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Examining the Lyrical Content and Musical Features of a Crowd-Sourced, Australian Pandemic Playlist

Kaila C. Putter[1], Amanda E. Krause[1], Dianna Vidas[2] and Adrian C. North[3]

Abstract

A recent examination of charting popular music before and during the first six months of the COVID-19 pandemic indicated that popular music lyrics during turbulent socioeconomic conditions had more negatively valenced words, providing support for the Environmental Security Hypothesis. However, the use of chart data alone cannot speak to what individuals are listening to against the backdrop of COVID-19. The present mixed-methods case study examined a crowd-sourced playlist ($n = 55$ songs) created by Australian residents during an extended lockdown in September–October 2021. Qualitative analysis of the lyrics demonstrated that the selected music expresses a closeness to others, references to the current situation (such as illness and staying at home), negative emotions (including confusion and fear), a positive outlook (expressing perseverance and a will to survive), and a changing sense of time. Quantitative analyses compared the "pandemic playlist" songs to charting songs during the first six months of the pandemic in 2020 and the same period in 2021 ($n = 28$ and 26 songs, respectively) with regard to their musical features (using scraped Spotify API data) and lyrical content (using Diction). The findings indicated that the songs included in the "pandemic playlist" differed significantly from the charting songs in 2020 and 2021 by being higher in energy (relative to 2020 and 2021) and less acoustic (relative to 2021). Additionally, the lyrics of the "pandemic playlist" songs had significantly more positively valenced words. These differences suggest that people believed music selected in response to the pandemic ought to be upbeat and realistic (playlist suggestions), but popular songs were relatively pensive and reflected uncertainty and isolation (chart data). These findings broaden our understanding of music listening behaviors in response to societal stress.

Keywords

COVID-19, Diction, pandemic, playlist, popular music, song lyrics, Spotify API

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Over six separate lockdown periods, Melbourne, Australia has cumulatively had the world's longest lockdown in response to COVID-19, totaling over 260 days (Stansfield et al., 2022). Lockdown measures, intended to slow the spread of the disease, required people to remain at home (Agoramoorthy & Hsu, 2021; Manipis et al., 2021) and have resulted in people experiencing long periods of social isolation, unprecedented changes to everyday routines, and various psychological challenges, such as fear, anxiety, insomnia, irritability and anger (e.g., Cabedo-Mas et al., 2021; Hansen et al., 2021; Ibn-Mohammed et al., 2021; Newby et al., 2020). Additionally, COVID-19 restrictions changed routine music behaviors, including increased streaming of the songs sung from balconies during the initial lockdowns (Lehman, 2021); a shift from audio- to video-based platforms (Hansen et al., 2021); an exploration

[1] Department of Psychology, James Cook University, Townsville, QLD, Australia
[2] School of Psychology, The University of Queensland, St. Lucia, QLD, Australia
[3] School of Population Health, Curtin University, Bentley, WA, Australia

Corresponding author:
Amanda E. Krause, Department of Psychology, James Cook University, 1 James Cook Drive, Townsville, QLD 4811, Australia.
Email: Amanda.Krause1@jcu.edu.au

of new styles of music (Cabedo-Mas et al., 2021); and typically an increase in listening time (Carlson et al., 2021; Fink et al., 2021). These societal changes occurred alongside a rise in public health interventions aiming to improve psychological well-being. For example, the Western Australian Mental Health Commission and Cancer Council WA launched the "Be Positive. Be Connected. Be Active" campaign (Mental Health Commission, 2020), and the Australian Government Department of Health and Aged Care's "Give yourself a boost" campaign encouraged Australians to stay up to date with their vaccination status by suggesting that receiving the COVID-19 booster vaccine is also "a boost to [one's] happiness" (Department of Health, 2023).

Music can be used for numerous purposes, including arousal and mood regulation, social relatedness, and to achieve self-awareness (Schäfer et al., 2013). Relative to pre-COVID data, peri-COVID Australian data indicated that people emphasized value arising from music listening due to its ability to promote social connection, provide comfort and companionship, and counter loneliness (Krause, et al., 2023). Moreover, music choices can vary depending on social and environmental conditions (Pettijohn et al., 2012). The Environmental Security Hypothesis proposes that, during threatening socioeconomic conditions, individuals display a preference for meaningful and mature themes in an attempt to manage threat and uncertainty and focus on safety and security needs (Pettijohn II et al., 2012). Previous research has examined themes in song lyrics and other media during threatening conditions, including periods of turbulent socioeconomic circumstances (Bentley et al., 2014; Pettijohn II & Sacco Jr., 2009a; Qiu et al., 2021). For instance, individuals prefer mature facial features (Pettijohn II & Sacco Jr., 2009b; Pettijohn II & Tesser, 2005) and television programming that explores meaningful, serious issues (McIntosh et al., 2000) during uncertain or challenging social and economic conditions (e.g., wartime, high inflation and unemployment rates). Moreover, an examination of charting billboard R&B/hip-hop music from 1946 to 2010 revealed that references to reproductive themes (e.g., lust, longing) were more prevalent during turbulent socioeconomic conditions, suggesting a desire for social connection and support (Eastman & Pettijohn, 2019).

Similarly, threatening circumstances in the United States between 1955 and 2003 (as evidenced by fluctuations in US unemployment rates and other economic indicators) were associated with a preference for songs that were longer, slower, dealt with meaningful issues, and were more comforting and romantic (Pettijohn & Sacco, 2009b). Putter et al. (2022) also found that, from 1999–2020, a monthly measure of economic misery in the US was positively associated with the presence of negatively valenced lyrics in charting songs. Influxes in negatively valenced lyrics might reflect contrahedonic emotion regulation (increasing unpleasant emotions or decreasing pleasant emotions), which can be both useful (e.g., when used for reflection or introspection, or to garner feelings of connectedness) or harmful (e.g., when maintaining or increasing negative emotions leading to distress or impairments; Parrott, 2014).

