Lee, 2011). Because the revised Nuri curriculum is child-centered and play-centered, teachers play an important role in supporting children's play in an inclusive environment.

5. Conclusion

This paper explored the characteristics of multicultural households and children with special needs from such households. It is identified that these children often do not receive appropriate support from their families or schools, despite facing linguistic and emotional difficulties every day. The revised 2019 Nuri curriculum emphasizes child-centered and play-centered education, in which children take the initiative in play activities. Children with special needs from multicultural households are also included within this curriculum.

However, teachers face challenges in applying child-led play activities in actual educational settings and frequently adapt the Nuri curriculum into a customized one in practice. They view these children as students with special needs rather than as students from multicultural households.

Disabilities of children with special needs from multicultural households are more noticeable than those of children with special needs from typical Korean households due to language barriers and cultural differences. Therefore, customized support should be provided based on each child's characteristics and developmental levels. Providing sufficient play materials and support in learning the main language is necessary to handle their emotional needs.

Nevertheless, because the revised 2019 Nuri curriculum largely depends on each teacher's capacity, appropriate play support may not always be provided.

6

Environmental Sustainability

The Correlation Between the Introduction of Food Waste Recycling Systems and Resident Satisfaction

– Focusing on Integration with the Technology Acceptance Model –

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1. Introduction

When I first came to the U.S., I thought recycling would be easier than it was back home because there were bins everywhere. At my school, there was always a "trash" side and a "recycling" side. But when I watched what happened in the lunch line, the recycling felt fake. Half-full drinks went in with paper. Food-smeared containers went in with clean ones. From my observation, I realized that the lack of proper recycling was a habit problem. It is also a system problem because the rules change by city, by school, and even by building.

The U.S. Environmental Protection Agency (EPA) reports that in 2018, Americans generated 292.4 million tons of municipal solid waste, and only 32.1% was recycled or composted. If you want one detail that should stop anyone mid-toss, the EPA also reports that, in 2018, plastics had an 8.7% recycling rate. When I hear classmates say, "At least I recycled," I think about that 8.7%, and I wonder how often the blue bin is only helping us feel better.

Back home in South Korea, recycling felt like a daily rule because the system made waste visible. You didn't just "take out the trash." You had to buy the correct bags and sort your waste, because dumping it the wrong way could bring complaints or penalties. South Korea's Ministry of Environment uses the Volume-Based Waste Fee

approach, where households use designated bags and pay based on how much they throw away. When waste costs you something you can see, you pause, you think, and you change.

Food waste is where I feel the contrast the most. In the U.S., food is treated like ordinary trash, so it leaks into everything, and it ruins what could have been recycled. In South Korea, food waste has its own routine.

2. Theoretical Background

1. Recycling Waste Treatment Methods and the Circular Economy

In the 20th-century economy and society, a one-way system of mass production, mass consumption, and mass disposal operated. This resulted in the generation of vast amounts of waste heat and waste, leading to ecological disruption caused by harmful substances and the greenhouse effect, which in turn threatened human survival. Consequently, there is a demand to transition to a circular society that minimizes the generation of waste heat and waste and uses resources and energy as sparingly as possible. A circular society actively suppresses the flow of materials and energy and the generation of waste. It strives to recycle as much as possible into resources and properly treat waste that cannot be recycled. In other words, a circular society advocates low-carbon green growth, emphasizing high efficiency in resource use and minimizing environmental pollution. It is now imperative to move beyond the linear economy of mass production and mass disposal, transitioning instead to a circular economy that reduces waste and expands high-value recycling throughout the entire production, distribution, consumption, and recycling process.

Based on such situation, there is a growing interest in the development of renewable, ecofriendly and reducing waste. Academic studies are exploring the alternative for waste management methods and are trying to establish a circular economic social system as the new economic social system and. While exploring the alternative for waste management methods takes into consideration that the reduction in waste that is processed as recyclables by recognizing the severity of

waste problem, establishing a circular economic social system emphasizes resource conservation and environment protection starting with the problem of lacking energy and environmental pollution. Based on the prior researches mentioned above, many nations around the world have established related policies regarding waste with the purpose of conserving the environment and healthy development of national economy by emphasizing the circular usage of resources is ways such as suppressing the occurrence of waste and facilitating recycling. Recent increase in the use of disposables is becoming a severe problem, however, it is realistically difficult to properly re-use disposables. Particularly regarding plastic use, the global trend is to reduce consumption. If plastic is not recycled and instead discarded or simply thrown away, environmental pollution problems become severe. Therefore, legal regulations requiring a deposit for disposable plastic cups are being implemented.

Plastic packaging pollution is emerging as an urgent environmental issue (UNEP, 2023). Approximately 141 million tons of plastic packaging are produced annually, and its entire lifecycle contributes to about 1.8 billion tons of carbon emissions per year. Roughly one-third of plastic packaging used in global markets leaks into the environment (WRAP UK, n.d.), causing severe negative impacts on ecosystems and human health (UNEP, 2021b). One major source of plastic packaging waste is fast-moving consumer goods (FMCG) (UNEP, 2021b), as these products are typically designed for single-use and disposal (Zeeuw van der Laan & Aurisicchio, 2019). The circular economy (CE) offers a potential solution to this problem by focusing on redesigning to eliminate waste, circulating products and materials at peak value, and regenerating nature (EMF, n.d.-b). FMCG products, which heavily rely on single-use packaging, need to be redesigned to support the transition to a circular plastics economy (Zeeuw van der Laan & Aurisicchio, 2019), including shifting from single-use to reusable packaging (EMF, 2022). Reusable packaging systems (RPS), such as refillable or returnable products, can reduce plastic packaging waste (EMF, n.d.-a; Greenwood et al., 2021). RPS reduce the need for single-use plastic packaging (EMF, 2022) and generally have a lower environmental impact than single-use

products (UNEP, 2021a). As noted above, recycling for single-use products is a common global practice, while the treatment and recycling of household waste varies by country.

2. Recycling Regulations and Food Waste Disposal Systems

1) South Korea's Recycling Regulation Policy

First, in Korea, waste is categorized into household waste, general industrial waste, and designated waste, and is regulated by law. South Korea enacted the Framework Act on Environmental Policy on August 1, 1990, and implemented it the following year on February 2, 1991. Revised 56 times to date (as of December 2024), this fundamental law establishes various environmental regulations and policies to ensure public health and a pleasant living environment. To maintain a pleasant living environment, the responsibilities of each stakeholder are also defined. The responsibilities of the state, local governments, and businesses are stipulated in the Framework Act on Environmental Policy. According to this Act, the state must establish appropriate plans to prevent environmental pollution and damage. Considering the regional characteristics of each local government, the Minister of Climate and Environment has the responsibility to formulate these plans. Business operators must take measures to prevent environmental pollution arising from their business activities and have the duty to participate in environmental conservation initiatives of the state and local governments. Citizens have the right to live in a healthy and pleasant environment and the obligation to actively cooperate with environmental conservation initiatives of the state and local governments.

The Resource Circulation Framework Act was enacted on May 29, 2016. For approximately seven years, it has stipulated fundamental measures to reduce waste and enable the circulation of generated waste as resources. It legislated the establishment and operation of the Resource Circulation Information Center ([1]), designating it as a control tower to facilitate the circulation of waste and recyclable

1 https://www.re.or.kr/common/viewIntroPage.do

waste as resources, thereby contributing to waste reduction. The Resource Circulation Information Center is a comprehensive resource circulation information system. It shares distribution information on waste, recycled resources, recyclable resources, and recycled products to ensure valuable resources are circulated effectively. It supports related businesses through distribution assistance and provides supply and demand information via electronic bidding, electronic procurement, and a recycling marketplace. Subsequently, aligning with the government's deregulation policy direction, the 「Resource Circulation Framework Act」 was completely revised on December 31, 2022, into the 「Act on the Promotion of Transition to a Circular Economy Society」. This revision aims to revitalize the industry through regulatory innovation in the circular economy sector, such as introducing regulatory sandboxes for new circular economy technology services, and to strengthen research and development of circular economy technology services. To support the transition to a circular economy, the existing Resource Circulation Framework Act, which focused on suppressing waste generation, promoting circular utilization, and disposal, was completely revised into the Circular Economy Society Transition Promotion Act. This aims to contribute to building a sustainable circular economy society by promoting the efficient use of resources, suppressing waste generation, and encouraging circular utilization throughout the entire process of production, consumption, and distribution.

[Figure 1] Annual Waste Generation in Korea (tons/day)

[Figure 2] Annual Municipal Solid Waste Treatment Status in Korea (tons/day)

Furthermore, in Korea, Article 1 of the 「Act on the Promotion of Resource Conservation and Recycling」 (hereinafter referred to as the "Resource Recycling Act") aims to contribute to environmental conservation and the sound development of the national economy by suppressing waste generation, promoting recycling, and ensuring the circular use of resources. To achieve these policy objectives, measures are being implemented to impose the costs of collecting, transporting, and processing household waste on the generators. Specifically, fees for the collection, transportation, and disposal of municipal solid waste are calculated by waste type, considering factors such as the waste generator, collection and transportation systems, and disposal systems, and are levied on the waste generator. For construction site waste, bulky waste, and commercial waste, where the generator is clearly defined, the full cost of collection, transportation, and disposal is charged as a fee to the waste generator. However, for large waste items such as discarded home appliances processed by business associations, only the collection and transportation costs (excluding processing costs) are calculated and charged. Commercial waste

is subject to this only if its nature and condition are similar to household waste, allowing it to be processed using household waste standards and methods, and if the waste type is specified as such by the relevant local government ordinance.

The calculation of the resident burden rate for household waste disposal fees is applied only to areas designated as household waste management zones under Article 14, Paragraph 1 of the Waste Management Act, through the implementation of a pay-as-you-throw system for waste fees. Waste subject to this pay-as-you-throw system includes household waste and general business waste that is similar in nature and condition to household waste, and can be collected, transported, stored, and disposed of using the standards and methods for household waste. However, in areas designated as excluded from domestic waste management, such as hiking trails, recreational parks, beaches, and other comparable areas where large numbers of people gather during specific periods, the pay-as-you-throw system is also applied during periods of high visitor volume.

Pay-as-you-throw bags shall be manufactured according to the following standards based on their intended use, with capacity adjustments possible to suit local government circumstances. Additionally, they may be produced separately as landfill bags (non-combustible) or incineration bags (combustible) depending on the disposal method.

Table 1 Types and Specifications of Pay-As-You-Throw Bags

Type	Capacity
General-purpose bag capacity	1L, 2L, 3L, 5L, 10L, 20L, 30L, 50L, 75L, 100L
Reusable Pay-As-You-Throw Bags	3L, 5L, 10L, 20L, 30L
Public-use bag capacity	30L, 50L, 100L
Single-use plastic bag dedicated bag capacity	3L, 5L

2) California State Recycling Regulation Policy

Recycling is primarily regulated around solid waste. ⅰ) The costs incurred in processing recyclable waste are not borne by the beneficiaries but are covered by general tax revenues, meaning volume-based waste bags are not used; ⅱ) Management of recyclable waste is lax, as evidenced by the significant number of cases where households fail to separate recyclable trash for disposal. ⅲ) Food waste is treated as general waste and simply landfilled, not recycled. Compared to Korea, the focus is more on waste reduction than on recycling. Below, we examine the recycling legislation in California, where the researcher resides.

(1) California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 ([2]) establishes a comprehensive program to reduce, recycle, and reuse solid waste generated within the state in the most efficient and cost-effective manner possible. The purpose of this Act is to conserve water resources, energy, and other natural resources; protect the environment; improve the regulation of existing solid waste landfills; ensure that new landfills are environmentally sound; improve the permitting process for solid waste management facilities; and clarify the responsibilities of local governments for developing and implementing integrated waste management programs. The goal of this Act is to minimize, recycle, and reuse solid waste to the greatest extent possible. "Solid waste" means all solid, semi-solid, and liquid waste, both putrescible and non-putrescible, including garbage, trash, refuse, paper, rubbish, ashes, industrial waste, demolition and construction waste, end-of-life vehicles and their parts, discarded household and industrial appliances, non-hazardous dewatered, treated, or chemically stabilized sewage sludge, manure, plant or animal solid and semi-solid waste, and other discarded solid and semi-solid waste. However, solid waste does not include hazardous waste, radioactive waste regulated under the Radiation Control Law, or medical waste regulated under the Medical Waste Management Act. The

2 Public Resources Code (PRC) Section 40000 et seq.

following table shows the estimated annual disposal tonnage (column 2) and the percentage of total statewide material disposal (column 3) for covered material within each material class. Column 4 shows the CMC within each material class estimated to have the largest amount of material disposed of.

Table 2 Estimated Disposal of Covered Material, By Material Class

Material Class	Annual Disposal Estimate of Covered Material (tons)	Percentage of Total Estimated Covered Material Disposal	Highest Tonnage Covered Material Category in Material Class
Paper and Fiber	3,929,375	46.5%	Cardboard
Plastic	3,123,797	36.9%	Flexible and Film Items
Wood and other Organic Materials	811,999	9.6%	All Untreated Forms
Metal	432,265	5.1%	Non-aerosol Containers
Glass	154,149	1.8%	Bottles and Jars
Ceramic	5,564	0.1%	Small – Two or more sides measuring 2" or less

Furthermore, this law is designed to specify local government responsibilities regarding environmental protection, improved regulation of existing landfills, ensuring the environmental soundness of new landfills, improving permitting procedures for solid waste management facilities, and the development and implementation of integrated waste management plans. However, nothing in this Integrated Waste Management Act shall abolish, limit, or otherwise affect the authority or obligations of the Department of Conservation under the California Beverage Container Recycling and Litter Reduction Act.

Responsibility for solid waste management is shared between the state government and local governments. The state government must exercise its legal authority to ensure an effective and coordinated approach to guarantee the safe management of all solid waste generated within the state, and must oversee the establishment and implementation of local integrated waste management plans. In the public interest, the state government, as the sovereign authority, may empower and require local agencies (subordinate administrative units of the state government) to provide adequate solid waste disposal services, not only within their respective jurisdictions but also in response to local needs consistent with the policies, standards, requirements of the law, and all regulations enacted pursuant thereto. Each county, city, district, or other local government agency providing solid waste disposal services shall provide services including, but not limited to, resource reduction, recycling, composting activities, and the collection, transportation, and disposal of solid waste within and outside its jurisdiction. These solid waste disposal services may be provided by one or a combination of the following methods: (a) directly by the local government agency, (b) by another local government agency, or (c) by a solid waste enterprise. Each county, city, district, or other local government agency has the authority to determine specific matters related to the provision of solid waste disposal services, particularly aspects of solid waste disposal that constitute matters of local concern. Furthermore, in implementing this Act, the Department of Resources Recycling and Recovery and local government agencies shall promote waste management practices in order of priority, including source reduction, recycling and composting, environmentally safe diversion, and environmentally safe landfill disposal (at the discretion of the city or county). Furthermore, they shall maximize the use of all available means of source reduction, recycling, and composting to reduce the amount of solid waste requiring diversion treatment and landfill disposal.

The Integrated Waste Management Act does not limit the authority of a city, county, or borough to impose and enforce reasonable land use conditions or restrictions on solid waste management facilities to prevent or mitigate potential

nuisances, provided that such conditions or restrictions do not conflict with or impose less stringent requirements than the policies, standards, or requirements of this Act and all regulations promulgated pursuant thereto.

California operates a beverage container recycling program where consumers can receive a refund based on the type of container. California Redemption Value (CRV) is a fee paid by consumers when purchasing beverages. Consumers receive the CRV refund when they return the containers to recycling centers or retailers (referred to as 'dealers' in the program). CRV-eligible beverage container materials include Aluminum, Glass, Plastic, and Bi-metal. Effective January 1, 2024, this also includes box-shaped, bladder, and pouch containers holding wine, spirits, wine coolers, and spirits coolers. The CRV refund amount is 5 cents for containers under 24 ounces, 10 cents for containers 24 ounces or larger, and 25 cents for box, bladder, or pouch containers holding wine, spirits, wine coolers, or spirits coolers effective January 1, 2024.

(2) California Integrated Waste Management and Recycling Board (CIWMB)

The California Integrated Waste Management and Recycling Board (CIWMB) was established by AB 939 (Sher) (Chapter 1095 of the Statutes of 1989), the California Integrated Waste Management Act of 1989. AB 939 abolished the California Waste Management Board, the predecessor to CIWMB, and established CIWMB under the California Environmental Protection Agency (Cal-EPA) (9:4 CRLR 110-11). The CIWMB reviews and issues permits for landfill facilities and oversees the operation of all existing landfills. The Board also requires counties and cities to establish County Integrated Waste Management Plans (CoIWMPs), which serve as the basis for reviewing, permitting, inspecting, and regulating solid waste treatment and disposal facilities. Instead of the CIWMB, local governments may form regional agencies. In such cases, the regional agencies must submit Regional Integrated Waste Management Plans (RAIWMPs).

The primary means of waste reduction under AB 939 are recycling, source reduction, and composting. Accordingly, the CoIWMP and RAIWMP comprise several elements. These include the Source Reduction and Recycling (SRR) element, as well as the materials that constitute the solid waste in the region and the methods to convert sufficient quantities of solid waste through recycling, source reduction, and composting to meet the requirements of AB 939. Additionally, each jurisdiction must develop a Household Hazardous Waste (HHW) component, which establishes a program for the safe collection, recycling, treatment, and disposal of hazardous waste generated in households that must be separated from the solid waste stream.

3) Introduction of a Food Waste Disposal System in California, USA

As mentioned earlier, South Korea has implemented a pay-as-you-throw system using designated bags to promote the recycling of food waste. This policy measure has led to a stable convergence in annual household waste generation and a steady increase in recycling rates. This demonstrates the realization of the so-called circular economy. In contrast, recycling regulations in the United States, including California, which treat food waste as general trash and rely entirely on landfilling and composting as policy measures, generate various wastewater during the food processing stage prior to landfilling and composting. Furthermore, food waste is often discarded directly into general trash bins at public facilities like schools, affecting indoor environments and public health through odors and other issues. Furthermore, while South Korea's implementation of pay-as-you-throw bags, where generators bear the cost, has naturally led to separation and collection to reduce household waste placed in these bags, thereby increasing recycling rates, the United States, as shown in Table 2, has relatively low recycling rates. To reduce carbon emissions and achieve sustainable growth, the introduction of a food waste treatment system is essential. To this end, this study proposes to establish this as an independent variable by integrating it with the Technology Acceptance Model (TAM), which mediates human perceptions or attitudes toward waste treatment systems.

3. Adoption of the Extended Technology Acceptance Model

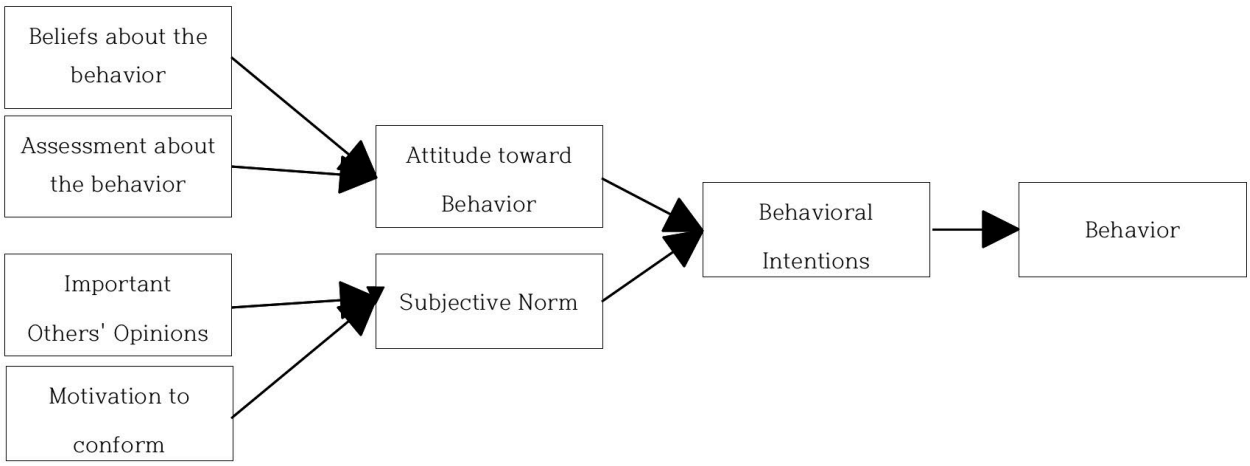
In the 1980s in the United States, when new technologies or services were offered to the public, models were devised to facilitate their smooth diffusion by enabling users to readily adopt these innovations. Notably, Davis's Technology Acceptance Model (TAM) explained user adoption behavior by linking individual beliefs to the intention to use new technologies or services. Perceived usefulness and perceived ease of use were developed as sub-variables of the intention to use a new technology service. Perceived ease of use refers to the degree to which consumers believe they can easily use a new technology or system without mental effort. Perceived usefulness refers to the degree to which consumers believe a new technology or system will enhance their own task performance or efficiency. Since the new technology or service itself is distinct from human perception, a logical framework was developed to incorporate human perception into the new technology or service for interdisciplinary discussions utilizing statistics. This logic has expanded its scope, as described later, into theories such as the Adoption Theory, the Integrated Adoption Theory, and the Extended Technology Adoption Theory.

The Technology Acceptance Model (TAM) is a model developed by social psychologist Davis (1989) that systematically explains the adoption of new information technology users, based on Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA). TAM is based on the hypothesis that for users to adopt a new information system, the system must satisfy their perceived usefulness and perceived ease of use. TAM has two key variables: first, perceived ease of use; second, it emphasizes perceived usefulness. Furthermore, it suggests that these variables influence the user's attitude toward the new technology and their intention to use it.

The Theory of Reasoned Action (TRA) was developed in the late 1970s by social psychologist Martin Fishbein and an ice cream salesman working for an ice cream manufacturer to create tailored advertisements. TRA analyzes the decision-making process that leads individuals to engage in specific behaviors, theorizing how

cognitive, attitudinal, and cultural factors interact to predict specific actions. TRA identifies two primary factors influencing an individual's decision to engage in a specific behavior.

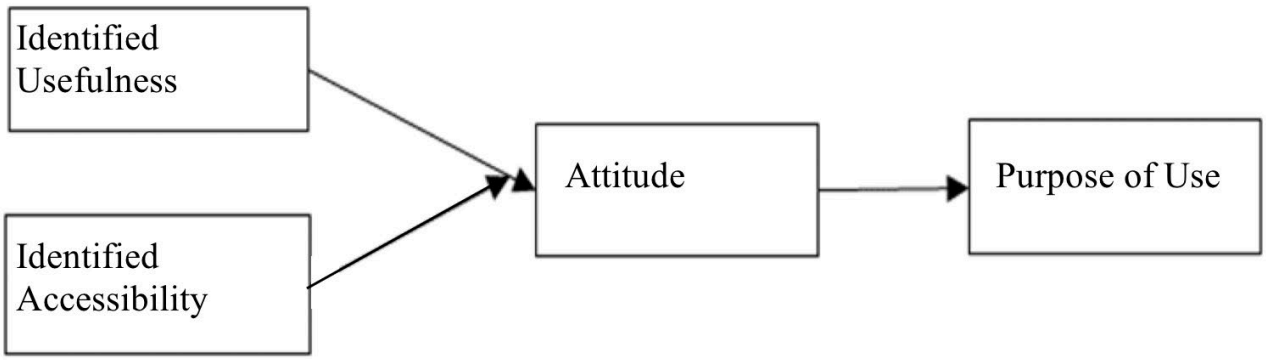
First is attitude. This refers to an individual's own attitude—how they think and feel about a specific behavior. Attitudes are formed by factors such as an individual's beliefs, values, perceptions, and knowledge. Second is normative subjectivity. This is the tendency for an individual to engage in a specific behavior based on others' evaluations or expectations. It is influenced by an individual's social environment or cultural background. TRA assumes that these two factors interact to determine an individual's behavior. Based on this, TRA is used to create predictive models by analyzing the cognitive, attitudinal, and normative subjective factors of individuals who are likely to engage in specific behaviors. Given the significant potential for TRA theory to be applied across diverse fields, it is judged that, from the perspective of the acceptability of crisis communication theory, it can help identify the rational reasons why the public (individuals) would want to continue using SNS media.



[Figure 3] Theory of Reasoned Action (Fishbein & Ajzen, 1975)

Next, Fred Davis (1989) developed the Technology Acceptance Model (TAM), a systematic model explaining the adoption of new information technology by users. TAM is based on the hypothesis that for users to adopt a new information system, the system must satisfy their perceived usefulness and perceived ease of use. TAM

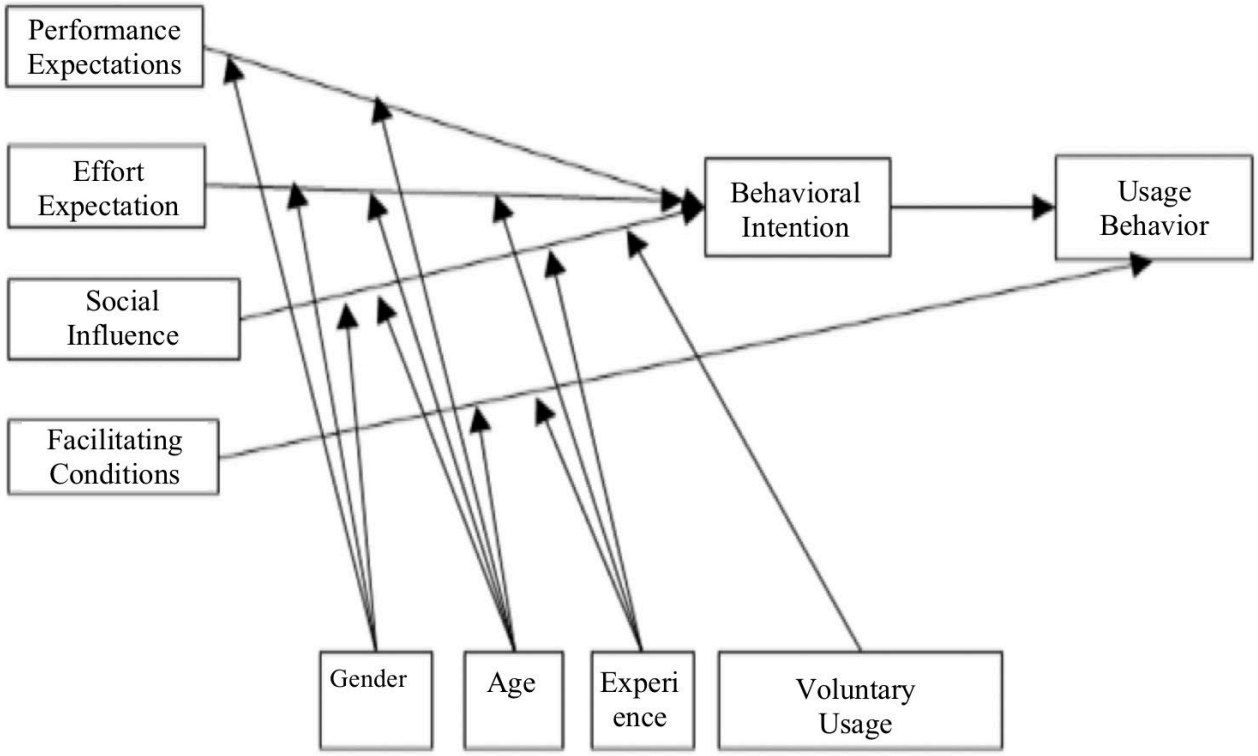
has two key variables: Davis (1989) posits that individual beliefs influence attitudes toward information technology use, and further, that these attitudes determine behavioral intentions. Based on this fundamental framework, behavioral intentions then influence actual information technology usage behavior.



[Figure 4] Technology Acceptance Model Davis (1989)

However, during the application of the Technology Acceptance Model, many studies proceeded without adequately explaining detailed variables due to insufficient hypothesis setting or theoretical logic. Furthermore, these studies often attempted to confirm causal relationships by unconditionally applying the model without considering the characteristics of the specific user groups targeted by each researcher (Gefen & Straub, 2000).

Criticizing these limitations of the Technology Acceptance Model (TAM), Venkatesh (2003) introduced a new, more integrated model of technology acceptance to address the problem, aiming for greater explanatory power. This is the Unified Theory of Acceptance and Use of Technology (UTAUT). The Unified Technology Acceptance Model is shown in 〈Figure 9〉 below.



[Figure 5] Unified Theory of Acceptance and Use of Technology (UTAUT) Venkatesh (2003)

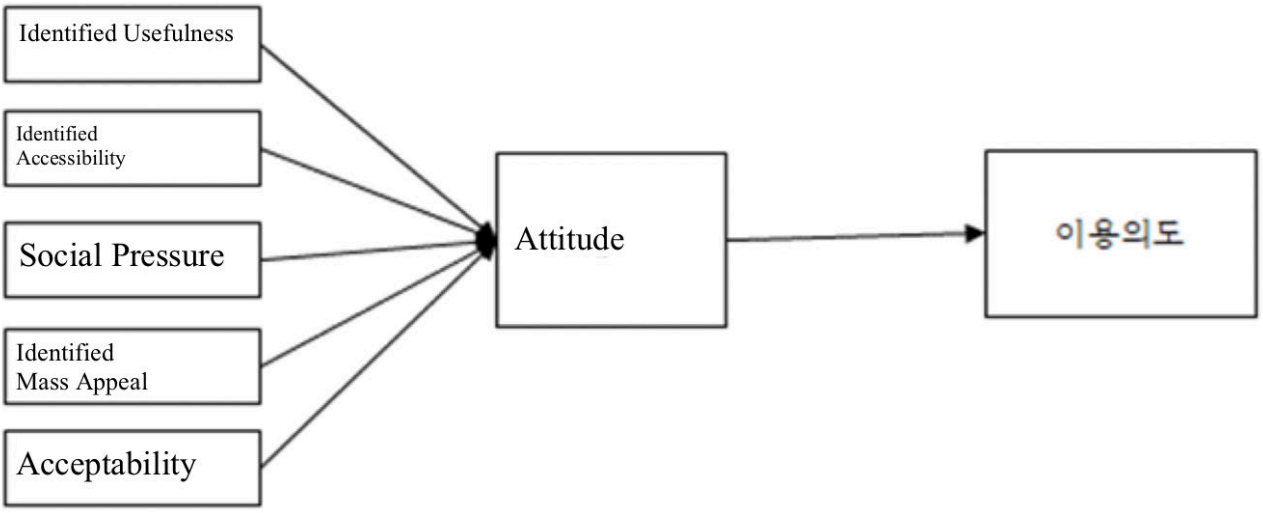
The Integrated Theory of Technology Acceptance derives 32 concepts from eight theories: the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), the Technology Acceptance Model (TAM), the Combined TAM-TPB Theory, the Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT). It proposes the Integrated Theory of Technology Acceptance by applying three variables influencing usage intention, one variable affecting usage behavior, and four moderating control variables (gender, age, experience, and spontaneity) in the process .

Identified Usefulness

Finally, the extended technology acceptance model is based on the above technology acceptance theory and acknowledges external factors and social elements in addition to perceived usefulness and perceived ease of use. It extends beyond individuals who voluntarily use work-related information technology within an organization. Its components include: 1) social pressure, 2) perceived popularity, 3) perceived cost, 4) personal innovativeness, and 5) aesthetic appeal. Among these

variables, some inherently contain variability within the variable itself. Examples include perceived amusement, perceived popularity, perceived cost, and personal innovativeness. Above all, social pressure is such a variable.

Meanwhile, according to the Theory of Narrative Empathy (Keen, 2006), OTT users who watch streaming programs with political content come to recognize political solidarity related to political discourse and action. Thus, as users frequently encounter opportunities to understand and empathize with others' emotions and thoughts, their cognitive empathy abilities are said to increase. Unlike emotional empathy, this involves striving to understand another person's mind through cognitive processes.



[Figure 6] Extended Technology Acceptance Model (UTAUT) Venkatesh (2003)

In short, technology acceptance theory is a theory that targets the design of information systems and aims to guide that design. It is fundamentally a theory that explains and predicts the determinants of an information technology user's intention to adopt it, as well as the motivating factors that lead users to adopt the technology. However, SNS media users are also explained by theories such as the so-called Apparatigeist Theory (Katx & Aakhus, 2002) or the Networked Publics theory (Boyd, 2010), which posits that SNS media users perceive a sense of community in their daily lives.

4. Satisfaction with Food Recycling Systems

Satisfaction is expressed through various terms depending on the research subject, such as consumer satisfaction, customer satisfaction, tourist satisfaction, and resident satisfaction. Satisfaction is a subjective evaluation at the individual level, involving psychological dimensions such as expectations, attitudes, emotions, and feelings. It is assessed through the process of changes in an individual's state of mind before receiving a service, during the process, and after receiving it. Due to these factors, it is necessary to incorporate technology acceptance theory, which mediates residents' attitudes, emotions, and feelings toward food waste treatment systems, as previously discussed.

Among the satisfaction types above, resident satisfaction focuses on residents living in areas where the subjects of experience and cognition are limited, and it is an emotional expression of the differences in perception they feel within their living environment. Resident satisfaction and dissatisfaction can also be viewed as a comparative process. After a phenomenon resulting from a plan unfolds, residents compare the expected outcomes with the actual outcomes. This comparison generates emotional responses—satisfaction or dissatisfaction—based on whether expectations were met or not (Woodruff, Cadotte, & Jenkins, 1987).

Research on resident satisfaction has been actively conducted since the 1970s. If local governments focus their efforts on increasing resident satisfaction, resident loyalty will naturally increase as well, leading to higher service reuse rates (Cornell, 1992). However, failing to satisfy residents influences their behavior through word-of-mouth and complaints. Satisfaction, shaped by residents' positive or negative perceptions, can trigger new thinking, maintaining a close interdependence with service providers. Providers must not only aim to satisfy residents through service activities but also use this process to drive continuous service improvement.

Administrative reforms in the 1980s and 1990s introduced the concept of treating citizens as 'customers' and making public services customer-centric. This meant separating the service delivery process from outcomes, providing citizens with a

pleasant service experience, and transforming the traditional bureaucratic state into a 'service delivery machine'. This customer-oriented approach led to the emergence of various tools designed to help public services deliver better service and ensure citizens and customers were treated fairly. For example, citizen surveys were introduced primarily by local governments in the 1970s and 1980s and gradually became widespread. The 1990s saw the rapid establishment of formal complaint handling systems and ombudsman institutions. The introduction of citizen and customer charters symbolized the public sector's emphasis on citizen satisfaction. These charters specified the service standards citizens could expect, functioning as a kind of contract between government and citizens. Examples include the UK Citizen's Charter (1991), France's Charte des Services Public (1992), and Belgium's Charter of the User of Public Services (1992–1993). While some of these general charters later evolved into specific service standard charters, most eventually disappeared. The introduction of e-government in the late 1990s enhanced public service accessibility while also restructuring the service experience around key life events such as birth, marriage, and home purchase. This signified a shift from a supply-oriented public sector to a citizen-centered, demand-driven public service market. Furthermore, some customer-oriented innovations introduced in the 1990s became firmly established and generalized, while others remained temporary attempts to spread the awareness that citizens should be treated as customers.

Reforms in the late 1990s and 2000s shifted toward treating citizens not merely as customers but as actual consumers of public services. Whereas early reforms focused on improving how public services were delivered, the new reforms centered on what services to provide, aiming to align service supply with citizen demand. In this context, the consumer approach to citizens spurred more in-depth empirical research analyzing consumer choice and whether it improved public satisfaction (Brown, 2007; Jilke et al., 2015).

Citizen satisfaction and dissatisfaction with public services can be discussed as attitudes, and various mechanisms and theories exist to explain satisfaction. Furthermore, how citizens behave when dissatisfied—that is, not only attitudes but

also behavior—can be studied as an indicator of public service satisfaction. Public service satisfaction is a complex phenomenon combining expectations, experiences, and prior attitudes (Van Ryzin, 2004; 2008). Satisfaction evaluations are influenced by factors beyond service quality (Van Ryzin & Immerwahr, 2004; Orr & West, 2007), and service quality improvements do not always lead to increased satisfaction (Stipak, 1979; Kelly & Swindell, 2002). Recent experimental studies in public administration have revealed that satisfaction judgments do not consistently correlate with performance (Andersen & Hjortskov, 2015) and are particularly susceptible to cognitive biases, especially in abstract services. Based on this prior research, this study formulates the following hypotheses.

Hypothesis 1: The acceptability of the food waste treatment system positively (+) influences resident satisfaction.

Hypothesis 1-1: Usefulness, a sub-factor of the acceptability of the food waste treatment system, has a positive (+) effect on resident satisfaction.

