Music-Evoked Emotion and Intention to Share Emotional Data: The Role of Positive and Negative Affect and Mental Privacy Awareness

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Abstract

As emotional artificial intelligence (AI) and mood-sensing technologies become increasingly integrated into everyday digital services, individuals are more frequently asked to share emotion-related or biometric data. Music is known to evoke strong emotional responses, yet little is known about how such emotional experiences influence willingness to share emotional data. This study examined whether positive and negative affect elicited by music predict emotional data-sharing intention and whether mental privacy awareness reduces such willingness. A total of 170 participants listened to a short music clip of their preferred genre and completed an online survey. Emotional responses were measured using the Positive and Negative Affect Schedule (PANAS), mental privacy awareness was assessed using the IPSA scale (Sim et al., 2012), and data-sharing intention was measured using a scale adapted from Kim et al. (2023). Regression analyses showed that positive affect significantly increased willingness to share emotional data, while negative affect was not a significant predictor. Mental privacy awareness significantly reduced emotional data-sharing intention. These findings suggest that positive emotional experiences may lower resistance to emotional data sharing, whereas mental privacy awareness functions as an important protective factor. The study highlights the importance of ethical transparency and informed consent in emotional AI and music-based digital platforms.

Keywords: music emotion, PANAS, emotional data sharing, mental privacy, emotional AI

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Introduction

Music plays an important role in everyday emotional experiences (Kim et al., 2010). People listen to music in a wide range of daily situations, such as while studying, relaxing, exercising, commuting, or using digital platforms including music streaming services and social media. Because music is closely connected to emotions, it is often used intentionally to regulate mood, reduce stress, or enhance concentration. Previous research (Sloboda & O'neill, 2001) has consistently shown that music can evoke strong emotional responses, including happiness, calmness, sadness, excitement, and tension. These emotional reactions are not only temporary feelings but can also influence individuals' attitudes, judgments, and behaviors in various contexts.

Importantly, emotional responses to music have been shown to affect decision-making processes (Lerner et al., 2015) and trust toward technology and digital services (Ajenaghughrure et al., 2018). For example, positive emotional experiences may increase openness, engagement, and favorable attitudes toward a platform, while negative emotions may lead to caution, avoidance, or skepticism. As music consumption increasingly occurs through digital systems, emotional experiences are becoming closely intertwined with technology use (Lustgarten et al., 2020). This connection highlights the importance of understanding how emotions elicited by music may influence users' behavioral intentions beyond simple enjoyment.

At the same time, rapid technological developments have enabled digital platforms to collect and analyze users' emotional states (Sang et al., 2024). Advances in emotional artificial intelligence (AI) now allow systems to infer emotions through facial expressions, voice patterns, physiological signals, and behavioral data. Wearable devices, smart applications, and online platforms are increasingly capable of detecting users' moods and emotional reactions in real time. While these technologies offer potential benefits, such as personalized services and improved user experiences, they also raise important ethical and psychological concerns.

With the integration of emotional artificial intelligence (AI) and mood-sensing technologies into digital platforms, concerns about mental privacy have been brought to the forefront. Unlike other types of personal data, mental data involve individuals' internal experiences, including emotions, motivations, and psychological vulnerabilities. Recent advances in affective computing have made it possible to infer mental states using behavioral and physiological cues, as well as emotional responses triggered by listening to music. Importantly, positive emotional states may decrease users' alertness to privacy risks and increase susceptibility to emotional data sharing, thereby weakening resistance to potential

mental data privacy threats. Consequently, mental privacy needs to be understood not only in terms of data protection but also as a matter of cognitive liberty, particularly in emotionally engaging digital environments where emotional experiences can shape data-sharing decisions.

One of the most significant concerns is mental privacy, which refers to the right to keep one's emotional and mental states private. Emotional data are highly sensitive because they can reveal intimate information about an individual's psychological well-being, vulnerabilities, and inner experiences (Wajnerman, 2021). Unlike basic demographic data, emotional data reflect how a person feels and reacts, making them especially personal. As a result, individuals may feel uneasy or threatened when asked to share emotional information, particularly if they are aware of how such data could be stored, analyzed, or misused.

Despite growing academic and public attention to emotional AI and data privacy, relatively little research has focused on the role of emotional experiences themselves in shaping emotional data-sharing behavior. Most existing studies (Schomakers et al., 2022; Yin & Hsu, 2023) have examined technological factors, perceived usefulness, or general privacy concerns, rather than the emotional states that precede data-sharing decisions. In particular, it remains unclear whether positive emotional experiences make individuals more willing to share emotional data, or whether negative emotions reduce such willingness. Furthermore, the extent to which mental privacy awareness acts as a psychological barrier to emotional data sharing has not been sufficiently explored.