When considering the turbulent socioeconomic conditions of the first six months of COVID-19, lyrics of top-charting songs in the US and UK in March–August 2020 reflected a greater degree of social isolation and lower satisfaction compared to the charting music in the same period in 2015–2019; and charting music in the US during the beginning of the pandemic contained lyrics with lower incidence of positive affect relative to an average of the same months in 2015–2019 (Putter et al., 2022). Thus, music may reflect public sentiment. In contrast, Hansen et al.'s (2021) examination of a crowd-sourced corpus of media reports and music videos containing implicit or explicit references to the coronavirus and pandemic life revealed emotive themes including happiness, togetherness, humor, and being moved (Hansen et al., 2021). Additional research regarding the use of escapist media as a coping mechanism during COVID-19 has shown that use of nostalgic media content was positively associated with a fear of isolation (Wulf et al., 2022). People use nostalgic music and other media types to distract themselves from negative affective states and turn toward more positive experiences during periods of strain (Wulf et al., 2022): in effect, they engage in emotion-focused coping, which is especially effective when individuals have limited control over the stressor or when other coping tools are less accessible (Eden et al., 2020).

Indeed, people have reported listening to music more frequently to cope with stress, regulate moods and emotions, and connect with others during the COVID-19 pandemic than under usual circumstances (Cabedo-Mas et al., 2021; Fink et al., 2021; Granot et al., 2021; Henry et al., 2021; Ribeiro et al., 2021; Vidas et al., 2021a). Moreover, during COVID-19, music has been reported as the most efficient activity for attaining enjoyment, maintaining a good mood, and alleviating negative emotions (Granot et al., 2021) and has been positively associated with life satisfaction (Krause et al., 2021). When examining university students' selected songs for coping with stress due to COVID-19, Vidas et al. (2021a) found they selected songs that were low in valence and moderate in energy, potentially congruent with their own low valence, high arousal affective state in the stress and anxiety of the pandemic.

Music preferences and evaluative judgments can also be colored by the way music is labelled or by prior information pertaining to it; a type of conformity known as "informational influence" or "prestige effects" (North & Hargreaves, 2008). For instance, the way music is framed can influence listeners' emotions or enjoyment of the music (Fischinger et al., 2020; North & Hargreaves, 2008): A radio program labelled "popular gramophone music" received double the number of listeners relative to when it was labelled "classical music" one week later (Geiger, 1950). Furthermore, North and Hargreaves (2005) found

that when a song was described as linked with incidences of suicide, the participants considered it to be suicide-inducing, whereas when the same song was described as helpful in dealing with emotional problems, it was considered life-affirming. Therefore, the media's representations of coping during COVID-19 might influence individuals' perceptions of the music that will benefit them. In contrast to the Environmental Security Hypothesis, the public messaging around "staying positive" during the pandemic might influence people's music listening choices, and therefore a pandemic-specific playlist might contain more hopeful or optimistic lyrics relative to charting music.

While there was a widespread shutdown of music venues and cancellation of concerts, one method of group music engagement still possible was via playlists (making and listening). A playlist is a collection or sequence of songs designed to be listened to together (Zamani et al., 2019) and can be created by individuals or via online sharing platforms, and created for a personal or shared musical motive (Harris, 2022). Collaborative playlist making (the digitally mediated co-curation of music by two or more people) allows social engagement through song selection among geographically separated individuals (Harris, 2022). Playlist song selection may be guided by activities, emotional states, themes, external events, or other collaborators' choices (Harris, 2022; Karakayali & Alpertan, 2021; Krause & North, 2016). For example, online playlists can be employed or curated by users to improve productivity or encourage relaxation (Karakayali & Alpertan, 2021). During the COVID-19 pandemic, Park et al. (2022) found that collaborative playlists have been used to connect with others.

Taken together, music functions as a useful tool for mood regulation and creating feelings of social connectedness and may reflect shifts in affective states in response to environmental circumstances. While previous research has examined either population-level chart data[1] (e.g., lyrical content in charting popular music – Putter et al., 2022) or individual listening behaviors (e.g., self-reported music choices – Vidas et al., 2021a), no research (to our knowledge) has directly compared data from both approaches to investigate whether the music that populations listen to during stressful socioeconomic events maps onto the music that individuals say they want to listen to when directly asked. The current article addresses this gap by presenting a two-part case study investigating the musical and lyrical features of a crowd-sourced playlist created in response to COVID-19 lockdown measures published in the Melbourne-based Australian newspaper, *The Age,* relative to charting songs in 2020 and 2021.

The literature concerning the Environmental Security Hypothesis implies that music listening, as reflected by chart data, should indicate that the music has characteristics that reflect meaningful and mature themes that represent an attempt to manage threat and uncertainty, and which focus on safety and security. Moreover, the literature concerning informational influence would suggest that the more generally negative public discourse (and media reporting) at the time of lockdowns led to the popularity of music reflecting this bleak sentiment. In contrast, this same literature concerning informational influence might instead suggest that, consistent with the public health messaging at the time concerning the need to maintain a positive outlook on life, chart data might reflect an upbeat and positive tone.

In the present study, we firstly asked, (RQ1) What themes are present in the lyrics of the music included in a crowd-sourced lockdown playlist in Australia? To answer this research question, we used a qualitative, descriptive approach to examine the lyrical themes present in the songs included in our case study crowd-sourced playlist (from here on referred to as the "pandemic playlist"), representing people's purported (public) listening choices during COVID-19 lockdown.