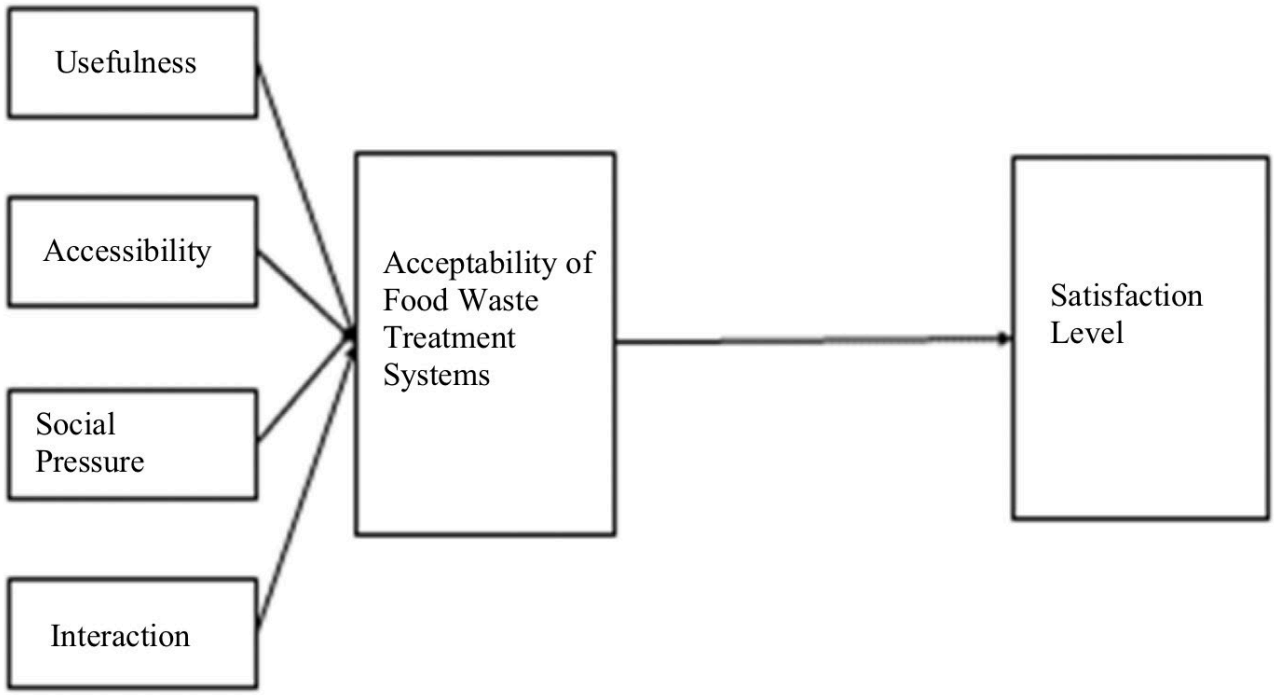
Hypothesis 1-2: The sub-factor of acceptability in the food waste treatment system, namely convenience, positively influences resident satisfaction.

Hypothesis 1-3: Social pressure, a sub-factor of acceptance in the food waste treatment system, has a positive (+) effect on resident satisfaction.

Hypothesis 1-4: Interaction, a sub-factor of acceptance in the food waste treatment system, positively influences resident satisfaction.

3. Research Model and Research Method

1. Research Model



[Figure 7] Research Model

This study sets the acceptability of food waste treatment systems as the independent variable, with its sub-factors being usefulness, ease of use, social pressure, and interaction. Notably, interaction is defined as interaction among the public, representing a newly emphasized factor in technology acceptance theory.

2. Research Method

This study investigates the impact of the acceptability of food waste treatment systems on resident satisfaction. Considering that those handling food waste are distributed across the age range from mid-20s to 50s, and that the study is based on the Extended Technology Acceptance Model, residents aged 25 to 55 living in California were designated as the survey population. The sample size was calculated using the G Power 3.1 Program based on (1) a significance level of .05 required for regression analysis, (2) a moderate effect size of .15, and (3) five variables. This

yielded a sample size of 213. Considering a 10% dropout rate, the final sample size was set at 234. Research participants were recruited via online sites such as Instagram, Twitter X, and Everytime. The survey they participated in was an online questionnaire based on Google Forms. The final survey data underwent statistical analysis using the SPSS statistical program. The statistical data processing steps and analysis methods are as follows. First, frequency analysis was conducted to examine the general characteristics of the research participants who took the survey. Second, prior to testing the research hypotheses, Pearson's correlation coefficients were used to conduct correlation analysis to verify the relationships between variables and check for multi collinearity. Third, regression analysis was performed to analyze the acceptability of the food waste treatment system, extended technology acceptance, and resident satisfaction.

The specific demographic characteristics of the participants in this study are shown in Table 12. The collected sample consisted of 168 men and 66 women, with men being collected approximately 2.5 times more frequently than women. The age groups with the highest proportions were those in their 40s (23.931%) and 30s (22.64.7%), while the remaining age groups accounted for around 10% each. Educational attainment showed the largest sample size for university graduates (28.63%), followed by college graduates (25.21%) and graduate school graduates (23.502%).

Table 3. Demographic Characteristics of Research Participants (N = 234)

Content	Category	N(%)	M(SD)
Gender	Male	166(70.9)	1.71(0.455)
	Female	68 (29.1)	
	Subtotal	234(100)	
Age Group	20s	45 (19.23)	42.47 (1.073)
	30s	53 (22.64)	
	40s	56 (23.93)	
	50s	45 (19.23)	
	60s and older	35 (14.95)	
	Subtotal	234(100)	
Education	High school graduate or below	53 (22.64)	–
	Junior college graduate	59 (25.21)	
	College graduate	67(28.63)	
	Graduate degree or higher	55 (23.50)	
	Subtotal	234(100)	
Occupation	Company employee	116 (49.57)	–
	Service worker	48 (20.51)	
	Professional	37 (15.81)	
	Other	33 (14.10)	
	Subtotal	234(100)	
Monthly Household Income	Under $5,000	115 (41)	–
	$5,000–$8,000	51 (19.2)	
	$8,000–$12,000	34 (12.8)	
	$12,000–$20,000	18(3)	

Content	Category	N(%)	M(SD)
	$20,000–$30,000	11 (21.8)	
	$30,000 and above	5(2.1)	
	Subtotal	234	

3. Measurement Tools

1) Questions on Demographic Characteristics

Data was collected on participants' gender, age, education level, occupation, and monthly household income.

2) Acceptance of Food Waste Disposal Systems (Extended Technology Acceptance Model)

The questionnaire consists of 12 items measuring four subfactors: usefulness, ease, social pressure, and interaction. It uses a 5-point Likert scale ranging from 1 to 5, where 'strongly disagree' is 1 point, 'disagree' is 2 points, 'neutral' is 3 points, 'agree' is 4 points, and 'strongly agree' is 5 points. The score range is 16-80 points, with higher scores indicating greater interaction among the public and higher media diffusion.

3) Resident Satisfaction

This study uses a 21-item scale comprising 'Resident Satisfaction 1 = Expectation', 'Resident Satisfaction 2 = Experience', and 'Resident Satisfaction 3 = Prior Attitude' to measure the degree of resident satisfaction. Each item is rated on a 5-point Likert scale (1 point - Strongly Disagree, 5 points - Strongly Agree). A higher total score indicates greater resident satisfaction. To verify whether the questionnaire was constructed homogeneously among the same variables, reliability validation was conducted. For this validation, Cronbach's α was calculated to assess internal consistency among the items. Generally, a Cronbach's α value of 0.7 or higher is considered to demonstrate reliability, and a higher value is preferable (Cortina, 1993).

Accordingly, the reliability of each item was assessed, and the results are shown in Table 13 below. While most factors satisfied a value of 0.7 or higher, some factors had values below 0.7, indicating that reliability was not fully established for those items. However, some literature considers 0.6 as the threshold for reliability (Shi, Mo, & Sun, 2012). Considering that the questionnaire used in this study is an adaptation of one already employed in prior research, values below the general standard of 0.7 are also acceptable.

Table 4. Subfactor Item Composition and Reliability

Variable	Subfactor	Item Number	Number of Items	Cronbach's α
Acceptability of Food Waste Disposal Systems (Extended Technology Acceptance Model)	Usefulness	1, 2, 3	3	.860
	Usability	4, 5, 6	3	.738
	Social Pressure	7, 8*, 9	3	.759
	Interaction	10*, 11, 12	3	.604
	Total		12	.941
Resident Satisfaction	Resident Satisfaction 1 (Expectation)	1, 2, 3, 4, 5, 6, 7	7	.873
	Resident Satisfaction 2 (Experience)	8, 9, 10, 11, 12, 13 14	7	.873
	Resident Satisfaction 3 (Previous Attitude)	15, 16, 17 18, 19, 20, 21	7	.858
	Overall		21	.951

* Reverse-scored items

4. Data Analysis

This study utilized the SPSS 26.0 program, and the collected data were analyzed using the following methods. ⅰ) Frequency analysis was conducted to confirm the demographic information of the research participants. Descriptive statistics were used to examine the normality and trend of the research variables, and Pearson's

bivariate correlation analysis was performed to confirm the relationship between variables. Skewness and kurtosis were examined to test data normality. Multi collinearity was assessed using tolerance and variance inflation factor (VIF). Reliability was tested using Cronbach's alpha. ii) Independent samples t-tests were performed to identify differences in key variables by gender. iii) Pearson's bivariate correlation analysis was performed to examine the relationship between the acceptability of the food waste treatment system (extended technology acceptance) and resident satisfaction. Each variable consists of multiple items. Therefore, it is necessary to verify whether the sub-characteristics of each variable are consistent. For this purpose, reliability verification must be conducted. Item bundling is then performed based on the results. iv) Finally, establish significant causal pathways within the research model and verify their statistical significance.

4. Research Results

1. t-Tests for Key Variables

To determine whether there were differences in key variables by gender, independent samples t-tests were conducted with dependent variables including situational crisis communication strategies, extended technology acceptance, and age group. The results are presented in 〈Table 16〉.

Analysis revealed significant differences in public relations, a sub-variable of situational crisis communication strategy, and social pressure, a sub-variable of extended technology acceptance. Public relations showed a significant difference between genders: $t(328) = 2.308$, $p = .006$. The average public relations score for men (2.11 ± 0.88) was higher than that for women (1.82 ± 0.85). Social pressure also showed a significant gender difference: $t(279.52) = 2.153$, $p = .001$, with males reporting higher social pressure (2.45 ± 1.07) than females (2.12 ± 1.03). Therefore, gender was controlled in subsequent analyses.

Variable		Male (n = 68) M(SD)	Women (n = 166) M(SD)	t
Acceptance of Food Waste Disposal Systems (Extended Technology Acceptance Model)	Usefulness	2.5(1.11)	2.21(0.99)	1.949
	Ease of Use	2.72 (0.97)	2.44 (0.96)	1.964
	Social Pressure	2.45 (1.07)	2.12(1.03)	2.153*
	Interaction	2.66(1.01)	2.77(1.05)	−0.688
Resident Satisfaction	Resident Satisfaction 1	2.90(0.76)	2.95(0.84)	−0.429
	Resident Satisfaction 2	2.52(0.85)	2.69(0.89)	0.845
	Resident Satisfaction 3	2.67 (0.92)	2.54 (0.91)	0.963

m: Mean, *p<.01

2. Descriptive statistics for each variable

Prior to analyzing the data in this study, outliers were identified to verify the accuracy of the collected data entry. The mean, standard deviation, skewness, and kurtosis were examined to understand the general trends in the collected data and to confirm that the assumptions for the model were satisfied. First, in this study, data with missing values were excluded from the analysis to prevent missingness, thereby using the raw data without any missing value imputation. Since the model in this study assumes multivariate normality, the multivariate normality of the observed variables was examined. Since univariate normality can be considered satisfied if there are no issues in the univariate normality review (Shin, 2013), normality was assessed through the skewness and kurtosis of the observed variables. ity can be considered acceptable if the absolute value of skewness is less than 2 and the absolute value of kurtosis is less than 7 (West, Finch, & Curran, 1995). In this study, skewness was found to be ≤0.63 in absolute value and kurtosis ≤0.95, indicating

that the normality assumption was satisfied. Furthermore, the mean and standard deviation were examined to assess the general tendency of the data, with the results presented in 〈Table 17〉 below.

Table 6. Descriptive Statistics for Key Variables **(N=234)**

Variable	Subfactor	Number of Items	Mean	Standard Deviation	Skewness	Kurtosis
Acceptance of Food Waste Treatment Systems (ExtendedTechnology Acceptance)	Usefulness	3	2.2963	1.02963	0.414	−0.864
	Ease of Use	3	2.5228	0.96762	0.13	−0.777
	Social Pressure	3	2.2165	1.05211	0.529	−0.656
	Interaction	3	2.735	1.04115	−0.038	−0.643
Resident Satisfaction	Resident Satisfaction 1	7	2.939	0.81526	−0.267	−0.378
	Resident Satisfaction 2	7	2.457	0.87611	−0.153	−0.423
	Resident Satisfaction 3	7	2.576	0.90877	−0.057	−0.823

To explore normality in the relationship between the acceptability of the food waste treatment system (extended technology acceptance) and resident satisfaction, we examined the mean, skewness, and kurtosis. The results are presented in Table 17. The table above shows the descriptive statistics for each variable. Most means are clustered around 3. Public relations, a sub-factor of situational crisis communication strategy, showed the lowest average value at 1.9103, while sincerity of apology, another sub-factor of situational crisis communication strategy, showed the highest average value at 3.0513.

1) General level of acceptability (extended technology acceptance) of the food waste treatment system

The overall acceptability score (extended technology acceptance) for the food waste treatment system was 2.44 out of 5 points. Examining the scores for each subdomain specifically: Usefulness was 2.29 (1.03), Ease of use was 2.52 (0.97), Social pressure was 2.21 (1.05), and interaction was 2.73 (1.04). Interaction was the highest, and social pressure was the lowest. The general level of extended technology acceptance is as shown in the following 〈Table 19〉.

Table 7. General Level of Acceptability (Extended Technology Acceptance) for Food Waste Disposal Systems

Domain		N	M	SD
Acceptability of Food Waste Treatment Systems (Extended Technology Acceptance)	Usefulness	234	2.29	1.03
	Ease of Use	234	2.52	0.97
	Social Pressure	234	2.21	1.05
	Interaction	234	2.73	1.04
	Total	234	2.44	1.02

2) General Level of Resident Satisfaction

Resident satisfaction scored 2.66 out of 4 points. Examining the scores for each sub-domain specifically: Resident Satisfaction 1 (Expectation), a sub-domain of corporate reputation, scored 2.94 (0.81); Resident Satisfaction 2 (Experience) scored 2.46 (0.87); and Resident Satisfaction 3 (Prior Attitude) scored 2.58 (0.91). Expectations were the highest among the satisfaction components. The general level of resident satisfaction is shown in 〈Table 8〉.

Table 8. General Levels of Resident Satisfaction

Domain		N	M	SD
Resident Satisfaction	Resident Satisfaction 1 (Expectations)	234	2.94	0.81
	Resident Satisfaction 2 (Experience)	234	2.46	0.87
	Resident Satisfaction 3 (Previous Attitude)	234	2.58	0.91
	Overall	234	2.66	0.86

3. Correlation Analysis Among Variables

Prior to validating the research model, Pearson correlation coefficients were calculated to examine the relationships among variables included in the model, with the results presented in Table 21. Specifically, Pearson correlation analysis was conducted to investigate the relationship between the acceptability of the food waste treatment system (extended technology acceptance) and resident satisfaction. The purpose of conducting this correlation analysis is to determine whether the independent variables and their sub-factors, as well as the dependent variables and their sub-factors, established in this study are sufficiently distinct to be treated as independent factors.

Table 9. Correlations Among Variables

	1	2	3	4	5	6	7	8	9
1	1	1	1	1	1				
2	.712**	1	1	.712	.712				
3	.782**	.727**	1	.782	.782**				
4	.471**	.583**	.606**	1	.471	.471			
5	.889**	850**	.906**	705**	1	.889			
6	403**	450**	.384**	303**	.474**	1			
7	458 **	497 **	432 **	351 **	527 **	837 **	1		
8	499 **	488 **	475 **	392 **	557 **	818 **	836 **	1	
9	461 **	524 **	449 **	400 **	552 **	921 **	934 **	898 **	1

1. Usefulness 2. Ease of Use 3. Social Pressure 4. Interaction 5. Overall Technology Acceptance 6. Resident Satisfaction 1, 7. Resident Satisfaction 2, 8. Resident Satisfaction 3, 9. Overall Resident Satisfaction

***P〈.001, **p〈.01, *p〈.05

The correlation analysis results indicated that all variables exhibit significant correlations. All correlations are positive. Consequently, a significant correlation exists between all variables. In other words, the variables in the model diagram function as non-overlapping, independent variables, confirming the statistical significance of the hypothesis. Specifically: The acceptability of the food waste

treatment system (extended technology acceptance) showed a positive correlation with resident satisfaction, r = .552, p 〈 .01. Finally, the skewness of each variable ranged from -.267 to .529, and the kurtosis ranged from -.864 to -.378. The absolute values of skewness were less than 3, and the absolute values of kurtosis were less than 7, confirming that the normality assumption was satisfied.

When the correlation between variables is high, the variance of the regression coefficient increases, potentially leading to inaccurate results. To address this, multicollinearity was verified. Generally, tolerance and variance inflation factor (VIF) are examined to assess multicollinearity. Multicollinearity is considered absent when tolerance is greater than 0.1 and VIF is less than 10. In this study, the tolerance range among the measured variables was .392 to .982, exceeding 0.1, while the VIF range was 1.018 to 2.548, below 10. Based on this, the regression analysis results in this study were confirmed to be free from multicollinearity issues.

5. Research Results

1. Correlation between the acceptability of food waste treatment systems (extended technology acceptance) and resident satisfaction

The correlation between the acceptability of the food waste treatment system (extended technology acceptance) and resident satisfaction is shown in 〈Table 9〉. To examine the correlation between the acceptability of the food waste treatment system (extended technology acceptance) and resident satisfaction, Pearson's correlation coefficient was calculated. The sub-domains of extended technology acceptance—usefulness (r=.461, p〈.01), ease of use (r=.524, p〈.01), social pressure (r=.449, p〈.01), interaction (r=.400, p〈.01), and overall extended technology acceptance (r=.552, p〈.01) showed significant positive (+) correlations with resident satisfaction.

2. The relationship between the acceptability of the food waste treatment system (extended technology acceptance) and resident satisfaction

To examine the effect of the acceptability (extended technology acceptance) of the food waste treatment system on resident satisfaction, a multiple regression analysis was conducted, and the results are shown in 〈Table 10〉. First, prior to analysis, we verified whether multicollinearity existed among the independent variables. The VIF values ranged from 1.558 to 2.583, all less than 10, indicating no multi collinearity issue among the independent variables. Furthermore, the D/W value was 2.077, close to 2, indicating no correlation among the residuals.

The explanatory power of the acceptability (extended technology acceptance) of the food waste treatment system in predicting resident satisfaction was found to be 43.8%, and the regression model was significant (F=6.614, p〈.001). The sub-domains of the food waste treatment system's acceptability (extended technology acceptance)—usefulness (=.210, p〈.05), social pressure (=.172, p〈.05), and interaction (=.221, p〈.05)—were found to have a significant positive (+) effect on resident satisfaction. That is, higher levels of usefulness, social pressure, and interaction within the acceptability (extended technology acceptance) of the food waste treatment system will positively influence resident satisfaction. However, ease of use (=.074, p>.05) was found to be insignificant.

Table 10. Impact of **Acceptance of Food Waste Treatment Systems (Extended Technology Acceptance)** on **Resident Satisfaction**

Domain		B	SE		t	p	VIF
Acceptability of Food Waste Treatment Systems (Extended TechnologyAcceptance)	(Constant)	2.451	.526		4.663	.000	
	Utility	.237	.100	.210	2.371*	.019	2.239
	Ease	.079	.101	.074	.777	.438	2.583
	Social Pressure	.202	.087	.172	2.331*	.021	1.558
	Interaction	.251	.102	.221	2.481*	.018	2.341
Dependent Variable: Resident Satisfaction							
=438, Adjusted =.117, F=6.614***, p=.000, D/W=2.077							

*p<.05, ***p<.001

In summary, we developed a tool to analyze the impact of the acceptability (extended technology acceptance) of food waste treatment systems on resident satisfaction. The results are analyzed as follows.

Table 11. Research Hypothesis Results

Hypothesis	Hypothesis Content	Acceptance
H1	The acceptability of the food waste treatment system has a positive (+) effect on resident satisfaction.	Adopted
H1-1	The sub-factor of acceptability in the food waste treatment system, namely usefulness, has a positive (+) effect on resident satisfaction.	Adopted
H1-2	Ease of use, a sub-factor of acceptability in food waste treatment systems, has a positive (+) effect on resident satisfaction.	Rejected
H1-3	Social pressure, a sub-factor of acceptability in food waste treatment systems, has a positive (+) effect on resident satisfaction.	Adopted
H1-4	Interaction, a sub-factor of the acceptability of the food waste treatment system, has a positive (+) effect on resident satisfaction.	Adopted

6. Conclusion

Discussions on sustainability have primarily focused on climate change (Constance, L.-T. Global Warming and Sociology, 2008). This includes issues like species extinction and ecosystem protection. As this human perspective on nature began to face criticism, the focus shifted and expanded from nature to the urban environment. With the rise of a technology-centric viewpoint, attention turned to technological innovations aimed at curbing climate change and preventing the excessive use of Earth's resources. Consequently, other academic fields such as urban planning, geography, and anthropology had long been focusing on sustainability. Later, "social elements" were belatedly added to sustainability discussions. Consequently, there is general agreement that establishing sustainable development methods requires a triad model where ecological, economic, and social elements are intertwined (Hopwood, B. et al., 2005). Social sustainability originated in the 1987 Brundtland Report (Vallance, 2011). This report emphasizes human livelihoods in achieving ecological goals through economic development that "meets

the needs of the present without compromising the ability of future generations to meet their own needs." The UK's Sustainable Communities Framework (Office of the Deputy Prime Minister, 2003), approved in 2003, defines a sustainable community as "a place where people want to live and work now and in the future, meeting the needs of a diverse range of residents today and tomorrow, being environmentally sensitive, and contributing to a high quality of life. In contrast, Dempsey et al. (2011) view social sustainability as emphasizing "close relationships between neighborhoods and the people who live in them." Considering these aspects, various concepts have been established by different scholars. Physical environment/ characteristics are important for achieving social sustainability. However, the physical environment/characteristics alone are insufficient to solve the problems currently facing urban communities, and communities cannot independently generate social sustainability capacity. Therefore, essential social processes and structures are needed that emerge and evolve within the community and can meet its constantly changing needs. In this regard, Vallance, Perkins, and Dixon (2011) propose understanding the processes and structures of social sustainability through the following three approaches: i) 'development sustainability', ii) 'bridge sustainability'—adjusting structures to meet changing demands, and iii) 'maintenance sustainability'—preserving useful and functional structures. Coleman (1988) explains that "the sustainability of a community relates to the capacity of society itself, or its expression as a local community, to maintain and reproduce an acceptable level of functioning in terms of social organization." Based on this approach, the literature presents various non-physical factors associated with social processes and structures. Jabareen (2006) emphasizes diversity as a key process ensuring social sustainability, while Dempsey et al. (2011) present the following comprehensive list: education and training, intergenerational and intragenerational social justice, participation and local democracy, health, quality of life and well-being, social inclusion (including the elimination of social exclusion), social capital, community, safety, mixed ownership patterns, fair income distribution, social order, social cohesion, community cohesion (i.e., intergroup cohesion), social

networks, social interaction, community awareness and belonging, employment, housing stability (opposite of turnover rate), active local organizations, and cultural traditions. Dempsey et al. (2011) also emphasize pride/attachment to local identity and community stability. Other scholars have expressed similar or related elements using slightly different terminology (Fainstein, S. T, 2010). Among the components of social sustainability listed above, we will examine resident participation.

Residents are a group that shares values through social interaction within a limited geographical area (Hillery, 1955). Participation means manipulating or controlling decisions or choices that affect them (McCracken & Narayan, 1999). Regarding resident participation, which combines these residents and participation, Verba (1967) defines it as the involvement of people without formal decision-making authority in public affairs.

Cunningham (1972) defined resident participation as the process by which residents raise issues and make decisions within their community, thereby exerting influence on public decision-makers. The essential elements of this resident participation include residents, power, and policy-making.

I remember hating that chore, but I also remember learning that discomfort is not an excuse to quit. I am not saying Korea is perfect, and I am not saying the U.S. does not care. I am saying the U.S. often asks people to do the right thing, while it gives them a bad rulebook and meaningless recycling labels. When the rulebook is bad, good intentions turn into random behavior.

If I could change one thing, I would start with clarity. Clarity means schools and cities should label bins based on what they can process, not on what they wish they could process. Until that happens, I will stop guessing. And, I will remember that recycling is not the moment you drop something in a bin. It is the whole chain after that, and in the U.S., that chain only works when we stop treating the blue bin like a magic exit.

Restoring Endangered Species Policy, Conservation, and the Case of Spoonbills

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I. Introduction

I've been interested in many environmental issues ever since I was young. When I was 12, I got the chance to visit a spoonbill research center near my school as a field trip. It was a short trip, only there to observe the birds and learn a bit about them, but learning about them pulled me in. I had never realized how special spoonbills were to my country, especially the area I grew up and learned in. So when I got the chance to write about the environment, I decided to focus on spoonbills and how to protect them.

The concept of sustainability and sustainable development is becoming prevalent in the mainstream development philosophy after the Brundtland Report was announce in 1987. According to the report, such development is defined as a development that satisfies both the future generations and the current generations(Jeong, 2021). After the report, UN defined sustainability and proposed 3 key pillars which are economic, social, environmental sustainability in the report that was announced at The World Commission on Environment and Development in 1987(United Nation, 2002). TBL(Three Bottom Line), a model that is accepted the most for sustainability, proposed that none of the three pillars should be biased and all three pillars should be addressed in a balanced way(Campbell, 2004).

In response to the global climate crisis, the Paris Agreement, adopted in 2015 under the United Nations Framework Convention on Climate Change (UNFCCC), sets a goal in Article 2 of limiting the increase in the global average temperature to well below 2°C, and preferably 1.5°C, compared to pre-industrial levels (1850-1900).

After the agreement, the IPCC(Intergovernmental Panel on Climate Change) announced that carbon dioxide emissions should be reduced by 45% compared to 2017 on a global scale, and accomplish carbon neutrality which is zero emissions by 2050 in order to achieve the goals of the Paris agreement in a report in 2018. And in the Climate Action Summit 75 nations pledged to comply to carbon neutrality on September 23rd, 2019, followed by the declaration of Japan, Korea and United States. China also made '2060 carbon neutrality' declaration on September 22nd, 2020. However, China is delaying the year of achieving the goal by 10 years compared to other nations, and they chose to drastically reduce emissions at a certain point rather than reducing greenhouse gas slowly over time(Kim et al, 2021). As for China, they are sustaining the economic development without considering any limitations of carbon emissions. It can be assumed that China will continue to carry out industrial development for securing supply line. In such situation, attention is being focused on environmental pollution, climate change and more. As part of this, the decrease of biodiversity and deterioration of habitats are drawing attention as extinction of species are accelerating due to habitat destruction(WWF, 2024). We live in the times of mass production and mass consumption, releasing tons of waste every single day. Unlike doing separate collection of daily waste for recycling, industrial waste is a special type of waste that requires separated disposal and management.

Among the special waste, visible toxic liquid, released toxic gas and invisible toxic materials can become a potential · indirect type. A single strong toxic material can be brought into the human body and cause an acute injury, but also multiple weak toxic waste can cause chronic disease or death after a long incubation period. Due to the industrial development such damage by toxic materials is not limited to humans but also to the whole ecosystem.

2. Protection of Ecosystem and Endangered Animals

1. Restrictions to Preserving the Ecosystem

In Korea, 2.1% of forests, 15.9% of farmland and 20.4 percent of tidal flats have diminished for the last 20 years due to deterioration of ecosystem and natural sites(McKinney 2008 ; Ministry of Environment 2016), and it is about 500 species of wild fauna and flora are estimated to extinct every year(Ministry of Environment 2005), displaying the abrogating reality of lacking management and preservation conditions due to the development focused national land projects(Kim and Pauleit 2007; Ministry of Environment 2016). The number of endangered species is growing as the statistics are 92 endangered species in 1989, 198 endangered species in 1998, 246 endangered species in 2012, 267 endangered species in 2017 and 282 endangered species in 2022. Such increase highlights the importance and improvement of preservation institutions other than the habitats to facilitate biodiversity and restoration/preservation of endangered wild animals. According to the article 7 of the Wildlife Act that was enacted to achieve such improvements in 2012, the Ministry of Environment making designated notices of preservation institutions other than the habitats of wild life by discussing with the leader of central administrative agencies in the case where it is difficult to preserve wildlife at it's own habitat or where preservation at other sites than the wildlife's habitat for preservation of the species. Total of 28 preservation institutions are ran currently by September, 2025.

Currently there are laws related to animal protection such as the Animal Protection Act, the Wildlife Protection and Management Act, the Cultural Heritage Protection Act, and the Natural Environment Conservation Act in Korea, however, in many parts they are declarative, having policies of animal preservation only instructively and are lacking the understanding of the citizens' awareness of animals. Furthermore, regarding the task of preserving animals are distributed to Ministry of Agriculture, Food and Rural Affairs, Ministry of Environment, Cultural Heritage Administration making it difficult to facilitate policies about organic and systematic animal protection.

2. Endangered Animals and Human Danger

By 1600, more than 350 species and subspecies of birds and mammals had disappeared from the Earth. The reason for the disappearence can be natural ones including climate change, however most of the extinction were due to the brutality, greed and stupidity of the human race. The human race has exterminated 3% of the known mammal species for the last 2,000 years. Half of such extermination occurred after 1900 and several times more number of species are endangered in the status quo. the extermination of wild life accelerated during the 'civilized' modern times where even more sophisticated measures of destruction was introduced.

English Zoologist James Fisher recorded the destructive influence of humans to Pleistocene animals in the world, and explain the role of human race in exterminating megafauna. Many giant birds that can not even fly, or didn't need to fly existed on Earth. In North America there was the Teratos, the largest bird of prey ever known. Europe was home to the giant, flightless "super swan" and the enormous Maltese vulture. The last individual ss thought to have existed in Monte Carlo about 100,000 years ago. Until the 17th century, Elephant birds that could reach 10 feet (about 3 meters) in height and weigh half a ton inhabited Madagascar. Their eggs were over two gallons, equivalent to 200 chicken eggs. Other bizarre flightless birds inhabited Indian Ocean islands such as Mauritius, Réunion, and Rodrigues, including the famous dodo (which became extinct around 1680). Moa, the world's tallest bird which reached 12 feet (3.6 meters) in height inhabited in the New Zealand, but became extinct between 1500 and 1850.

The extinction of such species was due to the seeking of survival measure of the human race. The Grattit Oak living in an North Atlantic island was killed for the food and oil for the expedition team for instance. Later when the species became rare, individuals were hunted down for sampling, leading to extinction at the end. In the same context, Hydrodamalis stelleri inhabiting in the Aleutian islands extincted 27 years after the humans discovered them. However, some specied were not exterminated for the survival of human species. Mustela vison macrodon

inhabiting the frontal sea of Maine, US, were sacrificed for fur hunting, buffalos in US were sacrificed for fun or as sports. David Day, in The Doomsday Book of Animals(1981) points out that many endagered species are just on the waiting list to extinction.

3. Balance of Ecosystem and The Existence of Animals

Animals play a key role in sustaining the balance and function of the ecosystem. For instance, animals make contribution such as, restricting pollution, dispersion of seeds, cycle of energy and their role as decomposer. Bees, butterfly and birds for instance are important intermediary measures of pollen, facilitating the reproduction of plants, contributing the sustainment of flora diversity and production of food, animals such as monkeys and birds facilitate the restoration of forest and flora diversity by dispersing the seeds. Additionally, eagles and insects decompose organic matters and return the nutrients to the soil that came from the process of decomposition, contributing to the growth of plants and sustaining the ecosystem. Nevertheless the human activity is a negative influence to the general health of the ecosystem and animal species, including activities of deforestation, climate change. the destruction of habitats can cause loss of biodiversity, disturb the ecosystem and the pollution harms animals. The change of climate forces many species to move and adapt to new environments, threatening their survival. Hence is the reason why programs of preservation strategy, protection sites and reproduction are required to mitigate the negative influence of environmental change caused by humans. Since animals play an important role in maintaining the importance of biodiversity and ecological integrity, the preservation efforts to guarantee the safety of biodiversity for the future generations and the efforts to protect wild species are emphasized.

In his address to the 75th anniversary of the founding of the United Nations in 2020, Sh. Mirziyoyev said, “As we continue our efforts to protect the environment and manage natural resources sustainably, we must prioritize the protection of endangered species, forests, and landscapes.” This emphasizes the need to protect diverse animal species and increase the biological responsibility of the human race.

Furthermore, MirziyoyevS h, emphasized the support of projects including update of red list and large scale species preservation programs, and urged changes in government policies to protect wild animals and better mange natural resources. Setting protection sites and running reproduction programs for endangered species is essential to protecting biodiversity. Protection sites such as national parks provide animals shelter and reproduction and re-releasing programs support the restoration of endangered species.

3. Spoobill Proteciton

1. Current Situation of Reproduction and Concept Spoonbills

The spoonbill (Platalea minor) is a species of aquatic bird in the family Threskoirnithidae of the order Pelecaniformes. It breeds in South Korea, China, North Korea, and Russia, and is an endemic species found only in coastal areas and archipelagoes of Taiwan, China, Japan, and Southeast Asia. The spoonbill (Platalea minor) is a medium-to-large-sized wading bird that breeds mostly along the west coast of the Korean Peninsula and winters throughout East Asia (Yu and Swennen 2004; Swennen and Yu 2005; Ueng et al. 2006; Kang et al. 2016; Kwon 2017). This species repoduce in groups in island ares far from land, usually laying 3 eggs on the surface and the male and femal individual take care of the eggs or hatchling by taking rotations(Chong et al. 1996). Spoonbills are IUCN designated international endangered species, low in the population in the past(Kennerley 1990). Research regarding the species was rare since the habitats of the spoonbills are located in ares that are hard to approach(Kwon 2017).

In the late 1980s, the global population was under 300 individuals. Later two international action plans(1995, 2010-2020) were carried out and in 2021-2022 the global population increased to more than 6000 individuals. In 2000 the preservation grade of spoonbills was downgraded from EN to CR. It is rare to find such interesting preservation example in Asia(Yu, Y.T.; Yip, K.Y.; Li, C.H.; Kong, P.Y.; Chung, C.T.; Moulin, A.L. 2022). According to prior researches, in Korea, spoonbills inhabit an

unmanned island on the West coast and their wintering site is Jeju island. Most nests were found in the main reproduction sites near the coast of Kyongii province including Guji-island, Bi-island, Yoo-island, Seoman-island, Mae-island, Namdong reservoir and Suhaam.

The reproduction site of spoonbills can be categorized in to two types based on the location and its characteristics. First type is where there is little life and rock islands that show high density of reproduction, usually located near the shore. The second type is where there is multiple life that show low density of reproduction due to the wide are of the island, usually located on islands far from the land(Kwon, 2017).

Reports exist showing a great difference between the types of reproduction sites, and differences in the behavior of the parent birds during the egg stage depending on the type of reproduction site (Park et al, 2019), suggesting a possibility of difference in the breeding behaviors, however there aren't any known reports regarding the difference in breeding behaviors depending on the reproduction site type.

[Figure 1] Gaksiam, Incheon, South Korea

[Figure 2] Distribution of Platalea minor from 1999 to 2024 in South Korea. 1. Gyeonggi Bay area (Baekryungdo Island, Kujido Islet, Bido Islet, Seokdo Islet, Youdo Islet, Seomando Islet, Sangyeobawee Islet, Kaksiam Islet, Suhaam Islet, Maedo Islet, Namdong retaining basin, and Hwangseodo Islet); 2. Yeongjondo Island; 3. Oido Island; 4. Sihwaho Lake; 5. Asan Bay; 6. Daeho Lake; 7. Kanwolho Lake; 8. Keum River estuary; 9. Mangyeong River; 10. Chilsando Islet; 11. Mooan; 12. Jindo Island; 13. Hyungsan River; 14. Suncheon Bay; 15. Gwangyang Bay; 16. Sacheon Bay; 17. Madongho Lake; 18. Upo Wetland; 19. Junam Reservoir; 20. Nakdong River estuary; 21. Gangneung; 22. Cheongchoho Lake; 23. Yongsu Reservoir; 24. Seongsanpo.

