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Music for the Seasons: Seasonal Music Preferences in College Students

Terry F. Pettijohn II · Greg M. Williams · Tiffany C. Carter

Abstract The present research examined music preferences in relation to the seasons: fall, winter, spring, and summer. Across two studies, male and female college students (N = 232 and 199) were primed to think about the seasons and indicate their music preference from Rentfrow and Gosling's (2003) music classification scheme. Participants were predicted to prefer *reflexive and complex* music when primed with fall/winter and *energetic and rhythmic* and *upbeat and conventional* music when primed with spring/summer. Study 1 had participants read winter or summer season scenarios and Study 2 had participants write their own fall, winter, spring, or summer seasonal experiences. Overall, results were consistent with predictions for the *reflexive and complex* and *energetic and rhythmic* classifications, indicating an environmental influence of musical preferences.

Keywords Music · Musical preferences · Environment · Seasons

> To everything—turn, turn, turn
> There is a season—turn, turn, turn
> -Pete Seeger of The Byrds, 'Turn! Turn! Turn! (to Everything There Is a Season),' 1962

Since the beginning of civilization, the pervasiveness of music in our everyday lives is outstanding, yet it has been rarely explored in the field of social psychology until

Portions of Study 1 were presented at the 19th Annual Association for Psychological Science Convention in Washington D.C.

T. F. Pettijohn II (✉) · T. C. Carter
Department of Psychology, Coastal Carolina University, P.O. Box 261954, Conway, SC 29528-6054, USA
e-mail: pettijohn@coastal.edu

G. M. Williams
University at Buffalo, The State University of New York, Buffalo, NY, USA

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recently (Rentfrow and Gosling 2003). The music that we listen to often acts as a soundtrack to our emotions and behaviors throughout day-to-day living. No matter where we are, music is close to follow. Whether at parties or weddings, on the car ride to work, at the gym, or alone in our homes, music is part of our social and physical environment. Musical preferences help define our social identity and help convey our personality and interests to others around us (Rentfrow and McDonald 2010). But what type of music do we prefer to listen to and when and why do these music selection preferences change? The current study will consider how the environment, specifically the seasons, can influence the types of music we choose to listen to.

Music Preference Influences

Several past studies have related music preferences to personality, social lifestyles, individual differences, learning, and environmental conditions (North and Hargreaves 2008). Rentfrow and Gosling (2003) conducted a comprehensive study looking at the importance of music in the lives of individuals and the relationship between personality and music genre preferences. Participants reported listening to music frequently in multiple social contexts, and besides hobbies, music preferences were considered the most important aspect of people's lives when it came to identifying themselves with others. Rentfrow and Gosling (2003) had participants complete the Short Test of Music Preferences (STOMP) and through a series of exploratory analyses, they identified four factors organizing 14 music genres. The *reflexive and complex* dimension included blues, jazz, classical, and folk music, which was explained as "structurally complex" and facilitating introspection. Rock, alternative, and heavy metal music, genres that are "full of energy" and promote "themes of rebellion," were grouped in the *intense and rebellious* dimension. The *upbeat and conventional* dimension was described as "structurally simple" and accentuating positive emotions, including the country, pop, soundtrack, and religious genres. Rap/hip-hop, soul/funk, and electronica/dance music genres were organized together in the *energetic and rhythmic* dimension, highlighting music that is "lively" and focuses on rhythm.

Individuals who liked *reflexive and complex* music were politically liberal, imaginative, open to new experiences, and think they are intelligent (Rentfrow and Gosling 2003). Those who like *intense and rebellious* music are risk-takers, physically active, curious, and also consider themselves to be intelligent. *Upbeat and conventional* music listeners are extraverted, agreeable, conscientious, conservative, and view themselves as physically attractive. People who listen to *energetic and rhythmic* music are social, full of energy, liberal, agreeable, and also see themselves as physically attractive (Rentfrow and Gosling 2003). Zweigenhaft (2008) has confirmed Rentfrow and Gosling's (2003) findings, linking general genre dimensions to personality factors, and extended the results to include the relationships between specific genre preferences (i.e., heavy metal, soul, etc.) and personality factors. Further research also shows people confirm stereotypes about different music genre listeners, such as rock fans consuming large amounts of alcohol and drugs (Rentfrow and Gosling 2007; Rentfrow et al. 2009).