Second, we asked, (How) Do the pandemic playlist songs differ to those of the charting popular music during the COVID-19 pandemic? Thus, we quantitatively compared the lyrical content and musical features of the music within the pandemic playlist (as what people say they were or should be listening to in response to COVID-19) with that of music charting in 2020 and 2021 (reflecting the public's actual listening choices during COVID-19). In response to Putter et al.'s (2022) suggestion, we wanted to consider both musical features and lyrical content (given that both components can affect the interpretation of music [Schotanus, 2020]). The potentially contradictory predictions arising from two theoretical approaches previously discussed, absence of direct prior evidence, and idiosyncratic nature of the COVID pandemic, meant that we opted to approach the quantitative analyses as an exploratory study guided by the following two research questions:

RQ2: How does the lyrical content of the pandemic playlist differ from charting popular music during the COVID-19 pandemic with respect to (a) interpersonal relationships and (b) valence? Putter et al. (2022) found that charting songs during the start of the pandemic reflected greater social isolation and lower positive affect relative to pre-pandemic data, so it is possible that the pandemic playlist might differ from that within the chart data.

RQ3: How do the musical features of the pandemic playlist songs differ to those of the charting popular music during the COVID-19 pandemic? We expected pandemic playlist songs to show a similar trend (i.e., low valence, moderate energy) to COVID-19 coping songs from previous research (Vidas et al., 2021a), but made no specific prediction concerning how the music contained within the pandemic playlist might differ from that within the chart data.

Method

Data

The present research uses three datasets: one containing the 55 songs included in a crowd-sourced playlist published in

The Age on 10 October 2021 and two containing charting songs from 2020 and 2021. The 55 songs from the crowdsourced playlist were those that readers of *The Age* and *Sydney Morning Herald* submitted in response to a callout requesting "songs you've been listening to on repeat or that you play when you need a lift" (Miller, 2021). In an interview, Nick Miller, the Arts Editor at *The Age,* explained that he and another editor selected the included songs from all of the submitted entries received; he expressed that they wanted the final playlist of songs "to be sort of representative of the suggestions we got in that we wanted it to be broad in terms of musical styles and just about everything …" (Nick Miller, personal communication, 13 January 2022).[2]

The other two datasets comprised the charting songs in Australia during the first six months of the pandemic in 2020 ($n = 27$) and the same period in 2021 ($n = 24$). Charting songs were those that had reached a top-five position on the weekly Australian chart (songs were counted once regardless of the number of weeks in a top-five position). The March–August period in 2020 equates to the first six months of the pandemic (as per the World Health Organization classifying COVID-19 as a global pandemic on March 11, 2020 – Putter et al., 2022). Songs were labeled as belonging to the pandemic playlist, the 2020 chart, or the 2021 chart. One song from each of the 2020 and 2021 chart datasets also appeared in the pandemic playlist; in these two instances, the song data was included in both the chart and pandemic playlist datasets.

The lyrics were obtained for each song using web-based sources (e.g., www.azlyrics.com), as per the protocol employed by Krause and North (Krause & North, 2019, 2020), and cleaned using the two-step process outlined by North et al. (2018). Briefly, to prepare the song lyrics for analysis, redundancies were reintroduced so that a verbatim version of the lyrics was used, and misspellings and contractions were corrected to create consistent language use across the sample of lyrics.

Lyrical Content. Computerized sentiment analysis using DICTION 7.0 software was used to analyze the lyrical content of each song in the dataset (Anglada-Tort et al., 2021; Cook & Krupar, 2010; Krause & North, 2020). DICTION uses a built-in database of words to produce data concerning 31 dictionaries (word lists) and 5 master variables (Hart et al., 2014). These variables are based on the frequency of words within a text, such that a score is produced for each song on each variable. The five DICTION variables noted as master variables are activity, optimism, certainty, realism, and commonality (see Table 2 for short definitions of each variable). As the 2014 DICTION manual states (p. 4), "when taken together, these five measures provide the most general understanding of a given text." By combining relevant component variables, master variables provide an indication of the pervading tone of the text, affording a robust understanding (Craig & Amernic, 2021; Hart, 2001).

We were particularly interested in the DICTION variables used in Putter et al.'s (2022) analyses concerning interpersonal relationships (see Table 1 for variable details). As in Putter et al. (2022), we also examined positive and negative valence via word lists from The General Inquirer (Harvard University, 2002, September 12; Stone et al., 1966) entered into DICTION (see Table 1 for variable details).

Musical Features. The musical features for each song were collected through the R package SpotifyR, which queries track audio features and other information from Spotify's Web API (Thompson et al., 2019). We were interested in using the audio features previously investigated in the COVID-19 context by Vidas et al. (2021a), and focused on valence, energy, tempo, danceability, and acousticness (see Table 1 for short definitions of each variable and sample means and standard deviations). Tempo is measured in beats per minute, while the other audio features are scored from 0.0 to 1.0 (https://developer.spotify.com/documentation/web-api/reference/#/operations/get-audio-features). Several recent studies have used the Spotify API variables to examine people's music listening behaviors (e.g., Liew et al., 2021; North & Krause, 2022; Panda et al., 2021; Vidas et al., 2021b).

Data Analysis

Human coding of the song lyrics was undertaken using a semantic analytical approach (Wolf-Branigin & Edmondson, 2021) to identify themes in the song lyrics. An inductive approach was used such that themes were generated from the data (Diamond et al., 2006; Mutegi et al., 2014) rather than looking for the presence of pre-determined content (as in, e.g., Evans, 2014; Primack et al., 2008; Van Sickel, 2005). As in Mutegi et al. (2014, p. 8), our procedure was to read the lyrics and to make note of any themes that arose. Because the lyrics were read line by line for meaning (Cheung & Feng, 2021) and because the unit of analysis was "a complete and independent thought" (Mutegi et al., 2014, p. 8), it was possible that more than one theme was identified as being present in a single song.