During the Korean war, due to the destruction of reproduction sites and disturbance of reproduction groups, the population of spoonbills decreased sharply(del Hoyo et al. 1992). The decrease of habitats and environmental pollution due to the economic development is also a main reason for the decline of population(Yeung et al. 2006; IUCN 2014). However the population of spoonbill is slowly but consistently increasing due to the public and institutional effort to preserve habitats(Ueng et al, 2007; National Research Institute of Cultural Heritage, 2013). Reproductive group in the Western shore of the Korean peninsula which is a key reproduction site of spoonbills also surged. In 2015, 93% of the global spoonbill population were confirmed to be reproducing. However, as reproductive

groups and sites increase and ecological research are carried out, new threats to reproduction are being identified(Kwon, 2017). The habitats of spoonbills that used to be limited to the Northern DMZ and the West coastal area except for Chilsan-island, extended further to Incheon area as of 2000s, with new habitats being formed on unmanned islands that are less than 1km away from the land(Chong and Pak 2000, Kwon 2017). Such coastal habitats are close to the land that more incidents of eagle owls(Bubo bubo) and raccoons(Nyctereutes procyonoides) invading the habitats occur(NIE 2021, 2022, 2023a). These two species, once they succeed in invading the reproduction sites, the eagle owls predate on hatchling and fully fledged individuals, and the raccoons predate on the eggs and hatchling. Additionally, as the reproducing population increases, the narrow coastal sites are being saturated. This caused the number of drowning of nests of spoonbills who attempt to reproduce at the lower land of the coastal site because they fell behind in the competition, or those who attempt to reproduce late(unpublished date). Still, as a result of recent international protection efforts, the population is showing an increasing trend and as the spoonbills' habitat is extended further to the vicinity of Incheon-si, researches regarding their mating behavior(Kim, 2015), nest feature(Kwon et al, 2015), brooding rotation behavior(Park et al, 2019) and movement range of young individuals after fledging are being reported.

2. Preservation and Restoration of Spoonbills

The history of spoonbill preservation began at the 21st Birdlife International World Competition held in 1994. In this conference the Asian member nations agreed to conduct a group act for the presercation of spoonbills. As a result the first species preservation acts plan was announced in 1995(Severinghaus, L.L.; Brouwer, K.; Chan, S.; Chong, J.R.; Coulter, M.C.; Poorter, E.P.R.; Wang, Y., 1995), and a workshop was help at Beijing(1996) and Tokyo(1997) to carry out the plans. The plan contributed in facilitating internationally cooperative projects in all regions leading to satellite tracking and increase of scientific research, enhancing legal protection of the species and holding workshops and conferences in multiple nations. In such

context, spoonbills are raised in zoos all over the world and there is a history of succeeding in breeding the spoonbills in Tama zoo of Japan and Seoul zoo of Korea. In the case of Tama zoo, after a pair succeded in reproducing in 1996, reproduction continued. In 1996 a hatchling and an egg that seemed to be negleted by the parent bird were artificially care and both individuals succeeded in fledging(Chong et al, 2000). In the case of Seoul zoo, for the first time in 2016, 5 eggs that were in danger of drowning near Gaksiam were collected and succeded in artificially hatching them, and a single individual survived until the fledging stage(Eoh et al, 2016). Based on such history, the basis of supplementing wild species and the possibilities through artificial hatching were established, however in both cases the survival rate during the stages between hatching and fledging is low. Also, the population of spoonbills is increasing, but still lacks for the minimum survival population which is 7,000 mature individuals(Yeung et al, 2006). Domestic habitats are also increasing in number, however the rate of damaged couples due their shore-close location is high. Such failure in reproduction in shore habitat can greatly influence the whole species(NIE, 2023). Furthermore, toxic materials in shore areas can deteriorate the preservation of spoonbills if they are exposed to such material.

3. Spoonbill Restoration Strategies and Limitations

Strategies in restoring species endangered due to deterioration of habitats are improving the quality of the habitats or directly refilling the population.

First of all, spoonbills prefer reed field where they can hide from the cold and strong wind, choosing Jeju or Seosan, Chungnam as their wintering site. These reed fields accommodate the cohabitation of spoonbillds, egrets and mallards. The problem is that such wetlands are shrinking. Tidal flats or costal intertidal wetlands are shrinking every year, or the areas are becoming unsafe due to environmental pollution(Lee, Oh, 2006). This is the reason for the need of wetland protection area designation and conservation program. Considering such needs, the government enacted the Wetland Conservation Act (Act No. 5866, enacted on February 8, 1999) to designate and announce areas that are particularly worthy of conservation, such

as wetlands that maintain their pristine natural state or areas rich in biodiversity, as wetland protection areas. In wetland conservation areas, building or artificial structures cannot be built, the nature of the land cannot be changed, the water level or quantity of the wetland cannot be increased or decreased, soil and sand cannot be collected, minerals cannot be mined, and plants and animals cannot be artificially introduced, cultivated, captured, or collected (Article 13 of the Wetland Conservation Act). The problem is that there are limitations in protecting endangered animals including spoonbills from human activity. Invisible toxic chemicals or noise pollution of tourists are depreciating the area as a suitable habitat and lead to the decrease in the population.

Next, the method of directly supplementing the population by bringing the popluation from other habitats, or releasing the captive-bred individuals has been attempted with many different bird species(Scott and Carpenter 1987, Armstrong et al. 2002). Headstarting strategy refers to one of such ways of supplementing the population where humans breed individuals from the high death rate egg or chick stage to that low death rate stage and later releasing them(Heppell et al. 1996, Ross et al. 2021, Donaldson et al. 2024). Species that were preserved using the headstarting strategy are Calidris pygmaea from 2012 and Limosa limosa from 2017. The captive-bred and released individuals were found to be well reproducing in the wild(Colwell et al., 2020), and eggs of American Oystercatcher that were returned to their original nest or surrogate after being artificially hatched succeeded in improving the low hatching rate after parent bird accepting the chicks without rejection responses(Collins et al. 2016). Also in the headstarting strategy of Takahē (Porphyrio hochstetteri) who teach survival skills to the chicks such as ways to get food for up to a year, the individuals that were artificially hatched and given a wilderness adaptation training showed similar re-observation rate with those raised by their parent bird(Maxwell and Jamieson 1997). Based on such headstarting strategy, artificial reproduction technology was conducted to restore spoonbills in Korea(yoo et al, 2024). Eggs were collected from spoonbill nests that were expected to fail in reproduction near Namdo reservoir, Incheon, and the artificially hatched

eggs were released to the wilderness as an experiment. According to the experiment 13 eggs out of 21 eggs were hatched and 2 individuals survived untill the fledging stage. The survival rate is not significantly high, however the results prove that in order for artificially bred spoonbills to successfully adapt to the wilderness, artificial hatching and breeding technology, and wilderness adaptation training system are needed.

4. Conclusion - Discussion on the Suitability of Spoonbill Restoration Program

The number of spoonbill increased compare to the times right after the breakout of the Korean war. This proves that the restoration stratedy or program for preserving spoonbill was efficient. However, spponbills inhabitsmainly near the shore area and their wintering site is also Jeju or Seosan, Chungnam which are not very far from human residential areas. The law prohibits people from making intrusive actions, however aspects that hinder the complete restorations of spoonbills still exist, including noise pollution, toxic outpour, frequent experiments and sampling under the pretext of restoration. Furthermore, since the policies regarding the preservation of spoonbills and ministries responsible for the preservation are not consolidated integrated management is absent in the status quo. It is possible to recognize the waste of budget which is not enough in the first place. It is impossible for just humans, the highest predator, to survive, and humans contribute to a significant level to the balance of the ecosystem. Considering this, it is urgent that policies regarding endangered species including spoonbills and the establishment of relevant ministries.

To truly protect the environment, interest isn't enough. Everything we learn in our research can only create real impact when proper action is taken. With a system, like a well-run management department, the nature and wildlife we want to protect can actually stay safe.

7

Sports & Society

Sports, Society, and the Brain Exploring the Social and Neuroscientific Impact of Sports

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1. Introduction

Research on the social impact of sports is extensive. For instance, sports have been reported to have positive effects on 'physical health, mental health and wellbeing, education and lifelong learning, active citizenship, crime reduction, and anti-social behavior.' Discussions of this nature are relatively familiar through parents, teachers, and public service advertisements in mass media. However, there have been few explanations that are personally convincing. Therefore, this study aims to explore the social impact of sports based on this concern.

Sports as we know and love bring variety into the community. There are so many different types, all for each fan to cheer on whether that be through those tv snack nights, or getting tickets to see teams play in a booming arena: sports is the quality that intertwines American culture to the people.

2. The Relationship between Sports and Neuroscience

1. Neuroscience

Neuroscience includes any of the sciences, such as neurochemistry, neurophysiology, etc., that deal with the structure or function of the nervous system and brain. Today, we have much more knowledge of how our system functions and the most recent advances in neurosciences

The most developed part of our mind is our conscious mind. It is what separates us from animals and is located on the outer surface of the brain (cerebral cortex). It is the reasoning part of the mind and decides what is real and what is not, what is good and what is not, etc. The conscious mind holds the thoughts that we are aware of and have the ability to control moment-by-moment. The conscious mind makes up less than 5 percent of overall brain power and is the location of active and short term memory (Winston, 2007). It can only remember seven pieces of information at a time (phone numbers) and can dual process (think of two things at once) if they are prioritized (Schmidt & Lee, 2005). The powerhouse of our mind is the subconscious mind, located in the midbrain. It is more powerful than we can possibly imagine and holds the key to creating our world. Within the subconscious mind is the answer to every question we will ever ask. It is the source of limitless riches, success, joy, peace of mind, health and abundance. Below are seven key principles of the subconscious mind (Winston, 2007):

* Holds 95 percent of our ability to have, do and be whatever we want in life.
* It doesn't judge whether something is right or wrong, real or unreal.
* It makes thousands of decisions for us daily, based on past experiences.
* It can process 400 billion pieces of information at once and manages many aspects of our life while we are daydreaming or being distracted by other things.
* It is the storehouse for our emotions.
* It is the storehouse for our beliefs.
* It stores information with 100 percent retention (long-term memory).

We can easily see – from these seven key principles – the power of the subconscious mind. The thoughts and experiences we have each day are manifested based on the picture of life and sports that is held in our subconscious mind. An understanding of the relationship between the conscious and subconscious mind is key to successful sports performance. The most important factor is that they are on the same page. If the conscious mind is defining what we want and the subconscious mind is blocking us from manifesting what we want, the outcome is not likely to

happen. We may want to get better at sports, however, within our subconscious mind we might have the belief we are not athletic, For instance, in golf, players might say, "We can't putt," or "We don't have enough distance." Instructors can pay attention to the language used by the player and gain insights into their subconscious mind. The good news is, if need be, it is possible to change what is in your subconscious mind. We can replace that which does not serve our highest good. Before we can replace what is in our subconscious to that which can better serve us, we must identify what is stored in our subconscious mind and what we truly want to have, be and do.

There are two primary ways to take control and create the life and sports game we want. One is through conscious or deliberate creation by managing our thoughts (words) and actions (routines, practice, preparation, etc.). The other is through subconscious creation by managing and changing, if needed, our inner beliefs and emotions (Crews Ketterling, 2006).

2. Sports and Neuroscience

In sports, we have two skills that will assist the conscious and subconscious to be on the same page and optimize performance: (a) We can't control all the thoughts that come into our head, but we have the ability to decide what is true for us and what is not; and (b) we have the ability to turn up or down our emotions (self-regulate). Through words, images, behaviors and affirmations, we can change beliefs and emotions. The subconscious will adjust if the conscious is in charge. This means sports instructors can assist players to choose words that will serve them well – to help them decide if outside information they are exposed to is true for them – and to increase and decrease emotions at will. If we simply think of a significant experience in sports, we can turn up the emotions related to that event and, therefore, also turn them down (Crews Ketterling, 2006). These are two of the most important skills a sports player can learn for the mental side of their game.

We are defined by our decisions. The interesting news is that our feelings know more than we do (Lehrer, 2009). They have access to so much more information (subconscious) than what can be held in the conscious brain at any one point in

time. Simple decisions are made by the prefrontal cortex (front, highest part of the brain), which tends to use no emotion. But when it comes to harder decisions, we use emotions to help guide our decision-making. It is important to verbalize what we are thinking and then listen to the feelings that accompany the words. The feel will guide us to a better decision. Thus, we sometimes have battles between reason and emotion. Yet, it is the emotion that knows more of the whole picture. The brain is simply a three-pound laptop without emotions.

A brain that can't feel can't decide. Consider a soccer match as an example. During the game, a player constantly faces the decision of whether to make a long pass or a short pass. From a purely logical standpoint, a short pass may often seem more appropriate. However, when attempting a short pass, the subtle voice of the subconscious may urge the player to make a long pass instead. Which would you choose: a short pass or a long pass? Since the subconscious can access a far greater amount of information, the most accurate pass is likely to be the long pass.

In sports, we experience every emotion to the extreme. We often feel too emotional and it is the emotions that start running our game. When anything starts running our game, we are not in charge and it is not good for performance. The way it works in our system is that the rational brain can't silence emotions, but it can help figure out which ones to follow. Rational people have fear but they regulate it better with the prefrontal cortex. It is the prefrontal cortex that can hold small amounts of information at a time and make decisions without being flooded with emotions.

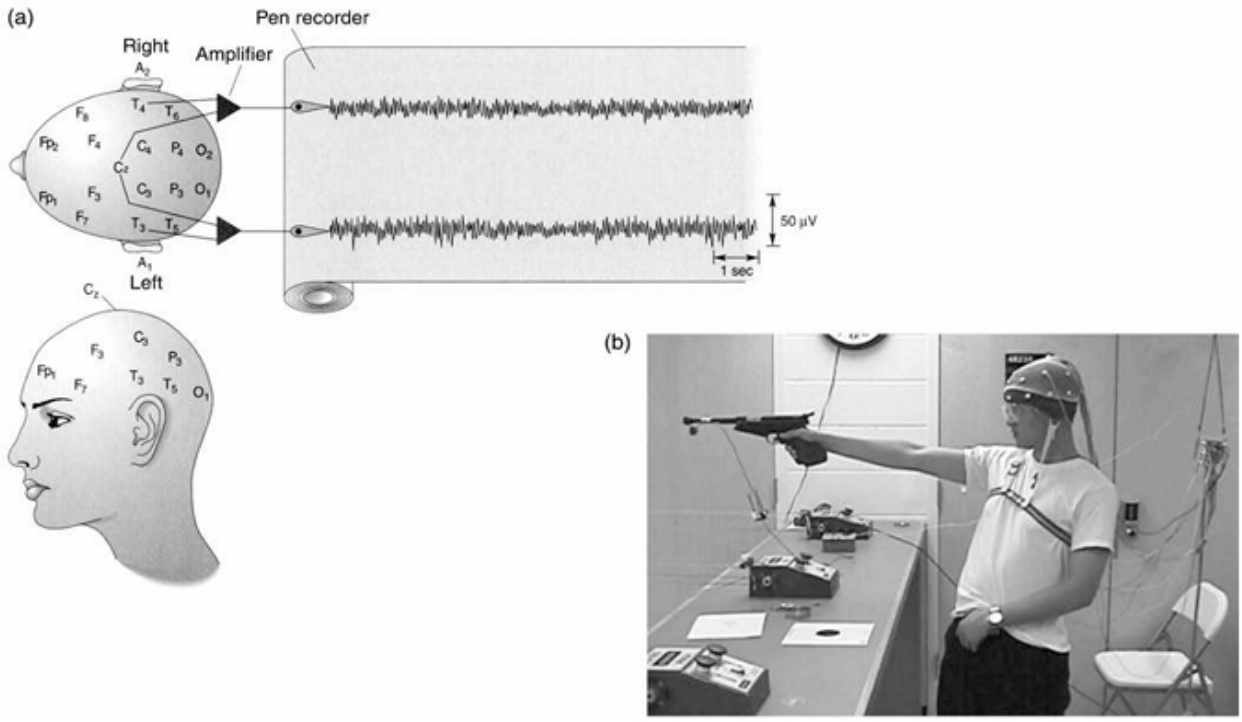
However, when emotions are running high, our system goes into "loss aversion" and this can make us irrational and risk-seeking. We do everything we can to reduce our losses. The anxiety and fear areas of the brain are alerted, and we work to minimize loss instead of staying focused on what we want. When we miss a shot, we think we have to make-up for it on the next shot, which can lead to poor decision-making. This is when our hero shots appear. Some of them can work if the conscious and subconscious both agree with the decision made. Many of them do not work. We often use the word "commit" in golf. If we just commit to the shot, it will work. This is true as long as our thoughts and feel both commit – not just

our thoughts. And they must stay committed through the finish of the swing. Being certain (committed) really means you aren't worried about being wrong. The rational brain can distort our sense of reality (Lehrer, 2009). We are good at justifying what we want – we can justify most anything. But, instead of analyzing the facts, we justify the decision we have already made. We find enough support for the decision we want. On the other hand, we can trust the emotions we feel. Emotions accurately tell us what we feel without justification. Lehrer (2009) writes that the best way to make a decision is to look at all the options, distract yourself and then decide (intuition). The distraction in the middle will get our prefrontal cortex out of the way and any worry and fear will subside. The final decision will be made by our intuition. Intuition knows the best because the thoughts and feelings have been integrated at a subconscious level. A recent study in golf showed that informed choice guided by experience of positive and negative effects leads to enhanced performance (Gnagy & Bartholomew, 2012). So, look at all your options, access your feelings, distract yourself (if possible) and then decide. One more very important point: When the mind is denied the emotional sting of losing, it never figures out how to win!

3. The Expanded Achievement Goal Model and the Development of Neuroscientific Factors through Sports

EEG (electroencephalography) recordings refer to time-series data obtained by placing electrodes on specific regions of the scalp to capture the brain's electrical activity over time. Figure 4.1 illustrates the standardized EEG recording sites (a) and a shooter monitored via EEG during a targeting task requiring focused attention (b). The standard electrode placement system specifies electrode positions based on anatomical landmarks of the head and is known as the international 10–20 system. This system allows for the comparison of results obtained across different laboratories and clinical settings (Jasper, 1958). According to Hatfield et al. (2006), EEG sensors detect the transient summation of excitatory and inhibitory post-synaptic potentials (PSPs) from tens of thousands of neurons, and in some cases, glial cells. These potentials originate from cortical regions beneath the scalp,

generating electrical charges or voltages. The currents detected by EEG sensors are typically on the order of microvolts (μV), i.e., one-millionth of a volt. Continuous potentials (analog signals) fluctuate in amplitude over time and are converted into digital values via an analog-to-digital (A-D) converter. Typically, the signals are amplified by 20,000 to 50,000 times; however, when using high-resolution A-D converters, the amplification may be relatively lower, as even very small voltage changes can be distinguished. Subsequently, the currents undergo differential amplification, which records the voltage difference between a recording site and a reference site (e.g., earlobe, mastoid process, tip of the nose, or other non-cerebral regions). This process eliminates signals common to both sites that do not originate from the brain, allowing the amplified time-series data to more accurately reflect cortical electrical activity. EEG recordings represent two-dimensional time-series data characterized by amplitude and frequency. The EEG frequency range is approximately 1–50 Hz, with higher frequencies indicating greater neural activation. Raw EEG signals consist of a complex mixture of these frequency components, which can be decomposed to assess the degree of brain activation. The process of decomposing complex EEG waveforms within specific time epochs is referred to as spectral analysis, which is mathematically performed using the fast Fourier transform (FFT).



[Figure 1] (a) EEG recording and (b) marksman being monitored for EEG and eye movements during the motionless aiming period.

Note: A = auricle (or ear), C = central, Cz = vertex, F = frontal, Fp = frontal pole, O = occipital, P = parietal, T = temporal. Wires from pairs of electrodes are fed to amplifiers, and these drive pen recorders

Source : Bradley D. Hatfield and Scott E. Kerick, 2006

Achievement goal theory (e.g., Nicholls, Ames) did not sufficiently consider the approach/avoidance valence of goals, that is, whether the goal reflects the pursuit of success or the avoidance of failure. In response, Elliot and colleagues argued that goals should be distinguished not only based on their definition of competence but also according to the affective value (pleasure–displeasure) associated with their outcomes. Research findings (Elliot & Harackiewicz, 1996; Rawsthorne & Elliot, 1999) indicate that performance-approach goals exert mixed effects on intrinsic motivation, whereas performance-avoidance goals tend to decrease intrinsic motivation and task interest. Elliot (1999) and subsequent studies (Elliot & McGregor,

2001) combined the criterion for goal definition (mastery vs. performance) with the directional valence (approach vs. avoidance) to propose four distinct types of achievement goals.

Table 1 performance-approach goals

		Definition of Competence	
Valance of Strivings		Mastery (absolute or intrapersonal)	Performance (normative)
	Approach (striving for competence)	Mastery Approach Goals	Performance Approach Goals
	Avoidance (striving away from incompetence)	Mastery Avoidance Goals	Performance Avoidance Goals

Source : A. J. Elliot and H. A. McGregor, 2001, Journal of Personality and Social Psychology, 80, p. 502

This indicates that the critical factor influencing differences in learning, engagement, and performance outcomes is not only what one aims to achieve (i.e., the definition of competence), but also the directional orientation of the pursuit (approach vs. avoidance).

3. Sports and Social Activities

Contemporary individuals experience a variety of emotional problems due to increasing stress. When exposed to stress, humans exhibit a cognitive response of fear toward the stress-inducing stimulus, which may ultimately manifest as the emotion of anxiety, even in the absence of a specific object. Adolescents are no exception, indicating that they too are not free from anxiety. Anxiety disorder, one of the most prevalent emotional problems in modern society, is among the most common psychiatric conditions and is typically diagnosed when the level of anxiety becomes excessive enough to interfere with daily functioning. In individuals with

anxiety disorders, the origin often lies in specific cognitive patterns formed through past experiences. These patterns influence both emotion and behavior, and high levels of anxiety can significantly impair everyday life.

Individuals suffering from anxiety primarily experience difficulties due to cognitive factors. When they are unable to regulate these processes, emotional problems such as depression, as well as physiological responses, may occur. Consequently, anxiety can adversely affect not only interpersonal relationships but also overall quality of life.

Among the subtypes of anxiety disorders, social anxiety disorder (SAD) is characterized by intense anxiety experienced in social situations where individuals are subject to evaluation by others. If excessive anxiety symptoms are not adequately regulated, maintaining a healthy and functional life may be challenging. Furthermore, when individuals encounter social situations or engage in interactions with others, irrational beliefs can trigger anxiety that exceeds appropriate levels, thereby impeding effective coping and causing significant psychological distress. SAD is defined as a disorder in which individuals experience extreme fear or anxiety in one or more social situations that involve exposure to unfamiliar people or situations where they may be observed and evaluated by others, with fear of negative evaluation as a central feature (American Psychiatric Association, 2013). This disorder is further characterized by repeated and intense anxiety responses in social or performance situations where evaluation by others is possible (APA, 2013). Adolescents occupy a transitional period between adolescence and early adulthood, during which they must achieve autonomy and psychological independence from their parents, expand social relationships, and engage in various developmental tasks such as career exploration and occupational preparation. During this process, they are particularly vulnerable to psychological difficulties, and the severity of social anxiety disorder may increase (Chapman, Mannuzza, & Fyer, 1995). In this context, the positive function of sports in actively developing the unconscious domain of the human mind can play a role. As unconscious-based insight is enhanced, adolescents may gain relief from anxiety. Perceptual-cognitive skills, namely anticipation and

decision-making abilities, are increasingly recognized as essential for high-level performance across diverse domains. Empirical evidence indicates that these skills account for a substantial portion of the performance differences between elite and sub-elite athletes (Reilly, Williams, Nevill, & Franks, 2000). At higher levels of competition, perceptual-cognitive and technical skills tend to be more critical than anthropometric or physiological characteristics in distinguishing performance differences among athletes (Williams & Reilly, 2000b). The advice, "You cannot live your life worrying about what others think of you," is one that most people have likely heard at some point in their lives, usually from well-meaning friends or family who encourage them not to overemphasize the evaluations or impressions of others. However, in reality, how others evaluate us is highly consequential. The impressions we convey—such as being perceived as intelligent, diligent, and attractive (or conversely as ignorant, lazy, or unattractive)—significantly influence how we perceive ourselves, how others treat us, and the extent of our social and material achievements (Leary & Kowalski, 1990). Even in everyday social interactions, such as dinner parties or workplace meetings, people respond to others based on impressions of their personality, ability, beliefs, and other attributes. In practice, there are few social situations in which one can entirely disregard how others perceive and evaluate oneself (Leary, 1995). Given that impressions can lead to important outcomes, it is understandable that individuals sometimes act deliberately to create specific impressions in the eyes of others. Self-presentation, or impression management, refers to the process by which individuals monitor and control how they are perceived and evaluated by others (Schlenker, 1980). Although the term 'impression management' may evoke the idea of deliberately projecting a false or insincere image, the images people seek to convey generally align with their own self-perceptions. In other words, self-presentation typically involves selectively revealing information or characteristics that contribute to a desired impression while concealing information or traits that might produce an undesired impression (Leary, 1995). Within this process, unconscious-based insight and the capacity of sports to enhance such insight may also play a significant role.

4. Sports and Patriotism

Sports are an institution that embodies and teaches character, celebrated traditions, and values worldwide, while also providing opportunities to negotiate them (Carrington, 2010). For instance, major sporting events like the Olympics or World Cup attract global media attention, functioning as promotional tools for host cities to attract visitors and shape a positive tourism destination image (Getz & Page, 2014; Mackellar & Nisbet, 2017). Even in large-scale sporting events like the Olympics, many media outlets amplify a sense of nationalism and/or patriotism before and during the event period to enhance their visibility and revenue from sponsorships (Brown et al., 2016; Devlin et al., 2017; Devlin & Billings, 2016; Saniah et al., 2024; Al Ardha et al., 2024). Previous research indicates that sports media plays a pivotal role in disseminating nationalism and shaping profound national narratives through the broadcasting of sporting events. Furthermore, as seen in the case of Scotland's traditional sports, the symbolism within sports contributes to strengthening national identity. Furthermore, sports are utilized as political tools to promote nationalism and political legitimacy. Particularly in countries like China and South Korea, sports heroes or naturalized athletes function as symbols of nationalism and patriotism. In these nations, the media shapes public perceptions of nationalism and patriotism through narratives that highlight athletes' achievements as forms of sacrifice for the nation. Above all, based on its frequent use as a tool to strengthen cultural bonds, sports plays a multifaceted role in shaping social and cultural dynamics and national identity across many countries. In this sense, sports nationalism is a complex social phenomenon formed through the union of the nation and sports (Tosa, 2015; Chaeroni et al., 2023). Therefore, prior studies indicate that sports are strongly associated with both patriotism and nationalism (Andrews, 2019; de Oca, 2013; Gusril et al., 2024). This phenomenon can be explained through social identity theory and self-categorization theory, which describe the cognitive process by which individuals perceive themselves as belonging to specific categories (Devlin & Billings, 2016; Ihsan et al., 2024). From this perspective, patriotism can be interpreted as the emotional connection and attachment spectators feel toward

their nation, along with their willingness to support athletes or teams representing their country (Druckman, 1994). In the United States, Denham (2010) studied sports pride and national sports pride. In the U.S., this association may be particularly pronounced due to the widespread commercialization of sports and the general perception of American exceptionalism—which has created an ideal society—encompassing sports merchandise, commemorative events, and performances (de Oca, 2013; Knoester et al., 2022; Knoester & Ridpath, 2021). Sometimes, through sports, communities unite under the name of a nation, and absolute love for the national community can manifest as exclusive, blind patriotism—or chauvinism—toward other nations. Chauvinism is generated by individuals and communities defined by nationality. Furthermore, sports can be effectively utilized to propagate nationalistic and patriotic values, shape national identity, and enhance social cohesion at the national level. Such an expanded understanding of the role of sports mediated by media will contribute to individual nations forming more cohesive and integrated societies amidst global challenges.

However, as shown in Table 2 below, most of the above prior research is limited to qualitative studies based on expert interviews. There is a limitation in that there is no psychological analysis or quantitative survey targeting the general public or a specific majority, making it unclear whether the citizens of a specific nation actually hold such awareness.

Table 2 Characteristics of included studies

Study	Country	Research Objectives	Research Design	Methodology	Population and Sample	Main Topics	Data Validation
Socolow, 2022	Australia	Cricket, Horse Racing, Boxing, Wrestling, Football	Qualitative research with a de scriptive and criti cal approach	Analysis of archival documents, contemporary pe riodicals, and other histori cal materials	Archival documents, listener letters, radio magazine articles, and internal documents of the Austral ian Broadcasting Commis sion (ABC)	Nationalism, national identity, sports broadcasting, national radio development, Australian Broadcast ing Commission (ABC), cricket, horse racing, network radio	Data triangulation by comparing various his torical sources and cross-verification with historians or relevant experts
Whigham, 2023	Scotland	Highland Games, Shinty, Golf, Football, Rugby Union	Qualitative re search with histor ical text analysis and archival docu mentation	Qualitative History	Academic literature, his torical archives, media doc umentation, and political narratives related to na tionalism and national identity in Scotland	Nationalism, national identity, national sports, ethnosymbol ism, Scotland, ancient history, symbolism	Method triangulation by combining data from various sources. Findings validated through cross-checking with secondary sources
Kuo & Kuo, 2023	China Southeast Asia	Wushu	Qualitative analysis with an ethno symbolism approach	Ethnosymbolism approach	Academic literature, his torical archives, media doc umentation, and political narratives related to Chi nese	Nationalism, national identity, Wushu, Chin Woo Athletic Federation, Chinese diaspora, Southeast	Method triangulation by combining data from various sources. Findings validated through cross-checking with secondary sources

Study	Country	Research Objectives	Research Design	Methodology	Population and Sample	Main Topics	Data Validation
					nationalism and na tional identity in SEA	Asia, organizational cloning	
Murtha et al., 2021	United States, It aly, Portu gal	Physical Cul ture	Qualitative re search with histor ical text analysis and archival docu mentation	Qualitative History	Articles, books, and publi cations related to Bernarr MacFadden, Benito Musso lini, and António de Oliveira Salazar	Nationalism, fascism, physical culture, na tional health, mascu line body, propaganda	Data triangulation by comparing various his torical sources and cross-verification with historians or relevant experts

5. Conclusion

Athletes are continually exposed to the risk of injury (Ojofeitimi & Bronner, 2011). In addition, methodologies of somatic education, which have gained attention since the 1970s (Thomas Hanna, 1985; Don Hanlon Johnson, 2004; Seymour Kleinman, 2004), emphasize resonance with the body (listen to the body) and promote the awareness of the moving self (the self that moves). Within the scope of somatic education, practitioners have developed Somatic Movement and Somatic Movement Education and Therapy (SME&T) (Eddy, 2004) to enhance sensory and motor awareness, thereby facilitating self-healing and self-awareness among participants. Recently, somatic movement has come to encompass elements such as breathing, voice, subtle movements of the face and muscles, and events or expressions. These elements are presented in parallel without assigned weight or hierarchy and are understood to collectively contribute to the enhancement of sensory and motor

awareness. Notably, there has been a marked increase in interdisciplinary interest in elements of somatic movement related to breathing, voice, or voice-assisted breathing. In this context, the impact of the VMI Somatic Practice Certification Program, developed by Patricia Bardi in Amsterdam in 1993, warrants particular attention.

Now we know sports isn't just about watching your favorite team play, each score feels like a victory to a community raised by similar cultures that share a unique pride. Sports also have a strong influence on youth. Many young people look up to certain athletes as role models. They learn hard work, teamwork, and mental skills by both watching and playing sports. Being involved in a sport can also help keep kids healthy, make friends along the way and learn how to handle good and bad things in life. Another important way sports affect society is through patriotism. Major events like the Super Bowl or the Olympics often include the national anthem and other symbols of pride in our country. These types of moments remind people of the values we share as Americans. In conclusion, sports do more than just entertain people. They help unite communities of all sorts, shape the lives of young people, and build pride in our nation. This shows why sports are such an important part of American culture and everyday life.

The Effects of High School Students' Participation in Sports Clubs on Stress Reduction and Enhancement of Resilience

-Mediated by Sports Coaches' Competencies -

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I. Introduction

The matter of human character and morality have been traditionally addressed in fields of philosophy and education. According to Jean-Jacques Rousseau, human beings are innately incomplete, and hence education inevitable. Since the 1930s, approaches through psychology have tried to explain the human character and behavior, and attempts differing from philosophy and education mentioned above have continued to understand and clarify the humankind. This is based on the growing severity of psychological issues of anxiety and depression. According to an analysis of clinical trends in depression and anxiety disorder from 2017 to 2021, there was an increase in number of patients by 35.1% and 32.3% respectively, with 930,000 patients with depression and 860,000 patients with anxiety disorder(Health Insurance Review Assessment, 2022). This indicates that analyses on human morality itself cannot resolve the anxiety and depression occurring within the society.

On one hand, recent research on the structure of emotions classify emotions into positive affect and negative affect(Kang et al., 2000). Within the emotions, low positive affect and high negative affect are crucial indicators of defying depression and anxiety(Tellegen, 1985). Moreover, negative affect are linked with stress and

inadequate coping mechanisms(Clark & Watson, 1986). Anxiety lays in the heart of such negative affect. Anxiety drops daily functions and life quality. If chronic, it can lead to both physical and mental health problems. A significant concern is that there are many individuals exposed to such anxiety symptoms. According to the national mental health survey from September of 2020, 18.9% were at risk of being classified as having anxiety(Korean Trauma and Stress Society, 2020).

In light of this reality, sports activities within and beyond the school has been highlighted in maintaining adolescents' mental health. However, the spotlight on sports in modern times is more due to compensated sports rather than pure recreational sports. Specifically, in the area of after-school sports, unlike elite sports, the relationship between the supplier and the consumer is not based simply on goodwill but rather in the form of monetary compensation. Therefore, the so-called "difficult consumers" or black consumers appear in the field of after-school sports as well. For instance, many coaches occasionally face black consumers when transporting trainees using academy buses in swimming, soccer or taekwondo classes. Mothers unashamedly demand training fees be exempt or delayed for days their children were not able attend due to sickness. On one hand, there has been reports that physical activities taking place in school such as soccer, basketball, baseball, and volleyball etc have an effect on students feeling strong kinship towards their school and peers(Kim et al., 2014). However, due to pressure of entrance exams, it is difficult to promote physical activity during school hours, and exercises contributing to students' grades rarely have a positive psychological impact on them. Hence is the reason this research focuses on participation of sports clubs. The majority of preexisting research on the topic fixated on middle school students. However, at the researcher's institution, sports club activities are actively augmented, and the need to examine the significance of such experiences is deemed crucial. Therefore, this research will analyze the psychological effect of high students school participating in sports clubs.

2. The Purpose and Function of School Sports Clubs

1. Purpose of School Sports Clubs

According to article 2 of the National Sports Promotion Act, life-time sports refer to voluntary and regular physical activities that promote health and fitness. Moreover, the Ministry of Culture and Tourism(2004) defined sports clubs as an organization that operates various programs for people of all gender and age based on accessible local facilities. These clubs utilize athletes with elite backgrounds as community sport instructors, secure financial sufficiency, and serve as a way to discover and nurture more elite athletes by implementing leagues. Through such legislation, the 2022 Sports Club Act(Act No.18252, 2021. 6. 15. enacted) has been enacted, and in the same Act, the definition of sports clubs has been established as "corporations or organizations that has been enlisted for the regular exercise of the members, and promote the local community's engagement in physical activity. Based on this legal framework, out of the 288 city, country and district, 164(71.9%) have enacted the Sports Club Act, and within the group, 81(49.4%) independent forms have created policies to support sports clubs in line with the legal purpose, while 83(50.6%) comprehensive forms incorporated the sports club-related matters into other existing ordinances. In Incheon, out of the 10 cities and counties, 8 have enacted the ordinance, with 3(37.5%) being standalone ordinances and 5(62.5%) being comprehensive ordinances. The proportion of elementary, middle, and high school students registered in school sports club exceed to about 70~80% in majority of cities of 2019, with 1,008(5.3%) of the entire registered students participating in basketball, followed by soccer among team ball games in student preferences(Korean Sports Policy Research Institution, 2020).