Besides personality, other researchers have examined music preferences and lifestyle choices, behaviors, and beliefs. The research of North and Hargreaves (2007a, b, c) suggests that the musical preferences of their sample of music listeners from the United Kingdom correlate with a variety of lifestyle choices. In one study, music fans were asked questions about Internet use, frequency of reading newspapers, magazines and books, television program viewing habits, radio station listening, and other media patterns. Overall, hip hop/rap, dance/house, and R&B music fans preferred low culture, intellectually-undemanding media and fans of classical music, opera, blues, and jazz preferred high culture, intellectually-demanding media (North and Hargreaves 2007c). In another study, music fans were asked questions about travel, personal finances, education, employment, and health. Fans of adult pop and classical music had the highest access to financial resources (stocks, bank accounts, credit cards), whereas hip hop/rap and dance/house music fans had the lowest access. Fans of soul, opera, jazz, classical music, and adult pop also reported the highest incomes, and the same group had the highest proportion of fans with advanced graduate degrees (Masters and PhDs). Hip hop/rap and dance/house music fans reported drinking alcohol the most, whereas fans of musicals, opera, classical, country, and pop music reporting drinking alcohol the least (North and Hargreaves 2007b). Relationships, living arrangements, crime, and beliefs were also related to musical tastes in another study. Fans of country, R&B, soul, hip hop/rap, and dance/house music came from a high proportion of singe-parent families. Fans of classical, blues, and pop music had a high percentage of fans who were currently in a romantic relationship. R&B, dance/house, and hip hop/rap music fans were least likely to own their home whereas opera, country, classical music, and adult pop music fans were most likely to have their own house. Rock music fans were least likely to have been arrested and hip hop/rap fans were the most likely to have been arrested (North and Hargreaves 2007a). Many other interesting findings are presented in these three studies, showing how lifestyles, behaviors, and beliefs are related to music preferences.

Music preferences may also be shaped by early experiences, including parental music influences. Serbun and DeBono (2010) had participants listen to and evaluate songs that were secretly selected from their parent's favorite artists and genres. Participants also completed a measure indicating how warm, nurturing, and supportive they thought their parents were. As predicted, the more students perceived their parents as being warm, nurturing, and caring, the more the students provided favorable ratings to their parents' favorite artists and music genres. Warm, nurturing parenting can have a great influence on children, and in this particular case, their music preferences. Individuals may develop musical tastes through social learning and modeling their parents' musical tastes.

Personality, lifestyle choices, individual differences, and learning may contribute to predicting musical tastes, but these tastes may also change with varying environmental conditions. While Renfrow and Gosling (2003) found the test-retest reliability of the STOMP over a 3 week period was relatively stable, preferences for the specific content of songs within these genres may certainly change, and preferences for other genres may shift depending on additional environmental factors. Indeed, LaMont and Webb (2010) used a diary method to track favorite musical pieces of young adults and found favorite songs changed regularly. Favorite song selection was influenced by

whether the individual heard the song that day or not, suggesting musical preferences fluctuate often and can be easily influenced. Environmental circumstances may help explain some of the variability in musical preferences.