The first and second author independently coded 50% of the dataset and discussed their codes together to establish an initial list of meaningful codes that were relevant to the research aims and to resolve any discrepancies (Diamond et al., 2006; Holody et al., 2016; Mutegi et al., 2014). The first author then coded the remaining pieces; all assigned codes were discussed repeatedly with the second author to ensure that a consensus was reached (Herd, 2009). Both authors reviewed the final codes to develop and clarify the themes discussed below.

For the quantitative analyses, as in previous research (e.g., North et al., 2018, 2021), raw scores for each song on each DICTION variable were divided by the total number of words to account for songs of varying lengths.

Table 1. Definitions, means, and standard errors for each variable.

Variable definition		Mean (Standard error)					
		Pandemic playlist ($n = 55$)		2020 chart ($n = 27$)		2021 chart ($n = 24$)	
Diction dictionaries (Hart et al., 2014)							
Self-reference	Contains all first-person references	130.051	(99.312)	116.649	(83.447)	123.902	(48.496)
Praise	Affirmations of some person, group, or abstract entity	28.490	(30.527)	14.502	(17.093)	20.536	(20.390)
Levelling	Words used to ignore individual differences and to build a sense of completeness and assurance	40.490	(59.910)	22.278	(20.871)	18.481	(17.679)
Human interest	Includes standard personal pronouns, family members and relations, and generic terms (e.g., friend)	118.392	(89.570)	92.329	(55.724)	120.088	(63.476)
Satisfaction	Terms associated with positive affective states	38.430	(54.840)	25.012	(30.608)	22.069	(16.965)
Rapport	Words denoting attitudinal similarities among people	6.811	(22.757)	0.164	(0.549)	3.158	(4.786)
Exclusion	Describes the sources and effects of social isolation	3.797	(8.078)	4.682	(11.208)	3.248	(5.529)
Activity	References to movement and change	155.800	(63.677)	127.187	(41.901)	123.731	(29.911)
Optimism	Endorsing or emphasizing positive aspects of people, concepts, or events	168.231	(79.221)	116.737	(48.966)	117.222	(33.961)
Certainty	Words denoting inflexibility and completeness	166.715	(74.501)	112.909	(37.090)	113.055	(31.448)
Realism	Tangible and immediate circumstances affecting daily life	167.856	(65.733)	122.618	(46.083)	124.990	(35.506)
Commonality	Language emphasizing shared group values	157.428	(64.147)	115.870	(39.046)	120.874	(30.674)
General Inquirer (Putter et al., 2022)							
Negative valence	The negative valence word list ($N = 2,291$; e.g., aversion, chaos, deceitful, embarrass, turbulent)	72.166	(56.771)	51.563	(29.384)	74.912	(50.131)
Positive valence	The positive valence word list ($N = 1,915$; e.g., abundant, companionship, loyal, opportunity, pleasure)	130.899	(108.875)	79.860	(66.247)	88.978	(38.235)
Spotify API (https://developer.spotify.com/documentation/web-api/reference/#/operations/get-audio-features)							
Valence	Positivity conveyed by the track	0.625	(0.237)	0.522	(0.217)	0.524	(0.261)
Energy	Perceptual measure of intensity and activity	0.726	(0.174)	0.596	(0.155)	0.613	(0.180)
Tempo	A measure of the song's beats per minute	121.483	(26.895)	123.451	(27.070)	125.655	(31.089)
Danceability	Based on tempo, rhythmic stability, beat strength, and overall regularity	0.657	(0.157)	0.709	(0.143)	0.677	(0.155)
Acousticness	Confidence that track is acoustic	0.150	(0.229)	0.281	(0.261)	0.334	(0.249)

A series of four multivariate analyses of variance (MANOVA) conducted using SPSS (version 27) were used to examine whether the song content of the pandemic playlist differed from that of charting 2020 and charting 2021 song lists. In each of these models, we compared the three datasets (Table 3). In order to correct for multiple comparisons, the Tukey method of correction was used.

Results

Lyrical Themes in the Pandemic Playlist Songs

Through semantic analysis of the pandemic playlist songs ($N = 55$), six themes were identified, namely closeness to others, current situation, negative emotions, positive outlook, good times, and changing sense of time. Each of these themes (and their sub-themes) are discussed in turn below (and illustrative quotations from the lyrics are provided in Table 2).

Closeness to Others. Several songs contained lyrics expressing both physical and emotional closeness to others. This included both desiring proximity to others (e.g., "Hold me now, don't start shaking" – *Hold Me Now* by The Polyphonic Spree) as well as descriptions of feeling lonely or being alone (e.g., "And the silence makes me lonely" – *Lost in the Supermarket* by The Clash).

Current Situation. This theme addressed topics that we interpreted as indirectly referencing the collective COVID-19 experience. It included eight sub-themes: illness/hygiene, staying home/restrictions, shared experience, coming together, hard times, the world is changing, wanting freedom/to escape, and finding positives during bleak times. While multiple songs made references to illness and disease (e.g., *My Sanity* by Bad Religion: "I've got it real bad there's no remedy"), it is notable that only one song made explicit reference to the COVID-19 pandemic (*Stay Home* by Teeny Tiny Stevies). However, additional

Table 2. The overarching themes and sub-themes identified from the semantic analysis of the crowd-sourced, pandemic playlist songs ($N = 55$), supported with exemplar lyrics.