2. Review of Prior Studies on the Roles of School Sports Clubs

Recognizing the significance of school violence(Jang, 2023), numerous anti-bullying precautions and countermeasures were promoted to eradicate the issue since the late 1990s. Specifically, "utilizing after-school hours, lunchtime, and Saturdays to activate intra and inter school sports club leagues" was suggested

as one of the fundamental measures of eliminating school violence. Thus, many budgets were arranged for the practical implementation of the policy and numerous professional sports instructors were deployed to activate school sports clubs(Jo et al., 2020). Through an analysis of the educational outcomes of such activities, participation in sports clubs was found to have effects on preventing and reducing school violence, enhancing character education and learning efficiency and behavior, and fostering a lively and healthy lifestyle(Ministry of Education, 2024). Prior studies from Kim, Kang(2019), Kim(2017), Park(2019), Jo, Sung(2020), Youn, Kim, Kim(2022), Choi, Kim(2017) have found that participation in school sports clubs for adolescents exposed to numerous environment have a profound effect in preventing aggression and deviant behavior by strengthening problem solving skills between individuals and sense of community. Such prior research concludes that participating in sport clubs function as an important mechanism in reducing school violence. Moreover, school sport club activities has been proven with academic significance to not only catalyze students' physical development, but also positively influence their emotional aspects, relationship with peers, health, and holistic development(Kim et al., 2020). However, as shown in the prior studies above, leaving sports clubs participation as an independent variable on the effect psychological aspects, such as stress reduction and resilience recovery, lacks elaborate research. Particularly, there seemed to be little research done on the correlation between sports club participation and the academic stress level of high school students who spends the majority of the time in school or in academies. Hence, to take this matter into hand, this paper investigates the relationship psychological between variables and engagement in sports clubs.

3. Participation in Sports Clubs & Stress Reduction

1. Stress

With the growth of digital technology, smartphones have become an indispensable tool in modern society, taking up a large part of one's daily life. According to a statistic from 2022, 98.6% of the population posses a smartphone, and 23.6% of the group are reported to be in risk of addiction(Ministry of Science, Technology, and Information, 2023). In particular, individuals in their twenties, including university students, recorded 22.8%, trailing second behind adolescents at 40.1%. In the analysis of adult groups, young adults in their twenties recorded 31.3%, the highest among all adult age groups(Ministry of Science, Technology, and Information, 2023). The interest in the issue of smartphone addiction is increasing likewise in high school students, as they experience severe stress due to intense academic curricula and become overly dependent on smartphones(Gi-Soon Seo, So Youn Bang, 2017). Problems that rise from such addiction are diverse, with educational and occupational concerns such as drops in academic performance and decrease in work productivity being the most prominent(Panova T, Carbonell X, 2018). In the long term, not only those it increase the socioeconomic cost, but users also become more dependent on online relationships, isolating them from society and deteriorating interpersonal relationships(Ministry of Science, Technology, and Information, 2023). Moreover, it has shown to induce health concerns such as impaired attention, sleep pattern disorder, and elevated stress levels(Jo, Kim, 2015). From a student's perspective, excessive use of smartphones have become a means of escape from the overwhelming stress they experience in schools.

The current university admissions system operates in a diverse and multifaceted manner. Early admissions based on students' holistic record effectively place them under college admission pressure throughout the entire high school years, and consequently, parents are also explicitly or implicitly exposed to the pressure as well. Experiencing similar fluctuations in emotional states such as 'expectation', 'achievement', and 'anxiety', parents resonate their psychological state directly with

their children, and at times amplify the academic stress they face(Kim et al., 2002). The same psychological connection between the parent and the child applies for regular admissions. In the case of regular admissions, where concentration and extensive practice is required, the process whilst simplistic demand dependence on private education for 'killer questions' that are mere impossible to solve without additional education. As the relative preparation periods extend, parents tend to endure the high-cost private tutoring, further bearing the intense academic stress alongside their children. The same holds true for international students preparing for foreign college admissions. Studying abroad itself presents prospective international students with stress such as post-study career paths, recent issues regarding visas, and decrease in employment rates among graduates.

One of the most researched concept regarding stress is the notion of psychological burnout. The idea refers to the state of physical, mental, and spiritual exhaustion in people working in people-oriented careers, causing them to psychologically distance themselves from the work that triggers incompetence and loss of purpose(Choi, 2010;Clark, 1980; Freudenberger, 1974). The first time the concept of "burnout" was brought up was through New York Clinic's psychoanalyst Freudenberger's Journal of Social Issues, in which he discussed the paradigm of "staff burnout". Freudenberger(1974) used the terminology "psychological burnout" to describe the deteriorating physical and mental state of carers in health clinics who lose their purpose of work without specific cause and become more distant towards their patients. He defined burnout as feeling a sense of existential doubt and depression despite performing to one's best efforts, in absence of expected reward and achievement(Park, 2007; Yeo, 2005). The most conventionally used concept within researchers of psychological burnout is Maslach's(1986), who systemized the notion based on prior research. According to the concept, psychological burnout is a syndrome resulting from chronic mental strain in people-oriented fields. Psychological burnout can be explained through three dimensions: emotional exhaustion, depersonalization, and decline in sense of personal accomplishment.

Emotional exhaustion refers to the feeling of mental overdrive and depletion from working overly, while depersonalization refers to acting impersonal towards oneself and becoming indifferent. Decline in sense of personal achievement signifies the feeling of inappropriateness in one's achievement due to experiencing negative judgment on its work and decrease in self-esteem(Maslach et al., 1986). Using the three concepts, Maslach(1986) created an instrument to measure psychological burnout named MBI(Maslach Burnout Inventory), which become conventionally used to indicate the state of burnout in researches(Schaufeli et al., 2003). The problem of psychological burnout is the various symptoms of reduced self-confidence resulting from relationship exhaustion, an array of somatization(e.g. apathy, sleep deprivation, indigestion), ADHD, impaired judgment, sense of incompetence and indifference, skepticism, irritability, and hatred towards work. In particular, it has been reported that not being able to hold in frustration in households lead to conflict between family members, and distancing from work and people caused reduction in productivity observed by supervisors, employers, and colleagues(Choi, 2010; Bibeau et al., 1989; Bernier, 1998; Maslach, 2003).

2. Participation in Sports Clubs & Reduction in Stress

Individuals can satisfy their fundamental desire of action and psychological catharsis through burst of energy from physical activities which in return releases stress. Exercise help ease instinctive stress response and relax tensed muscles. It also decreases stress level and shorten the time it takes the recover from stress, helping those defend from conditions caused by stress. Thus, exercise is the most effective way to increase stress resilience and relieve aggressive emotions. Exercise ease tensed muscles, promote mental relaxation, enhance self-confidence, and alleviate pressure and depression(Lee, 1991). Following such results, in 2012, the Ministry of Education, Science and Technology mandated school sports clubs be in formal education curricula to promote mental and physical health in adolescence and create a healthy school culture. However, early school sports clubs began in 2008, with the goal of cultivating students who possess knowledge, virtue, and physical

fitness(Kwon, 2010). Afterwards, to support physical education, the Ministry of Culture, Sports, and Tourism and the Ministry of Education, Science, and Technology announced in September 30th, 2019, the "Measures to Activate Elementary and Middle School Sport", aimed at creating a "fun physical education", "enjoyable classes", and "sports enjoyed together". Under the motto, the initiative aimed to increase sports club enrollment by 50% and physical activity by 30%(Kim, 2013). The school sports clubs were also presented as a solution various school issues such as adolescent obesity, stress from extensive academia, and school violence(Jeon, 2014). Specifically, the Ministry of Education, Science, and Technology mandated school sport club activities in the second terms of middle schools in 2013 as a way to fight back school violence, requiring all middle school students to participate in sport club activities for 34-68 hours annual throughout the three years of school(Ministry of Education, Science, and Technology, 2012). Moreover, President Lee Jae Myeong's administration presented "increasing school sports clubs and expanding opportunities for students to participate in physical activities" as a national priority. Likewise, the Ministry of Education and the Ministry of Culture, Exercise, and Tourism annually hold a nationwide school sports club festival for elementary, middle, and high school students.

According to Bandura's Social Cognitive Theory, 1986, the individual, environment, and activity holds an interrelationship in which they influence each other. Based on the theory, Bandura created the term self-efficacy: belief in academic achievement becomes the motivation behind the cause and hence influences the results. In other words, the level of belief that one can do well is self-efficacy. As prior research reports, sub components of self-efficacy include efficacy from academic achievement, self-regulated learning, and overcoming difficulties. Such components affects students' academic achievement and participation in class. Additionally, Bandura claimed that self-efficacy is not a fixed variable and can be adjusted. Therefore, in Bandura's home country Canada,

after-school programs to promote self-efficacy is provided on a national level. Based on such programs, prior researches have conducted studies on the relationship between sports club participation and stress.

Cheon(2023) found out that the intensity of participation in sports clubs in middle school students have an influence on reducing stress caused by fear of infection and difficulty from social distancing. There are studies proving regular physical activity's effectiveness in decreasing stress levels(Kim 2016, Barney, Benhan, Haslem, 2014). Despite the evident research, statistics show Korean adolescent's physical activity chart to be 37th amongst the 57 countries in the study(Jeong, 2022). Based on the Ministry of Gender Equality and Family(2024) statistics, 37.3% of adolescence face stress caused by pressure from academic achievement, sleep deprivation, competition between students, expectations from parents and others, overwhelming academia and private tutoring, with pressure from academic achievement being the leading cause of stress.

Jang(2016) and Lee(2017) stated that school sports club activity participation reduces stress and create gradual friendships, and Jeongmin and Kim(2019) further emphasized the importance of sports club by showing how the participation increased adaptability to school life. Numerous previous studies(Shin & Kim, 2015, Lee et al., 2013, Barney et al., 2014) showed that regular physical activities proved to be a method to reduce stress and elevate students' emotional problems. Moreover, Kang(2016) suggested utilizing sports club activities to reduce stress in life-satisfaction and academics among adolescents. Contingent on such studies, the level of participation in sports clubs seemed to be highly correlated with reduction in stress.

4. Participation in Sports Clubs & Increase in Resilience

1. Resilience

The term resilience was first used in child psychology(Werner & Smith, 1977) and Ecology(Holling, 1973), and was later implemented in various scholar fields, I.e. organization studies(Paton & Johnson, 2001; Sutcliffe & Vogus, 2003; Tierney, 2003; Weick, 1993), engineering(Cumming, Barnes, Perz & Schmink, 2005), and economics(Sheffi & Rice, 1993). Recovery refers to the ability to return back to the state prior to stress environment, and elasticity refers to the growth of mental resistance. Personal resilience is the holistic human capability to assign positive meaning to one's adversity and hardship, and to positively narrate the experiences into ways that is advantageous towards oneself(Kim, 2011). From an organizational level, resilience is the capacity of a system to flexibly and strongly adjust to hardships and modifications(Coutu, 2002), endure environmental stress, and positively handle change(Horne, 1997).

The majority of recent research was in the field of psychology, and focused on individual resilience(Lengnick-Hall & Beck, 2011). Initial research on individual resilience highlighted innate personal character(Werner & Smith, 1977), and later research concentrated on conditions that develops resilience(Luthar, Cicchetti & Becker, 2000). Such protective factors are composed of adaptability, positive environment in families, and positive and comfortable relationships with other individuals(Werner & Smith, 1992). Afterwards, studies elaborated on the process of resilience development as time passes(Olsson, Bond, Burn Vella-Brodrick & Vougus, 2003), and it was shown that resilience increases when individuals face cumulative experiences that allows them to utilize personal, social, and physical objectives, and their growth, capabilities, expertise, and efficacy(Sutcliffe & Vougus, 2003). Under the premise of resilience, researchers stated that resilient people can endure stress, effectively adapts to change, and positively understand events(Doe, 1994; Horne, 1997; Mallak, 1998a). Moreover, resilient people often perceive painful experiences

positively, with the capability to adapt to such circumstances(Mallak, 1998b). Above all, understanding resilience as a dynamic concept shows how it can be shaped by both internal and external factors. This is precisely what the study focuses on.

2. Participation in Sports Clubs & Increase in Resilience

Prior research proposed components of resilience to be self-trust, independence, composure, consciousness, decision making, flexibility, and pro-social behavior(Wagnild, Young, 1993; Dyer McGuiness, 1996). Rutter(1998), who distinguished between risk factors and protective factors, stated that these factors interact in influencing adolescents' responses to adversity(Han, 2015). In other words, approaches to adolescents' problematic actions should be based on systematic consideration using the two factors(Smith & Carlson, 1997). Variables related to adolescents' resilience have likewise been categorized between protective and risk factors. Among the protective factor are participation in school programs and extracurricular activities(Park, Choi, 2016). In this context, the relationship between sports club participation and increase in resilience can be justified. Prior research also confirms the relationship between the two variable.

Oh's(2017) analysis on the effect of sport experiences on adolescents' psychological exhaustion and resilience found that students that participated recorded higher resilience and likewise, students who attend 2~3 times a week showed a better record than students who attend once a month. Moreover, students who attend more than a year or between 6 months to a year resulted in higher scores of resilience than students participating less than 6 months, and students taking part in team sports showed relatively higher scores in the subdomain of positivity and self-regulation within resilience compared to students participating in individual sports. Kim(2019) examined the effects of high school students' participation in school sports clubs on self-esteem, resilience, and satisfaction in school. The study reported that younger the majority of younger students and male students displayed higher in all factors, and that positive self-esteem positively influenced the other

factors as well while resilience also had a positive effect on school satisfaction. Therefore, the study stated that promoting school sports clubs that enhances the students' self-esteem and resilience and satisfaction is deemed necessary, specially as students spend the majority of their time in school. Lee's(2013) research on the effect of sports club participation on resilience and potential delinquency among middle school students to understand the difference in individual traits and resilience showed that regarding gender, male students exhibited higher self-regulation than female students, while grade levels showed no significant differences in self-regulation, interpersonal skills, or positivity. Moreover, higher academic achievement was associated with higher levels of the respective traits as well. Following the research above, the study confirms that there is a significant correlation between high school students' participation in sports clubs and increase in resilience.

5. Roles and Effects of Sports Club Coaches

1. Roles of Sports Coaches

The roles of sports coaches are closely related to the concept of sports coaching, as the role of the coach is determined based on the scope of sports coaching. In this context, it is important to understand the concept of sport coaching. Whilst various perspectives exist, Terry's (1993) framework is considered the mainstream. According to Terry, sports coaching can be divided into: 1) professional skills to pass on sports knowledge, 2) strategic skills and decision making to win in competitions, 3) skills to systematically manage the team and the students, 4) interpersonal relationship skills to maintain under good conditions with the parents, administrators, sponsor, and the media in order to achieve the team goal. Based on this, the comprehensive role of sports coaches are as follows: 1) understand the players, trust and communicate to win matches, 2) guild the players in building ethics, character development, mindset, and sportsmanship, 3) instruct a rational player centered training, 4) show attentive care for athletes, 5) foster relationships between other team players, 6) individually

train under or over performing athletes to their level, 7) decrease the athletes negative psychological states and enhance positive ones during games, 8) promote positive team atmosphere that play a crucial role in team sports, 9) understand the motives behind why individual athletes began sports and utilize it to create habit, character, and ethics, and 10) generate an optimal training environment through autonomous training and reinforcement.

2. Qualities of a sports coach

The following qualities are needed for a sports coach. First of all ① There are interactions between the athletes and the coach. This means that for the victory of the team a mutual cooperative action is required for the coach and the athletes to work as a single organism. ② Cognitive and emotional empathy is required. Cognitively understanding the thoughts and emotions from the other's perspective cognitively is cognitive empathy and sharing and feeling the emotions from the other's perspective is emotional empathy. Since athletes are put in interpersonal relationships, such empathy is essential. ③ Sense of fairness. Fairness means being treated in the same way without discrimination. From the athelte's view this is the coach being fair to all of the athletes without discriminating a single individual. This value is essential to team sports that need cooperation and assistance. ④ Warm consideration is required. Athletes are easy to commit mistakes or malicious behaviors and they shouldn't be treated exclusively for such actions. ⑤ Network thinking is required. we form relationships with others and sustain our lives with those relationships. As a sports coach, such positive relationship building for human resources is needed for the game or smooth operation of the club. ⑥ Analytical skills are required. As of sports, whether it's an individual game or a team game, analytical skills based on the history of games is needed. The improvement of individual athletes needs the analytical skills of the coach. ⑦ Communication skills are required. The coach has to facilitate communication with single or multiple team members. Some complaints of the members should be resolved and requests of some members should be understood and this preemptively requires smooth

communication. ⑧ Sincerity is required. Sincerity is needed in the words of the coach for the athletes to identify the orders or requests of the coach in detail. ⑨Emotional resonance is required. This means that resonance corresponding to the athletes or students is needed. The coach and athletes often spend significant time in the same place. If the coach properly resonate with the emotions expressed by the athletes, they can be recognized as leadership.

Among the qualities of a sports coach explained above, the researcher considers empathy, sense of fairness, warm consideration as a priority. The reason for this is that empathy is the best measure to draw out the actions of the athletes, warm consideration is the reason for continuous relationship between the coach and the athletes. It is clear that the essence is teaching skills of sports whether its elite sports, daily sports or school sports clubs. However, the qualities required for the coach can be matching with those required for teachers of general educational institutions based on recent incidents. If such transitional thought can be the basis, the listing of the qualities can be meaningless. The researcher thinks that a sports coach should acquire the same qualities that are required for teachers.

3. Effect of sports coaching

In the case of school sports clubs, the positive part is that students can find their interest with voluntary participation in the free atmosphere whre the autonomy of the students are guaranteed depending on the coaching style of the sports club leader and without the burden of assessment(Kim, 2010). Additionally, teenagers participating in school sports clubs can not only develop cognitive, psychodynamic areas by learning the knowledge and functions to achieve a task but also improve self-efficacy(Ruth, 1993), grow confidence in physical abilities and improve physical self-concept(Marsh, 1998, 박윤기, 2013; 재인용).

Following the coaching of such sports coaches, students can continuosly participate in the sports club due to the increase in interest in the school sports clubs. This can be an immersive element in sports clubs, which can improve

satisfaction with school life and even increase satisfaction with daily life(Kim, 2016). Additionally, the sports coaches can set customized goals for the students based on the current ability of the students and increase the urge to participate and physical activity when the students put in the effort to improve their abilities with the continuous success experience(Ryu, 2013; Park, 2009; Horn & Amorose, 2002).

Based on such prior researches, the researcher identified that the qualities of the sports coach cad mediate or adjust the correlation between the participation intensity and reduce in stress or improvement of resilience. If the qualities of the sports coach is briliant, it can have the effect of mediating such correlation and if the qualities are lacking, it can have a negative effect. Therefore, based on the perspective, it can be recognized as an effect of adjusting the correlation above.

6. Conclusion

The study confirmed the correlation between high school students' level of participation in sports clubs and reduction in stress, as well as the correlation between level of participation and the increase in resilience. It was further found that the competencies of sports coaches influences the aforementioned correlation. Although the study was limited to literature review due to many constraints, findings from previous studies are sufficient to support the researcher's hypothesis. Notably, the researcher believes that investigating into the effect on high school students represents a unique contribution from the previous studies that primarily focused on middle school students.

Autonomous vehicles, IoT, and robots that are equipped with artificial intelligence are evident around our modern society. The change of production structure and neoliberal trend resulted in reduction in employment and risk of ethical invasion from AI calls for understanding the pros and cons that exists in the technological era we live in(Hawking, Musk et al., 2015; Russell et al., 2015, Stephanidis, Salvendy et al., 2019; Shneiderman 2020 a, 2020c; Hancock, 2019; Salmon, Hancock & Carden, 2019; Endsley, 2017, 2018; Lau et al., 2020). Numerous discussions on AI, language

philosophy, phenomenology, and ontology are done to ease the general population. The essence of AI, and the mere existence of itself became a topic od discourse, showcasing the problems we live in. Such topic influences high school students as well. Different to other generations, decisions on future career and schools must be made quicker, and with that comes psychological pressure. The research has confirmed the positive effects of school sports clubs in such case.

8

Technology

Price Dynamics in Organic Markets and the Impact of Automation and Robotics

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I. Introduction

Whenever I visit the market near my home, I realize that the prices of organic produce are relatively high. Nevertheless, the organic product market has witnessed rapid growth over the past decade, and organic farming is now widely adopted globally, and is now available not only in specialty stores but also in other large grocery stores and supermarkets. These products must carry a label to directorate them from conventional products. To export organic food products to the United States, exporters must comply with the organic standards established by the United States Department of Agriculture (USDA) and submit an organic certificate issued by a certifying agency in the exporting country (USDA NOP Import Certificate). However, under the Korea-United States Organic Equivalence Arrangement, organic certifications from both countries are mutually recognized. Therefore, when exporting organic products from Korea to the United States, exporters may use a certificate issued by a Korean organic certification agency. The United States Department of Agriculture (USDA), in coordination with the United States Trade Representative (USTR), has reviewed the Republic Of Korea's program for certification of organic agricultural products produced and handled in accordance with Korea's Act on Promotion of Environmentally - friendly Agriculture and Fisheries and Management and Support for Organic Food (here in after "Korean Organic Food Act") and its regulations. Based on that review, USDA has determined pursuant to the Organic Foods Production Act of 1990 (OFPA) (7 U.S.C. §§ 6501

et seq), under authority delegated to the Secretary of Agriculture by the President, that certain processed food products produced and handled in accordance with the Korean Organic Food Act and its regulations, as in effect on July 1, 2014, are produced and handled under an organic certification program that are at least equivalent to the requirements of OFPA. This study aimed to investigate the reasons why organic products are relatively expensive and to assess whether their prices are justified.

2. Factors Influencing Organic Food Purchases

It's hypothesized that consumers of organic products are inclined to pay a premium compared to those purchasing conventional products. With this hypothesis in mind, this paper gathers information from various literature and conducts laboratory experiments. The objective is to test whether some consumers are not only willing to pay more for organic food than conventional ones but also if they are willing to pay even more for organic food with a higher degree of organic purity. Previous studies found that organic consumers generally have a middle-high income and live in a family with one or more children including newborns (Fotopoulos & Krystallis 2002, 738-740). Several organic associations initially established their organic standards. Yet, as these standards multiplied, a segment of organic producers and consumers voiced concerns, advocating for a unified national standard. Nevertheless, smaller organic producers were wary of a costly certification and inspection process (Batte et al.,2007, Sriwaranun et al., 2015, Kai et al., 2013, Rodr´ıguez et al., 2007, Van Doorn and Verhoef, 2011, Krystallis and Chryssohoidis, 2005), carbon neutral(Choi and Ritchie, 2014), fair trade(De Pelsmacker et al., 2005), and other eco-labels (Loureiro et al., 2002).

Production standards for organic are "process based," i.e., the national organic standards address the "production process" or the methods, practices, and substances used in producing and handling crops, livestock, and processed agricultural products. Products' creation processes are governed by specific requirements, not by

the quantifiable characteristics of the final product. While practices among organic producers might differ, they must universally adhere to the stipulations of the organic foods production act within their respective states, encompassing a prescribed list of acceptable and forbidden methods, practices, and substances. For instance, items made entirely from organically derived ingredients can be branded as "100 percent organic" and bear the relevant seal. Organic food production inevitably incurs higher costs compared to traditional methods. As the organic content in products increases, so does the cost of production. This raises the question: are consumers prepared to pay a premium for such products?

As the level of globalization continues to rise, residents' demand for quality of life is getting higher and higher, and in recent years, the structure of global residents' consumption of organic products has changed dramatically. Based on the limitation of Korea and America's domestic organically production resources, Korea and American's domestic organically production mainly focuses on ensuring sufficient food rations, and to produce other agricultural products, it increasingly relies on the international market for regulation. With the establishment of diplomatic relations between Korea and America in 1945 and Korea's accession to the World Trade Organization (WTO) in 1995, Korea and American engage in large scale organically production trade every year and have established a stable and long-term trade cooperation relationship.

Trade in organic products between Korea and America is an important part of the trade relationship between the two countries, and different natural conditions and policies can have an impact on the main products traded. However, language and cultural differences, government restrictions, and other factors make it difficult for traders, scholars, and policy makers in Korea and America to fully understand each other's food-related regulations. Therefore, it is of great significance to analyze the policies and comparisons between the two countries in terms of organic products by collecting and cleaning up data on organic products trade between Korea and

America and to derive the most traded organic products categories. Based on the analysis of trade data, we can narrow down the focus from a large number of organic products categories and identify the most important ones for subsequent analysis.

Besides, a study focusing on cross-cultural comparisons between developed and developing countries has been on the rise (Kushwah et al. 2019; Curvelo et al. 2019; Thøgersen et al. 2019). In general, these studies indicate that the primary motivators for purchasing organic food stem from either altruistic factors (such as environmental and ethical concerns, food safety, and health) or hedonistic reasons (like product attributes and perceived personal image). Ethical concern, food safety and health are included among the altruistic purchase motives, while product characteristics and perceived personal image are categorized as hedonistic (Maggi 2022). Drawing from the studies mentioned, key criteria such as "Country of Origin," "Ethical Concern," "Product Attributes," and "Trustworthiness" have been identified as the primary factors influencing the purchase of imported organic foods (Cicia et al. 2002, 206; Hughner et al. 2007, 102; Nuttavuthisit & Thøgersen 2017; Hemmerling et al. 2013; Lohr 2001; Lee & Cho 2011; Dekhili & Achabou 2015; Thøgersen et al. 2019; Lee & Cho 2011; Thøgersen et al. 2018). Each of these criteria comprises specific sub-criteria, which are elaborated upon in subsequent sections. While these determinants are prevalent across consumers from various countries, the emphasis placed on a particular factor or sub-factor is anticipated to vary based on cultural context and individual values and lifestyles.

3. Product Attributes

Product attributes refer to the specific characteristics that define an item. They influence how consumers perceive the product's quality and their decision-making process. For organic foods, tangible attributes, such as appearance, don't play a significant role in decision-making. Still, intangible attributes like freshness, naturalness, and taste are esteemed as key indicators of quality that influence purchasing choices (Doležalová et al. 2016, 90).

Research into how the country of origin (COO) affects consumers' evaluations of products presents varied and occasionally conflicting findings. These disparities might arise from different product types, samples, and countries studied (Kaynak and Kara, 2002). Most research emphasizes the multi-faceted nature of the COO effect. A product label referencing its country of origin can shape consumers' perceptions about its quality. However, the impact can vary based on the type of product (Balabanis and Diamantopoulos, 2004; Watson and Wright, 2000, among others). Other research suggests that the influence of the COO effect is determined by a combination of the product's country of origin, its category, and specific attributes (Supphellen and Rittenburgh, 2001, and others).

Consequently, these attributes, along with the "availability of a local organic alternative product," have been chosen as sub-criteria for "Product Attributes." Scientifically, no clear distinction in taste exists between organic and conventional foods. However, consumers often equate the "organic" label with superior taste, safety, and health benefits (Fotopoulos & Krystallis 2002, 737). "Naturalness" refers to minimal use of additives, chemicals, colorants, preservatives, and GMOs in organic food production (Sirieix et al. 2011, 674). This quality is associated with health, authentic taste, and safety. However, perceptions of freshness as a determining factor in purchasing organic food can differ among consumer groups. For example, regular Italian organic food consumers prioritize freshness, especially when buying fruits, vegetables, and meat (Chinnici et al. 2002). Yet, in regions like South Bohemia, taste and naturalness outweigh freshness (Doležalová et al. 2016, 90). In some contexts, like in China, freshness is linked with local organic foods, whereas in Hong Kong, both imported and local organic products are valued similarly (Yip & Janssen 2015, 76). Generally, organic product consumers have a preference for local goods over imports, especially for items like meat, fruits, and vegetables. This preference can shift when local organic standards are deemed lax or unsafe (Janssen & Hamm 2011 and others). Thus, the product type is crucial when choosing between local or imported organic items. In some instances, local production can be seen as an added value, underscoring the significance of having a local organic alternative.

Collectivist cultures, characterized by strong ethnocentrism, often show a higher preference for local products over imports (Gurhan-Canli & Maheswaran 2000). For example, while Korea leans towards a collectivist culture, Northern Italy tends to be more individualistic.

4. The Cause of Price Increase of Organic Crop

1. Trustworthiness

Trust is characterized by a consumer's belief, expectation, and loyalty towards both the producer and/or the reseller (Curvelo et al. 2019). Due to their nature, organic foods are seen as credence goods; consumers often struggle to ascertain if a product was genuinely produced following organic standards (Thøgersen et al. 2016). The establishment of organic regulations, certification entities, and labeling systems aimed to fortify this trust. The presence of organic certifications and logos bolsters consumer trust in a product's authenticity, influencing their confidence, willingness to pay, and ultimately, their buying decision (Canova et al. 2020; Sønderskov & Daugbjerg 2011). Both the organic label and the credibility of the certifying organization play a significant role in shaping perceptions of an organic product's quality and value (Hamzaoui-Essoussi et al. 2013; Kyriakopoulos & Oude 1997). Furthermore, consumers regard the dimension of trust through the lens of brand image and reputation (Hamzaoui-Essoussi et al. 2013). As such, the sub-criteria for "Trust" have been identified as "Organic Labels/Logos" and "Brand Image and Reputation." Research by Janssen and Hamm (2012) indicated that the organic label/logo adds value for organic food consumers, particularly when associated with stringent standards.

2. Ethical Concern

Korean companies' strategy expands and strengthens its business based on the local environment for organic and sustainable growth. The strategy aims to overcome the limitation of the Korean style of business in other countries, building appropriate

infrastructures for the upcoming expansion. It includes cooperation with local firms and those in superior positions in the field. Recently, consumers' interest in corporate social responsibility issues, such as practicing ethical management, has significantly increased. There exists a belief that a mutual relationship should be fostered between customers and firms. In this relationship, customers play an active role, not only voicing their perspectives on the creation and provision of products or services but also engaging directly in these processes. Research in this area indicates that when customers are actively involved, the overall quality of service is enhanced, leading to increased customer satisfaction.

There is an interesting situation in which emerging markets can be recognized as a difficult environment for multinational companies. In case of global expansion, there have been cases in which multinational companies failed to overcome the stronghold of local companies, such as Cemex in the Mexican cement industry and Jollibee in the Philippine food and beverage industry (Dawar & Frost, 1999). Compared to developed countries, emerging markets have differences in institutional environments such as product markets, capital markets, labor markets, various regulatory systems, and contract implementation mechanisms (Khanna & Palepu, 1997). Therefore, multinational corporations seeking local success should be able to adapt to these different environments in various areas, including value proposals, brands, designs, packaging, marketing, and capital raising. For companies that have entered emerging markets, such differences in institutional environments can act as foreign costs, and thorough localization needs to respond to this.

Ethical buying behavior reflects a move towards choosing products based on moral considerations in the value chain rather than just price. Ethical consumption encompasses purchasing decisions driven by societal, political, and environmental ethical concerns (Kushwah et al. 2019; Szmigin & Carrigan 2006). Sumner's perspective on ethnocentrism revolves around the creation of a "we-group" sentiment, where the in-group becomes the reference point, and all external groups are assessed in comparison to it. Sumner highlighted the binary nature of ethnocentrism: a negative perception of out-groups paired with a positive view of

in-groups. The standards set by the in-groups influence judgments and interactions with other groups. Consumer Ethnocentrism (CE) extends the ethnocentric framework to the economic context, preserving the core principles and characteristics of ethnocentrism.

It is defined as a "trait-like property of an individual's personality" and encompasses "the beliefs held by the consumers about appropriateness, indeed morality, of purchasing foreign-made products" (Shimp and Sharma, 1987). Sharma et al. (1995, in Piron, 2000) and Rawwas and Rajendran (1996) indicated that consumer ethnocentrism (CE) can result in consumers placing greater value on the attributes and perceived quality of domestic goods, while undervaluing those of foreign products.

Ethical considerations encompass aspects such as human and labor rights, protection of the environment, animal well-being, support for local communities, and issues of social justice (Carrigan et al. 2004). A variety of elements influence CE, among which the nature of the product itself plays a role. Research has shown that the intensity of CE differs depending on the product category.

The ethical principles demonstrated to influence consumers' purchasing behavior toward organic food items are often ecological and/or political in orientation (Honkanen et al. 2006; Pellegrini 2009), and these have been categorized as sub-factors within the broader criterion of "Ethical Concern." Political dimensions include the promotion of fair trade and the safeguarding of workers and human rights (Lohr 2001; Guido et al. 2010; McCarthy & Murphy 2013). Ecological motivations that positively impact the decision to buy organic products are linked to environmental issues such as climate change (Grunert & Juhl 1995; Idda et al. 2008; Lee et al. 2015, 1162) and concern for animal welfare (Hughner et al. 2007, 102). Consumers motivated by ethical values are aware of the consequences of global climate change and place importance on the eco-friendly aspects of organic goods. Environmental consciousness has been found to play a crucial role among Korean consumers of fair-trade coffee (Lee et al. 2015) and American consumers who regularly purchase organic products (Idda et al. 2008).

3. Country of Origin

In the international literature one can find many diverse definitions of the Country-of-origin effects (COO effects) (Khachaturian and Morganosky, 1990; Okechuku, 1994; Schaefer, 1995; Ahmed and d'Astus, 1995, 1996; Kucukemiroglou, 1997; Knight and Calantone, 2000).

The concept of Country of Origin (COO) has been interpreted in various ways throughout scholarly literature. Nagasimha (1970; 1977) coined the term "made in" to depict a product's COO. Conversely, Johansson, Douglas, and Nonaka (1985) view COO as the country housing the main corporate office of the brand or company selling the product. Papadopoulos and Heslop (1993), however, see COO as the nation where a product is manufactured or assembled. Given today's intricate global market with products being procured from numerous countries, pinpointing a product COO is challenging. Wang and Lamb (1983, cited in Al-Sulaiti and Baker, 1998) describe the COO effect as a vague, non-tangible barrier a product faces when penetrating a new market. Meanwhile, Usunier (2006) and Jaffe and Nebenzhal (2006) perceive COO as the nation consumers usually link with a brand or product, irrespective of where it truly originates. Additionally, the COO effect encapsulates "any bias or influence on product assessment, perceived risk, purchase intent, etc., that stems from COO information" (Zeugner-Roth & Diamantopoulos, 2010, p.2).

This challenge is reflected in consumers' unfavorable attitudes toward newly introduced imported products or services. The entire literature concerning the COO effect suggests that consumers' perceptions about imported products and their attributes are affected by the country of origin (Papadopoulos, 1993) and related to CE. The country-of-origin functions as an informational cue that triggers consumers' ethnocentric tendencies and prior knowledge, which in turn influences how they interpret and evaluate a product's characteristics. This tendency to assess a product based on perceptions of its country of origin is referred to as the country-of-origin (COO) effect.

The academic literature that focuses on the influence of perceived COO on consumer product evaluations and purchase intentions has a long history that dates to 1960 (Roth & Diamantopoulos, 2009). Since the seminal research of Ditcher in 1962, to date over 1600 pieces of research have been carried out to investigate the link between products and place related images that consumers attached to products focusing on variety of aspects (Papadopoulos, 2012). In 2008, the International Marketing Review dedicated two special issues on the topic. Several reviews (Al-Sulati & Baker, 1998; Dinnie, 2004; Josiassen & Harzing, 2008; Pharr 2005; Zenugar-Roth & Diamantopoulos, 2009) and meta-analysis have also been conducted on the subject.

Since the early 2010s, the international economic landscape has undergone significant transformations, such as market globalization and the rapid expansion of Asian economies. These developments have created new opportunities for in-depth exploration of the topic. Consequently, studies conducted after 1990 have examined the country-of-origin (COO) effect in greater detail.

In the case of existence of unambiguous information for a specific product, experienced consumers base their choices upon the evaluation of specific product attributes, whereas less experienced consumers rely on the country of origin (Maheswaran, 1994). Conversely, when product information is insufficient or unclear, consumers—regardless of their level of involvement—tend to use the country of origin as a reference point to assess product quality. Moreover, the extent to which a product's country of origin cue is utilized depends on the level of consumer involvement in its purchasing (Gurhan-Canli and Maheswaran, 2000).

When consumers have fewer motivations to participate actively in the purchasing process, they are more likely to rely on the product's country of origin as an indicator of quality. In contrast, consumers with higher levels of involvement tend to pay closer attention to the product's specific attributes. In such cases, the country of origin serves merely as a reference cue rather than determinant of overall quality.

There is a significant difference in elite Korean and American consumers' Means-End-Chain based product images, attitudes and purchase intentions towards local versus foreign made products. The MEC-based product COO images were found to have a significant ability to predict elite consumers' attitudes and purchase intentions

The COO was found to play a role in the purchase decision for imported organic foodstuffs. However, the COO effect was found to be weaker on organic products compared to conventional goods due to the moderating role of perceived trust in the organic certification system (Thøgersen 2019). It was found that "Knowledge of and Cultural Proximity to the Country of Origin", "Geographic Distance to the Country of Origin", "Socio-Economic Development of the Country of Origin" and, "Green Image of the Country of Origin" shape consumers' perceptions and preferences regarding imported products from specific countries (Thøgersen et al. 2016). Regarding "Geographic Distance to the Country of Origin", it has been observed that consumers place particular value on organic food products originating from countries located in closer geographic proximity (Thøgersen et al. 2018). Due to the concerns towards transport emissions and animal welfare during transportation. Countries that are situated in close geographic proximity tend to be more familiar to consumers, share cultural traits, and evoke stronger emotional connections (Thøgersen et al. 2016). In fact, American consumers tend to favor products that display the EU organic label and contain ingredients sourced from EU countries over those made with non-EU ingredients. Moreover, the economic and social development level of a product "Country of Origin" plays a significant role in shaping consumers' preferences and evaluations of imported organic goods.

