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How mentally well and unwell international students in the UK use music listening for emotional regulation

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ABSTRACT

This study uses the episode model (Eerola et al., 2024) to analyse which key functional musical-emotional episodes international students experience in different situations, and primarily whether there are significant differences in mean ratings for each episode under different situations between mentally well and unwell international students in the UK. 77 students were assessed on the level of mental well-being with the World Health Organisation-Five Well-being Index (WHO-5) and rated the emotional episodes they experience according to three hypothetical situations, with the Dynamic Emotional Episodes to Music (DEEM) instrument (Kirts et al., 2025). Results suggest that well and unwell individuals may share similar context-specific emotion regulation goals; however, they may differ in depth and nature of emotional engagement in areas involving aesthetic interest, awe, motivation, and sense of belonging. Nevertheless, the findings highlight that perceived emotional experiences alone may not determine whether music emotion regulation is healthy or unhealthy. Instead, according to previous literature, the effectiveness of regulation may depend on the outcome—whether emotional relief or stability is achieved.

1. INTRODUCTION

Demand for mental healthcare in the United Kingdom (UK)'s National Health Service often exceeds supply, resulting in long waits for professional help, causing further mental health deterioration (Royal College of Psychiatrists, 2022). This emphasises the need for effective, sustainable, and accessible mental healthcare (National Collaborating Centre for Mental Health, 2023). Furthermore, UK international students often lack sufficient knowledge to maintain mental well-being; thus, they rarely use university mental health services (Clough et al., 2019; Lu et al., 2014; Mori, 2000; Vidas et al., 2022). Additionally, cultural adjustment can contribute to emotional distress. Students who adjust maladaptively experience an increased risk of developing mental health issues (Li & Peng, 2019; Kristiana et al., 2022). One potential accessible tool for students who struggle with managing their emotions is music-listening for emotional regulation (MER). This can be a cheaper and non-invasive way to maintain emotional well-being compared to pharmacological treatments (Lorek et al., 2023).

What is music-listening for emotional regulation? Emotion regulation concept include managing a cognitive/emotional response to a situation via coping strategies and mechanisms (VandenBos, 2015). Music-listening can be integrated into this process. Specifically, Goethem & Sloboda (2011) showed that an emotional response to a situation can be changed through goal-directed music listening. This involves applying specific coping strategies to reach a target mood (e.g., distracting oneself by listening to happy music to reduce negative emotions). The mechanism behind achieving the target mood is the emotional reactions to the music (e.g., evoking a joyful memory).

MER effectiveness and gaps in research. Research has shown MER's effectiveness across different cultures and ages (Eerola et al., 2024; Goethem & Sloboda, 2011; Hennessey et al., 2021; Saarikallio, 2007; Saarikallio, 2010). Those suffering from severe mental illness, who tend to have trouble with emotional regulation, can also benefit from MER (Hereld, 2019). Participants in these studies expressed they 'felt understood' and 'not alone' when music matched with their feelings. They also used music as a way to experience catharsis (externalising internal pain), healthy processing of emotions, and relaxation (Goethem & Sloboda, 2011; Hereld, 2019; Saarikallio, 2007). Investigations comparing individuals struggling with mental health and control groups also helped differentiate adaptive and maladaptive MER-related coping strategies that can improve or worsen emotional distress (Saarikallio, 2007; Sakka & Juslin, 2018). Critically, a meta-analysis by McFerran (2016) suggests that MER goals may be shared across well and unwell individuals, but the outcomes (e.g., level of distress) of these regulatory efforts may differ. This may be due to ruminative tendencies, anhedonia (inability to experience pleasure), lack of motivation, negatively biased thinking or emotional blunting characterised in those scoring low on well-being measures (Christensen et al., 2022), which may impact their emotional experience with music (McFerran, 2016).

Additionally, research has shown MER's effectiveness for international students in other countries, except those in the UK are underresearched (Dingle et al., 2016; Louiza & Agathi, 2024; Vidas et al., 2023; Wadley et al., 2019). Some have also investigated MER's role in helping migrants cope with the stress of cultural integration and settling, including insights into potentially healthy and unhealthy coping mechanisms (Gratzer et al., 2023; Hirsch et al., 2025; Khorsandi & Saarikallio, 2013). Nevertheless, there is limited understanding of how situational factors may contribute to people's use of MER coping strategies and how they vary in different contexts.