Theme	Sub-theme	Exemplar song lyrics
Closeness to others	–	No Doubt, *Hella Good*: "Well, come here a little closer | 'Cause I wanna see you, baby, real close up" Elton John, *Are You Ready for Love? (remastered)*: "Don't let me go, just say it's so" Glass Animals, *Heat Waves*: "I don't want to be alone" Destiny's Child, *Jumpin' Jumpin'*: "Last weekend you stayed at home alone and lonely"
Current situation	Illness/ hygiene	D:Ream, *Things Can Only Get Better*: "I must learn to deal with this disease" Tame Impala, *Breathe Deeper*: "breathe a little deeper" Teeny Tiny Stevies, *Stay Home*: "You must be sick of being told | To wash your hands and blow your nose"
	Staying home/ restrictions	Taylor Swift, *August:* "cancelled my plans" Everyone You Know and Joy Anonymous, *Just for the Times*: "When we get back to them crowded places | Making best friends with strangers"
	Shared experience	Everyone You Know and Joy Anonymous, *Just for the Times*: "We're all going through the same thing" Tame Impala, *Breathe Deeper*: "If you think no one is feeling what you're feeling, I am"
	Wanting freedom/ to escape	Queen, *I Want to Break Free*: "I want to break free" George Michael, *Freedom! '90*: "Freedom (I will not give you up)"
	The world is changing	One Direction, *Night Changes*: "Everything that you've ever dreamed of, disappearing when you wake up" R.E.M, *It's the End of the World As We Know It (and I Feel Fine)*: "It's the end of the world as we know it"
	Hard times	The Polyphonic Spree, *Hold Me Now* (UK radio edit): "You keep me safe don't ever think You're the only one when times are tough | In your new age" Duran Duran, *Ordinary World*: "Papers in the roadside | Tell of suffering and greed"
	Coming together	Empire of the Sun, *Walking on a Dream*: "Don't stop, just keep going on | I'm your shoulder, lean upon" Canned Heat, *Let's work together:* "Let's work together, ah, You know together we will stand"
	Finding positives during bleak times	Empire of the Sun, *Walking on a Dream*: "Never looking down, I'm just in awe of what's in front of me" Lady Gaga, Ariana Grande, *Rain on Me:* "I'd rather be dry, but at least I'm alive | Rain on me, rain, rain"
Negative emotions	–	Stealers Wheel, *Stuck in the Middle with You*: "Trying to make some sense of it all | But I can see it makes no sense at all" Gloria Gaynor, *I Will Survive*: "At first I was afraid, I was petrified" David Clash, *Wake Me Up (When It's All Over)*: "All this time I was finding myself | And I didn't know I was lost"
Positive outlook	Looking ahead to a positive future	Madonna, *Holiday*: "You can turn this world around | And bring back all of those happy days" Amyl and the Sniffers, *Guided by Angels*: "I never hold on to the misery or grief"
	Perseverance/work harder	Five, *Keep on Movin'*: "Never let go, gotta hold on and | Nonstop 'til the break of dawn and | Keep moving, don't stop rocking (ah)" Yazz, *The Only Way Is Up:* "But if we should be evicted | Huh, from our homes | We'll just move somewhere else | And still carry on"
	I will survive	Tai Verdes, *A-O-K:* "But I am a G, can you not see that I will always be all A-O-K" Tame Impala, *Breathe Deeper*: "If you think I couldn't hold my own, believe me, I can | Believe me, I can, believe me, I can"
Good times		Destiny's Child, *Jumpin' Jumpin'*: "But the party ain't gon' stop | So let's make it hot, hot" Bad Lip Reading, *Seagulls! (Stop It Now)*: It's nothin' a little music can't help. | Rockin' | Rockin' and Rollin'
Changing sense of time		Taylor Swift, *August:* "August slipped away into a moment in time" Canned Heat, *Let's Work Together*: "Oh well now, two or three minutes | Two or three hours | What does it matter now"

Table 3. Summary of MANOVA models, examining interpersonal variables, valence, DICTION master variables, and Spotify API variables across the pandemic playlist, 2020 charts, and 2021 charts.

Variable	F	p	η_p^2
DICTION Interpersonal variables: $F(14, 200) = 0.913$, $p = .546$, $\eta_p^2 = .060$			
Self-reference	0.241	0.786	0.005
Praise	3.013	0.053	0.054
Levelling	2.786	0.066	0.050
Human interest	1.122	0.329	0.021
Satisfaction	1.797	0.171	0.033
Rapport	1.536	0.220	0.028
Exclusion	0.092	0.912	0.002
General Inquirer Valence variables: $F(4, 210) = 2.691$, $p = .032$, $\eta_p^2 = .049$			
Negative valence	1.841	0.164	0.034
Positive valence	4.120	0.019	0.073
DICTION Master variables: $F(10, 204) = 3.419$, $p < .001$, $\eta_p^2 = .144$			
Activity	4.811	0.010	0.084
Optimism	9.028	<.001	0.147
Certainty	11.856	<.001	0.184
Realism	9.053	<.001	0.147
Commonality	8.142	<.001	0.134
Spotify musical features: $F(10, 204) = 2.221$, $p = .018$, $\eta_p^2 = .098$			
Valence	2.601	0.079	0.047
Energy	7.245	0.001	0.121
Tempo	0.060	0.942	0.001
Danceability	1.087	0.341	0.020
Acousticness	5.817	0.004	0.100

Note. Degrees of freedom = 2, 105 for all predictor variables.