Negative perceptions regarding eco-friendliness tend to sway decision-making more than positive perceptions, largely because they significantly impact the perceived trustworthiness of a product (Thøgersen et al. 2018; Dekhili & Achabou 2015). For instance, while consumers in Hong Kong generally view imported organic foods favorably, they harbor reservations about organic products originating from China (Yip & Janssen 2015, 82). Given the prevalent negative perceptions of the

eco-friendliness of nearby countries and compounded by historical adversities and current frictions with neighboring nations, American consumers might give lesser importance to factors like "Geographic Distance to the Country of Origin" and "Familiarity with and Cultural Closeness to the Country of Origin" when compared to American consumers.

5. Automation and Price Reduction Using Robots Regarding Organic Production

1. Organic Production and Robots

Industrial robots consist of the biggest sector among many different areas of intelligent robotics in modern society. Industrial robots were introduced to production in the 1960s. Robots first started with hydraulic motors then to electric motors, specifically from DC servo to AC servo motors. The form of robot also finally evolved into the multi-jointed design after many different attempts, including polar coordinate and cylindrical coordinate systems. The basic control method of robots is at a level where no further development is needed. There are of course motivations to develop the control methods academically, however economic justification lacks when it comes to application and manufacturing. The future developments will be focused mainly on sensor application technologies for improving the adaptability of robots. Robots are manufactured to follow the programmed routes only. While multiple technologies have been developed to adjust such movements in live time, the development will be focused more on the commercialization of low-price, versatile and easily applicable technologies using vision, lasor sensors.

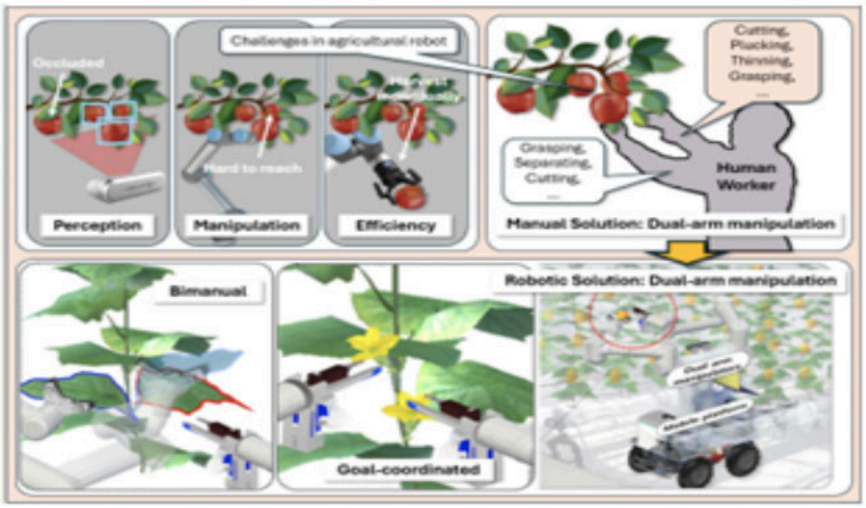
Robotic application technology, specifically production automation technology using robots, is a field entirely separate from robot body development technology. Globally successful industrial robot manufacturers today are companies with accumulated expertise in robotic system application technology. This is because robots can only be effectively deployed in the field if they possess not only the core hardware but also the capability to integrate application software and the

functionalities required for specific tasks. The availability of such application software demonstrates that automation using robots is feasible even for organic agricultural production. For instance, automation in organic farming requires the integration of robot system technology, task-specific skills like pruning, thinning, and harvesting, transportation techniques, and the application of technology for various peripheral devices. Above all, the robot controller must possess the capability to manage this application technology. Therefore, for a robot manufacturer to succeed, it must coexist with system engineering companies (System Houses) specializing in each specific application field of robotics.

2. The Concept and Usefullness of Dual-Arm Robot System and

Agricultural environments consist of densely packed, irregularly shaped objects with varying degrees of rigidity. In such environments, robots may encounter challenges in perception and control (Park, Y., Seol, J., Pak, J., Jo, Y., Kim, C., and Son, H. I., "Human-centered approach for an efficient cucumber harvesting robot system: Harvest ordering, visual servos, and end-effector," Computers and Electronics in Agriculture, vol. 212, pp. 108116, 2023). For example, when multiple objects overlap within the robot's FOV (Field of View) due to leaves and branches, not only occlusion occurs, but the robot may also reach a state where inverse kinematics solutions become unavailable (Park, Y., Kim, C., Son, H.I., "Fast and stable pedicel detection for robust visual servos to harvest shaking fruits," Computers and Electronics in Agriculture, vol. 220, 2024). To address these issues, methods for improving manipulator motion planning and techniques for restoring occluded areas of the fruit are being researched (Gené-Mola, J., Ferrer-Ferrer, M., Gregorio, E., Blok, P.M., Hemming, J., Morros, J.R., Rosell-Polo, J.R., Vilaplana, V., and Ruiz-Hidalgo, J., "Looking behind occlusions: A study on amodal segmentation for robust on-tree apple fruit size estimation," Computers and Electronics in Agriculture, vol. 209, pp. 107854, 2023). Such occlusion and motion planning challenges can be overcome through dual-arm manipulation (Surdilovic, D., Yakut, Y., Nguyen, T. M., Pham, X. B., Vick, A., and Martin-Martin, R. "Compliance control with dual-arm humanoid

robots: Design, planning and programming.," In 2010 10th IEEE-RAS International Conference on Humanoid Robots, pp. 275-281, 2010). This is why dual-arm robotic systems are gaining prominence. Thus, dual-arm robotic systems possess the potential to perform complex tasks by mimicking human bimanual cooperative actions in non-standard agricultural environments.



[Figure 1] Concept of a Two-Armed Agricultural Robot

Table 1 Hierarchical Control Strategy for a Bipedal Robot

Dua-arm manipulator		
Un-coordinated	Coordinated	
	Goal-coordinated	Bimanual
Example:The left arm is palleting parts while the right arm is welding an unrelated scam.	Example: Both arms are palleting parts into the same box	Example:Both arms are lifting and moving the same box full of parts

Source : Surdilovic, D., Yakut, Y., Nguyen, T. M., Pham, X. B., Vick, A., and Martin-Martin, R. "Compliance control with dual-arm humanoid robots: Design, planning and programming.," In 2010 10th IEEE-RAS International Conference on Humanoid Robots, pp. 275-281, 2010

However, for dual-arm agricultural robots to be utilized in organic farming, technologies such as dual workspaces, self-collision avoidance, cooperative path planning, task division and cooperative control, end effectors, perception,

localization, and navigation. Additionally, task-specific design, IoT technology, haptics, and multimodal control, and various additional sensors are required. Regarding this, while no comprehensive analysis of prior research exists, studies have proposed a dual-arm agricultural platform and system dynamics for pruning overlapping or obscured branches (Korayem, 2014), a lightweight dual-arm cooperative manipulator for leaf sampling (Nekoo, 2023), proposed a dual-arm agricultural platform and a deep learning-based tea leaf stem location estimation framework for recognizing tea leaves and cutting branches (Wu, 2024).

농업작업	전정	적과 & 수확	운송	방제	파종
플랫폼					
Reference	Nekoo et,. al.(2023)	Ling, et. al(2019)	Wang et. al.(2019)	Katode et. al.(2023)	Pramod et. al(2019)

3. The Impact of Dual-Arm Robot Systems on the Price of Organic Agricultural Products

As mechatronics technology has reached maturity, agricultural automation using robots has become technically feasible, and demand is growing alternatives capable of replacing human labor in crop production. This highlights robot systems as substitutes for agricultural workers, who are becoming increasingly difficult to hire and retain globally. Accordingly, the engineering aspects of agricultural robots are advancing rapidly (Duckett et al. 2018; Shamshiri et al. 2018). Mobile, autonomous, decision-making mechatronic devices capable of performing crop production tasks such as soil preparation, seeding, transplanting, weeding, pest and disease control, and harvesting without direct human labor under human supervision are gaining prominence. Bipedal robotic systems are also a prime example. Previous studies report that automating one or more production processes in agricultural production increases the economic efficiency of agricultural production (Clary et al. 2007;

Pérez-Ruíz et al., 2014). Specifically, Pérez-Ruíz et al. (2014) demonstrated that weeding using co-robotic systems in broccoli cultivation reduces labor hours and weeding costs. Zhang et al. (2016) highlighted cost savings from automation in apple cultivation. However, while the above prior studies demonstrated cost savings using small robots, if a dual-arm robotic system is deployed in organic crop cultivation under the premise of system sophistication, the economic benefits are expected to be significantly greater.

6. Conclusion

The popularity of organic products has been steadily increasing. This trend is evidenced by numerous academic studies comparing organic and conventional foods, as well as the growing number of retailers offering organic products. In the 1990s, obtaining eco-friendly products in the United States was challenging; however, it is now well established that organic products are more nutritious and safer for human health than conventional foods. This perspective has remained consistent despite various empirical studies published by researchers. The primary reason consumers perceive organic products as superior to conventional ones is the dissemination of socially constructed awareness through education, while a portion of this perception is also rooted in family traditions. Nevertheless, the actual pesticide residue levels and suitability of organic produce as healthy ingredients require verification for each individual item.

Furthermore, published research on the economic viability of automation and robotics in agriculture is extremely limited compared to actual needs. Case studies integrating automation and robotics into organic farming are particularly scarce. In this regard, the academic value of this research is considered substantial. This research can add fundamental information to the field that can help the market near my home, markets in the United States, and markets all around the world. Above all,

the usefulness and economic viability of dual-arm robotic systems are areas that can be demonstrated through future empirical research, that can make groundbreaking innovations in the organic product industry around the globe.

Responsibility in the Age of AI:How Generation Z Navigates Accountability in Algorithmic Environments

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1. Introduction

Last year, a series of small incidents at school changed how I noticed technology. Not through announcements or lessons, but through discomfort. One afternoon, a friend received messages from a private account that looked familiar. The profile image suggested someone our age. Later, we learned the image had been artificially generated. The account vanished quickly. The unease did not.

For several days, conversations felt cautious. Screens were checked more often. Tone mattered more than words. Nothing obvious had changed, yet trust felt thinner.

Soon after, a rumor appeared. A deepfake video involving another student. No one had seen it. That did not slow anything down. Screenshots appeared. Partial messages followed. Stories shifted as they moved through group chats. Accuracy seemed less important than speed.

Around the same time, I noticed something quieter. I paused on a short video while scrolling. Only a few seconds. By lunch, similar videos filled my feed. They became the center of conversation. Friends who rarely used social media struggled to follow along. Not because they were unpopular. Because they were seeing something else.

It felt like we were sharing the same space while living inside different versions of it.

These moments raised a question. Whether teenagers actually understand the systems shaping their fears, relationships, and daily decisions.

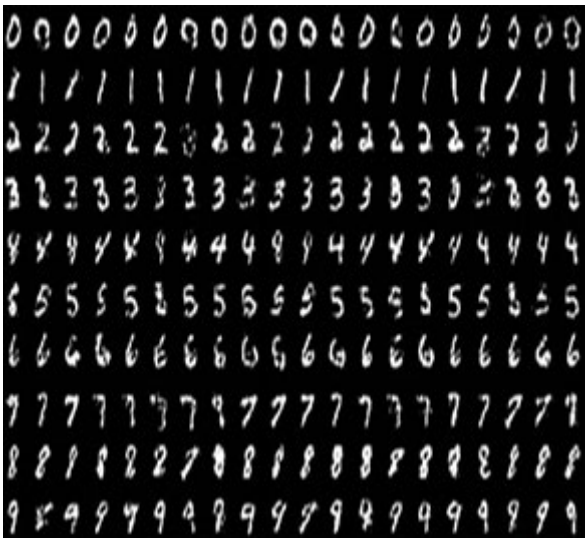
A deepfake refers to media created or altered through artificial intelligence models trained on large datasets. Images and videos produced this way can closely resemble real people. That resemblance carries weight. Deepfakes have already been used in misinformation, false promotion, and violations of personal dignity. Fabricated recordings of public figures have caused public confusion. Trust weakens when visual evidence loses reliability.

Among adolescents, the effects intensify. Curiosity moves quickly. Phones remain close. Manipulated images placed into explicit or harmful contexts spread within minutes. Sharing no longer waits for confirmation. Participation accelerates circulation. Reactions shape perception. Over time, these patterns influence how Generation Z understands privacy, truth, and responsibility.

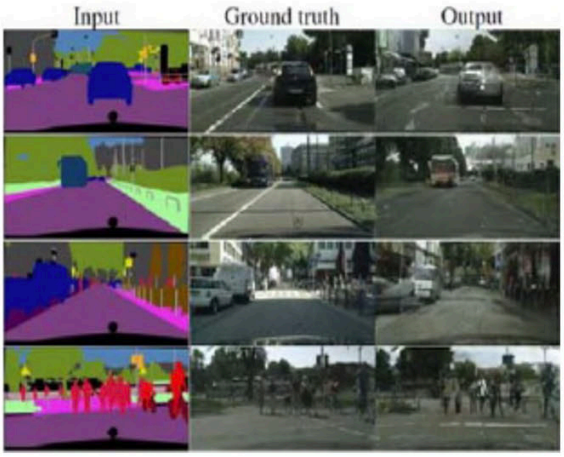
Technology alone does not resolve this. Legal clarity matters. Accountability from developers matters. Education that builds critical judgment matters just as much.

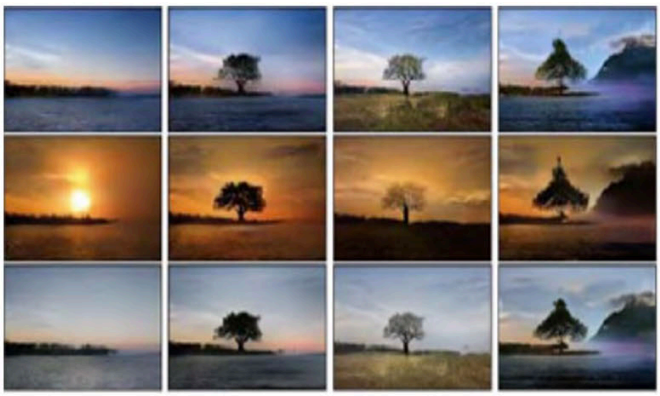
2. Utilization of Artificial Intelligence

Understanding deepfakes requires attention to how images are produced. Artificial intelligence includes systems designed to reason, systems built on structured knowledge, and systems trained through data. Machine learning belongs to the last category. Performance improves through repeated exposure. One widely used framework in image generation is the Generative Adversarial Network introduced in 2014. Its structure relies on competition between two models. One produces images. The other evaluates them. Over time, the outputs become difficult to distinguish from real data.



[Figure 1] Digits generated by GAN[1]





A Generative Adversarial Network does not learn by being told what is correct. It adjusts through resistance. One model proposes. The other refuses. Improvement appears in the space between them.

At first, the results were rough. Structure arrives before meaning. Shapes stabilize without intention. Edges settle. Contrast follows. Order forms even when purpose is absent.

1

Boundaries were later introduced. Outputs began responding to constraints rather than drifting freely. The generation changed character. What appeared was no longer accidental. It reflected selection.

As images became more complex, cracks showed. Detail competed with form. Texture disrupted balance. The model could hold fragments while losing the whole. This revealed a deeper problem. Visual realism depends less on precision than on coordination across scale.

Changes in structure altered this balance. Spatial awareness strengthened relationships between regions. Local features stopped overpowering global form. Images endured longer before breaking apart.

Something else became visible during training. Small shifts in input led to small shifts in output. Movement felt continuous. When this continuity disappeared, failure followed. Smooth change suggested internal organization rather than recall.

Language entered quietly. Descriptions shaped outcomes without specifying pixels. Words guided attributes. Meaning influenced form. Generation crossed into interpretation.

Later work stepped away from creation altogether. Transformation replaced invention. Existing images moved between states. A single system adapted across tasks. Structure persisted even as context changed.

Stability remained delicate. Introducing detail too early caused collapse. Complexity required restraint. The coarse form needed time to settle. Refinement only succeeded once structure was held. Resolution increased slowly. Ambition delayed itself.

These patterns suggest something simple and easy to miss. Generative systems struggle less with power than with timing. Order matters. Structure comes first. Realism follows when patience allows it.

Why Generative Models Optimize Plausibility Before Truth

Generative image systems are not designed to verify reality. They are designed to approximate it. This distinction explains why their outputs often appear convincing while remaining detached from factual events. At a technical level, diffusion based image models are trained to minimize statistical distance between generated samples and real images in the training data. The objective is similarity, not correspondence.

During training, these systems learn which visual patterns are likely to co-occur. Shadows align with light sources. Textures follow familiar distributions. Objects appear in plausible configurations. What the model internalizes is not a model of the world, but a model of appearances. Physical causality, historical specificity, and real world contingency are not directly encoded unless explicitly represented in the data.

This optimization produces a specific strength. Local coherence becomes highly reliable. Surfaces look realistic. Lighting feels natural. Composition follows conventions that humans associate with authenticity. At the same time, global consistency remains fragile. Hands may contain extra fingers. Objects may blend subtly into one another. These failures are not random. They reveal the boundary between statistical resemblance and causal understanding.

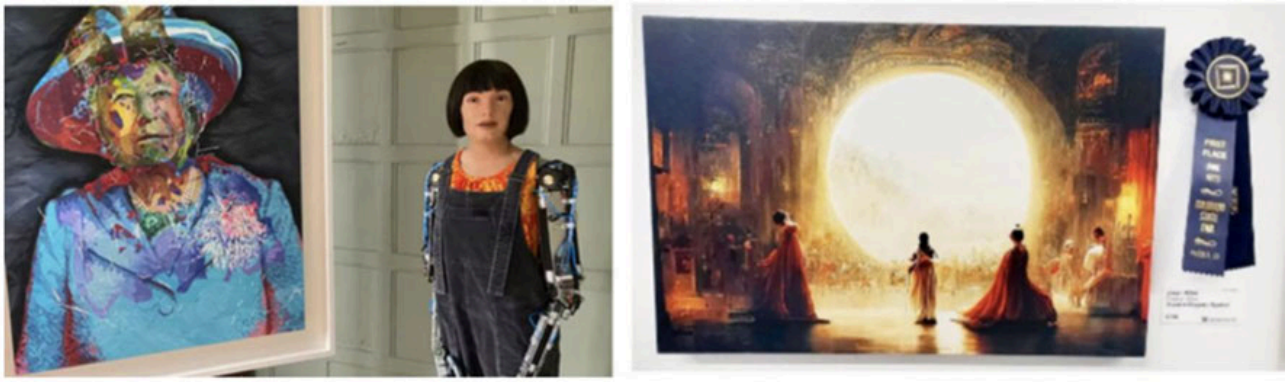
The reason plausibility dominates truth lies in the loss function itself. Training rewards outputs that resemble the distribution of images seen before. It does not reward alignment with an external event or physical constraint. As a result, the system converges toward what looks right rather than what is right. This bias is not a flaw in implementation. It is a consequence of the learning objective.

This distinction becomes especially important when image generation scales. As millions of images are produced daily, users encounter outputs that feel evidential even when no corresponding reality exists. The visual system evolved to trust images because, historically, image production was expensive and slow. Generative systems invert that assumption. Images become abundant, instantaneous, and unanchored.

From a scientific standpoint, this creates a mismatch between perception and epistemology. Human observers continue to interpret images as traces of events, while the generative system treats images as samples from a probability space. The

tension does not arise because the images are deceptive by intent, but because the criteria for success differ. The model succeeds when it produces something that could exist. Humans expect evidence of something that did exist.

Understanding this gap is essential before addressing ethical or legal consequences. Without recognizing that generative systems optimize plausibility rather than truth, debates about misuse remain superficial. The deeper issue is structural. These models were never trained to know what happened. They were trained to know what usually looks like it happened.



(a) (b)

Source : D. Carter, "Ai-Da creates the first portrait of the Queen painted by a humanoid robot | Creative Boom," Creative Boom, Jun. 01, 2022.

Ideas do not arrive in design as finished images. They arrive as incomplete signals. A quick line can mark proportion without committing to detail. A short phrase can carry mood without specifying form. What changed with recent image making tools is not that designers gained a faster way to render. They gained a way to keep the unfinished stage active for longer, then interrogate it from multiple angles without paying the old cost of effort and time.

That matters because the earliest phase of design is usually the most fragile. In that phase, a decision can harden too early simply because drawing takes time. The hand settles on one option, not because it is best, but because it has already been drawn. When rapid generation enters the loop, that bias weakens. The process stops rewarding the first workable outcome. It rewards the next question. What happens if

the roofline shifts slightly? What happens if the light source moves? What happens if the interior feels quieter? The designer is no longer trapped inside a single draft. Exploration becomes cheap enough to be honest.

This also changes what a sketch is. A sketch used to be a bridge between what a designer imagined and what others could see. Now it becomes something closer to a constraint. It says, keep this relationship. Preserve this boundary. Do not lose this proportion. The sketch does not need to be precise to exert force. Its role is to keep the work from drifting. Text plays a different role. It does not anchor geometry. It anchors intention. It names what the drawing cannot yet show, the atmosphere, the use case, the social meaning the space is meant to support. When these two signals coexist, the tension between them becomes productive rather than paralyzing.

A deeper layer emerges once you look at why the results can feel coherent. Coherence is not the same as realism. Coherence is the persistence of relationships. A doorway that continues to function as a doorway across variations. A circulation path that continues to read as a path even when the style changes. When coherence is present, variation becomes informative because it isolates what is flexible and what is not. Style can move while structure holds. That stability is what turns repeated trials into iteration rather than noise.

This is where recognition, in the broad sense, matters. A system that repeatedly produces outputs that respect certain boundaries is implicitly learning what tends to stay together. It picks up adjacency patterns. It picks up typical transitions between inside and outside. It learns that some changes break usability even if they look visually pleasing. It cannot explain these lessons in words, but its behavior reveals that it is responding to limits. Over many cycles, the loop begins to act like a pressure test on a concept. If a design collapses under small variations, the concept was not stable. If it survives, the concept has internal structure.

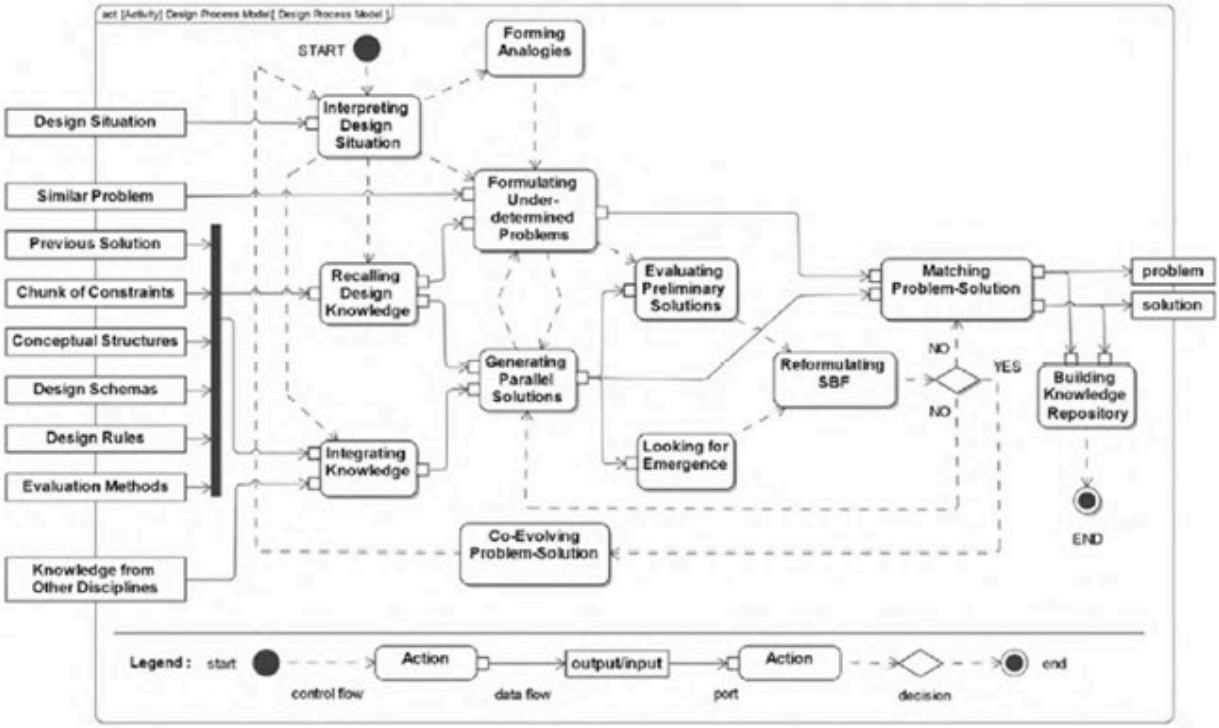
The most important shift, then, is epistemic. Iteration is not only a way to produce alternatives. It becomes a way to learn what the designer actually believes about the problem. Every prompt, every revision, every selection expresses a hypothesis. This configuration will feel inviting. This layout will reduce confusion. This material

palette will signal calm rather than spectacle. The outputs provide feedback, not because they are true, but because they make those hypotheses visible. A designer can notice when the images drift away from the intended social meaning, even if the images look polished. That drift is useful. It shows where intention was vague, or where constraints were missing.

Deliverables also change meaning in this environment. Renderings, diagrams, and descriptive images used to be endpoints, the moment when uncertainty is resolved and presented as certainty. In an iterative loop, they become snapshots. They are taken when communication is needed, not when thinking is finished. Their scientific value lies in comparison. One image alone proves nothing. A set of images, produced under small changes, reveals sensitivity. It shows which features persist, which disappear, which trigger collapse. That sensitivity is the closest analogue to an experiment in this context.

This is why knowledge integration is not a decorative phrase. It names the act of turning human experience into constraints that can survive iteration. A designer's tacit knowledge is usually embodied. It lives in habits, in small corrections, in a pause before committing. Text can externalize some of it. Sketches can externalize some of it. The loop externalizes the rest by forcing those intuitions to face variation. What holds across variation starts to look like knowledge. What fails begins to look like guesswork.

Seen this way, the process is not linear. Input returns. Choices echo. Constraints circulate. Each cycle narrows what feels acceptable without erasing possibility. It also reshapes the designer's role. The designer is less a producer of a single artifact and more a curator of stability, deciding what must remain true as everything else moves.



Ideas in design do not fail because they are wrong. They fail because they solidify too early. In the earliest phase of conceptual work, uncertainty is not a weakness but a resource. The difficulty lies in maintaining that uncertainty long enough for its structure to reveal itself. What computational image generation changes is the energetic cost of keeping possibilities open.

From a mechanistic standpoint, this occurs because variation is no longer tied to irreversible commitment. In manual processes, each drawing embeds effort. Effort creates inertia. Inertia biases judgment. When variation becomes inexpensive, this bias weakens. The system enables repeated perturbation of an idea without erasing its core assumptions. Small changes can be introduced, observed, and withdrawn without loss. This reversibility is critical. It allows design reasoning to operate closer to hypothesis testing than to linear production.

The function of sketches shifts accordingly. A sketch is no longer a proto-solution. It becomes a boundary condition. It constrains certain relationships while leaving others undefined. Its informational content is sparse by design. This sparsity is not a limitation. It is what allows the sketch to survive transformation. Textual input

complements this by operating at a different level of abstraction. Language specifies intent without geometry. It constrains meaning rather than form. When both are present, the system is forced to reconcile relational cues with semantic ones. The reconciliation process does not aim for resolution. It aims for compatibility.

What emerges through repeated cycles is not visual refinement but structural filtering. Some configurations persist across variation. Others collapse under minor change. This persistence is not aesthetic. It is relational. Circulation remains readable. Thresholds continue to function. Publicness or privacy remains legible even as form mutates. These features indicate invariants. In scientific terms, invariants are properties that remain unchanged under transformation. Their presence signals internal coherence.

The generative loop exposes these invariants by applying controlled disturbance. Each iteration functions as a perturbation. If the underlying concept lacks structure, the outputs diverge rapidly. If structure exists, divergence remains bounded. The system therefore acts as a stress test on conceptual assumptions. It does not validate ideas by producing attractive images. It challenges them by forcing them to endure variation.

Abstraction plays a central role in making this process legible. By suppressing surface detail, abstraction prevents compensatory aesthetics from masking weak structure. When detail is absent, relationships must carry meaning on their own. Adjacency, continuity, and transition become visible variables. Semi-abstract visual outputs emerge not as incomplete artifacts, but as diagnostic instruments. Their ambiguity is functional. It prevents premature interpretation and keeps attention on relational behavior.

Language sensitivity further sharpens this mechanism. Minor shifts in wording often produce disproportionate changes in output. This nonlinearity reveals how intent is encoded. Vague descriptions generate diffuse outcomes. Constrained descriptions yield coherent clusters. The system does not interpret language

semantically. It responds statistically. Yet this response forces designers to confront the precision of their own conceptual framing. The output becomes a mirror for intent.

Within this framework, authorship is redistributed rather than removed. The designer no longer authors a single form. The designer authors a set of constraints that define a space of admissible forms. Judgment shifts from selecting appearances to identifying invariants. Selection becomes analytical rather than preferential. What matters is not which image looks best, but which properties persist when others change.

From a scientific perspective, this marks a methodological transition. Conceptual design begins to resemble an experimental practice. Variation functions as manipulation. Persistence functions as evidence. Breakdown functions as falsification. Knowledge does not emerge from isolated success, but from repeated exposure to failure and survival. Artificial intelligence contributes by accelerating this cycle and making its dynamics observable.

The significance of this shift lies not in automation, but in epistemology. Design intuition, long treated as opaque, becomes partially inspectable. Not fully formalized, but no longer inaccessible. What survives pressure begins to count as knowledge rather than preference. The system does not replace human reasoning. It amplifies its resolution.

3. Responsibility in the Utilization of Artificial Intelligence (AI)

Digital data did not become ethically problematic because it was misused. It became problematic because it became reusable beyond its original context. Since the late 1990s, search infrastructures such as Google have transformed fragmented traces of online activity into persistent and searchable memory. Personal photographs, casual remarks, location metadata, and social interactions no longer disappear with time. They remain accessible long after the social intentions that produced them have faded.

Artificial intelligence intensifies this condition by altering how stored information is treated. Machine learning systems do not preserve data as records of past events. They process data as evidence of statistical regularities. Through repeated exposure, correlations are abstracted, generalized, and recombined. This process does not retain purpose or consent boundaries. It retains probability. As a result, information disclosed for limited use can later reappear in radically different forms, detached from the expectations of the original subject.

The central mechanism behind this shift is statistical generalization. Learning systems optimize performance by minimizing error across large datasets. Individual data points matter only insofar as they contribute to aggregate behavior. This property enables powerful inference, yet it also diffuses accountability. When a system generates a synthetic face, voice, or image, no single training example can be identified as the cause. Responsibility disperses across the dataset, the training process, and the optimization objective. Harm can emerge without a clearly identifiable actor.

Autonomy further amplifies this diffusion. Unlike deterministic software, learning systems modify their internal parameters through exposure. During training, they absorb regularities without awareness of social context, identity boundaries, or original intent. Availability is treated as permission. A publicly accessible image becomes a reusable pattern, regardless of whether the subject consented to such reuse. Identity, within this framework, is not personal. It is representational.

This explains why misuse cases such as deepfake imagery and voice imitation are not anomalies but structurally predictable outcomes. Faces and voices are particularly vulnerable because they exhibit high internal regularity. Once encoded, they can be reproduced, blended, and recontextualized with minimal degradation. The technical success of such systems is inseparable from their capacity for misuse. The same mechanisms that enable realism enable violation.

In cases of nonconsensual synthetic media, harm extends beyond misinformation. It involves the loss of agency over one's own representation. Identity becomes something that can be reconstructed by others without participation or consent.

The resulting damage is psychological, reputational, and enduring. Importantly, this harm does not arise from malicious intent within the system. It arises from the absence of mechanisms capable of recognizing harm as harm.

Responsibility therefore cannot be assigned solely at the point of end use. Focusing only on malicious users obscures upstream decisions that make misuse likely. Dataset selection, model objectives, deployment incentives, and commercialization timelines all shape the probability of harm. Responsibility is embedded in design choices long before misuse occurs. This recognition underpins the emergence of human centered approaches to artificial intelligence.

Research initiatives such as those developed at Stanford University under the framework of Human-Centered AI argue that ethical considerations must be operational rather than symbolic. The central claim is that values must be translated into system constraints. Transparency, interpretability, auditability, and user impact assessment are not ethical add ons. They are technical requirements if accountability is to survive scale and autonomy.

From a mechanistic perspective, human centered design reframes the development pipeline itself. Instead of optimizing exclusively for accuracy or speed, it introduces evaluation points where system behavior is assessed against foreseeable harm. Interpretability mechanisms aim to make internal decision processes partially inspectable. Governance structures attempt to define responsibility boundaries when systems act without direct human intervention. These measures do not eliminate risk. They make risk visible before it becomes irreversible.

Regulatory frameworks attempt to formalize these principles. The European Union's AI Act represents a significant effort to treat AI systems as products subject to safety and compliance standards. By classifying systems according to risk and assigning responsibility to providers rather than end users alone, regulation targets upstream incentives. This approach acknowledges that harm often arises from deployment pressure rather than explicit intent.

Nevertheless, regulation faces structural constraints. Learning systems evolve faster than legislative cycles. Technical definitions struggle to keep pace with rapid innovation. Moreover, AI development unfolds within geopolitical competition. Strategic rivalry accelerates deployment while discouraging restraint. Disputes involving platforms such as TikTok or emerging models like DeepSeek illustrate how algorithmic control, data sovereignty, and national security concerns become entangled.

This geopolitical dimension further complicates responsibility. When algorithms function as strategic assets, ethical safeguards risk being framed as competitive disadvantages. In the absence of unified global standards, systems migrate toward less restrictive environments, producing regulatory asymmetry. Responsibility becomes fragmented across jurisdictions.

At a deeper level, these tensions reveal a fundamental mismatch. Artificial intelligence systems operate on patterns aggregated from populations. Ethical responsibility, however, is experienced at the level of individuals. Bridging this gap requires more than post hoc regulation. It requires embedding responsibility into the technical processes themselves.

One emerging direction lies in shifting responsibility from outcomes to processes. Instead of evaluating systems only after harm occurs, responsibility can be assessed through the decisions that shape system behavior. What data was included. What data was excluded. What trade offs were accepted between performance and safety. What forms of misuse were anticipated and which were ignored. These choices determine the moral trajectory of a system long before it generates content.

In this sense, responsibility in artificial intelligence is not a constraint on innovation. It is a condition for its legitimacy. As systems gain autonomy, scale, and generative capacity, the cost of unexamined design choices increases. Responsibility becomes meaningful only when it is rendered operational. Not as an abstract principle, but as a structure that governs how intelligence is built, deployed, and allowed to act.

1. Perception of AI Design Objectives

Distrust in artificial intelligence rarely begins with a single mistake. It grows from repetition. When a system responds predictably in situations that feel uncertain to humans, confidence erodes. This pattern becomes visible when artificial intelligence encounters change. What deviates from precedent is often treated as failure rather than signal.

This tendency is not accidental. Systems trained on historical data learn stability, not emergence. Regularity is rewarded. Deviation is penalized. Over time, what was once descriptive becomes prescriptive. Past patterns harden into silent standards. When such systems are used in social contexts, new practices struggle to register as legitimate. They appear statistically thin, even when socially meaningful.

Human judgment operates differently. People tolerate ambiguity. They pause when information is incomplete. They revise expectations when context shifts. Artificial intelligence, by contrast, is optimized to decide. Delay carries cost. Uncertainty is resolved through approximation. As a result, outputs may appear decisive while remaining poorly aligned with lived reality. This gap, rather than error itself, is where unease takes root.

Questions about design objectives emerge precisely at this boundary. If artificial intelligence is asked to judge, what kind of judgment is it designed to perform? Is it preserving continuity, or recognizing transformation? These are not technical details. They define how authority is distributed between humans and systems.

Human-centered approaches to artificial intelligence arose in response to this imbalance. Their premise is modest but consequential. Artificial intelligence is not an independent source of judgment. It is an extension of human intention. Treating it otherwise obscures responsibility. When systems are framed as tools rather than arbiters, accountability remains traceable. Decisions can be questioned. Outcomes can be revised.

This framing draws from older philosophical distinctions between instruments and agents. Tools extend action. They do not replace deliberation. Applied to artificial intelligence, this distinction clarifies why control and oversight are not optional features. They are structural requirements. Without them, authority migrates quietly from human decision-makers to statistical processes.