Situational context for MER. Researchers have recently recognised the nuances of MER, especially the impact of context and situational factors on musical-emotional experiences, along with the goal-strategy-mechanism process in MER (Baltazar & Saarikallio, 2016). However, operationalising the impact of context has been challenging, leading to new theoretical perspectives, such as the constructionist approach by Céspedes-Guevara (2023). He proposes that core affect – emotional arousal (intensity) and valence (how pleasant an emotion is) – forms the basis of an emotional experience with music. Then, one's interpretation of these emotional experiences are shaped by two mechanisms. 1) Associative mechanisms: Episodic memories of similar past emotional experiences and how one should express, act, and do when feeling this way (formed by personal and cultural upbringing). 2) Appraisal mechanisms: Evaluation of the aesthetics and relevance of the music to the current situation (Céspedes-Guevara, 2023). The dynamic interaction between these factors and situational factors shapes the experience of an emotional episode, resulting in different expressive and regulatory responses, even when core affect appears as similar (Barrett, 2006). For example, one can "feel sad", but situational factors, associated past experiences, and appraisal mechanisms could influence the emotional episode and regulation approaches. In practice, one might listen to happy music to reduce sadness in one situation or sad music to enhance sadness in another. Currently, there is limited empirical evidence supporting these concepts, especially among underrepresented groups (e.g., international students), and the role individual differences (e.g., well vs. unwell individuals) could play in context-specific MER (Lennie & Eerola, 2022; Eerola et al., 2024).

To specify common emotional episodes people experience with functional music-listening, Eerola, et al. (2024) proposed the episode model. It comprises five episode constructs during functional music-listening across several contexts:

1. **Enjoyment-Distraction-Relaxation (EDR)**: 'A functional episode to obtain, maintain, or enhance a positive emotion, which can include distraction from stress, worry, and unwanted thought'
2. **Connection-Belonging (CB)**: A functional episode to feel social connection with others, 'ideas of belonging, kinship, or socialisation'
3. **Focus-Motivation (FM)**: A functional episode for seeking motivation, focus, and concentration
4. **Personal-Emotion-Processing (PEP)**: A functional episode relating to introspective functions such as 'stimulating identity, recalling associations, self-expression, emotional support, and processing emotions'.
5. **Aesthetic-Interest-Awe (AIA)**: A functional episode relating to experiences of 'being moved, elements of spirituality, detached emotions, "out-of-body" experiences, including aesthetic or awe'.

While this model has shown some cross-cultural implications (Eerola et al., 2024), current research has yet to use measures based on this model to test for any effect of individual differences in situated functional emotional episodes in music-listening. This study aims to contribute additional findings to the existing literature by paying special attention to context-specific MER responses in mentally well and unwell UK international students. Also, given that international students often navigate cultural adjustment and struggle with mental health literacy, their insight would be valuable to contribute findings on how they may cope with music according to situational factors and specific contextual needs. Moreover, differentiating context-specific MER attitudes could provide insights into individual differences in coping habits, as the quality of mental well-being is closely linked to whether these habits are adaptive or maladaptive (St-Louis et al., 2020). However, how unwell participants use MER should not be pathologised but seen as potentially unhealthy coping mechanisms (Saarikallio, McFerran, & Gold, 2015a).

Aim of this study. This study aims to identify which key functional episodes international students experience when listening to music for different situations. Another primary aim is to examine whether there are significant differences in mean ratings for each episode between mentally well and unwell students. By targeting international students, this study seeks to expand the model's generalisability to diverse backgrounds.

Hypotheses

H1: There is a significant difference in the episode construct mean ratings for different situations between mentally well and unwell participants

H2: The operationalised situations are hypothesised to target the following episodes:

- Vignette 1: EDR
- Vignette 2: CB
- Vignette 3: FM

2. METHOD

Design. The study was a between-groups (well and unwell) and repeated measures (all participants exposed to all situations) design. Participants were classified as either mentally well or unwell according to the World Health Organisation-Five Well-Being Index. Then, all participants were presented with three scenario vignettes; participant responses determined which emotional episodes they imagined experiencing in each scenario. Ethical approval was granted by the Music Department Ethics Committee at Durham University – ethical approval reference number: MUS-2025-7628-9101.