Pettijohn and Sacco (2009a, b) tested the *Environmental Security Hypothesis*, a theory which predicts individuals will prefer more mature and meaningful social stimuli when environmental conditions are threatening (see Nelson et al. 2007, for a review), in the context of popular music preferences. The researchers found that across time, when social and economic times were more threatening (high unemployment rate, low birth rate, high murder rate, low disposable personal income, etc.), *Billboard* number one songs of the year that were longer in duration, more meaningful in content, more comforting, more romantic, and slower were most popular. Music that was slow, comforting, and covers meaningful content, was especially attractive during challenging conditions because this music reflects conditions the listener may be currently experiencing and may assist the listener in dealing with these difficult circumstances by managing emotions and providing useful information. Conversely, music that was fast, less comforting, and less meaningful was more appealing when social and economic conditions were more positive and stable, as a reflection of a worry free time of jubilation and festivity. In related research, LaMont and Webb (2010) interviewed participants about their favorite music choices. Participants reported listening to their favorite songs to influence mood (50%), help with relaxation (38.24%), to help "carry out/enhance the activity I was doing" (32.35%), and to help "create the right atmosphere" (30.88%) as the top choices behind "because I really like listening to it" as responses. As specific song examples, Pettijohn and Sacco (2009a, b) found upbeat, fun, party songs, such as 'At the Hop' or 50 Cent's 'In Da Club' were more popular when times were relatively good compared to slow, serious, reflective music, such as 'Bridge Over Trouble Water' or Elton John's re-release of 'Candle in the Wind (1997)', when times were relatively poor.

The Current Studies

Environmental influences can have an important effect on physiological functioning (Rutter et al. 2001) and decision making. In many cases, our everyday performance is dependant on the physical and social context in which we exist and our physical and mental well-being can be affected by minor alterations in the environment. Changing seasons is one such environmental factor which may contribute to variation in social preferences. Seasons mark changes in the calendar year based on ecology, weather patterns, and daylight hours (Fix 2011; Nelson 2010; Stern 2005). In the U.S., June, July, and August (summer) are the hottest months and longest daylight months. November, December, and January (winter) are the coldest months and shortest daylight months. Animals hibernate and migrate before winter, plants and vegetation grow in the spring and summer and lie dormant or die in the fall and winter. Seasons also evoke different physical and psychological activities, stressors, and emotions.

Specifically for college students, fall represents the beginning of an academic school year and a readjustment from the carefree, and often school-free, days of summer. With daylight savings, clocks "fall back," providing an hour less of

daylight, which feels like losing time to many individuals. Winter brings colder temperatures, shorter days, and snow in certain parts of the country. These environmental changes may lead to emotional changes, including depression or seasonal affective disorder (APA 1994). Seasonal affective disorder is widely believed to be caused by such factors as the availability of light in the area, decrease in potential positive reinforcers in the environment, and an increase in aversive environmental stimuli (Rohan and Sigmon 2000; Rohan et al. 2003). Winter can sometimes isolate individuals and force them to make adjustments to the way they travel and dress to deal with the changing environmental weather. Spring brings new beginnings, including "spring break," a time when many college students travel to warmer, beach destinations to party excessively. With daylight saving time, clocks "spring forward," providing an extra hour of daylight and a change of schedule. Summer provides a vacation for many students from studies, and the warmer weather provides additional opportunities to be outside and engage in more social interactions and activities compared to other seasons.

It is apparent that music and environmental conditions are intertwined, and the current research explores the connections between seasonal conditions and individual music preferences. The purpose of these studies is to determine whether prompting an individual to think about a specific season can elicit different sets of music genre preferences. We predicted winter would lead to a preference for *reflective and complex* music and summer would lead to a preference for *energetic and rhythmic* and *upbeat and conventional* music. Winter is more of a time for reflection and emotional introspection where participants may show an increased preference for blues, jazz, classical, and folk music which are more structurally complex (Rentfrow and Gosling 2003) than other types of music. Winter may also be considered a more threatening season, with respect to cold weather changes and less sunlight. According to Pettijohn and Sacco's (2009a, b) findings, more meaningful music should be preferred in winter if winter is a more threatening season compared to other seasons. Conversely, summer would be the least threatening season. Summer is a time for social activity and celebration where dance music with a focus on rhythm, as highlighted in rap/hip-hop, soul/funk, and electronica/dance music genres of the *energetic and rhythmic* dimension (Rentfrow and Gosling 2003), should be preferred. In addition, the simple structure and positive emotion expressed in *upbeat and conventional* music, including country, pop, soundtrack, and religious music, should also be preferred in the summer. More simple, less meaningful music should be preferred, according to Pettijohn and Sacco's (2009a, b) findings, during periods of reduced social and economic threat, and fun, as in summertime. Preferences for the rebellious and energetic rock, alternative, and heavy metal music genres from the *intense and rebellious* dimension were not predicted to change with the seasons. No season was predicted to elicit preferences for rebellion themes over any other season.