songs contained references that clearly speak to COVID-19 beyond physical disease. Lyrics indicative of the sub-theme staying home/restrictions, referred to staying at home, canceling plans, or being confined (e.g., Dua Lipa, *Break My Heart*: "I should've stayed at home"), which may reflect listeners' interpretation of popular song lyrics in the context of social distancing and isolation measures, such as lockdowns. Songs categorized within the shared experience sub-theme pertained to identification with the emotions and experiences of others (reflected in the use of first-person, plural pronouns, collective nouns, or words denoting togetherness, e.g., "But I promise you, we will get there" in *Everyone You Know* by Joy Anonymous). The sub-theme of wanting freedom/to escape arose from lyrics concerning desiring freedom, running away, or needing a holiday. Song lyrics grouped within the sub-theme the world is changing pertained to perceptions of how social circumstances had altered as a consequence of the pandemic (e.g., "Wake me up when it's all over" in the song *Wake Me Up [When it's all Over]* by David Clash).

Songs within the hard times sub-theme remarked on tough times and suffering (e.g., "Of holy war and holy need", in the song *Ordinary World* by Duran Duran). Not all of the references were negative, however. Several songs advocated for coming together to improve circumstances through joint efforts (e.g., Madonna, *Holiday*: "And we will find | A way to come together, we can make things better") or expressed gratitude for being alive despite challenges, which were considered to be illustrative of finding positives during bleak times (e.g., *We Found Love* by Rihanna and Calvin Harris: "We found love in a hopeless place").

Negative Emotions. Negative emotions reflected in song lyrics included uncertainty, confusion, and fear, as well as feeling lost, beaten, and worn down. Lyrics demonstrating these sentiments include: "I'm permanently black and blue" in *Bruises* by Chairlift, and "I don't think I can take anymore" in *Stuck in the Middle with You* by Stealers Wheel.

Positive Outlook. In contrast to the negative emotions, song lyrics containing references to good times and having a positive outlook were also common. Lyrics portraying current circumstances as temporary and the inevitability of growth and improvement were categorized within the sub-theme, looking ahead to a positive future (e.g., Yazz, *The Only Way Is Up*: "Things may be a little hard now | But we'll find a brighter day"). Additional sub-themes included perseverance/work harder, which emphasized the importance of working hard to facilitate growth and improvement (e.g., Daft Punk, *Harder, Better, Faster, Stronger*: "Work it harder, make it better | Do it faster, makes us stronger"), and Gloria Gaynor's *I Will Survive* epitomizes the homonymous sub-theme, which stresses the role of individual characteristics, such as words denoting resilience, when encountering adversity.

Good Times. This category included songs with lyrics pertaining to dancing, partying, and feeling powerful or carefree (e.g., "Baby how you feelin'? Feeling good as hell" in *Good as Hell* by Lizzo).

Changing Sense of Time. Notably, several songs made reference to a changing sense of time, which mirrors self-reported distortions to the passage of time experienced by those in lockdown (Ogden, 2021). For example, the lyrics in Powderfinger's song, *These Days,* appear to reflect the loss of control over how one's time is spent during periods of lockdown: "This life well it's slipping right through my hands | These days turned out nothing like I had planned."

Comparing the Pandemic Playlist Songs to Charting Popular Music

Table 3 provides an overview of the four MANOVA models used to examine whether the song content of the pandemic playlist differed from that of charting 2020 and charting 2021 song lists (note that the means and standard errors for each variable by dataset are displayed in the Supplementary Materials). The first MANOVA concerning

interpersonal variables was statistically non-significant. The second MANOVA concerning valence was statistically significant: A significant difference was found between the song content of the pandemic playlist and the charting songs regarding positive valence, such that the pandemic playlist was more positive than the 2020 chart content ($p = .036$), and trending similarly for the 2021 chart ($p = .087$).

The third MANOVA conducted making use of DICTION's master variables was statistically significant. All five global variables were statistically significant. Post-hoc analyses indicated the same pattern across optimism, certainty, realism, and commonality, namely that the pandemic playlist content had significantly higher scores on each of these four master variables compared with the 2020 and 2021 chart content ($ps \leq .006$). For activity, the pandemic playlist content had significantly higher scores compared with the 2021 playlist ($p = .023$) but was similar to the 2020 playlist ($p = .055$). No significant differences were observed when comparing the 2020 and 2021 chart playlists for positive valence or the master variables.

The fourth MANOVA conducted to compare the three datasets on each of the Spotify API variables (namely valence, energy, tempo, danceability, and acousticness) was statistically significant. No significant differences were found for valence, tempo, or danceability. Significant differences were found for energy, such that the pandemic playlist had higher energy than either chart playlist, ($p \leq .013$). Additionally, significant differences were found for acousticness, such that the pandemic playlist had lower acousticness than the 2021 charts ($p = .006$) and trended similarly when comparing the pandemic playlist with 2020 charts, although this was non-significant when corrected ($p = .060$). Again, no significant differences were observed for energy or acousticness when comparing the 2020 and 2021 chart playlists.

Discussion

Using the context of the threatening socioeconomic conditions associated with long-term, on-going lockdowns in response to the COVID-19 pandemic to consider music listening, the present research qualitatively analyzed the lyrics of the songs in an Australian crowd-sourced pandemic playlist (RQ1) and subsequently quantitatively compared its lyrical and musical features to two datasets consisting of top-charting songs in comparable time periods (RQ2 and RQ3).