Participants. Due to this study's consideration of cultural adjustment, students with long residence in the UK (>10 years) will be excluded. Convenience sampling was employed through posters placed around campus, recruitment messages in the college international committee communication platforms, social media advertisements, and the researcher's personal networks (*N*=47). Another participant sample was recruited via prolific.co (*N*=30). Each participant received informed consent before participation, and all data were anonymous.

The initial sample included *N*=91 respondents; 14 responses were excluded from the data as demographic information collected suggested they had long residence in the UK with British ethnicity and nationality, thus implying they do not fall under this study's definition of an international student. The analytical sample, therefore, included *N*=77 respondents (Females: N=52; *M* = 24.83 years, *SD* = 7.02 years) from 24 nationalities (*N*=24 from Hong Kong, *N*=11 from Nigeria, and *N*=<5 from a diverse list of 22 countries, spanning 5 continents (Appendix A)). Using the World Health Organisation-Five Well-being Index (WHO-5), *N*=20 were classified as mentally unwell and *N*=57 as mentally well.

Stimuli. The WHO-5 will be used to classify the participants' mental well-being as it is known for its structural similarities to other measures of depression (Topp et al., 2015), and was used for disseminating characteristics of depression (Christensen et al., 2022). It consists of five non-invasive questions regarding experiences of positive feelings (over the last two weeks). Raw scores range from 0 to 25 (the worst to the best possible well-being) and, by normal practice, are multiplied by four for a percentage score (de Graaff & van Ommeren, 2024). Percentage scores higher than 50 would indicate better mental well-being, scores less than 50 indicate poorer mental well-being (de Graaff & van Ommeren, 2024; Ellervik et al., 2014). Participants will be reminded of their right to withdraw if they feel uncomfortable during the study. They were also referred to local and international mental health services after completing the survey.

This study uses the Dynamic Emotional Episodes to Music (DEEM) Instrument (Kirts et al., 2025) – a novel 82-item self-report measure (Appendix B) based on the episode model that identifies the emotional episode(s) one experiences during functional music-listening in response to a specific situation. To operationalise situations, participants read hypothetical descriptions of three daily experiences (vignettes). They were asked to consider the music they would listen to in each situation and then rate the level of relevance of the DEEM items (e.g., an item representing the EDR episode construct: "The music helped me break away from the situation") to their experience.
Stimuli. The stimuli consisted of three vignettes (e.g., first vignette labelled as Vig1 below) of plausible situational experiences for international students targeting the EDR, CB, and FM episodes:

- Vig1: You are attending a social event hosted by your college/society. There is a live band playing your favourite genre of music. All around you, people are dancing, drinking, and talking. While you do not know the other people, you have a good time at the event.

- Vig2: After returning to your room after a day full of lectures, you start to miss home. You put on music you used to listen to when you were growing up.

- Vig3: There is an upcoming deadline due and you need to get a good grade. While studying in the library, you put on music.

These vignettes are not validated, but are typical experiences of international students that are hypothesised to target the three proposed episode constructs (Vig1: EDR; Vig2: CB; Vig3: FM). Three vignettes representing three episode constructs were chosen to focus on international student-specific experiences with MER, and prevent burdening participants with too many irrelevant and broad scenarios (Kirts et al., 2025). Analysis of the DEEM survey responses will compare how people rate each episode construct as relevant to the respective situation.

Procedure. Participants who volunteered to take part (N=47) and were able to indicate a charity that would be donated £3 on their behalf. Participants recruited via prolific.co (N=30) were compensated £3.20 for a 22-minute completion time (£10.5 hourly rate). Firstly, participants were asked basic demographic questions, including age, gender, ethnicity, and nationality. Secondly, they rated how relevant the WHO-5 items were to their experiences over the last two weeks. Finally, participants were randomly presented with a vignette and were asked to think about the kind of music they would listen to and rate the 82 DEEM items (Appendix A) as if they were in that experience. They repeated this process two other times for the remaining vignettes. All participants provided informed consent and were debriefed upon completion of the survey.