We designed two studies to test our hypotheses in different geographic regions, using different seasonal condition primes. In Study 1, college students from the Northeastern U.S. reported their musical preferences after readings a winter or a summer seasonal condition scenario. In Study 2, college students from the Southeastern U.S. reported their musical preferences after writing a fall, winter, spring, or summer personal seasonal story.

Study 1

Method

Participants

Two hundred and thirty two college students (153 females and 79 males) from a small, private, liberal arts college in northwestern Pennsylvania participated in this study. The average participant age was 19.57 years (*SD* = 3.06, range = 18 − 46). Participants were mainly recruited from psychology courses, and students received partial credit for a research requirement in exchange for participation.

Materials & Procedure

Participants were randomly assigned to read a seasonal condition scenario depicting either a typical winter experience or a typical summer experience (see Appendix for exact wording). These experiences were created by the experimenters, based on common Midwestern and Northeastern U.S. college student experiences. Participants were then asked to report whether the scenario that they had just read was common to their own seasonal experience using a seven point Likert-scale (1 = *strongly disagree* to 7 = *strongly agree*).

After reading the seasonal scenario, participants were asked to choose a single music preference classification they would most like to listen to if the scenario described were happening to them in real life. The four music preference classifications to choose from were derived from Rentfrow and Gosling's (2003) Short Test of Music Preference (STOMP) and included *reflexive and complex* (including the genres classical, blues, folk, and jazz), *intense and rebellious* (including the genres alternative, rock, and heavy metal), *upbeat and conventional* (including the genres country, religious, pop, and soundtracks/theme songs), or *energetic and rhythmic* (including the genres dance/electronica, rap/hip-hop, and soul/funk). We did not use the actual STOMP, which has participants rate each genre and generates scores for each classification area. Instead, we decided to simply provide the four music classification areas, with their associated genres, and allow participants to choose one area to minimize the time and effort required to report music preferences. As a descriptive background variable, participants were also asked how often they listen to music during different seasons, using a seven point Likert-scale (1 = *never* to 7 = *very often*), and their favorite overall genre of music.

Results and Discussion

Agreement ratings verified that the summer (*M* = 4.65, *SD* = 1.68) and winter (*M* = 4.73, *SD* = 1.62) seasonal condition scenarios reflected common experiences of the college students who participated in the study.

A chi-square test for independence was conducted to determine whether there was a relationship between the seasonal condition scenario (winter or summer) and the music preference classification choice (*reflexive and complex, intense and rebellious, upbeat and conventional,* or *energetic and rhythmic*). Consistent with our hypothesis, the