A semantic analysis of the lyrical themes present in the crowd-sourced, pandemic playlist identified six themes: closeness to others, current situation, negative emotions, positive outlook, good times, and changing sense of time. The presence of lyrics expressing a desire for closeness may reflect the widespread loneliness and social disconnection experienced due to social isolation measures (Dahlberg, 2021; Pai & Vella, 2021), while lyrics expressing negative emotions is unsurprising, given the substantial body of research outlining the negative psychological impacts of the pandemic, including fear of contracting COVID-19, financial insecurity, and loss of loved ones (Cheng et al., 2021). Furthermore, these lyrics may demonstrate contrahedonic emotion regulation (Parrott, 2014) for the purpose of reflection or to foster feelings of connectedness when experiencing loneliness. Lyrics pertaining to a "changing world" seem to mirror current conditions, as COVID-19 has significantly impacted almost every facet of life, including changes to living and work arrangements (Terasawa et al., 2021) and large-scale changes in business, tourism, and the educational and medical sectors (Beninger & Francis, 2022; Flew & Kirkwood, 2021).

The presence of lyrics concerning finding positives during challenging circumstances is perhaps indicative of a shared belief in needing to act as a community to combat the spread of COVID-19, supporting the ideas of conformity and informational influence in particular (North & Hargreaves, 2008). In addition, the presence of lyrics reflecting a positive outlook indicates that the chosen music not only reflected the current, negative aspects of living in COVID-19 lockdown but also that people could use their listening to think positively about the future. Both the positive outlook and shared belief themes align with the public messaging and government campaigns (e.g., the "Be Positive. Be Connected. Be Active" campaign - Mental Health Commission, 2020) mentioned in the introduction. Considering that music can function to regulate listeners' emotions and enhance socio-emotional well-being (Fink et al., 2021; Henry et al., 2021), song choices within the good times theme may demonstrate contributors' emotion-focused coping strategies in response to the stressful circumstances associated with the pandemic (Henry et al., 2021). As with the themes concerning a positive outlook, lyrical themes reflecting good times may be evidence of positive reframing (Henry et al., 2021) or the notion that people may use their music listening to help focus on finding positive aspects in turbulent circumstances.

The qualitative analysis showed that, even in response to a call for songs used to give an emotional lift, some of the lyrical themes of the pandemic playlist were quite dark: The Australian public's song selections (e.g., lyrics which pertain to disease, isolation and a desire for freedom) largely mirrored their reported negative pandemic experiences (e.g., Rossell et al., 2021). Overall, the chosen selections also seemed to reflect the employment of music to cope with the physical, social, emotional, and temporal experiences associated with the pandemic and isolation measures (e.g., lyrics denoting agency in improving circumstances) through positive reframing of the pandemic situation and an emphasis on the future.

The quantitative analyses demonstrated differences between songs from the pandemic playlist compared with charting songs from 2020 and 2021 with respect to both lyrical content and the audio features. This supports previous research demonstrating that music choices vary

depending on social and environmental conditions (Eastman & Pettijohn, 2019; Pettijohn et al., 2012; Putter et al., 2022). Concerning lyrical content, there was no substantial difference between the pandemic playlist and charting data in relation to negative valence or interpersonal variables. However, the pandemic playlist was substantially higher in positively valenced lyrics and lyrics pertaining to four of the DICTION master variables, namely optimism, realism, commonality, and certainty. In regard to musical features, the pandemic playlist was higher in energy (relative to 2020 and 2021 chart data) and lower in acousticness (relative to 2021 chart data). No substantial differences were found for valence, energy, tempo, or danceability.

While lyrical themes pertaining to "desiring proximity and closeness to others" and "being alone" emerged through semantic analysis of the pandemic playlist (mirroring the widespread loneliness experienced by those impacted by physical distancing measures [Johnston & Oliva, 2021]), the quantitative analyses revealed no difference in interpersonal variables between the pandemic playlist and charting playlists. Notably, lyrics reflecting optimism (positive aspects), certainty (inflexibility and completeness), realism (tangible and immediate circumstances), and commonality (shared group values) were substantially more prevalent in the pandemic playlist songs relative to the charting songs. Realism, optimism, and commonality were likewise evident through the semantic analysis; Lyrics reflected the immediate impacts of the pandemic, finding positive aspects of the pandemic, looking forward to the future, and shared experiences. Certainty was more prevalent in the pandemic playlist despite the immense uncertainty and disruption associated with the pandemic.

When considering whether the musical features of songs from the pandemic playlist differed from those of charting popular songs during the COVID-19 pandemic, we found that songs chosen for the pandemic playlist were higher in energy and lower in acousticness – again reflecting that the playlist songs are more upbeat whereas the charting music is more reflective. In contrast with the analysis of the valence of the lyrical content, there were no differences in musical valence between the pandemic playlist and chart data. While the computation processes that produce Spotify's "valence" variable are not in the public domain, it is implied that this variable refers to *musical* positiveness, which may be distinct from the positivity conveyed by the lyrics (Park et al., 2019). The differences in energy (according to Spotify, energetic tracks are generally perceived to be loud, fast, and noisy) and acousticness, however, suggest that individuals were seeking more upbeat songs for the crowd-sourced pandemic playlist compared to the music featured on the 2020 and 2021 charts. Interestingly, while the valence and energy from the charting songs were relatively consistent with previous chart data results (Vidas et al., 2021b), acoustic features from the pandemic playlist were inconsistent with previous results. While the pandemic playlist was positive in valence and energy, Vidas et al. (2021b) found that music to cope with stress during the pandemic was negative in valence and moderate in energy. This contrasts with our expectation that the pandemic playlist would be similar to Vidas et al.'s (2021a) results on chosen music. However, it is important to keep in mind that the pandemic playlist is based upon the subjective selections of two journalists from submissions made by the public in response to a call for music that would help people get through lockdowns (and, thus, is in effect one particular manifestation of the public discourse at the time). In considering these findings, additional work drawing on samples with varying COVID-19 experiences (e.g., consideration of lockdown duration, mortality rates, socioeconomic impacts) is needed to continue to unpack listening preferences in times of societal stress.