Data Analysis. Analysis of the most prevalent items selected for each vignette is expected to identify which key functional musical-emotional episodes international students experience in different situations. Mentally well and unwell participants, given that WHO-5 scores could indicate the quality of their emotion regulation habits, may also show which functional MER episodes are potentially healthy or unhealthy. Via visual inspection of distribution histograms, WHO-5 items showed minimal violations of normality, so parametric tests were used in data analyses. There were minimal outliers detected, and the data was complete. A Linear Mixed Model (LMM) was carried out, with the two WHO groups as the between-subjects factor, five DEEM episode constructs and three DEEM vignettes as the within-subjects factors, and participants as random effects. All interactions between the three factors were explored. This was done in RStudio with the lme4 package (Bates et al., 2015) to determine differences in mean construct ratings between mentally well and unwell participants in each vignette. Due to the exploratory nature of this study, the mean differences reported will be non-directional.

3. RESULTS

Tables 1-3 summarise the episode construct rankings for each vignette and their mean rating, along with the significance level in the mean difference between mentally well and unwell participants.

The LMM analyses results showed that Vignette 1, which was designed to focus on EDR, yielded no results that indicated a significant difference in mean construct ratings between mentally well and unwell participants. In Vignette 2, which focused on CB, unwell participants scored significantly lower than well participants for AIA (*Mdiff* = -0.388, z = -2.677, p = .007), representing a large effect size (indicated by the z score). Same as for FM (*Mdiff* = -0.452, z = -3.191, p = .001), also with a large effect size. In Vignette 3, which focused on FM, unwell participants scored significantly lower than well participants for AIA (*Mdiff* = -0.401, z = -2.770, p = .005), representing a large effect size. Same for CB (*Mdiff*= -0.577, z = -4.096, p = <.0001), also with a large effect size.

Table 1

Vignette 1: Mean construct ratings for well and unwell participants

Episode Constructs	**Unwell**		**Well**					
	M	*SD*	*M*	*SD*	Mean Difference	SE	*z*	*p-value*
AIA	3.58	0.125	3.81	0.074	-0.230	0.145	-1.589	.112
CB	3.80	0.121	4.01	0.072	-0.206	0.141	-1.460	.144
EDR	3.99	0.118	4.07	0.070	-0.083	0.138	-0.599	.549
FM	3.48	0.122	3.73	0.072	-0.252	0.142	-1.788	.074
PEP	3.73	0.119	3.97	0.071	-0.243	0.138	-1.754	.079

Note: * highlights results that are $p < .05$

Table 2

Vignette 2: Mean construct ratings for well and unwell participants

Episode Constructs	**Unwell**		**Well**					
	M	*SD*	*M*	*SD*	Mean Difference	SE	*z*	*p-value*
AIA	3.51	0.125	3.90	0.074	-0.388	0.145	-2.677	.007*
CB	3.87	0.121	3.94	0.072	-0.064	0.141	-0.450	.652
EDR	3.98	0.118	4.09	0.070	-0.111	0.138	-0.808	.419
FM	3.28	0.122	3.73	0.072	-0.452	0.142	-3.191	.001
PEP	4.08	0.119	4.13	0.071	-0.058	0.138	-0.422	.673