outcome showed that there was a significant relationship between these variables, $\chi^2(3, N = 232) = 49.2$, $p < .001$, $\varphi = .46$ (see Fig. 1). Specifically, a chi-square goodness of fit test was used to compare winter and summer condition scenarios for each of the four music preference classification choices. Participants preferred *reflexive and complex* music more in the winter than in the summer condition, $\chi^2(1, N = 56) = 31.5$, $p < .001$, $\varphi = .75$, 49 vs. 7 cases, respectively, and participants preferred *energetic and rhythmic* music more in the summer than in the winter condition, $\chi^2(1, N = 87) = 15.74$, $p < .001$, $\varphi = .43$, 62 vs. 25 cases, respectively. There were no significant differences when comparing winter and summer scenario conditions on preferences for *intense and rebellious* music, $\chi^2(1, N = 20) = .80$, $p = .37$, $\varphi = .20$, 12 vs. 8 cases, respectively, or *upbeat and conventional* music, $\chi^2(1, N = 69) = 1.17$, $p = .28$, $\varphi = .13$, 30 vs. 39 cases, respectively. While participants did not show a significant preference for *upbeat and conventional* music in the summer as predicted, the results were in the predicted direction. Also consider that the study was conducted at a private college associated with the Catholic Church. Many of the participants may have preferred religious music (one of the genres for the *upbeat and conventional* music classification) compared to other samples, especially in the winter with the Christmas season.

While we did not make specific sex difference predictions, we were interested in whether males and females reported similar music preferences in the seasonal condition scenarios in the current study. We ran a chi-square test for independence, looking at the relationship between seasonal condition scenario and music preference separately for the male sample and the female sample. While the pattern for the males and females was similar, and similar to the overall results, the results were statistically significant for the male sample, $\chi^2(3, N = 79) = 10.79$, $p = .01$, $\varphi = .37$,

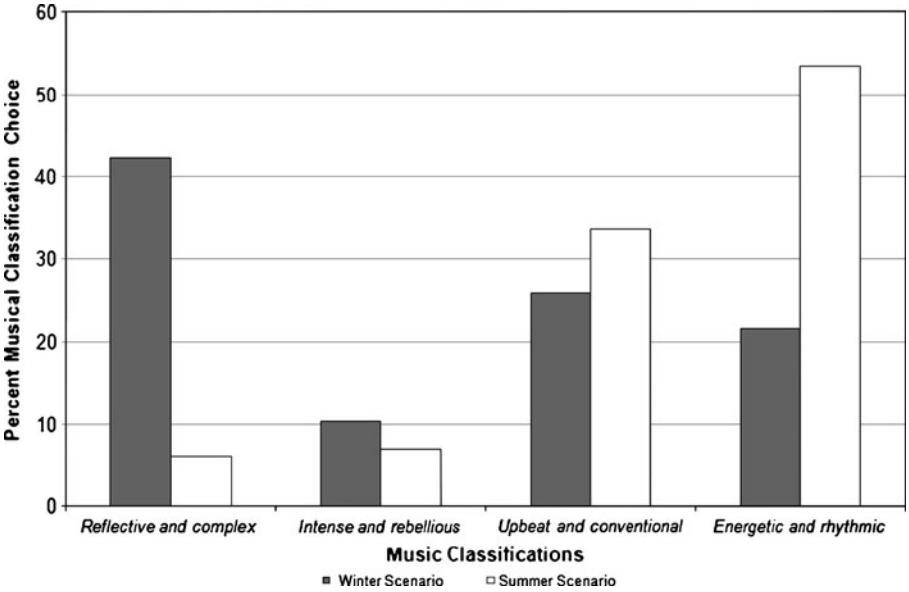

Fig. 1 Mean percentage musical classification choice by seasonal condition scenario, Study 1

but not for the female sample, $\chi^2(3, N = 153) = 3.86$, $p = .28$, $\varphi = .16$. Sex differences will be considered again in Study 2.

With respect to demographics, participants reported listening to music often in all seasons, $M_{fall} = 5.94$ and $SD = 1.24$, $M_{winter} = 6.01$ and $SD = 1.25$, $M_{spring} = 6.02$ and $SD = 1.22$, and $M_{summer} = 6.25$ and $SD = 1.19$. However, students reported listening to music most often in the summer, $F(3, 228) = 12.93$, $p < .001$, $\eta^2 = .05$. Reponses to the question about favorite overall genre of music revealed 20.3% rap/hip-hop, 18.1% country, 17.2% rock, 15.1% alternative, 10.8% pop, 6% soundtracks/theme music, 3.4% jazz, 1.7% heavy metal, 1.7% religious, 1.7% classical, 1.3% folk, 1.3% soul/funk, .9% dance/electronica, and .4% blues.