Technology-centered development has often prioritized efficiency and scale. These priorities are not inherently flawed. They become problematic when detached from context. Early computing systems emphasized capability first and addressed usability later. Artificial intelligence inherited this trajectory. Performance benchmarks advanced faster than mechanisms for interpretation or contestation.

The emergence of human-computer interaction research marked a shift in emphasis. Attention moved from what systems could do to how people experienced their use. As artificial intelligence entered collaborative environments, this focus expanded again. Interaction was no longer limited to interface design. It included coordination, trust calibration, and shared control.

In such settings, interaction becomes a question of governance. When a system suggests, who decides. When it predicts, who bears responsibility. These questions cannot be answered by accuracy metrics alone. They depend on how authority is signaled and constrained. Poorly designed systems invite overreliance. Well-designed systems make their limits apparent.

This is where design objectives take on broader significance. They shape not only system behavior but user expectation. If autonomy is emphasized without transparency, trust becomes misplaced. If oversight is emphasized without usability, engagement collapses. Design objectives therefore operate as balancing mechanisms rather than fixed targets.

Human-centered design extends beyond initial development. Systems evolve after deployment. Data shifts. Contexts change. Feedback loops form. Without continued intervention, bias re-enters through use itself. Design, in this sense, never ends. It becomes an ongoing negotiation between capability and constraint.

Complete alignment between artificial intelligence and human need remains unattainable. Human goals are plural. Context conflict. No system can anticipate every consequence. Acknowledging this limitation is not a failure of design. It is its foundation. Systems must be built to fail visibly, to allow correction rather than concealment.

Seen through this lens, the perception of artificial intelligence design objectives is inseparable from questions of authority. Who defines correctness? How disagreement is handled. When intervention is permitted. Artificial intelligence does not answer these questions neutrally. Its design embeds responses. Making those responses visible is not an ethical luxury. It is a practical necessity.

2. Perception of Risk Management Measures in Youth-Centered AI Environments

Risk has traditionally been conceptualized as the possibility that an uncertain event may occur and negatively influence the achievement of objectives. Within organizational theory, this understanding combines two dimensions: the likelihood of occurrence and the magnitude of potential consequences. From this perspective, risk management refers not merely to reaction after harm has materialized, but to the institutional capacity to anticipate adverse outcomes and establish mechanisms that enable timely intervention when uncertainty becomes actionable.

Despite its technical framing, risk is never value-neutral. It is shaped by perception, interpretation, and attribution. Scholars have long noted that risk judgments are intertwined with questions of legal liability and blame. Once a risk event becomes visible, attention shifts rapidly from prevention to accountability. Who recognized the signal, at what moment, and through which channel becomes as important as the event itself. Public trust, disclosure responsibility, and remediation pathways move to the foreground, transforming uncertainty into crisis.

This distinction between risk and crisis is critical. Risk occupies a temporal space of potentiality. Crisis emerges only after effects have already occurred. Classical governance models separate these domains, assigning risk management to preventive planning and crisis management to post-event response. In AI-mediated youth

environments, however, this separation becomes increasingly unstable. The speed at which algorithmic effects diffuse through youth networks collapses the interval between anticipation and realization.

Within such environments, risk management practices are formally conducted by individual AI providers, while regulatory authorities evaluate whether these practices are documented, maintained, and periodically reviewed. Oversight responsibility varies by sector and application domain. Yet structural constraints limit the capacity of governments to manage AI risks in isolation. Budgetary limitations, technical asymmetry, and informational opacity prevent centralized control from keeping pace with rapid technological diffusion.

These constraints elevate the importance of governance as a coordinating function rather than a command mechanism. Network governance theory offers a useful lens here. Rather than positioning the state as a singular risk manager, governance emerges through interaction among public institutions, private actors, regulatory bodies, and civil society. In AI ecosystems, especially those frequented by youth, risk is produced relationally. No single actor controls its trajectory. Effective risk management therefore depends on interdependence rather than hierarchy.

Youth technology spaces intensify this challenge. They operate as high-velocity social systems in which algorithmic adjustments, peer behavior, and cultural imitation interact continuously. Risks propagate not through isolated failures but through collective amplification. Under such conditions, provider-centric risk manuals and compliance checklists capture only a fraction of the lived risk environment. Governance mechanisms that rely solely on formal reporting channels encounter blind spots precisely where early warning signals first appear.

This reality necessitates a reconsideration of partnership structures within AI risk governance. Partnerships are not ancillary tools but structural requirements. At their core, partnerships involve multiple autonomous participants who engage in sustained interaction, contribute resources, and share responsibility for outcomes. In the context of AI risk management, particularly within youth-oriented platforms,

low-level cooperation such as information exchange is insufficient. The nature of the risk demands higher-order collaboration that integrates detection, interpretation, and response.

Youth communities themselves occupy an ambiguous position within these partnerships. Traditionally framed as risk subjects, they are increasingly central to risk detection. Informal behavioral shifts, emergent norms, and collective withdrawal often precede institutional recognition of harm. However, these signals rarely translate into formal governance processes. Risk management systems that exclude such experiential knowledge remain structurally incomplete.

Educational institutions represent one of the few spaces where youth experience intersects routinely with adult oversight. Yet schools are often positioned downstream in governance networks, responding to crises rather than participating in anticipatory risk assessment. AI literacy initiatives frequently emphasize operational understanding while neglecting interpretive risk awareness. Without institutional pathways that convert student experience into governance feedback, early intervention remains elusive.

From a technical standpoint, effective AI risk management must also extend into system design. Youth-facing platforms are frequently optimized for immediacy, engagement, and frictionless participation. These design priorities shape exposure patterns more powerfully than user intent. Risk mitigation strategies that rely on individual self-control underestimate the degree to which architectural choices channel behavior. Embedding responsibility into system constraints becomes essential.

Concrete measures illustrate this shift from abstract governance to operational control. Technologies capable of detecting synthetic media, including deepfake identification systems, represent one layer of response. Mandatory digital watermarking of AI-generated content provides another. These tools do not eliminate risk, but they alter its visibility and traceability, redistributing responsibility across the network.

At the policy level, youth-centered AI risk management challenges inherited regulatory assumptions. Age-based protections developed for earlier media ecosystems presume a distinction between content creation and consumption. Generative AI dissolves this boundary. Participation becomes continuous, recursive, and socially mediated. Regulatory frameworks that position youth as passive recipients fail to capture this transformation.

The implications extend beyond immediate harm prevention. Norms established through adolescent interaction with AI influence long-term expectations regarding authorship, authenticity, and accountability. When algorithmic mediation becomes normalized without corresponding risk awareness, future governance capacity weakens. Risk management thus acquires an intergenerational dimension, shaping not only present outcomes but the resilience of future regulatory cultures.

Ultimately, effective AI risk management in youth technology environments cannot rely on isolated actors or delayed response. It requires governance architectures capable of operating at cultural speed, integrating distributed knowledge, and embedding responsibility within both institutions and technical systems. Without such integration, risk governance remains conceptually robust yet practically misaligned with the environments where harm first emerges.

4. Conclusion

Computer mediated communication was once understood as interaction without physical presence. What this study shows, however, is that the absence of presence does not lessen impact. In youth digital spaces, it often intensifies it. When faces disappear, responsibility does not vanish. It becomes distributed, delayed, and harder to trace.

Within anonymous online environments, individuals feel less observed and therefore less anchored. Messages circulate faster than reflection. Images appear without context, and responses arrive before meaning settles. This shift does not

arise from individual carelessness, but from environments that subtly reshape how care, attention, and consequence are experienced. Deindividuation in CMC does not remove moral awareness. It thins it.

Artificial intelligence accelerates this thinning. Algorithmic systems do not evaluate meaning or intent. They measure visibility, engagement, and repetition. As a result, what spreads most efficiently begins to feel most acceptable. Over time, frequency replaces judgment. In such systems, harm rarely announces itself as harm. It blends into what feels normal.

For young users, this normalization is especially consequential. Adolescence is already a period marked by uncertainty about identity, belonging, and visibility. When AI systems mediate attention and imitation, young people are not only learning how to communicate, but how to position themselves within invisible structures that reward speed over reflection and reaction over responsibility. What appears temporary on a screen can quietly become permanent in memory.

This challenges conventional approaches to AI risk governance. Much existing policy assumes that risk can be identified, isolated, and managed before it escalates into crisis. Yet in youth digital environments, risk often moves through informal channels such as jokes, silence, screenshots, and shared images. By the time such risks become legible to adults or institutions, they may already feel ordinary to those who inhabit these spaces. Here, normalization functions as concealment.

The distinction between risk and crisis therefore becomes unstable. Prevention and response blur together. Governance frameworks that rely on delayed recognition struggle in environments where experience moves faster than evaluation. Rules exist, but they often trail behind lived behavior.

Importantly, young people frequently sense disruption before it can be formally articulated. Discomfort, hesitation, withdrawal, or silence are not data points, yet they are signals. They indicate moments where the system no longer feels aligned with those inside it. When such signals are dismissed because they are emotional or informal, governance forfeits its earliest opportunity to intervene.

Responsibility in AI mediated environments becomes diffuse. When content is generated automatically, shared anonymously, and amplified algorithmically, accountability appears to dissolve. Yet consequences do not disappear. They settle unevenly, often on those least equipped to absorb them. Deleting content may erase traces, but it does not undo fear, exposure, or loss of trust. Digital systems are efficient at removal. Human experience is not.

This study therefore argues that AI risk governance must move beyond technical control alone. It must attend to how systems are felt, not only how they function. Especially in youth digital spaces, governance should incorporate early experiential signals alongside formal metrics, and recognize that responsibility is learned through environments as much as through rules.

At the same time, this research remains limited in scope. It relies primarily on theoretical analysis and qualitative interpretation rather than large scale empirical data. Future research could examine how young users themselves interpret responsibility within AI mediated platforms, and how early signals of discomfort might be systematically recognized without reducing them to metrics.

Ultimately, the question is not only what young people should do online, but what kinds of environments they are asked to grow up in. If responsibility becomes invisible, it will not disappear. It will return later, heavier and harder to place.

Perhaps governance begins there. Not with certainty or control, but with the willingness to slow down and listen when something feels wrong, even before it can be fully explained.

9

Public Health

Peer-Influenced Drug Addiction and Depression Among Teen and Adolescent

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1. Introduction

During my high school years, references to drugs and alcohol have increasingly appeared through digital platforms rather than face-to-face interactions. Social media frequently portrays substance use as humorous, socially rewarding, or emotionally relieving, blurring the boundary between awareness and normalization. This effect is especially concerning for students experiencing anxiety or depression, who may be more vulnerable to online peer influence and emotional stress. My interest in this issue was further shaped through my work with the Federal Emergency Management Agency's Youth Preparedness Council (FEMA YPC), which emphasizes risk awareness, communication, and prevention. Through youth-led preparedness projects, there are frameworks in which substance use is examined not as an isolated choice but as behavior shaped by environmental exposure and information systems. This paper will highlight the tendency of drug abuse and rehabilitation out of drug abuse, and how social media takes a powerful channel for transmitting norms, behaviors, and coping strategies among adolescents.

This paper argues that social media exposure significantly contributes to teen substance use by normalizing risky behaviors and intensifying peer pressure, particularly among adolescents experiencing mental health stress. Drawing on survey data, peer-reviewed research, and prevention perspectives, this study examines how digitally mediated environments influence adolescent decision-making and conducts a simulation calculating the likeliness of drug abuse.

Research identifies peer influence as the strongest predictor of initial substance use, alongside socioeconomic, familial, educational, and psychological factors (Newcomb & Bentler, 1989). A survey found that 57% of high school seniors had tried an illicit drug, with alcohol, cigarettes, and marijuana commonly serving as gateway substances. The study outlines prevention approaches focused on education, peer refusal skills, alternative activities, and combined intervention models. Data show that marijuana and cocaine use among teens nearly doubled between 1992 and 1998, while most other age groups experienced declines (Sloboda, 2002). The study emphasizes the following risk factors as components that increase the likelihood of drug use; some include family dynamics, school environment, peer relationships, and emotional challenges. Social perceptions of harm and disapproval were found to influence non-users and moderate users most strongly. Triplett and Payne (2004) critiques traditional prevention and treatment programs such as DARE, arguing that many fail due to a lack of theoretical grounding, limited understanding of adolescent motivations, and reliance on a "one size fits all" approach. Using social learning theory, the authors stress the importance of identifying adolescents' specific reasons for drug use in order to design effective interventions. Finally, Alhakim (2024) discusses social rehabilitation and reintegration, emphasizing their importance for cognitive recovery and long-term outcomes. Although limited in scope, the study highlights the need for flexible, holistic approaches, particularly for juveniles whose cognitive and emotional development is ongoing.

Table 1. Steroid use with and without participation rates

Sport	Participation(%)	With(%)	Without(%)
Football	8.2	4.1	1.1
Wrestling	2.5	3.9	1.3
Soccer	11.5	2.7	1.2
Volleyball	5.1	2.9	1.2
Lacrosse	5.1	2.3	1.3
Surfing	5.5	2.2	1.3
Basketball	7.4	1.9	1.3
Swimming	5.2	1.8	1.4
Baseball/Softball	6.3	1.1	1.4
Cross Country	10.8	0.9	1.4
Tennis	5.9	0.8	1.4
Golf	2.4	0.0	1.4
Field Hockey	2.5	0.0	1.4
Other Sports	19.5	1.7	1.3

Figure (1) Past Month Use of Marijuana and Cocaine by Age, Sex and Ethnicity 1992 and 1998: National Household Survey on Drug Abuse, taken from Sloboda(2002)

2. MATHEMATICAL STRUCTURE OF ADDICTION AND DEPRESSION BASED ON SOCIAL MEDIA

Parameters Symbol	Description of parameters	Parameters values
Λ	Recruitment rate of susceptible individuals	0.5
ζ	Percentage of people in the recovered class who are susceptible to SMAD	0.35
λ	Individuals that leave recovered class	0.4
τ	Natural death rate	0.05-0.25
α	The rate at which depression is brought on by media impact	0.3-0.5
β	Susceptibles who avoid and/or stop using social media	0.01
χ	Contact rate of susceptibles with addicted population	0.25
υ	Depressed individuals that move to recovered individuals through the treatment	0.7
ς	Individuals that leave exposed class	0.25
ω	Probability that treatment is successful	0.8
ψ	The rate at which people leave treatment	0.0027
Φ	Percentage of those who are exposed who later become addicts	0.7
ρ	Rate at which people suicide to depression	0.01
ϕ	Transmission rate of addiction to the susceptible population	0.1-0.8

Figure (2) Common Parameter Values

Ali et al. (2024), the authors look at a mathematical model of social media addiction. This is important because studies seem to show that social media itself can be a significant factor in terms of ultimate drug abuse. In particular, social media addiction (SMA) has been related to "difficult interpersonal relations, poor sleep…and hostile, anxious, depressed moods" (Ali et al., 2024). In particular, such addiction to social media is similar to addiction to drugs. In terms of a mathematical model, denote by S the number of susceptible individuals, as in those who may be infected but currently are not, E the exposed individuals i.e. those who use social media frequently, I1 representing the addictive individuals as in those who are addicted now, I2 representing the depressed individuals affected by SMA, R representing the recovered or removed individuals as in those who have recovered from the addiction, Q representing those who quit social media. Finally, the total population, number of individuals denoted by N is given by:

$$N = S + E + I_1 + I_2 + R + Q$$

This results in a set of differential equations of the form:

$$\frac{dS}{dt} = \Lambda + \zeta\lambda R - \phi\chi I_1 S - (\beta + \tau)S$$

$$\frac{dE}{dt} = \phi\chi I_1 S - (\varsigma + \tau)E$$

$$\frac{dI_1}{dt} = \Phi\varsigma E - (\tau + \psi + \alpha)I_1$$

$$\frac{dI_2}{dt} = \alpha I_1 + \psi(1 - \omega)I_1 - (v + \rho + \tau)I_2$$

$$\frac{dR}{dt} = (1 - \Phi)\varsigma E + vI_2 + \psi\omega I_1 - (\tau + \lambda)R$$

$$\frac{dQ}{dt} = \beta S + (1 - \varsigma)\lambda R - \tau Q$$

Such an equation set needs initial conditions at time t = 0, where it is assumed that each of these at time t = 0 is ≥ 0 as in S(0) ≥ 0, E(0) ≥ 0, I1(0) ≥ 0 and so forth. Susceptible people get recruited at a rate of Λ. The peer pressure to use social media at a contact rate of ϕ with possible transmission of χ. Individuals can also be permanent quitters at a rate of β. The exposed population that suffers from social media addiction transitions to the addicted class at a rate of $(1 - \Phi)\varsigma$. The addicted individuals become depressed at rate α. Those who leave treatment may need a second dose of treatment at a rate of $(1 - \omega)\Psi$ also become depressed. The depressed individuals either recover at a rate of ν or they pass away from depression at a rate of ρ. The probability rate of treatment of being successful is $\omega\Psi$. Individuals who have recovered either permanently quit social media at a rate of $(1 - \zeta)\lambda$ or they become susceptible again at a rate of $\zeta\lambda$. It is assumed that the entire population has an average death rate of τ.

The following table shows the commonly associated values according to Ali et al., 2024.

Parameter	Description
S	Susceptible
D1	Secret Drug Users
D2	Public Drug Users
A	Drug Addict
R1	Rehabilitation Center
R2	Recovered
π	Recruitment Rate
P	Progression of those that use drug in public
μ	Natural death rate
γ	Rehabilitation rate
a	Awareness rate
τ	Recovery rate
σ_1, σ_2	Progression rate
δ_1, δ_2	Drug abuse death rate

Table 5. Interpretation of State Variables

SMAD assumes the addiction is not affected by gender, race or socio-economic standing. Likewise individuals who are not addicted could get addicted owing to social pressure of peers who are addicted. It is also assumed that each participant can interact with the others on a uniform basis. Another work of importance is the paper by Andrawus, 2024. Here the authors classified the population into several grades: susceptible to drugs S, light-grade drugs A, heavy-grade drugs H, medicated drugs T, and recovery from drugs R. D1 refers to the secret drug users, D2 refers to public drug users, rehabilitation is R1 , recovered individuals is R2, here R2 comes from the population of D1 and D2. The susceptible population is represented as π, it decreases at a rate of λ, where $\lambda = \beta AS / N$. Here β is the contact rate, it decreases

by pλ and (1 − p)λ where p is the fraction susceptible who moved to either D1 or D2. σ1 and σ2 represent the addicted class. Together these are represented by the differential equations set:

$$\frac{dS}{dt} = \pi - \lambda S - \mu S \tag{8}$$

$$\frac{dD_1}{dt} = p\lambda S - (\mu + \sigma_1 + a)D_1 \tag{9}$$

$$\frac{dD_2}{dt} = (1 - P)\lambda S - (\mu + \sigma_2)D_2 \tag{10}$$

$$\frac{dA}{dt} = \sigma_1 D_1 + \sigma_2 D_2 - (\mu + \delta_1 + \gamma)A \tag{11}$$

$$\frac{dR_1}{dt} = \gamma A - (\tau + \mu + \delta_2)R_1 \tag{12}$$

$$\frac{dR_2}{dt} = aD_1 + \tau R_1 - \mu R_2 \tag{13}$$

Here, $\lambda = \beta AS / N$

A fundamental theorem in this regard is regarding the region of the above system of differential equations. In particular, the region H = {S(t), D1(t), D2(t), A(t), R1(t), R2(t) ∈ R6 + : N ≤ π / μ} is a global attractor of all positive solutions of the model above and is a positive invariant. A positive invariant means that no solution that starts in the set H leaves H.

3. AN EXAMPLE USING MULTIVARIATE REGRESSION ANALYSIS AND DRUG ABUSE AMONG TEENAGERS

In Rawson et al. (2005), the authors examine methamphetamine (MA) use among adolescents seeking treatment in Southern California, focusing on demographic, behavioral, and psychological characteristics as well as treatment outcomes. Participants came from diverse backgrounds and frequently had co-occurring mental health or substance use disorders. Methamphetamine use was associated with risky behaviors such as criminal activity and unsafe sexual practices. Treatment outcomes varied, with improved results linked to family support and comprehensive care addressing multiple substance use issues.

A related study in Rawson et al. (2005) evaluates a community-based prevention program implemented across multiple communities. The intervention combined school-based education, community organization, and parental involvement to strengthen protective factors and reduce risk. Adolescents in intervention communities showed significantly lower drug use compared to control communities, demonstrating the effectiveness of coordinated prevention strategies.

In Pentz et al. (1989), a fixed-effects regression analysis examines longitudinal data from New Zealand adolescents to isolate the impact of peer affiliations on substance use behavior. This model controls for unobserved individual characteristics that remain constant over time. The regression framework is given by

$Y(it) = \alpha + \beta X(it) + \gamma(i) + \varepsilon(it)$

where YitY_{it}Yit represents outcomes such as substance use or criminal behavior for individual iii at time ttt, XitX_{it}Xit is the independent variable of interest, α\alpha$\alpha$ is a constant, γi\gamma_iγi captures individual-specific effects, and εit\varepsilon_{it}εit is the error term.

$\bar{Y}(it) = Y(it) - \bar{Y}(i)$

$\bar{X}(it) = X(it) - \bar{X}(i)$

Regression on these transformed variables allows for estimation of β, providing clearer evidence of the role of peer influence in adolescent drug use.

4. MATHEMATICAL CALCULATION USING STOCHASTIC VERSION

In this final section, we look at a possible stochastic model.

A. Model Setup We use a stochastic variant of the classical SIR (SusceptibleInfected-Recovered) model to simulate the spread of drug abuse among teens. The population is divided into three compartments, as in the original SIR model. • S(t): The number of susceptible teens who are at risk of using drugs • I(t): The number of teens currently using drugs (analogous to infected individuals) • R(t): The number of teens who have recovered from drug use (either through treatment or cessation) The stochastic differential equations governing this model are:

B. Closed-Form Solution (Deterministic Case) In the deterministic case, we ignore the stochastic terms ($\sigma S = \sigma I = 0$). The deterministic version of the model is represented by these equations:

5. NUMERICAL SIMULATION (STOCHASTIC CASE)

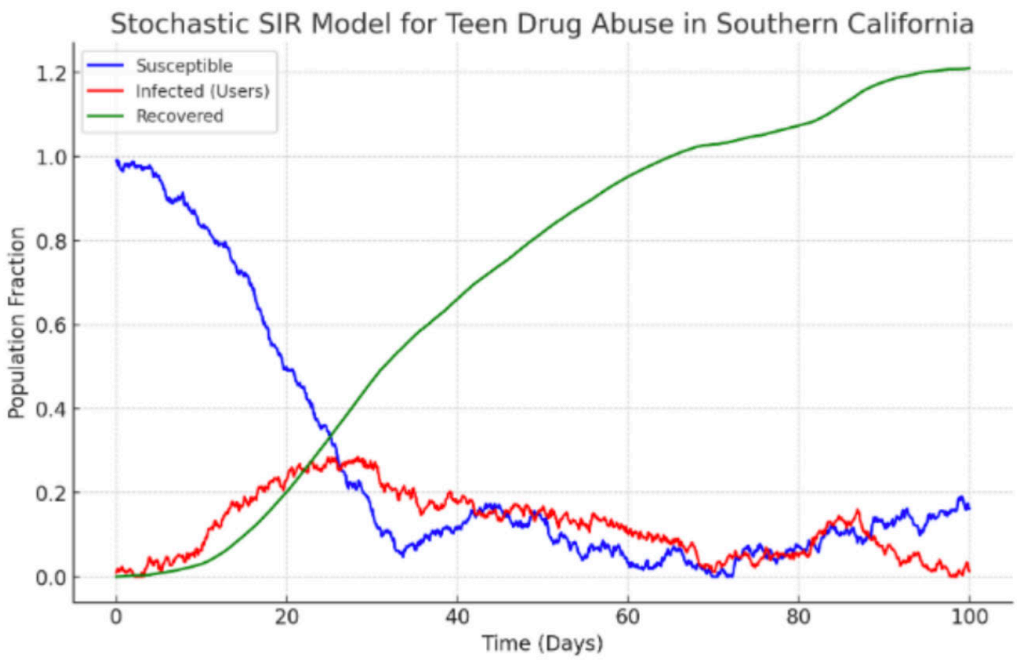

Table 2. Simulation Results

To solve the stochastic version of the model, we use the EulerMaruyama method, a stochastic extension of the Euler method for differential equations. The discretized system is given by:

Euler-Maruyama Method for the SIR Model

Let's apply the Euler-Maruyama method to the stochastic SIR model for teen drug abuse, which is governed by the following SDEs:

Figure (3) is the code we used for the Euler Maruyama method of the Stochastic Simulation. We used python to conduct this stimulation.

```
# Euler-Maruyama method
for n in range(N-1):
    dW_S = np.sqrt(dt) * np.random.randn()  # Wiener process for S
    dW_I = np.sqrt(dt) * np.random.randn()  # Wiener process for I

    S[n+1] = S[n] - beta*S[n]*I[n]*dt + sigma_S*dW_S
    I[n+1] = I[n] + (beta*S[n]*I[n] - gamma*I[n])*dt + sigma_I*dW_I
    R[n+1] = R[n] + gamma*I[n]*dt

    # Keep values between 0 and 1 (normalization)
    if S[n+1] < 0: S[n+1] = 0
    if I[n+1] < 0: I[n+1] = 0
    if R[n+1] < 0: R[n+1] = 0

# Plot the results
plt.plot(t, S, label='Susceptible')
plt.plot(t, I, label='Infected (Users)')
plt.plot(t, R, label='Recovered')
plt.xlabel('Time')
plt.ylabel('Population Fraction')
plt.title('Stochastic SIR Model for Teen Drug Abuse')
plt.legend()
plt.grid(True)
plt.show()
```

Figure (3) Euler Maruyama Method Used For Conducting Simulation

6. Conclusion

The simulation results illustrate how adolescent drug use evolves over time through the combined influence of peer interaction, recovery, and stochastic social behavior. Starting with a small initial population of users, substance use increases rapidly due to peer exposure, demonstrating how even a few users can significantly accelerate the spread of drug use during adolescence. As the number of users grows, recovery processes driven by treatment and self-regulation become more influential, gradually reducing the susceptible population and slowing the rate of new users. This interaction produces a peak in drug use followed by stabilization or decline, suggesting that intervention and recovery mechanisms can effectively counterbalance peer-driven escalation. When stochastic effects are included, the model captures short-term fluctuations and unpredictable changes in substance use, reflecting real-world variability in teen social networks, emotional states, and decision-making, while long-term trends remain stable. Ultimately, the system approaches a steady-state equilibrium in which new cases from peer exposure are balanced by recovery and cessation.

These results are consistent with existing research showing that peer and family environments are among the strongest determinants of both the initiation of and recovery from substance use. Adolescents are particularly sensitive to social pressure, and factors such as depression, academic stress, and exposure to substance-positive digital content further increase vulnerability. Gateway substances like alcohol and cigarettes play a key role in progression to more addictive drugs. These findings highlight the need for proactive, multifaceted prevention strategies, including targeted education, school-based mental health support, family-centered interventions, and policies that reduce exposure to substance-related influences in both physical and digital environments. Integrating simulation-based insights with empirical research can support the development of more effective strategies to prevent adolescent substance use from escalating into long-term addiction.

Author Biography

Chaeeun Emily Kim is a 10th grade high school student attending Palos Verdes High School, and former member of FEMA's Region 9 Youth Preparedness Council (YPC). Her interest in community safety, emergency readiness, and youth behavioral trends inspired her to research the deeper influences behind teenage substance use. She wrote this article to explore how social media, peer pressure, mental health, and environment interact to shape teen decision-making.

Addiction Tendencies among Adolescents and Countermeasures

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I. Introduction

"Addiction" is no longer a term exclusive to the adult world. As a teenager, I am surrounded by news of the rise in teenage drug addiction, smoking, and alcohol consumption, and find that many of my peers struggle with perhaps a more pernicious form of addiction: dependence on technology. I have had my fair share of academic stress and understand how modern pressures of teenage life can fuel loneliness, stress, and anxiety—all conditions conducive to addiction. In a world that continues to grow more complex and uncertain, addiction can no longer be reduced to an issue of individual will; if the social environment gives rise to factors that render adolescents vulnerable, we must confront not the individual for answers to the problem, but the system itself.

Recently, drug-related incidents involving adolescents have occurred in succession, and the number of juvenile drug offenders is rapidly increasing. For example, in the Gangnam academy district, there was a case where students preparing for exams were given drinks containing methamphetamine, and the perpetrators attempted to extort money from the parents of the affected students[1]. In another case, a middle school student purchased methamphetamine through Telegram and used it with others[2] and there was also a case in which high school seniors hired an adult as a 'dropper' to sell drugs through platforms like Telegram[3]. As a result of these series

1 https://imnews.imbc.com/news/2023/society/article/6480583_36126.html. 2023.5. 10. Visit
2 https://www.seoul.co.kr/news/newsView.php?id=20230421500203&wlog_tag3=daum. 2023. 5. 10. Visit

of incidents, the number of juvenile drug offenders increased sharply from 119 in 2017 to 481 in 2022, an increase of 304% over five years.[4] Furthermore, with the widespread use of mobile phones, the age at which individuals become immersed in games and similar activities has dropped significantly. Adolescents increasingly engage in prolonged gaming, and mobile phone addiction has become a prevalent phenomenon among this age group.

2. Addiction Tendencies in Adolescents

1. Concept of Addiction

Addiction is a complex phenomenon characterized by physical and psychological dependence on substances or behaviors that induce dependency, such as alcohol and drugs, or internet gaming and gambling (Korea Disease Control and Prevention Agency, 2022). As a form of psychological dependence, addiction can be classified into substance addiction, which includes alcohol, nicotine, and drugs, and behavioral addiction, which includes internet use, gambling, and shopping. In particular, alcohol, gambling, internet, and drug addictions, which pose serious social problems in South Korea, have been categorized as the four major addictions (Hae-guk Lee, Bo-hye Lee, 2012).

The socio-economic costs associated with substance and behavioral addictions in South Korea amount to approximately 109.5 trillion KRW, exceeding the social costs caused by diseases such as smoking-related illnesses or cancer. Substance addictions, primarily alcohol, tobacco, and drugs, extend beyond individual preferences and exert significant effects across society. The fact that the monthly drinking rate among Korean adults reaches 57.4% indicates that alcohol consumption has already become normalized. Moreover, media content such as “Sulbang” (online live drinking broadcasts) frequently depicts drinking scenes, culturally glamorizing

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3 https://www.nocutnews.co.kr/news/5927491. 2023. 5. 10. Visit

4 According to the statistics in the Supreme Prosecutors’ Office ‘White Paper on Drug-Related Crimes’ from 2012 to 2021, among the 16,153 drug offenders apprehended in South Korea in 2021, 450 were teenage offenders, accounting for 2.8% of the total and marking the highest proportion on record.

alcohol consumption and normalizing it for younger generations (News1, October 20, 2024). In addition, the current smoking rate of 17.7% shows that a considerable number of people continue to smoke, highlighting a significant issue that impacts not only individual health but also imposes social burdens (Korea Disease Control and Prevention Agency, 2022).

The Gateway Theory suggests that the issue of substance addiction can be explained by the possibility that the use of relatively less harmful substances, such as tobacco or alcohol, may lead to the use of harder drugs, such as illicit narcotics (Pentz & Li, 2009). Thus, since softer substances can serve as a pathway to stronger drug use, this phenomenon may pose an even greater problem in South Korea, where alcohol consumption and smoking are widespread. According to the 2022 statistics on drug offenders, the age at which individuals first encounter drugs is gradually decreasing, and the average age of teenage drug offenders is 17.7 years, raising concerns about the spread of substance addiction among younger populations (Supreme Prosecutors' Office, 2022).

Meanwhile, gambling addiction, a representative form of behavioral addiction, is also showing a trend toward younger ages. The number of gambling addiction patients in their 20s has doubled over the past five years, and according to the 2022 Survey on Adolescent Gambling Problems, four out of ten adolescents reported having gambled, with the average age at which they first engage in betting games being 11.3 years (Korea Center on Gambling Problems Prevention & Treatment, 2022). The ALSPAC study (Emond et al., 2019), a longitudinal study tracking gambling behaviors from ages 17 to 24, showed that individuals who started gambling during adolescence tended to continue gambling into adulthood or develop more severe addiction problems, and that early gambling may correlate with subsequent mental health issues and substance abuse. Furthermore, in internet and smartphone environments, the boundaries between gaming and gambling are becoming increasingly blurred, and the characteristics of behavioral addiction share similar characteristics. Digital gambling and gaming addiction stimulate users through immediate rewards, which leads them to continuously seek psychological

reinforcement (Griffiths, 2018). In particular, Drummond and Sauer (2018) emphasized that the "loot box" elements in games provide reward systems similar to gambling, which may promote or reinforce problematic behaviors and act as a gateway to addiction.

Reward sensitivity is one of the critical factors in the initiation and maintenance of addictive behaviors. Individuals with high reward sensitivity tend to respond excessively to addictive stimuli or to excessively pursue rewards. In the early stages of addiction, engagement in substance use or specific behaviors provides immediate rewards such as pleasure or satisfaction. As addiction progresses, an internal drive emerges to continue these behaviors in order to obtain greater rewards, leading to the intensification of addiction (Gullo et al., 2022). Furthermore, as addiction deepens, the motivation for behavior shifts. Initially driven by the pursuit of pleasure, the behavior gradually becomes oriented toward the avoidance of discomfort or withdrawal symptoms, rather than the pursuit of positive rewards (Gullo et al., 2022). Next, salience refers to the phenomenon in which addictive behaviors increasingly occupy a central position in an individual's daily life over time, representing a common characteristic across all types of addiction. Griffiths (2005) described the domination of an individual's thoughts, emotions, and behaviors by the object of addiction as a core feature of addiction, emphasizing the process by which the addict prioritizes the addictive target above all else. Consequently, other important activities such as academic responsibilities, occupational duties, family obligations, and social roles are neglected, and addictive behaviors come to occupy the central position in one's life.One of the most critical symptoms of addiction is loss of control. This refers to the inability of an individual to intentionally reduce or cease the use of a specific substance or engagement in a particular behavior, resulting in the persistent repetition of the behavior regardless of circumstances. Loss of control is observed consistently across various forms of addiction, including gambling and substance use disorders (Peele, 1985; Goodman, 1990). Similar patterns have been identified in behavioral addictions, such as internet addiction (Smith & Jones, 2010). The DSM-5 recognizes loss of control as

a central element of addiction, describing the condition in which the addict is no longer able to regulate their behavior (O'Brien, 2010). Another core symptom of addiction is psychological tolerance. This refers to the phenomenon in which individuals require increasingly larger amounts of a substance or stronger behavioral stimuli to achieve the same level of reward. Gullo et al. (2022) suggested replacing the concept of tolerance used in Griffiths (2005) with the term habituation, referring to it as psychological tolerance. Users tend to increase the dosage of a substance as its effects diminish (Goodman, 1990), and similar behavioral patterns of seeking stronger stimuli are observed in behavioral addictions (Sussman & Sussman, 2011). Withdrawal symptoms refer to the physical and psychological discomfort experienced when individuals discontinue substance use or abstain from a specific behavior (Sussman & Sussman, 2011). These symptoms can manifest as psychological effects such as anxiety, agitation, depression, and insomnia, as well as physical effects including nausea and headaches (Griffiths, 2005). Such symptoms act as a significant factor that further reinforces substance use or engagement in addictive behaviors (Grant & Chamberlain, 2016).

2. Factors Contributing to Addiction

According to a U.S. survey, 35% of adults experience severe loneliness (AARP, 2018). Such loneliness has been shown to reduce life satisfaction and overall well-being. Steptoe et al. (2013), in a population-based longitudinal cohort study of 6,500 men and women, demonstrated that loneliness and social isolation serve as independent variables influencing mortality. The study further found that women facing health problems and economic difficulties tend to experience greater loneliness, whereas men exhibit higher mortality rates in relation to social isolation and other factors. Age-specific analyses indicate that adults in their 40s and 50s report higher levels of loneliness than those aged 60 and above (AARP, 2010, 2018; Cigna, 2020). Additionally, a reported loneliness prevalence of 49% has been linked to sexual identities outside traditional categories, including lesbian, gay, bisexual,

and transgender (LGBT) individuals (Herbert, 2018). These findings are based on data from the MIDUS (National Survey of Midlife Development in the United States), which sampled individuals aged 35 to 86.

Loneliness is associated with heightened anxiety, and social relationships are considered essential for human survival (Berkman & Syme, 1979; Holt-Lunstad, 2022). Weak social connections, whether subjective loneliness or objective social isolation, diminish quality of life and have been identified as chronic factors that ultimately strain healthcare systems (Holt-Lunstad & Perissinotto, 2023). The COVID-19 pandemic has exacerbated social isolation, further highlighting the need for societal attention to this issue. In the United States, approximately 25% of older adults have been found to experience social isolation (Cudjoe et al., 2020).