While both the crowd-sourced playlist and chart data are valid measures of people's listening choices during COVID-19, a key strength of the current article is the opportunity to compare people's perceptions of what they ought to be listening to (reflected in the playlist suggestions) and what the population actually listen to (namely the chart data). In line with work concerning informational influence, when people are asked what they listen to and are encouraged to be upbeat (i.e., the pandemic playlist) they propose relatively upbeat, optimistic music. In contrast, and consistent with the Environmental Security Hypothesis, what people actually listen to in response to the pandemic (i.e., music contained within the chart data) seems to be darker, uncertain, escapist, and isolated. This appears to reflect a preference for mature and meaningful media content when faced with threat (Pettijohn II et al., 2012).

The present findings have implications for considering music listening preferences. For instance, many people listen to music to regulate their emotions (Schäfer et al., 2013), and Vidas et al. (2021a) argued that people often choose music that is consistent with their emotional state; yet the pandemic playlist music was far more upbeat than the charting music, and there were a number of very positively valenced themes present in the songs (though it is important to consider the phrasing of the callout: "songs you've been listening to on repeat or that you play when you need a lift"). Consistent with the notion of informational influence, this may have prompted the public to intentionally select music which they perceived would improve, rather than correspond to, their current mood. The prompt for the crowd-sourced playlist provided a common, collaborative goal (Harris & Cross, 2021). It is possible that people's suggestions for the pandemic playlist reflected the music they expected would improve the mood of others, which may not necessarily have been the music they would select to regulate their own emotions. Future research on playlist making could benefit from the scholarship on joint action and music-making (Cross, 2014) or the much larger literature in social psychology concerning group processes (e.g., shared musical preferences and social identity theory, see, e.g., Tarrant et al., 2001).

Limitations and Directions for Future Research

We recognize that there are limitations to the analyses presented when considering capturing music listening during the pandemic. First, the entire duration of the pandemic is not represented, and research indicates that the general public's psychological state differed over the course of the pandemic (e.g., O'Connor et al., 2021; Sønderskov et al., 2020). Additionally, only one song in the pandemic playlist made direct reference to the pandemic. Future work is still needed to consider the impact of the pandemic on artists' composition processes and subsequent recorded output (e.g., Putter et al., 2022). Furthermore, considering that the pandemic has impacted countries to varying degrees (e.g., research suggesting that poorer countries have seen a greater psychological impact; Ribeiro et al., 2021), future work should incorporate a broader perspective, drawing on data from multiple countries to consider a broader range of music and pandemic experiences.

Moreover, our case study focused on one particular, crowd-sourced playlist made during a COVID-19 lockdown using historical data. We did not collect data from individuals regarding their listening behavior, limiting the generalizability of the present findings. Thus, it falls on future research to continue to examine individual listening practices to continue to build on work examining the efficacy of listening as a coping strategy relative to the environmental security hypothesis and mood management theories. Such work would usefully also consider people's own accounts of the relationship between certain socioeconomic conditions (e.g., the pandemic) and their listening choices.

Strengths of the present study include the comparison of the qualitative and quantitative analyses pertaining to the same playlist. However, the quantitative analyses still relied on computerized analysis of lyrical content and thus may not have fully captured differences between the three sets of songs. As commented on elsewhere, computerized analysis relying on word dictionaries does not capture metaphor and humor (North et al., 2018; Putter et al., 2022), and song sentiment can be more complex than sums of word sentiments (Schotanus, 2020). Future research may quantify differences in lyrics using computational approaches such as data mining and machine learning techniques to further examine these complexities (e.g., Anglada-Tort et al., 2021).

In summary, by examining a crowd-sourced playlist created during the COVID-19 pandemic in response to lockdown, the present study contributes to our understanding of the role of music listening within the context of COVID-19 and with regard to our well-being more broadly. Our results highlight possible differences between the music people include in crowd-sourced playlists and that which is actually listened to. If music listening choices can both reflect and possibly buffer against negative aspects of stressful times, additional research is needed to continue to understand people's listening practices to further understand how music listening acts as a coping tool to promote well-being.

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Contributorship

KP and AK collaboratively developed the study and conducted the data collection with DV. KP and DV conducted the data analysis, with input from AK and AN. KP drafted initial versions of the manuscript, with AK, AN, and DV offering input. All authors collaborated to approve the final version of the manuscript.

Data Statement

Details concerning the playlist, from which some of the study data arises, can be accessed at https://www.smh.com.au/culture/music/the-music-you-chose-to-get-through-this-last-lockdown-stretch-20211007-p58y0t.html. Requests regarding the processed dataset should be directed to Amanda Krause, amanda.krause1@jcu.edu.au.

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The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval

This research did not require ethics committee approval. This research did not involve the use of personal data, fieldwork, or experiments involving human or animal participants, or work with children, vulnerable individuals, or clinical populations.

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ORCID iDs

Amanda E. Krause https://orcid.org/0000-0003-3049-9220
Dianna Vidas https://orcid.org/0000-0003-0574-5610

Supplemental Material

Supplemental material for this article is available online.

Notes

1. Charts provide an ordered list of songs based on their relative popularity, drawing on metrics such as radio airplay, sales data, and streaming activity, depending on the chart in question. Previous research has used chart data when examining song popularity (e.g., North, et al., 2017) as well as lyrical trends (e.g., North, et al., 2018).

2. We acknowledge that a single, crowd-sourced playlist does not represent all playlists, nor do the songs featured in the playlist represent the choices of all who submitted songs for inclusion.

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