Note: * highlights results that are $p < .05$

Table 3

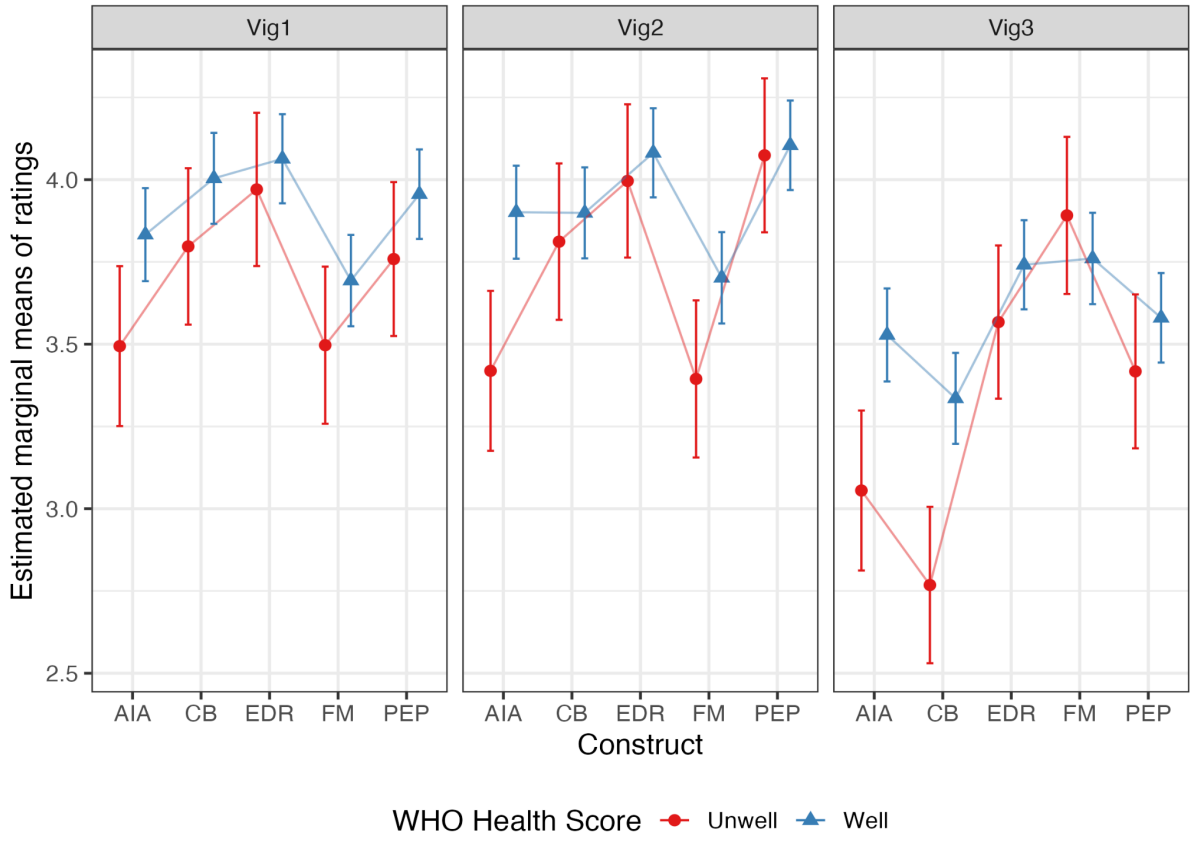
Vignette 3: Mean construct ratings for well and unwell participants

Episode Constructs	Unwell		Well					
	M	*SD*	*M*	*SD*	Mean Difference	SE	*z*	*p-value*
AIA	3.10	0.125	3.51	0.074	-0.401	0.145	-2.770	.005*
CB	2.73	0.121	3.30	0.072	-0.577	0.141	-4.096	<.0001*
EDR	3.48	0.118	3.74	0.070	-0.267	0.138	-1.938	.053
FM	3.84	0.122	3.81	0.072	0.033	0.142	0.235	.814
PEP	3.33	0.119	3.58	0.071	-0.252	0.138	-1.823	.068

Note: * highlights results that are $p < .05$

Figure 1

Plot visualising the mean episode construct ratings for all three vignettes



4. DISCUSSION

This study yielded some results that are inconsistent with the first hypothesis – the top three rated episode constructs in all three vignettes do not differ significantly in ratings between mentally well and unwell participants. Exceptionally, Vignette 1 yields no significant difference in ratings at all, which implies that well and unwell participants show similar qualities in MER intentions for this context. However, in Vignette 2, episode construct ratings significantly differed between the two groups for FM and AIA. Likewise, in Vignette 3, AIA and CB also significantly differed between the two groups for AIA and CB.

Although there is no significant difference in the top episode construct ratings across the three vignettes, perhaps the difference may lie in the MER outcome (e.g., mood changes). Previous research investigating the differences between depressed and non-depressed people in MER strategy-use has yielded similar results to this study, under previous MER models (Sakka & Juslin, 2018). However, while both groups may perceive benefit in sad music, individuals with neurotic and ruminative traits would have no observable improvements in mood (Garrido & Schubert, 2015). Similarly, the present study's findings can imply that regulatory needs and goals may not differ between well and unwell participants, as both can access the full range of a perceived emotional experience with music. However, this study did not measure whether the outcome of the MER goal was helpful or not. Therefore, from this study alone, one cannot conclude which context-specific episode constructs are adaptive or maladaptive/healthy or unhealthy.