Social isolation has been studied since Durkheim's research on suicide (Durkheim, 1951) and through network analyses conducted in the 1950s (Berkman et al., 2000). The concept of social isolation is defined as a lack or limitation of social contact with others (National Academies of Sciences, Engineering, and Medicine, 2020:3). Social isolation affects not only an individual's quality of life but also their income. Although social isolation has recently gained scholarly attention (Abelson, 2021), its prevalence varies across countries. For instance, studies have reported that 22% of adults in the United States, 23% in the United Kingdom, and 9% in Japan experience social isolation (DiJulio et al., 2018). Recent research has increasingly recognized differences in social isolation according to gender and age (Berkman et al., 2000), leading to a growing body of related studies (Cornwell, Laumann, & Schumm, 2008). Social isolation tends to intensify with increasing age (Röhr et al., 2021), and gender differences have also been identified (Umberson et al., 2022). In the case of women, relatively lower educational and occupational attainment compared to men may serve as a key factor contributing to social isolation. However, research indicates that women often maintain social contact outside the workplace, including interactions with spouses, children, and friends, resulting in levels of social isolation that are not substantially different from those of their male peers (Shartle, 2023). Social isolation can also lead to anxiety through multiple pathways.

Recent research on affect distinguishes between positive affect and negative affect (Kang et al., 2000). This distinction is based on the subcomponents of subjective well-being, a psychological construct defined as individuals' evaluations of their own lives (Diener, 2000), which include: (i) life satisfaction, (ii) positive affect, and (iii) negative affect (Emmons & Diener, 1985; Diener, 2000). Among these, low positive affect and high negative affect are key factors differentiating depression and anxiety (Tellegen, 1985). Negative affect, in particular, is associated with stress and poor coping abilities (Clark & Watson, 1986). In other words, loneliness, social isolation, and stress all function as antecedents of negative affect, at the center of which anxiety is positioned. Anxiety reduces the capacity for everyday functioning, diminishes quality of life, and, if chronic, can lead to physical and mental health problems. The prevalence of exposure to such anxiety symptoms is considerable. For example, the National Mental Health Survey conducted in September 2020 during the COVID-19 pandemic found that 18.9% of the population belonged to an anxiety risk group (Korean Society for Traumatic Stress Studies, 2020). Anxiety sensitivity (AS) is closely related to anxiety disorders and depression, with higher levels of AS associated with greater severity of both conditions (Mailer & Reiss, 1992; Olatunji & Wolitzky-Taylor, 2009; Taylor, Koch, Woody, & McLean, 1996). When anxiety exceeds an individual's threshold of tolerance, it may manifest as an anxiety disorder (National Institute of Mental Health, 2011). Thus, anxiety symptoms can develop into clinical anxiety disorders.

An anxiety disorder is defined as a condition in which anxiety exceeds normal levels, eliciting excessive responses accompanied by neurotic symptoms as well as physical and behavioral manifestations. Anxiety disorders encompass not only the core anxiety symptoms but also associated avoidance behaviors and a range of somatic symptoms. When anxiety is directed toward a specific object or situation, it is termed fear (Kwon, 2008). Pathological anxiety primarily occurs in the context of neurotic disorders, various psychotic disorders, personality disorders, or constitutional medical conditions. Key physical symptoms include palpitations, elevated blood pressure, tachycardia, sweating, hyperreflexia, pupillary dilation,

tremors, gastrointestinal disturbances, and urinary frequency, reflecting autonomic nervous system hyperactivity. Behavioral symptoms often include irritability and pacing (Sadock & Sadock, 2007). In terms of lifetime prevalence, the most common anxiety disorder is specific phobia (15.6%), followed by social anxiety disorder (10.7%), separation anxiety disorder (6.7%), generalized anxiety disorder (4.3%), panic disorder (3.8%), and agoraphobia (2.5%). Anxiety disorders are considered among the most prevalent mental disorders across all age groups (DSM-V). Despite this high prevalence, the proportion of individuals receiving treatment remains very low, largely because anxiety disorders often present with diverse somatic symptoms that are mistaken for physical illnesses and frequently co-occur with other psychiatric conditions, complicating accurate diagnosis (Jeong-ho Chae, 2006).

Previous studies have reported that depression and anxiety are significant factors influencing addiction or addictive tendencies (Yen CF, Ko CH, Yen JY, Cheng CP. 2008; Kyu-soo Oh, Hye-kyung Lee, Geon-seok Lee, 2016). For example, relationships have been reported between social anxiety and social media addiction (Young-jin Lim, 2024), adolescent depression, anxiety, impulsivity, and smartphone addiction (Kyeong-ah Jeong, 2024), social anxiety and smartphone addiction (Seong-jae Park, 2023), anxious attachment and social media addictive tendencies (Eun-ju Jo, Min-ji Kim, Eun-young Ko, 2024; Won-hyung Lee, Seung-po Hwang, 2023; Yu-rim Kim, Jang-won Jeon, 2022), and depression and anxiety with internet addiction (Ju-kyung Lee, 2022). Overall, recent research increasingly suggests that anxiety disorders are important predictors of internet or social media addiction tendencies. Conversely, a number of studies also indicate that internet addiction itself can induce anxiety and stress (Nima, 2012; Lee & Stapinski, 2012; Hong, 2013; Jalalinejad, 2012; Cho, 2013; Kim, 2013).

3. Concept of Addiction Tendencies

Psychological/behavioral addiction refers to a psychological dependence on a specific substance or behavior, accompanied by compulsive repetitive actions to satisfy this dependence. Over time, it negatively affects an individual's physical

and mental health as well as social functioning, arising from the complex interplay of neurological, psychological, and social factors (Korea Disease Control and Prevention Agency, 2022).

In the early stages of addiction research, studies primarily focused on alcohol and drug addiction, and during the 1930s, addiction was often regarded as a moral failing of the individual (VanGeest, Johnson, & Alemagno, 2017). However, in the 1960s, Jellinek redefined alcohol addiction as a disease and conceptualized addiction as psychological and physiological dependence on alcohol, drugs, tobacco, or other substances (Byung-yoon Lee, 1992; Kushner, 2011). Later, Peele (1985) proposed that addiction may arise not from the substance itself but from one's relationship with certain behaviors or from a failure to control impulses to engage in those behaviors. This concept became pivotal in expanding the scope of addiction research (Song-seon Lee, 2000). In contemporary classification systems, the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders) officially includes gambling disorder as an addiction, while internet gaming disorder is classified as a condition requiring further research. Meanwhile, the ICD-11 includes gaming disorder under the addiction category, thereby broadening the scope of behavioral addictions. In summary, addiction initially referred to a loss of control over substance use (Gyo-heon Kim, 2007; Maddux & Desmond, 2000; Potenza, 2006), but it has since evolved to encompass a range of dysfunctional behaviors (Peele, 1985). Notably, the expansion of the addiction concept from psychological and physiological dependence on specific substances to compulsive engagement in particular behaviors has led to the development of the concept of addictive tendencies. Consequently, research on addictive tendencies has been conducted across various domains, including mobile phones and digital media (Woong-ki Park, 2003; Sim-young Yang & Young-seon Park, 2005; Joo-ri Han & Kyung-ho Heo, 2004), sports such as golf (Hyung-seok Kim, Sung-il Ha, Seung-jun Kim et al., 2010; Hyun-ik Cho, Yong-Jun Kim, Young-ho Son, 2006), beauty-related behaviors (Young-ah Kim & Hyang-in Jeong, 2014), and work-related activities (In-ho Jeong & Eun-jin Lee, 2013).

Addiction is characterized by tolerance and withdrawal symptoms. Goodman (1990) defined addiction as a condition in which individuals cannot cease a substance or behavior despite negative consequences, highlighting tolerance and withdrawal as central features. Tolerance refers to the phenomenon in which increasing amounts of a substance or behavior are required to achieve the same effect, while withdrawal symptoms involve physical and psychological discomfort experienced when the substance use or behavior is discontinued. However, the concept of addiction is also described using terms such as overdependence, problematic, and severity, indicating that addictive tendencies are not necessarily confined to formal diagnostic categories (Atroszko et al., 2023). In other words, tolerance and withdrawal alone are not sufficient to diagnose addictive tendencies. For instance, the Problem Gambling Severity Index (PGSI) evaluates the severity of gambling behaviors and their negative impacts, providing a useful tool for assessing a spectrum of addictive tendencies, from mild problem gambling to severe addiction. This assessment approach allows for a broader capture of addictive tendencies. Similarly, the Internet Addiction Tendency Scale developed by the Korea Information Society Agency uses a self-diagnostic questionnaire tailored for Koreans. This instrument comprises 20 items across six subfactors: daily life impairment, positive expectation, withdrawal, virtual interpersonal orientation, deviant behaviors, and tolerance.

4. Types of Addictive Tendencies

The American Society of Addiction Medicine (ASAM, 2011) defines addiction as a chronic brain disease involving neural circuits related to reward, motivation, and memory, and explains that compulsive behaviors aimed at obtaining rewards or relief are key characteristics of addiction. This definition suggests that the release of neurotransmitters such as dopamine stimulates the brain's reward system, reinforcing and perpetuating addictive behaviors (Smith, 2012).

Substance addiction refers to a state in which individuals are aware that certain substances, such as alcohol, nicotine, or cocaine, have harmful physical and emotional effects, yet they are unable to self-regulate and continue to use them repetitively and compulsively (Naver Knowledge Encyclopedia, retrieved September 10, 2024). Substance addiction is classified as a substance use disorder in both the DSM-5 and ICD-11. In the DSM-5, substances are categorized into ten types, including alcohol, caffeine, cannabis, and hallucinogens. Substance addiction is primarily associated with an excessive release of the neurotransmitter dopamine, which strengthens the brain's reward system and promotes the repetition of addictive behaviors (Griffiths, 2005). Alcohol use disorder is a chronic behavioral disorder that impairs an individual's physical, psychological, and social functioning, and is characterized by tolerance, withdrawal symptoms, and cravings (Ministry of Health and Welfare, 2023). Drug addiction involves dependence on substances such as narcotics, psychotropic drugs, and cannabis, which can produce severe physical withdrawal symptoms and critically impair social and occupational functioning. According to the World Health Organization (WHO), regardless of the outcomes of substance use, the use of substances in non-medical or unauthorized ways is defined as substance abuse (Su-mi Chae, 2015).

Behavioral addiction refers to the development of an addictive state through the repetitive engagement in specific behaviors, such as gambling, internet gaming, or sexual activity, rather than dependence on physical substances. These addictive behaviors activate the brain's reward system similarly to substance addiction and induce core features of addiction, including withdrawal symptoms and tolerance (Choi, King, & Jung, 2019). In other words, behavioral addiction arises from the repetition of behaviors rather than the use of specific substances. In the DSM-5, gambling disorder is officially classified as a type of addiction, while internet gaming disorder is included as a condition requiring further study. The ICD-11, on the other hand, classifies gaming disorder under the category of addiction, thereby expanding

the scope of behavioral addictions. Previous studies have reported that behavioral addictions are reinforced through neurophysiological mechanisms similar to those of substance addictions (Nancy, 2014 et al.; Young, 1998).

(1) Substance Addiction

Substance addiction generally develops through the following process. The physical and psychological rewards experienced from substance use reinforce and motivate repeated substance-taking behavior. These reward experiences are generated by the brain's reward circuitry, the limbic system, which is deeply located in the midbrain, in response to reward stimuli. Specifically, the reward circuitry is activated through dopamine release in the limbic system, producing feelings of pleasure and reward (Nestle, 2005). When psychoactive substances are administered via inhalation, oral ingestion, or injection, massive amounts of dopamine are released in the ventral tegmental area of the limbic system. As a result of excessive dopamine release, users experience abnormally intense pleasure. Moreover, repeated overstimulation induces structural changes in the brain through neuroplasticity, adjusting the responsiveness of the neural circuits (Koob, 2006). Consequently, chronic substance users require higher levels of dopamine release to achieve the original level of reward, and the presence of tolerance and severe withdrawal symptoms leads to compulsive substance use. This cycle ultimately culminates in the development of substance addiction.

(2) Game Addiction

Game addiction refers to a condition in which an individual becomes abnormally immersed in gaming, leading to mental health problems such as cognitive impairment and depression, and resulting in difficulties in performing social activities (Hyun-su Kim, 2024). Similar to substance addiction, addictive tendencies in gaming involve the development of dependence, tolerance, and withdrawal symptoms through chronic gaming, increasing the likelihood of behavioral addiction and vulnerability to psychiatric comorbidities. Game addiction typically originates as

a leisure activity but gradually evolves into a dependency process through repeated participation. During this process, gaming time progressively increases, and cessation of gaming can trigger withdrawal symptoms or behavioral addiction-related symptoms such as anxiety and depression. In this context, the gamer's pre-existing psychological states, including depression and anxiety, may further exacerbate the addiction. Previous studies have accumulated evidence on factors influencing game addiction. For instance, interpersonal relationships in early adolescence and game addiction (Won-dae Baek & Kyung-hyun Seo, 2019), and communication anxiety and game addiction (Eun-joo Kim, In-kyu Kim, & Joo-hwan Kim, 2007) have been reported.

Finally, co-occurring addiction—the simultaneous occurrence of substance addiction and behavioral addiction—presents a significant challenge to recovery from addiction (Mary McGrath & Barrett, 2009). Several prior studies have shown that substance and behavioral addictions exhibit high co-occurrence and share common characteristics. For example, some individuals with gambling addiction also experience alcohol or nicotine dependence, and people classified as problem gamblers tend to abuse alcohol more than the general population (William R. Welte et al., 2008). Moreover, alcohol-related problems have been reported as significant predictors of gambling problems among college students (Soo-mi Jang, 2016). Regarding adolescent problem gambling, smoking has been found to have a significant impact (Mark Forrest & Peter McHale, 2012), and is suggested as one of the key contributing factors. Furthermore, delinquent and criminal behaviors are closely associated with addictive behaviors, serving to intensify addiction and complicate the process of overcoming it.

3. Countermeasures to Addictive Tendencies among Adolescents

Adolescence represents a period of heightened vulnerability to addiction due to biological and psychological developmental factors, with increased impulsivity contributing to a greater likelihood of engaging in addictive behaviors (Arnett, 1992). Addiction during adolescence can persist into adulthood, potentially leading to more severe problems, highlighting the importance of early intervention. Although adults may demonstrate greater self-regulation of addictive behaviors compared to adolescents, high levels of stress or anxiety continue to pose a significant risk for addictive tendencies. As discussed, addictive tendencies should neither be construed as a moral failing nor simply as psychological dependence. Rather, they are characterized by excessive preoccupation with specific behaviors and difficulties in regulating impulses to engage in these behaviors. Key individual factors influencing addiction include temperament and personality traits, such as impulsivity, reward sensitivity, sensation seeking, ADHD tendencies, and psychopathological characteristics (e.g., obsessive-compulsive traits, paranoia, insomnia, somatization). Temperamental traits, in particular, play a crucial role in both the development and maintenance of addictive behaviors.

Psychological factors are central to the onset and persistence of addiction and can be conceptualized in terms of both protective and risk factors for addictive behavior. Accordingly, programs designed to prevent and address addictive tendencies in adolescents should be grounded in the following principles. First, negative attitudes toward specific behaviors act as protective factors by fostering awareness of the adverse consequences of addictive behaviors and reducing the likelihood of engagement. Conversely, permissive or accepting attitudes toward specific behaviors constitute risk factors by justifying the behavior, diminishing recognition of its problematic nature, and thereby sustaining addictive engagement. Individuals with addiction exhibit compulsive use of substances or behaviors, which is a key factor in maintaining addictive behaviors. They also experience difficulty performing everyday activities or fulfilling responsibilities, allocating substantial time and energy to the addictive behavior or substance (Sussman & Sussman, 2011). While compulsive

behaviors in obsessive-compulsive disorder serve primarily to alleviate anxiety or stress, addictive behaviors are initiated primarily to obtain reward or pleasure. Addictive behaviors are repetitive or automatic but are distinct from habits, as they are compulsively repeated despite awareness of potential negative consequences (Yucel et al., 2019).

In this context, the effectiveness of public service advertisements targeting adolescent smoking through broadcast media appears to be gradually declining. Adolescents' addictive tendencies related to tobacco, alcohol, drugs, and gaming are primarily associated with failures in impulse control, and, strictly speaking, the fundamental cause lies in the stimulation of the brain's reward system. Because adolescents experience immediate pleasure and reward, they are more susceptible to developing addictive behaviors. Therefore, it is essential to establish a systematic framework to effectively manage and regulate adolescents' addictive tendencies.

4. Conclusion

Addiction causes significant functional impairments in individuals' daily lives and social relationships. Individuals with addiction experience a range of problems, including social stigma, financial loss, interpersonal conflicts, social isolation, and reduced self-esteem (Sussman & Sussman, 2011). Such functional impairments increase the long-term risks associated with addiction and create situations that require social support (Peele, 1985).

Yet, today's threats facing adolescents continually grow faster than the current regulatory system can keep up. Just as drug distribution has shifted to hidden digital channels and involving a complex web of interests, the behavioral addiction mechanisms have become inextricably embedded in the everyday digital landscape. Many adolescents, in particular, are unaware of the risk of algorithmic systems that take advantage of their biological weaknesses. Nonetheless, society cannot be absolved of the lack of responsibility that comes with not screening out such destructive stimuli. While this particular problem does not simply fall on the

shoulders of the individual, it is within the scope of public health and social ethics. Thus, the need for a cohesive, national-wide strategy is urgent. The state must act promptly and decisively if they wish to enforce structural prevention and early intervention before it is too late.

10

Identity

The Relationship Between Dopamine and Characteristics of Generation Z

– Changes in Dopamine Levels According to Internet Usage Time and Its Addictive Effects –

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1. Introduction

With the advent of the artificial intelligence (AI) era, students' concerns have deepened. Recent reports indicate that even graduates from prestigious universities often struggle to secure stable employment, reflecting increasingly intense competition in the labor market. Consequently, attention has naturally turned to the characteristics of our generation. By examining how other generations perceive and evaluate us, this study aims to enhance individual competitiveness and establish strategic goals for achieving a stable livelihood. Additionally, we aim to analyze how the popular notion that excessive internet use equates to dopamine addiction is being used to label Generation Z—who tend to use the internet more heavily—as suffering from dopamine addiction.

The relationship between dopamine and digital device usage has undergone a big shift as access patterns have evolved throughout generations. While the role of dopamine in the brain's reward system and its connection to addiction stayed the same, the technology that triggers it has evolved. For example, the change for "first generation users"(in computers), compared to "next generation users", who adopted the new patterns of electronics over portable, multiple devices (e.g smartphones), has made highly addictive stimulation available. This happens because each notification on the smartphone activates the brain's reward system, making habits of frequently

checking an electronic device. Over time, these changes have led to many negative effects, especially on younger generations. These dopamine deriving behaviors have reshaped mental and physical behavior trends. Earlier generations used electronic devices as a resource, while younger generations use it as an extension of themselves. Study shows a highly positive correlation between adolescent's IAT(Internet Addiction Test) score, weekly online time, and their peripheral blood dopamine level. This demonstrates that the generational change in easy access to portable electronics has directly resulted in the emergence of verifiable chemical processes in the brain (neurobiological mechanism) for uncontrollable digital use that directly correlates to classic addiction pathways.

However, Generation Z, who primarily engage in activities like commenting and reposting on social media, possess strengths in shaping public opinion compared to other generations, and this trait has ample potential to serve as an advantage in social life. Furthermore, the perception that Generation Z is more internet-addicted than other generations is merely a relative reputation; other generations also exhibit significant tendencies toward internet addiction. Notably, the frequency of using portable multi-device platforms like SNS is a common phenomenon across all generations. Considering these points, this study first examines the characteristics of Generation Z and then analyzes the changes in dopamine levels according to internet usage time and the addiction that is emphasized in the reputation of Generation Z.

2. Definition of Generation Z and Identity

1. Concept of Generation Z

The term 'MZ Generation' is primarily used in South Korea to collectively describe Millennials (Generation Y) and Generation Z, and is less commonly employed in Western generational studies. The term MZ Generation encompasses both the Millennial Generation (M Generation) and Generation Z, referring to individuals born from the early 1980s to the early 2000s. The Millennial Generation includes those born from the early 1980s to the early 1990s, while Generation Z comprises individuals born from the early 2000s onward. [Table 1] presents a classification of major generations according to birth cohorts.

[Table 1] Generation Grouping

Generation Name	Year of Age
Silent Generation (Generasi Veteran)	1925-1946
Baby Boom Generation	1946-1964
Generasi X	1965-1979
Generasi Y	1980-1999
Generasi Z	2000-

Source: National Chamber Foundation (Badan Pusat Statistik, 2018)

However, the age range defining Generation Z varies considerably among scholars, and [Table 2] provides examples of different age brackets proposed in the literature.

[Table 2] Z Generation age range – literature review

Age range	Author(s)
born 1990 or later	Świerkosz-Hołysz (2016, p. 441); Żarczyńska-Dobiesz and Chomątowska (2014, p. 407); Wiktorowicz and Warwas (2016, p. 22); Wojtaszczyk (2013)
between 1990 and 1999	Half (2015)
between 1991 and 2000	Tulgan (2009, p. 5)
between 1993 and 2012	White (2017)
between 1993 and 2005	Turner (2013, p. 18)
after 1995	Opolska-Bielańska (2016, p. 37); Ensari (2017, p. 53); Dudek (2017, p. 144)

Source : Anna Dolot(2018)

Generation Z refers to individuals who were born and raised in a technologically rich environment, and for whom technology constitutes a central aspect of their identity. Singh and Dangmei (2016, p. 2) note that they "live in a world where the web, the internet, smartphones, laptops, open networks, and digital media exist." In addition, Sidorcuka and Chesnovicka (2017, p. 809) describe Generation Z as "a cohort that experiences adolescence and adulthood during an era of economic and social transformation." Generation Z is capable of functioning in both the physical and virtual worlds, perceiving these spheres as complementary, which allows them to transition between them seamlessly (Żarczyńska-Dobiesz & Chomątowska, 2014, p. 407). Consequently, members of Generation Z can efficiently search for and verify necessary information and rapidly share it with others. Their communication is characterized as continuous, as they utilize a variety of communication devices and social media platforms. Csobanka (2016, p. 68) observes that "active social media users maintain extensive networks of contacts through which they sustain everyday relationships. While face-to-face interactions are important, online contacts hold equal significance." Generation Z employs diverse mobile devices to express opinions and attitudes regarding their reality, environment, and society. They articulate their thoughts via Twitter, blogs, and online forums; share photos through

Instagram, Pinterest, and Snapchat; and distribute videos on YouTube, Instagram, and Snapchat. Facebook functions as a platform enabling all of these activities. Moreover, Generation Z not only consumes online content but also actively creates and manages it (Hardey, 2011, pp. 750–753).

2. Comparison with Generation X and the YT Generation

In contrast, Generation X refers to individuals born after the Baby Boomer generation, specifically between the mid-1960s and the early 1980s. This generation was shaped by various global political and social events during their formative years. The Y Generation, born after Generation X between the 1980s and around 2000, is commonly referred to as the Millennials or Gen Y. Millennials matured during a technological revolution, with technology naturally integrated into their daily lives. They live in a constantly connected environment, utilizing advanced devices such as mobile phones, laptops, and tablets. Moreover, having observed their Baby Boomer parents working under prolonged stress, Millennials tend to place significant value on work-life balance. Compared to previous generations, Generation X is more open to diversity and has learned to embrace differences in religion, sexual orientation, class, race, and ethnicity. Although this generation has already entered the workforce, their characteristics, needs, attributes, and work styles remain insufficiently understood. Generation Z, in contrast, exhibits distinct work-related attitudes and perspectives compared to Generation X and Millennials. Organizations that fail to understand Generation Z may encounter difficulties in recruiting and retaining this cohort, potentially hindering sustainable organizational growth. Conversely, by understanding Generation Z, organizations can identify factors that motivate them in the workplace and develop effective recruitment and retention strategies. Generation Z demonstrates unique consumption patterns and actively seeks diverse experiences, emerging as a major new consumer segment. Compared to older generations, they are more proactive, expressive, digitally literate, and highly attuned to trends in a rapidly changing society. These generational characteristics are particularly evident in everyday consumption. Unlike older

generations, they do not focus solely on saving for the future or practicing frugality; instead, they actively invest in themselves and creatively shape their personal tastes. For instance, in line with the title of "the world's highest per capita luxury spending," approximately half of department store sales are attributed to MZ Generation consumers, who also frequently post luxury product reviews on their social media accounts. MZ Generation consumers prioritize personal happiness and satisfaction over collectivist norms. Recently, they have increasingly taken the lead in decisions regarding family-related products, such as insurance, thereby serving as a bridge between older and younger generations. Through social media, e-commerce, and mobile platforms, the MZ Generation has emerged as a highly influential consumer group in the distribution market. While older generations focused primarily on the act of purchasing goods, MZ Generation consumers consider both the social value of the products and the values of the companies that produce them. They tend to engage in environmentally friendly and ethical consumption. Ethical consumption refers to consumer behavior that practices consumption ethics in daily life, specifically involving conscious purchase decisions based on personal and moral beliefs, considering health, society, and the environment. Reflecting this value-oriented consumption, the term 'Meaning Out' has recently emerged. Value-oriented consumption involves rational purchasing decisions based on personal judgment rather than advertising or brand image, considering whether products positively impact society or the environment and whether they avoid unethical practices. 'Meaning Out' combines the concepts of 'meaning' and 'coming out,' referring to the active expression of political and social beliefs through consumption. MZ Generation consumers increasingly boycott inauthentic brands, purchase socially supportive products, and verify these choices publicly. As MZ Generation consumers become a central force in economic activity, ensuring the smooth continuation of their consumption is critical for maintaining a healthy economy. Consequently, their significance in the market continues to grow.

The Origin of Generation Z

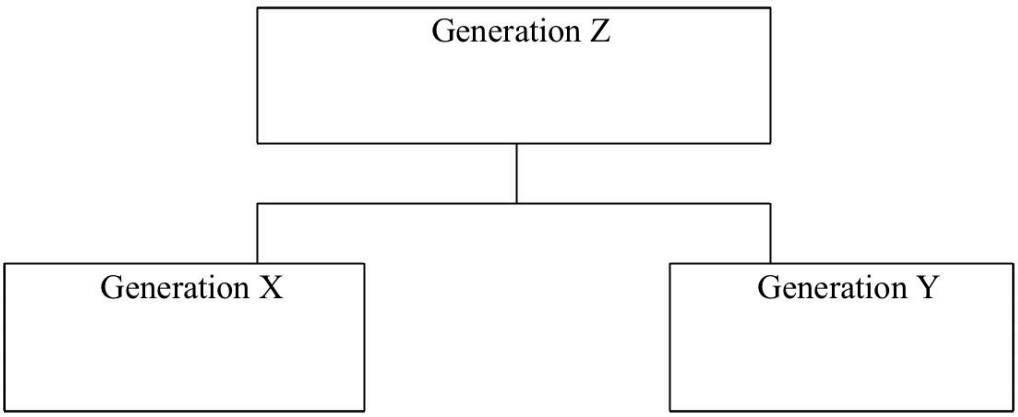

Table 3 Comparison of X Y and Z Generations in Definition

	Generation X 1965-1979	Generation Y 1980-1994	Generation Z 1995-2010
Iconic Technology	VCR Walkman IBM Personal Computers	Internet, Email, SMS DVD Playstation, XBox, iPod	MacBook, iPad Google, Facebook, Twitter Wii, PS3, Android
Popular Culture	Body Piercing Hyper Color Torn Jeans	Baseball Caps Men's Cosmetics Havaianas	Skinny Jeans V-necks RipSticks
Sales & Marketing	Direct / Targeted media Below-the-line	Viral / Electronic Media Through Friends	Interactive campaigns Positive brand association
Training Focus	Practical Case studies Applications	Emotional Stories Participative	Multi-modal eLearning Interactive
Purchase Influences	Brand switches Experts	No Brand Loyalty Friends	Brand evangelism Trends
Learning Format	Spontaneous Interactive	Multi-sensory Visual	Student-centric Kinesthetic
Ideal Leaders	Co-ordinating Doers	Collaborators	Inspiring Co-creators

Note: McCrindle Research, Generations Defined (mccrindle.com.au) (2012)

The Baby Boomer generation refers to individuals born between 1946 and 1964, during the so-called 'baby boom' period following World War II. After the war, most Western countries gradually recovered from the economic difficulties of the wartime period, resulting in a sharp increase in birth rates. This generation experienced unprecedented economic growth and prosperity throughout their lives. Although they were born in the relatively challenging postwar period, they benefited from expanded access to education, government subsidies, rising real estate values, and technological advancements, establishing themselves as a successful and affluent generation.

Intergenerational conflict is prevalent among different age cohorts. In particular, Generation Y (Gen Y) tends to avoid conflict to an extreme degree, making them relatively vulnerable in intergenerational conflict situations. Gen Y often strives to avoid disappointing others and may apologize or evade confrontations with supervisors to prevent disagreements. In contrast, Generation Z (Gen Z), who grew up under pragmatic and argumentative Generation X (Gen X) parents, is likely to perceive such Gen Y individuals as "lame, weak, and delusional."

Table 4 Work-Related Characteristics and Opinions of the Generations X, Y and Z

Work Characteristics	Generation X	Generation Y	Generation Z
Work Ethics	Balanced	Eager	More realistic
View on Work	Work is a challenge	Work is carried out to create difference.	Work is carried out with eager and energy.
Personal Characteristics	Practical flexible individualistic entrepreneurial, life quality	Having political conscious with high expectations team builder, understanding for differences selfconfident open to challenges	Curious about technology, getting mature early, spoiled, strengthened, against risks, protected
Work-Related Characteristics	-Not liking workplace policies - Less dependence on workmen - Ability to conduct multiple tasks simultaneously - Liking the work environment where an equal amount of responsibilities is taken - Liking doing projects - Giving importance to work responsibilities rather than work titles - Evaluating the performance according to the output - Not liking the power policies - Being flexible to the authority - Thinking that casual dressing is comfortable	- Eager to know the reasons - Eager to be praised in front of everyone - Liking an enjoyable workplace - Thinking that money is not motivational - Eager to take momentary responsibilities - Eager to set small time-limited goals - Thinking that worklife balance is important - Not eager to have a long -term relationship with a company - Having confidence in skills	- Being creative and cooperative - Having to solve environmental, social and economic problems - Ability of self-guidance - Processing information quickly - Being more intelligent

Note: Çetin, C. & Kara, S. (2016), Research about Gen X, Millennial and Z Students' Perceptions of Protean & Boundaryless Occupation

Generation Z is likely to emerge as the cohort that will lead the Millennial generation (Gen Y) immediately upon entering the workforce. Millennials tend to avoid standing out, and their concept of leadership emphasizes 'leading from the middle' or 'acting as if a leader is not needed.' This characteristic has not posed significant problems thus far, as Generation X generally does not seek leadership roles and prefers to spend time with their families after work. Consequently, the only generation currently providing top-down leadership in the workplace is the Baby Boomer generation, who are postponing retirement. However, this generation is relatively behind in adopting new technologies or embracing change, and their interests are largely confined to 'new retirement approaches.' As Generation Z fully enters the labor market, a leadership vacuum is expected to emerge, which they are likely to fill immediately. Simply declaring "I will be the leader" may suffice — no one is positioned to prevent them. Sociologists Strauss and Howe note that generational characteristics recur cyclically, emphasizing that the present moment represents the opportunity for Generation Z to exert leadership. Having grown up in an era marked by economic recessions, wars, and mass shootings, Generation Z tends to prioritize establishing order and maintaining stability. Therefore, they are expected to exercise leadership amid uncertainty and play a critical role in maintaining organizational equilibrium.

Generation Y is often bound by the belief that "one must do what they love." This mindset stems from the idealistic advice imparted by Baby Boomer parents, who emphasized that "passion drives life." Ironically, however, the Baby Boomers themselves rarely lived such lives. Their guidance has contributed to making Generation Y a cohort characterized by indecisiveness, giving rise to what has been termed the 'passion compulsion.' With the emergence of Generation Z, this phenomenon is expected to undergo significant change. Generation Z, often referred to as the 'Education Generation,' exhibits the highest proportion of homeschooling experience compared to previous cohorts. They possess the ability to independently discern their personal interests. In contrast, Generation Y grew up in an education

system heavily focused on standardized testing. Teachers emphasized test preparation, and parents often hired private tutors. As a result, Generation Y learned how to excel in exams but frequently lacked clarity regarding their genuine interests. Generation Z is poised to fill this gap, guiding Generation Y in understanding "what should be pursued." They are likely to redefine the meaning of work, moving beyond mere national stability, family economic adaptation, and corporate-centered life toward a new paradigm of adulthood. Having been raised under countercultural X Generation parents, Generation Z is already prepared to assume this role. Furthermore, Generation Z is expected to surpass Generation Y as communicators. Currently, Generation Y is regarded as the most adept communicator in the workplace, being the first generation to receive formal training in social skills, and demonstrating notable consideration and kindness toward others. They are also the first generation to accumulate widespread online writing experience from a young age and are considered to possess exceptional literacy skills. However, with the rise of Generation Z, these strengths may be perceived as relatively 'outdated.' Generation Z's communication style is predominantly video-centric. They utilize YouTube as a primary information source; for instance, rather than reading text to understand a game strategy, they consult videos. Boys conduct game tutorials for thousands of viewers, while girls operate YouTube channels to convey political messages even before the age of 13. This confidence and expressiveness in front of the camera are expected to translate into speaking influence and leadership charisma in the workplace. Consequently, an era emphasizing oral rather than written communication is emerging, in which Generation Z will distinguish themselves. Generation Z is also likely to serve as a reality check for Generation Y. Millennials often obsess over travel and experiences due to a desire to appear 'special and unique,' documenting their lives through photographs and validating their self-esteem via social media likes and approvals. Given that many lack substantial financial resources, they frequently assert that "Experiences are more important than possessions." In contrast, Generation Z is already fatigued by the culture of photo documentation and self-promotion. Their devices are all equipped

with cameras, and their X Generation parents have meticulously chronicled their lives. Moreover, Generation Z is acutely aware of their limited financial capacity and therefore feels little need to post images to affirm their existence on social media. As a result, Generation Z will act as a mirror reflecting the illusions of Generation Y. Nevertheless, historically, each generation has consistently served to make the preceding generation more self-aware and truthful.

3. Key Characteristic Elements of Generation Z

Preceding studies have examined various characteristics of Generation Z (Gen Z) from multiple perspectives. According to Sara Tendulkar, Gen Z is a generation that has grown up in a highly connected digital society, characterized by a technology-centered lifestyle and active use of social media. Additionally, the Institute for Emerging Issues (2012) identifies Gen Z as the most racially diverse and technologically proficient generation to date. Members of this generation prefer informal and candid communication and view social media as an essential part of life, earning them the label of a "Do-It-Yourself" generation. Dan Schawbel (2014) notes that Gen Z tends to be entrepreneurial, trustworthy, tolerant, and meaning-oriented rather than money-oriented. They exhibit realistic attitudes toward work and maintain a positive outlook on the future. Another distinctive feature of Gen Z is their heightened environmental awareness. Max Mihelich (2013) explains that Gen Z demonstrates a strong sense of responsibility regarding environmental issues and resource scarcity. Furthermore, Amanda Slavin (2015) observes that Gen Z seeks to express their opinions regardless of age. Conversely, the Generational White Paper (2011) characterizes Gen Z as impatient, preferring immediate results, highly dependent on technology, easily distracted, individualistic, self-directed, and materialistic with high expectations. While technology forms a core aspect of their identity, Joseph Coombs (2013) points out that Gen Z may lack problem-solving skills and critical thinking abilities. Moreover, the Institute for Emerging Issues (2015) reports that Gen Z exhibits lower voter turnout and reduced community engagement. These traits are also reflected in organizational behavior.

Research indicates that 61% of entry-level Gen Z employees are considering changing jobs, demonstrating that new Gen Z workers represent the group most likely to leave an organization. This finding empirically supports earlier research (Allen, 2006).

Figure 1 . The Z generation optimum employment period

Source : Anna Dolot(2018)

Turnover intention is highly likely to lead to actual turnover behavior (Fishbein & Ajzen, 1975). Turnover intention refers to an employee's inclination to leave their current organization in the near future, thereby relinquishing their membership in the organization. Meanwhile, the phenomenon of 'turnover contagion,' in which individual turnover spreads throughout the organization, is commonly observed. Employees observe the voluntary departures of their colleagues and subsequently decide whether to remain in the organization or to leave themselves, being influenced by the behaviors of those who have already exited (Felps et al., 2009). In this way, turnover can propagate within the organization similarly to the transmission of a contagious disease.