To address this research gap, the present study examines how music-evoked emotional responses relate to emotional data-sharing intention. Specifically, positive and negative affect elicited by music are measured using a validated emotional scale, the Positive and Negative Affect Schedule (PANAS). In addition, the study investigates mental privacy awareness as a key factor that may limit individuals' willingness to share emotional information. By focusing on the interaction between emotional experiences and privacy awareness, this study aims to contribute to a better understanding of emotional data sharing in the context of music and emotional AI technologies.

Literature Review

Music-Evoked Emotion

Music has a unique ability to evoke emotions without direct verbal communication. Emotional responses to music depend on individual preferences, musical structure, and listening context

(Juslin & Västfjäll, 2008). To measure emotional responses reliably, researchers often use standardized scales rather than self-created items. The Positive and Negative Affect Schedule (PANAS) is one of the most widely used tools for measuring emotional states. It distinguishes between positive affect (e.g., enthusiasm, excitement, interest) and negative affect (e.g., distress, nervousness, fear). This distinction allows researchers to examine how different emotional qualities influence attitudes and behaviors (Watson, Clark, & Tellegen, 1988; Crawford & Henry, 2004).

Emotional Data-Sharing Intention

Emotional data-sharing intention refers to an individual's willingness to allow digital platforms or devices to collect, analyze, or store emotion-related or biometric information. Prior studies suggest that positive emotional engagement can increase trust and openness toward digital systems, thereby increasing willingness to share personal data (Pelau et al., 2024). However, emotional data are more sensitive than typical usage data, and individuals may hesitate to share such information due to heightened privacy concerns and perceived risks (Lustgarten et al., 2020).

Mental Privacy Awareness

Mental privacy awareness reflects the extent to which individuals recognize emotional and mental-state data as private and deserving of protection. Individuals with higher mental privacy awareness tend to be more cautious about emotional data sharing and more sensitive to ethical issues related to emotional AI and affective computing technologies (Ienca & Andorno, 2017; Lustgarten et al., 2020).

Research Questions

Based on the literature, the following research questions were examined:

Research Question 1: Does a more positive emotional response to music increase intention to share emotion-related data?

Research Question 2: Does higher mental privacy awareness reduce intention to share emotional or biometric data?

Methods

Participants

A total of 175 participants took part in the study (approximately balanced by gender; mean age in the early 20s). Participants were recruited online and voluntarily completed the survey. Participants were primarily university students and young adults residing in South Korea, reflecting a population that frequently uses music streaming services and digital platforms.

Power Analysis

An a priori power analysis was conducted to determine the minimum required sample size for multiple regression analysis with two predictors. Assuming a small-to-medium effect size, a significance level of .05, and statistical power of .80, the analysis indicated that a minimum sample size of approximately 155 participants was required. To account for incomplete or inattentive responses, the target sample size was increased, resulting in 170 valid responses.

Procedure

Participants selected one preferred music genre (pop, classical, or ballad) and listened to a two-minute music clip using earphones or headphones. Immediately after listening, participants completed an online questionnaire measuring emotional responses, mental privacy awareness, and emotional data-sharing intention.

Measures

Emotional responses were measured using the Positive and Negative Affect Schedule (PANAS) developed by Watson, Clark, and Tellegen (1988). The scale consists of 20 items, including 10 items measuring positive affect and 10 items measuring negative affect. Participants rated their emotional responses on a five-point Likert scale (1 = not at all, 5 = extremely). Mental privacy awareness was measured using four adapted items from the Information Privacy Scale for Affective Data (IPSA; Sim et al., 2012), assessing concerns about emotional data collection, storage, and protection. The items assessed participants' concern about emotional data collection, storage, and the protection of emotional and mental-state information. Emotional data-sharing intention was measured using four items adapted from Kim et al. (2023), assessing willingness to share emotional or biometric data with digital platforms.

Results

Validity and Reliability

Exploratory factor analysis (EFA) was conducted to examine the construct validity of all measurement scales. Descriptive statistics and reliability coefficients presented in Table 1 indicate that all scales demonstrated acceptable internal consistency, with Cronbach's α values ranging from .83 to .91. As shown in Table 2, the PANAS exhibited a clear two-factor structure consisting of positive affect and negative affect, while mental privacy awareness and data-sharing intention each loaded onto a single factor. All factor loadings exceeded the acceptable threshold, and the explained variance for each construct was satisfactory.