Mentally well people rated AIA significantly higher than unwell people for Vignettes 2 and 3. To contextualise this finding, AIA is characterised by being moved, experiencing strong emotions, chills, along with feelings of reward and awe, and 'satisfaction of intellectual curiosity' (Eerola et al., 2024). Low scores on the WHO-5 tend to correlate with the level of anhedonia and emotional blunting (Christensen et al., 2022). Given these two statements, it is reasonable that mentally unwell individuals would experience less AIA compared to well participants. Those with poorer mental well-being (including those with depression and anxiety) tend to be relatively unresponsive to positive music stimuli compared to healthy controls and misinterpret emotional valence in positive music stimuli with a more negative bias (Punkanen et al., 2011). Neuroimaging studies also show that reward areas in the brain lack activity in depressed participants even when they are listening to their favourite music (Sachs et al., 2015). Likewise, in times of distress, it was found that those who felt pessimistic about one's own conditions found it helpful to maintain or deepen into the negative state by repeating old music listening habits that had helped them previously. Hence, they are relatively less prone to be insight-oriented via music listening, including being creative, and open to new ideas, compared to flourishing/optimistic people (McFerran & Saarikallio, 2014). Thus, as the AIA episode is characterised by satisfying intellectual curiosity about musical structure, it is plausible that mentally unwell individuals would tend to be disinterested in the latter.

While interpreting the results, one must be mindful that Eerola et al. (2024) have stated that AIA has the rarest occurrence out of all the emotional episode constructs (<2% likelihood). Thus, one must be cautious in assuming that all participants, whether well or unwell, typically have AIA experiences in daily life. It is also one of the lower-rated episode constructs out of the five constructs for all three vignettes, implying that the given context (i.e., missing home in Vignette 2, and focusing on an assignment in Vignette 3) could pose fewer situational needs for AIA experiences.

The aforementioned knowledge about depressed people's tendencies may also explain the significant difference in FM ratings for Vignette 2. There are two things to consider: The vignette sets individuals in a context about missing home and playing music from their childhood, and FM is characterised by facilitating task-related motivation, enjoyment, and focus (Eerola et al., 2024). However, depressive traits may disincline individuals from fully benefiting from FM functions in this context. While flourishing and optimistic young people tend to use music to overcome emotional turbulence via mental work, diversion and modification, this may be difficult for pessimistic individuals experiencing distress, who typically perceive benefit in delving into the negative state (McFerran, 2016). Indeed, when in distress, listening to songs that have previously been associated with positive experiences could even become part of the maladaptive rumination or isolation cycle (McFerran, 2016). In Vignette 2, unwell individuals' negative bias on their emotional experiences could be a potential reason for FM episode ratings, as they perceive limited personal benefits from FM functions. For future investigations, it would be insightful to record the subjective feelings towards the participants' context-specific song choices to clarify how past music-listening experiences would influence the context-specific episode construct experienced.

While CB was rated the lowest in both groups for Vignette 3, it is still worth discussing why mentally unwell participants still rated the episode construct significantly lower than well participants. There are links between low ratings on the WHO-5 index and loneliness, including social isolation (AlSumait et al., 2021; Gonçalves et al., 2020). CB is associated with feelings of nostalgia and longing to feel a sense of belonging (Eerola et al., 2024). However, interestingly, mentally unwell participants rated this episode construct as significantly lower than well people. Findings in Khorsandi & Saarikallio (2013) show that migrants with clinical depression tend to avoid nostalgic conditions during music listening, as they perceive it brings more harm than benefits. However, those who were able to regulate their mood to achieve a desired emotional stability recognise the importance of experiencing the sad feelings associated with nostalgia to move on. Hence, this could be a potential explanation why unwell participants anticipate experiencing less CB compared to well participants, due to a potential avoidance of nostalgia that feeds a sense of belonging. However, since the vignette sets individuals in a situation where a task is to be done, in a setting with other students (the library), individuals may have nuanced, yet specific regulatory needs that may not include nostalgia and a sense of belonging. The difference in levels of nostalgia between well and unwell participants under different contexts needs to be studied further before making generalisable conclusions about the avoidance of feeling nostalgia in unwell participants.