Since each generation holds different values and expectations regarding the workplace, understanding the workplace preferences of Generation Z (Gen Z) is a critical task for organizational management. This understanding enables the establishment of effective communication channels and the creation of an environment where Gen Z employees can be motivated. Moreover, it allows Gen Z to comprehend how other generations evaluate their characteristics and values, which can be useful for self-management. According to Bascha (2011), Gen Z regards transparency, autonomy, flexibility, and individual freedom as non-negotiable core values. Ignoring these values may lead to dissatisfaction, decreased productivity, lowered morale, and reduced engagement. Members of this generation expect information sharing, consideration of their opinions, and recognition of feedback. Max Mihelich (2013) explains that Gen Z desires the freedom to express themselves

and immediate recognition. Having never experienced a world without smartphones and iPads, they also expect a workplace environment free of technological constraints.

Dan Schawbel (2014) notes that Gen Z prefers face-to-face communication and wants their opinions to be respected and taken seriously. They favor workplaces where ideas and contributions are valued over age, and they prefer leaders who are honest and transparent. Teresa Bridges (2015) reports that Gen Z prefers environments that provide mentoring, learning, and professional development opportunities. They favor organizations that allow them to exercise creativity and entrepreneurial tendencies, flexible work schedules, and technology-centered work environments, including remote work and real-time collaboration. According to Knoll (2014), Gen Z prefers clear and predictable work environments and seeks to avoid complex organizational structures or procedures. A summary of these findings from preceding studies is presented in [Table 4].

[Table 5] A Critical evaluation of Gen z at workplace

Career Goals	Build several parallel careers, have several jobs simultaneously
Work environment	Office, home desires flexible schedule
Technology	Creates own documents, databases, uses web for research,email,24/7
Client orientation	E-mail/IM/Text
Retention	Personal relationship
Mentoring	Constant feedback needed
Motivators	Maintain personal life
Attire	Whatever feels comfortable

Source : Shilpa Gaidhani, Dr. Lokesh Arora, Bhuvanesh Kumar Sharma (2019)

3. The Effect of Internet Usage Time on Dopamine Changes and Addiction

The effect of internet usage time on dopamine levels has been established through experimental research and is now widely recognized as common knowledge. However, the hypothesis that higher dopamine levels, as measured in previous studies, increase addiction risk is flawed due to significant methodological shortcomings in those studies. However, considering the practical limitations preventing further experimental research, the undeniable positive characteristics observed in Generation Z, and the broader trends of increasing internet usage across generations alongside shifts in the mass media market, it is unfair to single out Generation Z as having a disproportionately high risk of addiction based solely on elevated dopamine levels.

1. Internet Usage Time by Age Group and Internet Addiction

The internet has rapidly spread worldwide as a powerful tool for recording and disseminating information. Currently, there are approximately 2.925 billion internet users globally, accounting for 40.4% of the world's population. A significant portion of these users are youth under the age of 25. The following are statistics on internet usage time by age group.

Figure 2 Average daily time spent using the internet by 3rd quarter 2024, by age and gender(in hours. minutes)

Details: Worldwide; DataReportal; GWI; Q3 2024; 16 years and older; time spent using the internet each day on any device

Source : DataReportal; We Are Social; Meltwater; GWI(Statista 2025).

As the number of internet users increases, more and more adolescents are reported to be experiencing problems such as decreased academic achievement, neglect of family responsibilities, and damaged social relationships due to excessive internet use (Young KS. 2014). In this context, Internet Addiction Disorder (IAD) has emerged

as an important research topic (Young KS. 2014; Min Liu, Jianghong Luo, 2015). Addiction is a complex phenomenon characterized by physical and psychological dependence on addictive substances or behaviors, such as alcohol, internet gaming, gambling, and drugs (West, R., & Brown, J., 2013). As a form of psychological dependence, addiction can be categorized into substance addiction (e.g., alcohol, nicotine, drugs) and behavioral addiction (e.g., internet, gambling, shopping). Psychological and behavioral addiction signifies psychological dependence on a specific substance or behavior, leading to compulsive repetition to satisfy this need. Over time, it negatively impacts an individual's physical and mental health as well as social functioning. Addiction arises from the complex interplay of neurological, psychological, and social factors (West, R., & Brown, J., 2013). Among these, behavioral addiction forms an addictive state through the repetition of actions like gambling, internet gaming, or sexual behavior, rather than dependence on a physical substance. Similar to substance addiction, this activates the brain's reward system, leading to addiction symptoms such as withdrawal and tolerance (Choi, King, Jung, 2019). This means the addictive state is formed through the repetition of the behavior itself, not dependence on a substance. The DSM-5 officially classifies gambling addiction as an addiction type, while internet gaming addiction is included as a condition requiring further research. ICD-11 expanded the scope of behavioral addictions by including gaming disorder within the addiction category. The term "Internet Addiction Disorder (IAD)" was first proposed by Goldberg (Goldberg I., 1995) and gradually gained widespread use following Young's groundbreaking research (Young KS, 1997).

2. Correlation between Internet Usage Time and Dopamine Changes

Research has shown that addictive drugs activate specific neural circuits known as the brain reward system (Schultz W. 2006). According to Schultz W (2006), nearly all normal activities we find pleasurable can activate this reward system. When these activities occur, the neural circuitry causes the brain to encode and remember the situation that induced pleasure, leading to the repetition of the same behavior

and the pursuit of reward again. This is the fundamental mechanism of addiction. The key substance playing a central role in this process is dopamine. Dopamine is secreted by neurons in the reward circuitry and functions as a neurotransmitter. Through experiments combining biochemical, electrophysiological, and imaging techniques, scientists have discovered that all addictive drugs increase dopamine release in the brain. When dopamine is released in specific brain regions, it produces feelings of pleasure or satisfaction, creating a desire to experience this satisfaction again. To satisfy this desire, individuals repeat behaviors that trigger dopamine release, with the resulting satisfaction acting as a reward (Laricchiuta D, Petrosini L. 2014). The euphoria induced by dopamine is so potent that individuals may lose rationality in pursuit of it. This leads to addiction. Romanczuk-Seiferth N, Koehler S, Dreesen C, Wüstenberg T, Heinz A. (2015) observed that not only chemicals like cocaine but also behaviors like gambling share similar neurobiological processes. Behavioral addictions have long been considered to involve abnormalities in the dopaminergic system. A classic example is that pathological gamblers have been reported for years to exhibit the same cortical arousal patterns as substance abusers, and in some individuals, naltrexone administration has been shown to reduce problematic gambling behavior (Brewer JA, Grant JE, Potenza MN. 2007). It has been proposed that these same pathways may contribute to addictive behavior in internet use (Min Liu, Jianghong Luo, 2015). Min Liu and Jianghong Luo (2015) found a significant positive correlation between weekly internet usage time and peripheral plasma dopamine concentration. This indicates that longer internet usage time correlates with higher peripheral plasma dopamine levels. A key finding in this prior study is that plasma dopamine levels did not decrease even at excessive levels of internet use.

However, the dopamine measurements described above are based on blood sampling from subjects within a limited experimental setting. Min Liu, Jianghong Luo (2015) also had all subjects avoid a high-tyramine diet for three days prior to blood collection, rest for 15 minutes before sampling, and collect fasting blood samples for measurement at 7:00 AM into 5ml vacuum glass tubes pre-filled with

the anticoagulant EDTA (Ethylene Diamine Tetra Acetic Acid). All blood samples were collected from the left brachial vein while seated and immediately transported to the laboratory at a temperature below 10°C. For blood sample pretreatment, whole blood samples were centrifuged at 3000 rpm for 15 minutes at room temperature immediately upon arrival at the laboratory. After centrifugation, the supernatant plasma was separated and transferred to clean tubes. All plasma samples were immediately stored at −80°C. For the experimental methods, 200 μl of thawed plasma was taken for analysis. The peripheral blood plasma dopamine concentration of all subjects was measured using an enzyme-linked immunosorbent assay (ELISA). A Thermo MK-3 ELISA reader was used in this process. The ELISA kit was purchased from Transhold Navigation Technology Ltd, and the repackaged reagents were provided by RapidBio Lab, located in Calabasas, California, USA.

Min Liu and Jianghong Luo (2015) conducted a study comparing internet usage time and plasma dopamine levels. They divided the subjects into an experimental group of 33 adolescents diagnosed with IAD and a control group of 33 healthy adolescents. Participants ranged in age from 12 to 22 years, with a mean age of 16.58 ± 2.29 years. There were 28 males and 5 females. The control group was matched 1:1 with the experimental group based on gender and age (±6 months). According to the experimental study by Min Liu and Jianghong Luo (2015), the plasma dopamine concentration in the IAD group was significantly higher than that in the control group ($t = 2.722$, $P < 0.05$, Table 6). Furthermore, the IAD group showed longer weekly online usage time compared to healthy adolescents. However, there was no significant difference between the two groups in terms of the duration of internet use (years) (Table 6).

[Table 6] Dopamine levels and time spend in IDA and control groups

	IAD (n = 33)	Control (n = 33)	t value	p value
IAT score	65.88 ± 0.99	39.52 ± 1.34	15.81	〈 0.0001
DA (pg/ml)	64.86 ± 7.98	36.79 ± 6.31	2.78	0.0076
Weekly time (h)	5.06 ± 0.28	2.97 ± 0.15	7.05	〈 0.0001
Duration of internet use (y)	5.48 ± 0.22	5.42 ± 0.19	0.21	0.8400

Plasma dopamine concentration showed a significant positive correlation with Internet Addiction Test (IAT) scores (r = 0.457, P 〈 0.001). Weekly computer usage time was assessed using a Likert scale (1 = Not used, 2 = Less than 3 hours, 3 = Less than 7 hours, 4 = Less than 14 hours, 5 = Less than 21 hours, 6 = 21 hours or more). Ordinal correlation analysis revealed a significant positive correlation between plasma dopamine concentration and weekly online usage time (r = 0.380, P 〈 0.01). That is, higher internet usage time was associated with higher plasma dopamine concentration. Participants' duration of internet use ranged from 0 to 5 years, and this item was also assessed using a stepwise response scale (1 = No use, 2 = Less than 3 months, 3 = Less than 6 months, 4 = Less than 12 months, 5 = Less than 24 months, 6 = 24 months or more). No significant correlation was found between duration of internet use and plasma dopamine concentration (r = 0.222, P 〉 0.05).

[Table 7] Correlation between DA levels and other parameters in all participants

	Pearson r	95% C.I.	p value
IAT score	0.4571	0.2418~0.6296	0.0001
Weekly time (h)	0.353	0.1213~0.5482	0.0036
Duration of internet use (y)	0.0255	−0.2179~0.2660	0.8388

3. Review of Previous Studies on Symptoms of Dopamine Addiction

However, as a pathophysiological study of Internet Addiction Disorder (IAD), the influence of dopamine on IAD has not yet been investigated. In other words, the extent to which dopamine changes induced by internet use must reach before leading to Internet Addiction Disorder has not yet been studied. The relationship between dopamine indices and dopamine addiction in internet use remains largely unexplored. This difficulty stems from the challenges involved in studying dopamine's impact on IAD: participants must be confined to a controlled laboratory setting to isolate variables unrelated to internet use; blood samples must be collected to measure serum dopamine levels; and long-term experiments are required to assess addiction status. Consequently, other prior studies have measured internet addiction based on behavioral indicators (Young KS, 2017) or emphasized evidence-based programs addressing device usage habits (McDaniel, B. T., 2019). These studies have revealed correlations between internet usage time and dopamine addiction based on statistical surveys grounded in psychological assessments of internet users. Currently, due to the above limitations, there are no experimental studies measuring the correlation between internet usage time and dopamine addiction, or internet addiction caused by dopamine addiction, using dopamine measurement methods. Furthermore, the problem of addiction is not caused by a single factor, but by the combination of factors such as stress, genetics, social background and such causes interact in a complex manner, possibly aggravating the problem of addiction. Also, the existence of high coexistence rate and similarities among different addictions(Fisher & Smith, 2008), making the addiction much more complicated and multi dimensional. In order to understand the problem of addictions in a more precise and comprehensive way, the integrated approach considers various causes including the understanding of the key reason for the addiction and understanding what factors commonly influence addiction as they can be inferred from the coexistence rate. It is crucial to systematically analyze various protective factors and risk factors that influence the problem of addiction, in order to understand

the cause and creation of addiction and to efficiently intervene in the problem. Therefore, approaching the correlation of internet usage and dopamine addiction in an inferential way is lacking in academic footholds.

Above all, smartphone addiction has emerged as a significant issue over the past decade (Panova, T., & Carbonell, X. 2018; Ting, C. H., & Chen, Y. Y., 2020)., SNS addiction (Griffiths, M. D., Kuss, D. J., & Demetrovics, Z. (2014). Social networking addiction: An overview of preliminary findings. Behavioral addictions, 119-141) have been relatively abundant, while research on internet addiction itself remains very scarce.

4. Evaluations of Generation Z and the high risk of dopamine addiction associated with Generation Z

Generation Z is a generation that grew up in a highly connected digital society, characterized by a technology-centric lifestyle and active social media use. As a generation with exceptional technological proficiency, they prefer informal and candid communication, viewing social media as an essential part of life, making them a 'Do-It-Yourself' generation. Compared to other generations, they also exhibit superior entrepreneurial tendencies and a preference for meaning over monetary rewards. Characterizing them solely as a dopamine-addicted generation due to excessive internet use should be avoided. As examined in the review of prior research above, merely demonstrating dopamine increases linked to internet usage time does not logically justify concluding that internet addiction equates to dopamine addiction. Extending this hasty conclusion to Generation Z as a whole constitutes a logical leap and exceeds the bounds of sound inference.

5. Influence to Addiction

Psychological and behavioral addiction refers to psychological dependence on specific substances or behaviors, leading to compulsive repetition to satisfy this need. Over time, it negatively impacts an individual's physical and mental health as well as social functioning. Addiction arises from the complex interplay of

neurological, psychological, and social factors (Korean Disease Control Agency, 2022). Addiction is characterized by tolerance and withdrawal symptoms. Goodman (1990) defined addiction as the inability to stop using a substance or engaging in a behavior despite negative consequences, identifying tolerance and withdrawal symptoms as its core elements. Tolerance refers to the need for increased amounts to achieve the same effect, while withdrawal symptoms are the physical and mental discomfort experienced when substance use or the behavior is discontinued. Sussman and Sussman (2011) analyzed 52 studies on the definition of addiction, explaining that addiction is not merely a failure of impulse control but a behavior arising from the reward-seeking process, resulting from the abnormal activation of the brain's reward circuitry. They also distinguished addiction from obsessive-compulsive disorder and emphasized that addiction can vary depending on social and cultural contexts. The concept of addiction is also described using terms like overdependence, problematic use, and severity, suggesting that addictive tendencies are not necessarily confined to diagnostic categories (Atroszko et al., 2023). If we substitute this interdisciplinary explanation with internet use addiction and dopamine addiction, it ultimately means that as internet usage time increases, dopamine secretion rises, leading to reward-seeking behavior that results in tolerance and withdrawal symptoms. The problem is that the risk level associated with dopamine changes as internet usage time increases has not been academically defined, nor has it been proven through experimental research. Considering the necessity of repeatedly conducting dopamine tests via blood sampling on a group basis, the reason lies in the fact that the practical conditions for conducting such experiments are far from straightforward.

4. Conclusion

Humans have been interconnected within multiple layers of relationships since prehistoric times. Emphasizing this, Antonucci (1985) proposed the 'convoy model' to describe human social relationships. According to this model, individuals form

relationships centered around themselves in the order of family, close friends, and colleagues, and the quality of these relationships positively influences overall life satisfaction. Generation Z, in particular, is significantly affected by these relational and daily life dynamics. In the context of the Fourth Industrial Revolution, attention has focused on strategies that enable Generation Z to facilitate relational living and personal development by leveraging their distinctive characteristics. These strategies include securing competitiveness relative to the preceding Generation Y, emphasizing traits suited to the Fourth Industrial Revolution, flexible engagement with virtual spaces, and developing competencies compatible with fintech environments. Thus, Generation Z possesses the potential to leverage their unique characteristics within new digital and social contexts, enabling them to play meaningful roles in future society and organizations.

Many generations are quick to label Generation Z as trapped in the shackles of dopamine addiction due to excessive internet usage. It is already a widely accepted view that dopamine increases with longer internet use, and this has been demonstrated through experimental research. However, there are still no examples of experimental studies conclusively proving that excessive internet use leads to dopamine addiction. Furthermore, symptoms that could be considered indicative of addictive tendencies are rarely observed in internet usage.

Correlation between MBTI Personality Type and Burnout among Student Basketball Players

– Changes in Dopamine Levels According to Internet Usage Time and Its Addictive Effects –

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1. Introduction

As a student-athlete playing basketball for nearly seven years now, I have experienced all sorts of games and practices. Games where everything seemed to go right with effortless playing from myself and my team. Yet, there were also days where shots never fell, turnovers, and a noticeable decline in confidence. In those situations, my mind would almost instantly start blaming myself for not preparing well for the game, or not focusing, intensifying internal pressure for factors beyond my control.

Over time, these repeated moments of high expectations from coaches, parents, and teammates, as well as self-criticism and emotional stress contributes to a growing feeling of mental fatigue. This is not abnormal, as many high school student-athletes face similar psychological pressures while balancing academics, athletic performance, and self-growth. Having a combination of such demands throughout four long years can increase the possibility of burnout.

Student-athletes in basketball face significant physical and psychological demands. The sport requires a high level of aerobic endurance, neuromuscular coordination, strength, agility, and flexibility, placing a substantial burden on players striving for

elite performance. This intense training regimen carries a persistent risk of injury, with studies indicating that the incidence of training-related injuries among amateur athletes is notably high. Moreover, a significant percentage of injuries may be linked to factors such as poor conditioning and musculoskeletal imbalances. Unlike professional athletes, student players often lack comprehensive support for injury prevention, physical therapy, and technical preparation, making them particularly vulnerable. An injury can jeopardize an athlete's career, forcing difficult personal assessments about their future in the sport.

Amidst these pressures, student-athletes frequently rely on intuitive judgment—a rapid, unconscious cognitive process—when evaluating their commitment and resilience. They grapple with questions such as, "Do I have the talent?" or "Can I overcome these obstacles?" While intuition plays a crucial role in decision-making, it is an unreliable guide because its reasoning remains opaque and subjective. Insight, by contrast, involves a sudden conscious integration of information—an "aha" moment—whereas intuition operates without immediate rational justification. To better understand how individuals perceive and cope with athletic stress, a more structured psychological framework is needed.

The theory of psychological types by the famous Swiss psychologist Carl Jung provides such a framework. He proposed that individuals can be categorized based on their dominant cognitive functions: thinking, feeling, sensation, and intuition, combined with attitudes of introversion or extraversion. He further suggested that intuition and sensation represent opposing perceptual orientations—intuition focuses on possibilities and patterns, while sensation grounds perception in concrete, immediate experience. This theoretical model was later operationalized into the Myers-Briggs Type Indicator (MBTI), a widely used personality assessment tool.

Given that burnout arises from chronic physical and emotional exhaustion—common in high-pressure athletic environments—it is plausible that an individual's innate psychological type, as measured by the MBTI, influences their susceptibility to burnout. Certain personality preferences may equip athletes with

more adaptive coping mechanisms, resilience, or stress-perception styles. Therefore, this study aims to investigate the correlation between MBTI personality types and burnout levels among student basketball players. By doing so, it seeks to provide a theoretical and empirical basis for understanding how personality influences athletic endurance and mental well-being.

Research Question:

Does the MBTI personality type of student basketball players significantly affect their level of burnout?

2. Theoretical Background

1. Personality Types

The concept of personality originates from the Greek word 'persona,' a mask used by actors to signify a specific role to an audience. In modern usage, personality refers to the distinctive and relatively stable patterns of thought, feeling, and behavior that characterize an individual. These traits are understood to be shaped by both inherent genetic factors and environmental influences acquired over time. Core personality traits are considered innate and enduring, while surrounding traits are more adaptable to circumstance.

(1) Jung's Theory and the MBTI

Carl Jung's theory of psychological types provides a foundational model for understanding personality differences. He proposed that individuals can be categorized by their dominant psychological functions—Thinking, Feeling, Sensing, and Intuition—combined with a primary attitude of either Introversion or Extraversion. This framework explains how people naturally prefer to perceive the world and make decisions.

The Myers-Briggs Type Indicator (MBTI) operationalizes Jung's theory into a widely used personality inventory. It identifies an individual's preferences across four dichotomies:

- **Extraversion (E) / Introversion (I):** Directs energy toward the outer world or inner world.
- **Sensing (S) / Intuition (N):** Prefers to perceive information through concrete facts or abstract patterns.
- **Thinking (T) / Feeling (F):** Makes decisions based on objective logic or personal values.
- **Judging (J) / Perceiving (P):** Prefers a structured, decisive lifestyle or a flexible, adaptable one.

The combination of these preferences results in 16 distinct personality types (e.g., INTJ, ESFP). The MBTI suggests that these inborn preferences influence an individual's behavior, motivation, and stress responses.

MBTI Personality Type

Direction of energy	Extraversion	Introversion
Information collection	Sensing	Intuition
Judgment and Decision	Thinking	Feeling
Understanding	Judging	Perceiving

(2) MBTI, Athletes, and Burnout

In sports psychology, the MBTI has been applied to better understand athletes. Research indicates that personality type can correlate with athletic experience, psychological skill development, and resilience. For instance, some studies suggest that certain preferences, such as Extraversion or Thinking, may be associated with higher levels of psychological skills in athletes. Given that burnout stems from chronic stress and exhaustion, it is plausible that an athlete's innate psychological

type—influencing how they perceive pressure, cope with demands, and recover energy—affects their susceptibility to burnout. This study investigates that potential correlation among student basketball players.

2. Burnout

(1) Concept of Burnout

Burnout is a psychological syndrome resulting from chronic, unmanaged stress. It is characterized by three core dimensions: emotional exhaustion, a cynical or detached attitude (depersonalization), and a reduced sense of personal accomplishment or efficacy. In essence, it represents a state of profound physical, mental, and emotional depletion.

(2) Burnout in Athletes

While initially studied in healthcare professionals, burnout is now recognized as a significant risk for athletes. For student athletes, the intense demand of high-level training, performance pressure, and balancing sport with academics creates a high-stress environment conducive to burnout. Symptoms manifest both psychologically—as lost motivation, anxiety, and negative emotions—and physically—as chronic fatigue, disrupted sleep, and increased injury susceptibility. Key contributors include excessive training loads, perceived lack of control, and disconnect between effort and perceived reward or satisfaction.

(3) Linking Personality and Burnout

Although no direct study examines MBTI type and burnout in student basketball players specifically, related research provides a foundation. Personality influences how individuals perceive stress, their motivation, and their coping strategies. For instance, traits like perfectionism are linked to higher burnout risk due to harsh self-criticism. Furthermore, motivation theory suggests that burnout is associated with controlled, external motivation rather than self-determined, internal drive. Therefore, it is plausible that inherent psychological preferences, as categorized by

the MBTI, may affect an athlete's vulnerability to burnout by shaping their stress appraisal, recovery needs, and motivational sources. This study investigates that potential correlation.

3. Research Method

1. Research Design

This study employed a quantitative design to examine the relationship between personality type and burnout among high school students playing basketball. Data was collected via an online survey in October 2025. Participants were active high school basketball players, yielding 216 valid responses after screening.

2. Variables and Measurement

Independent Variable: Personality Type

The MBTI (Myers-Briggs Type Indicator) was used to assess personality across four dichotomies: Extraversion/Introversion, Sensing/Intuition, Thinking/Feeling, and Judging/Perceiving. The instrument categorizes individuals into one of 16 personality types.

Dependent Variable: Burnout

Burnout was defined as a state of physical, psychological, and emotional exhaustion resulting from prolonged stress. It was measured using a validated 15-item Athlete Burnout Questionnaire, structured into three subscales: Mental/Physical Exhaustion, Reduced Sense of Accomplishment, and Sport Devaluation. Items (e.g., "I feel completely exhausted these days") were rated on a 5-point Likert scale.

Operational definition and measurement tools for burnout

Items	Contents
Operational definition	The result of physical, psychological, and emotional exhaustion due to accumulated stress.
Measurement items	I am mentally tired these days.
	I feel completely exhausted these days.
	I am tired these days.
	These days, I find it difficult to perform moves that I used to be able to do easily.
	I am not doing very well these days even though I practice.
	I feel like my basketball skills are declining these days.
	I feel dull these days.
	I don't enjoy basketball as much these days as I used to.
	I do not enjoy going to the gym to play basketball these days.
	I am not sure if playing basketball is the right way for me these days.
	I don't know whether I should quit basketball or continue playing these days.
	These days, I wonder how long I can keep playing basketball like this.
	I am having doubts these days if basketball is the right sport for me.
	I am not motivated to play basketball these days.
	These days, other thoughts keep coming to my mind during practice time.

3. Sample Characteristics

The final sample (N=216) comprised 129 males (59.7%) and 87 females (40.3%). By grade: 61.1% were 10th graders, 20.8% 11th, and 18.1% 12th. Basketball experience varied: 24.5% had less than 1 year, 26.5% 1–3 years, 31.4% 3–5 years, and 17.6% had 5 or more years.

4. Data Analysis

Data analysis was performed using regression analysis in a standard statistical program to assess the correlation between MBTI personality types and burnout levels.

4. RESULTS

1. Personality Type Distribution

Among participants (N=216), personality preferences were distributed as follows:

Introversion (51.4%) slightly exceeded Extraversion (48.6%). For the remaining dichotomies, Intuitive (51.9%) was more common than Sensing (48.1%), Thinking (50.4%) slightly exceeded Feeling (49.6%), and Perceiving (52.8%) was more prevalent than Judging (47.2%).

2. Key Findings

An independent-samples t-test revealed a significant difference in burnout levels by gender, with male athletes reporting higher burnout than females. Therefore, gender was controlled in subsequent analyses.

A correlation analysis was conducted to examine the relationship between MBTI preferences and burnout. The results indicated that the Sensing (S) / Intuitive (N) dimension showed a statistically significant difference in burnout scores ($t=1.573$, $p=.041$). Specifically, athletes with an Intuitive (N) preference reported lower burnout levels than those with a Sensing (S) preference.

The other three MBTI dimensions—Extraversion/Introversion, Thinking/Feeling, and Judging/Perceiving—did not show statistically significant correlations with burnout. However, descriptive trends suggested that Extraverted, Sensing, and Perceiving types tended to report relatively lower burnout scores compared to their counterparts, though these differences were not significant.

5. Conclusion

This study explored the relationship between MBTI personality types and burnout among student basketball players. While personality dimensions such as Extraversion/Introversion and Thinking/Feeling did not show statistically significant associations with burnout, the Sensing/Intuition preference emerged as a significant predictor.

Athletes with an Intuitive (N) preference reported significantly lower levels of burnout compared to those with a Sensing (S) preference. Descriptive trends also suggested that Extroverted, Feeling, and Perceiving types may experience relatively lower burnout, though these findings were not statistically significant.

By establishing burnout as an outcome variable, this research provides an explanatory link between innate psychological preferences—particularly the Intuitive cognitive style—and burnout susceptibility in athletes. These results suggest that personality assessment tools such as the MBTI can offer valuable insight for developing more personalized training and support strategies aimed at mitigating burnout in student-athletes.

EDITOR'S NOTE

Jay Min Park
Editor-in-Chief (U.S.)
Palos Verdes High School, Grade 11

As the leader of the Hwarang International Journal Committee, I set out to create a platform where students from Korea and the United States could engage in meaningful academic collaboration. While students actively explore global issues within their own communities, opportunities for those perspectives to connect across cultures remain limited. This journal was created to bridge that gap through sustained intellectual exchange.

This publication became Hwarang's first student-led international journal. Contributors explored shared global themes—including politics, culture, economy, art, education, environment, technology, and identity—by conducting independent research and developing academic-style papers. Through this process, the journal evolved into a space where diverse perspectives could be expressed, compared, and refined.

To bring this vision to life, we established a structured system that combined clear academic standards with collaboration. We implemented a multi-stage writing and peer review process and oversaw timelines and revisions to ensure consistency and quality across all submissions. At the same time, we encouraged contributors to engage with one another's ideas and expand their thinking beyond local contexts.

Through this experience, I came to understand leadership as the ability to design systems that enable others to succeed. More importantly, this journal reflects how students from different cultural backgrounds engage with shared global issues in interconnected ways. By bringing these perspectives together, it fosters dialogue and deepens our collective understanding of the world.

EDITOR'S NOTE

Hyuk Lee
Editor-in-Chief (Korea)
Chadwick International School, Grade 11

INTERSECT was created from a simple but significant observation: while students actively engage with global issues within their own communities, opportunities for those perspectives to connect across cultures remain limited. As student leaders within Hwarang International, we recognized both a gap and an opportunity, and sought to create a platform for sustained intellectual exchange between students in Korea and the United States.

INTERSECT became Hwarang's first student-led international journal. Contributors explored a wide range of themes—including politics, culture, economy, art, education, environment, technology, public health, and identity—by conducting independent research and developing academic-style essays. Through this process, the journal evolved into a space where diverse perspectives could be expressed, challenged, and refined.

Our approach combined structure with collaboration. We established clear editorial standards and implemented a multi-stage peer review process to ensure quality and coherence across submissions. At the same time, we fostered an environment where contributors could engage with one another's ideas and expand their thinking beyond local contexts.

Through this experience, we came to understand leadership as the ability to design systems that enable meaningful participation. More importantly, INTERSECT reflects how students from different cultural backgrounds engage with shared global issues in interconnected ways. By bringing these perspectives together, the journal fosters dialogue and contributes to a broader understanding of how our generation interprets the world.

Contributing Journalists

Politics & Democracy
U.S.: Jay Min Park | Korea: Hyuk Lee

Culture & Globalization
U.S.: Jae Young Park | Korea: Yein Lee

Global Economy
U.S.: Jay Min Park | Korea: Ethan Saeyoung Lee

Art & Cultural
U.S.: Aiden Jung | Korea: Soyul Lee

Education Systems
U.S.: Korina Lee | Korea: Seojun Park

Environmental Sustainability
U.S.: Yoona Ro | Korea: Seoyoung Kim

Sports & Society
U.S.: William Lee | Korea: Seongbin Hwang

Technology
U.S.: Boogeon Seo | Korea: Hyomin Yoo

Public Health
U.S.: Chaeeun Kim | Korea: Nathan Saewon Lee

Identity
U.S.: Migyo Seo | Korea: Sophia Yunseo Kim

Student Journalists' Reflections

Jae Young Park

Student Journalist
Chadwick School (U.S.), Grade 10

Serving as a deputy editor for the Hwarang International Journal allowed me to take part in a project that brought together different perspectives from students across communities. Through the process of reading, editing, and organizing each piece, I learned the importance of patience, responsibility, and clear communication. This role helped me understand how student leadership can create meaningful opportunities for others to share their stories and connect through different perspectives.

Yein Lee

Student Journalist
Chadwick International School (Korea), Grade 10

Serving as a deputy editor for the Hwarang International Journal was a meaningful opportunity to support a project that amplifies youth voices and shared values. Through reviewing and organizing different works, I learned how collaboration and careful attention to detail can strengthen the message behind each story. This experience inspired me to continue creating platforms where culture, dialogue, and empathy can come together through student leadership.

Ethan Saeyoung Lee

Student Journalist
Korea International School (Korea), Grade 11

Through the Hwarang International Journal, I learned that in app purchases are part of a larger system in which big tech companies use their power to extract both money and data from users/developers. This research helped me understand how data capitalism and weak regulation allow companies like Google and Apple to maintain THEIR dominance despite laws intended to protect consumers and promote fair competition.

Aiden Jung

Student Journalist
Palos Verdes Peninsula High School (U.S.), Grade 11

Having this experience of writing for this journal has opened new pathways in my career. This opportunity has taught me many valuable lessons, and I have learned a lot from it.

Soyul Lee

Student Journalist
Chadwick International School (Korea), Grade 11

Writing about Korea's APEC art section made me think more deeply about Korea's traditional artistic beauty. Rather than sharp and rigid lines, I noticed the soft curves and gentle flow, and I felt that this smoothness reflects Korea's warm spirit and the value of living together, sharing, and caring for one another.

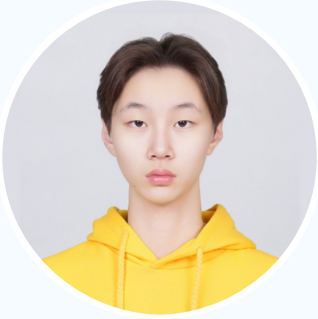
Korina Lee

Student Journalist
Orange County School of the Arts (U.S.), Grade 10

I am really grateful I had the chance to write this research paper about the U.S. education system and dual language immersion programs. I learned how schools are organized and funded, and I realized there are still many gaps and inequalities between states, school types, and student groups, but also programs like dual language immersion that work to make education fairer for English learners and can even benefit native English speakers by helping them become bilingual. This topic felt personal because I attended a dual language immersion school for four years in early elementary school, where I was able to learn another language that was not spoken in my home, and I know I gained stronger language skills and a wider perspective from it. Organizing sources, statistics, and ideas was challenging, but it helped me improve my research skills and increased my interest in how schools can improve for students like me.

Seojun Park

Student Journalist
Korea International School (Korea), Grade 10



I learned that there are many children from multicultural households in Korea who need support while writing an essay on "Children with Special Needs from Multicultural Households" and I am so proud of this essay. I am especially thankful for the advice from my aunt who is an expert in special education.

Yoona Ro

Student Journalist
Chadwick School (U.S.), Grade 10

Taking part in this collaborative academic journal connecting the United States and Korea allowed me to engage with and connect two distinct academic environments while exploring subjects that genuinely inspire me. Through this journey, I strengthened my research abilities and developed a wider understanding of how cross-cultural exchange can enrich intellectual growth and foster meaningful scholarly connections.

Seoyoung Kim

Student Journalist
Chadwick International School (Korea), Grade 10

Writing this journal gave me the chance to dive deeper into a topic I genuinely care about, making the whole process feel meaningful. Through the process, I was able to learn how to organize my ideas more clearly and support them with stronger research.

William Lee

Student Journalist
South High School (U.S.), Grade 9

Participating in Hwarang International Journal helped me learn how students from different backgrounds can share ideas and grow as one together. This experience improved my writing skills and helped me see new perspectives on sports and society.

Seongbin Hwang

Student Journalist
Chadwick International School (Korea), Grade 11

It was my first time writing a journal, so everything was new and challenging. However, I not only acquired knowledge on my topic, but also learned how to write a professional journal that requires a lot of effort.

Boogeon Seo

Student Journalist
Palos Verdes High School (U.S.), Grade 9

I learned a lot from this committee, including valuable skills such as working with my peers to fix our documents, citing articles, and immense knowledge on the field of how technology greatly affects organic products in America. I had a lot of fun participating in this committee and I highly recommend this to anyone interested.

Hyomin Yoo

Student Journalist
Chadwick International School (Korea), Grade 8

Participating in this journal became a powerful turning point, making me realize how the technologies I used so casually were quietly shaping my thoughts and emotions. Throughout the writing process, doubt often outweighed certainty, but it was within that uncertainty that I began asking an essential question: Is this choice truly mine? Although I have not found a final answer, the act of questioning itself expanded my perspective and became a deeply transformative experience.

Chaeeun Kim

Student Journalist
Palos Verdes High School (U.S.), Grade 10

This experience of writing this research paper was both enjoyable and meaningful for me. I liked taking the time to dig deeper into the topic, find strong sources, and connect different ideas together in a clear way. It made me feel more confident in my research and writing skills, and I'm proud of the effort I put into it. It also helped me improve my organization and critical thinking skills as I worked to present the information clearly and logically. Overall, this project was a valuable learning experience that I will carry with me into future assignments.

Nathan Saewon Lee

Student Journalist
Korea International School (Korea), Grade 11

As a member of the Hwarang International Journal Committee, I successfully authored a research paper titled "Addiction Tendencies among Adolescents and Countermeasures." I conducted an extensive literature review across public health and behavioral science sources, analyzing both substance and behavioral addictions and their social drivers. Through this project, I was able to successfully hone my source evaluation and analytical writing skills. Moreover, I gained valuable insight into what ails many Korean youth today; I hope to see more proactive, structural solutions that can protect our youth and our nation's future.

Migyo Seo

Student Journalist
Palos Verdes Peninsula High School (U.S.), Grade 11

Participating in this academic journal between the United States and Korea allowed me to bridge two academic cultures, learning more deeply about subjects I am passionate about. Through this experience, I not only deepened my research skills but gained a broader perspective on strengthening intellectual growth between cultures.

Sophia Yunseo Kim

Student Journalist
Korea International School (Korea), Grade 10

Participating in the Hwarang International journal was meaningful as it gave me the opportunity to investigate something that is a significant part of my own life: high school athletics. Through this journal, I was able to answer questions I had developed over the years, while seeing how other students were pursuing their own passions and wonderings under their individual journal pieces.

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