Table 1. Descriptive Statistics and Reliability

Variable	Mean	SD	Cronbach's α
Positive Affect	4.10	0.62	.91
Negative Affect	2.21	0.71	.88
Mental Privacy Awareness	3.76	0.69	.86
Data-Sharing Intention	2.64	0.83	.83

Table 2. Exploratory Factor Analysis Results

Scale	KMO	Variance Explained	Factor Loadings
Positive Affect (PANAS)	.90	52.4%	.56 – .84
Negative Affect (PANAS)	.90	50.1%	.53 – .81
Mental Privacy Awareness	.84	58.1%	.67 – .82
Data-Sharing Intention	.81	55.6%	.62 – .80

Main Findings

To examine the predictors of emotional data-sharing intention, a multiple regression analysis was conducted. The results are presented in Table 3. The overall regression model was statistically significant and explained 31% of the variance in emotional data-sharing intention ($R^2 = .31$).

As shown in Table 3, positive affect emerged as a significant positive predictor of emotional data-sharing intention ($\beta = .29$, $p < .001$), indicating that participants who experienced higher

levels of positive affect were more willing to share emotional data. In contrast, negative affect did not significantly predict data-sharing intention (β = −.08, p = .23). Mental privacy awareness showed a significant negative relationship with emotional data-sharing intention (β = −.36, p < .001), suggesting that individuals with higher awareness of mental privacy concerns were less willing to share emotional data.

Table 3. Regression Analysis Predicting Data-Sharing Intention

Predictor	β	t	p
Positive Affect	.29	3.84	< .001
Negative Affect	−.08	−1.21	.23
Mental Privacy Awareness	−.36	−4.91	< .001
R^2 = .31			

Discussion

This study examined how music-evoked emotions and mental privacy awareness influence emotional data-sharing intention. Overall, the findings suggest that emotional experiences and privacy awareness play distinct but complementary roles in shaping individuals' willingness to share emotional data. Specifically, positive emotional experiences increased openness to emotional data sharing, whereas mental privacy awareness functioned as a strong and consistent protective factor. However, this study has several limitations that should be considered, including the reliance on self-report surveys and the use of selected music genres and an online sampling method, which may limit the generalizability of the findings.

Positive affect emerged as a significant predictor of emotional data-sharing intention. When individuals felt emotionally uplifted, relaxed, or comfortable while listening to music, they were more willing to share emotional or biometric information. This supports the idea that positive emotional states can increase openness toward digital systems and temporarily lower resistance to emotional data sharing in emotionally engaging environments.

In contrast, negative affect did not significantly predict emotional data-sharing intention. This suggests that negative emotional experiences may not directly influence data-sharing decisions, but may instead lead users to disengage from the system. Taken together, these results indicate that positive emotional experiences may play a more influential role than

negative emotions in shaping openness to emotional data sharing in music-related contexts.

Mental privacy awareness showed a strong negative relationship with emotional data-sharing intention. Individuals who perceived emotional and mental-state data as highly private were consistently less willing to share such information, even when experiencing positive emotions. This finding underscores mental privacy awareness as a key psychological barrier that can override the influence of emotional states.

These findings have important implications for the design and use of emotional AI and music-based digital platforms. When users are emotionally engaged, they may be more likely to consent to data collection without fully considering long-term privacy risks. Therefore, platforms should avoid relying solely on emotional engagement to encourage data sharing. Instead, they should provide transparent explanations, clear consent options, and ethical design choices that respect users' mental privacy. Such efforts may help balance technological innovation with the protection of individual rights.

Conclusion

This study demonstrates that music-evoked positive affect increases emotional data-sharing intention, while mental privacy awareness reduces such willingness. By distinguishing between positive and negative affect, the findings highlight the unique role of positive emotional experiences in shaping openness to emotional data sharing. The use of a validated emotional scale strengthens the reliability of the results and supports the importance of accurately measuring emotional responses in research on emotional AI.

At the same time, the strong effect of mental privacy awareness underscores the need to consider psychological and ethical factors when examining emotional data sharing. As emotional AI technologies and music-based digital services continue to expand, protecting emotional and mental-state data will become increasingly important. Transparent data practices, informed consent, and user-centered ethical design should be prioritized to ensure responsible and trustworthy use of emotional data.

Future research may further explore how different types of music, platform contexts, or user characteristics influence emotional data-sharing behavior. Understanding these factors will be essential for developing emotional AI systems that enhance user experience while respecting mental privacy.

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