The second hypothesis was partially supported, as all participants highly rated the targeted episode constructs for Vignette 1 and 3 as the highest (EDR and FM). Unexpectedly, participants rated EDR and PEP as higher, followed by CB for Vignette 2. This could be due to the nuanced nature of the characterised nostalgia in CB (Garrido, 2016). It is also a possibility that episode constructs can overlap (Eerola et al., 2024). Future investigations are encouraged to include the DEEM instruments' descriptive schemes that can characterise each episode – 'Listening Modes & Agency'. This measures the participants' attention modality and whether it was on the music, something else, the intensity of emotional experiences, including whether embodied motor processes are present (Kirts et al., 2025). This puts a more 'prescriptive' observation on the emotional episode, deriving the probability of an episode happening (Eerola et al., 2024). It is important to characterise the attention modality to understand the nature of the emotional episode experienced. For instance, in AIA, the listening mode is characterised by focus on musical content, including one's own experiences to identify sound elements and varied valence of affective states (Eerola et al., 2024). If further descriptive scheme items could capture the listening mode, results could verify the holistic nature of how AIA was experienced by the individual in a specific context, or how probable other episodes could happen at the same time.

There are general limitations to consider when interpreting the results. The vignettes in this study were not necessarily emotionally distressing, as participants were instructed to imagine themselves in a hypothetical situation. Thus, individuals can feel more prone to regulate adaptively. It is uncertain whether participants would react in the same way in real life as they have reported in this study. Also, the survey was one-off and could not capture the full dynamic process of MER and how emotional episodes are experienced over time, including impact on mood (Kirts et al., 2025). A suggested method is to conduct longitudinal diary studies to track immediate MER experiences under the episode model theory over a period of time. Although this method would primarily rely on self-report data, which may not always be completely accurate (McFerran, Garrido & Saarikallio, 2013; Sharman & Dingle, 2015), experiences would still yield higher ecological validity, as participants would face their own experiences or hardship. This may also allow for the recording of MER outcomes; the evaluation of maladaptive/adaptive MER can be informed by observing the groups' ability to employ context-appropriate strategies flexibly to achieve healthy regulation.

One must take precautions in generalising results to real-life scenarios, as the vignettes for this survey are also exploratory and were hypothesised to target international students' daily experiences. Nevertheless, this study gives initial insights into how MER would vary in different contexts. Future investigations that wish to continue using vignettes with the DEEM survey are encouraged to incorporate data from Experienced Sampling Method (ESM) studies to inform vignette selection for increased ecological validity, as they would be derived from the target population.

Finally, this sample consists of a majority of Hong Kongers, largely due to convenience sampling. While the results give particularly fruitful insight into MER for those from a similar background, the results may not be generalisable to other diverse cultural backgrounds. Additionally, the survey allowed participants to self-identify as international students. Thus, it is recommended for future studies to include items that assess international student status to minimise participants who do not strictly meet the demographic standards (e.g., whether they have a student visa or are applying for indefinite leave to remain).

5. CONCLUSION

This study explored the importance of context for MER responses and how mentally well and unwell UK international students differ in three functional emotional episodes during music listening for emotion regulation. Most episode construct ratings did not significantly differ between groups across all three vignettes, suggesting that both well and unwell individuals may share similar context-specific emotion regulation goals. However, significant differences in ratings for AIA, FM and CB episodes indicate that predisposing mental well-being may influence the depth and nature of emotional engagement in areas involving aesthetic interest, awe, task-enjoyment, motivation, and sense of belonging. However, importantly, the findings highlight that perceived emotional experiences alone may not determine whether some MER responses are healthy or unhealthy. Instead, the effectiveness of regulation may depend on the outcome—whether emotional relief or stability is achieved.

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Appendix

Appendix A – List of participants' nationalities

- Brazilian
- Hong Konger
- British
- Chinese
- Indian
- Mexican
- Peruvian
- Italian
- Nigerian
- Canadian
- Malaysian
- Ukranian
- American
- Estonian
- Indonesian
- Japanese
- Taiwanese
- Pakistani
- Turkish
- Zimbabweance
- Czech
- Sierra Leonean
- Kenyan
- Bangladeshi
- Israeli

Appendix B – Items of the Dynamic Emotional Episodes to Music measure (Kirts et al., 2025)

DEEM item #	DEEM Question	DEEM item construct
1	The music helped me break away from the situation	EDR
2	The music pushed my worries aside	EDR
3	The music allowed me to escape from my daily routines	EDR
4	Music distracted my mind from the outside world	EDR
5	I wanted to have background music on to distract myself	EDR
6	Music acted as a mental shield against my distressing thoughts	EDR
7	I wanted the music to help me forget what I was doing	EDR
8	The music made me forget what I was thinking about	EDR
9	The music made me feel calm or relaxed	EDR
10	I used the music to soothe my mind	EDR
11	I was using the music to relax	EDR
12	I used the music to calm myself down and relax	EDR
13	Listening to the music helped me recharge	EDR
14	Relaxing with the music made me feel better	EDR
15	Music provided a relaxing mood	EDR
16	Listening to music was a good way of entertaining myself	EDR
17	The music gave me pleasure	EDR
18	I enjoyed how the music made me feel	EDR
19	I was delighted by the music	EDR
20	I felt like I was enjoying myself because of the music	EDR
21	I was having a good time listening to the music	EDR
22	I used the music to have a good time	EDR

23	I felt like a member of a group while listening to the music	CB
24	I felt a bond with the other people listening to the music	CB
25	The music made me feel more connected with those around me	CB
26	I felt more connected with other people because of the music	CB
27	I felt connected to the people I was sharing this musical experience with	CB
28	I felt connected with people who also listen to this music	CB
29	The music made me feel connected to my peers or family	CB
30	The music brought people together	CB
31	The music made me feel more connected to a group	CB
32	The music helped me feel closer to people	CB
33	The music made me feel connected to the people I care about	CB
34	The music made me feel like I belonged	CB
35	I felt a special connection to the people I shared this music with	CB
36	Listening to music made me feel less lonely	CB
37	The music helped me feel less lonely	CB
38	The music was motivating me to do something	FM
39	Listening to music made me more alert	FM
40	The music pumped me up	FM
41	I used the music to motivate myself	FM
42	The music kept me concentrated on the task I was supposed to do	FM
43	The music helped me concentrate	FM
44	I chose to listen to music to help me focus	FM
45	The music helped me accomplish work I needed to do	FM
46	Music helped me focus on what I was doing	FM
47	The music motivated me to finish the task I had to do	FM
48	The music reduced my motivation	FM
49	I used the music to block out distractions	FM
50	I was more focused while listening to the music	FM
51	The music let me focus on the present moment	FM
52	I used the music to cope with my situation	PEP
53	I found solace in the music	PEP
54	Listening to music comforted me	PEP
55	The music helped me understand different feelings in myself	PEP
56	The music was like therapy for me	PEP
57	The music was comforting to me	PEP
58	The music helped me process my emotions	PEP

59	I felt comforted by the music, as if it understood me	PEP
60	The music helped me reflect on how I was feeling	PEP
61	The music made me feel secure	PEP
62	The music helped me express myself	PEP
63	The music expressed what I could not	PEP
64	Listening to music allowed me to emotionally express myself	PEP
65	I used the music to express how I was feeling	PEP
66	Listening to music helped me express how I was feeling	PEP
67	I vented my emotions by listening to music that expressed my feelings	PEP
68	The music let me vent my frustration	PEP
69	The music helped me work through my thoughts	PEP
70	The music helped me release my mental tension	PEP
71	Listening to music allowed me to figure out how I wanted to express myself	PEP
72	I was completely immersed in the music, as it altered my state of being	AIA
73	I felt like the music was lifting me into the air	AIA
74	The music provided me with a spiritual experience	AIA
75	The music related to my spirituality	AIA
76	I wanted the music to take me somewhere spiritually	AIA
77	I experienced reality differently while listening to the music	AIA
78	Listening to the music stimulated my curiosity	AIA
79	The music sparked my curiosity	AIA
80	I appreciated the beauty of the music	AIA
81	I respected the music for its value as a piece of art	AIA
82	The experience was enhanced by the beauty of the music	AIA