A limitation of Study 1 was the geographic location of the sample. The current results may be specific to students from the Northeastern part of the U.S. For example, the winter weather the students regularly experience living in Erie, Pennsylvania may be more severe than in other geographic areas of the country. According to Fronner's *Cities Ranked & Rated*, Erie is one of "cloudiest" and "snowiest" places in country (Sperling and Sander 2004). The particular year data was collected, 118.7 in. of snow fell during the season (National Oceanic and Atmospheric Administration 2009), and over 100 in. of snow a season has been fairly regular in recent years. In addition, reading scenarios about typical seasonal experiences may be less effective at priming the seasons than other manipulations that are more personally inclusive. Another limitation was the focus on only winter and summer seasons. Initially, we were most concerned with the summer and winter seasons because of the extreme differences between them. Spring and fall share common characteristics with winter and summer, thus were seen as transitional seasons and were not included in Study 1. These limitations were addressed in the sample selection and design of Study 2.

Study 2

Study 2 was a conceptual replication and extension of Study 1. We wanted to replicate the results of Study 1 with a sample from a different geographic region of the country, using a different seasonal prime, to extend the generalizability of the research. In addition, we wanted to consider how the transition seasons (fall and spring) would influence music preferences, allowing participants to create their own seasonal scenarios to make the seasonal primes more personally relevant. The transition seasons of fall and spring were predicted to produce musical preferences similar to the previously tested winter and summer seasons. This is especially true given the geographic location of the current sample, in the Southeastern U.S., where seasons are not as distinct as in the Northeastern U.S. Furthermore, university classes end in April and students are on "summer break" during the spring months of May and June before summer technically begins. Spring and summer may therefore be naturally combined in the minds of students.

Specifically, similar to Study 1, we predicted participants would indicate a preference for *reflective and complex* music after writing a seasonal condition story about fall or winter, and participants would indicate a preference for *energetic and rhythmic* and *upbeat and conventional* music after writing a seasonal condition story about spring or summer.

Method

Participants

One hundred and ninety nine college students (128 females and 71 males) from a mid-sized public university in the Southeastern United States participated in this study. The average participant age was 19.91 years (*SD* = 3.07, range = 18 − 50). Students had a wide variety of majors, including psychology, marine science, biology, communications, sociology, and others. The majority of students in the sample were Caucasian (76.9%), but also included African American (16.1%), Asian American (1.0%), Hispanic, (4%), Native American (.5%), and three participants who identified themselves as "other." Participants were mainly recruited from psychology courses, and students received partial credit for a research requirement in exchange for participation.

Materials & Procedure

Participants were randomly assigned to one of four different groups (fall, winter, spring, or summer prime) and were then instructed to "describe your typical [insert season here] day from the time you wake in the morning to the time you go to bed at night." After writing the seasonal description, participants were also asked to choose a single music preference classification they would most like to listen to if the scenario described were happening to them in real life. The four music preference classifications to choose from were the same as used in Study 1: *reflexive and complex*, *intense and rebellious*, *upbeat and conventional*, or *energetic and rhythmic* (Rentfrow and Gosling 2003). As a descriptive background variables, participants were also asked how often they listen to music during different seasons, using a seven point Likert-scale (1 = *never* to 7 = *very often*), and whether they typically take college courses over the summer.

Results and Discussion

A review of the responses to the seasonal condition primes revealed that most participants wrote about a paragraph length entry. A one-way ANOVA found the word count for each of the four seasonal condition primes (fall, winter, spring, or summer) was not significantly different, F (3, 195) = .83. p = .48, *M*s = 61.46, 75.90, 73.94, and 68.90, *SD*s = 52.65, 53.32, 59.88, and 30.15, respectively. This result suggests participants wrote a similar-length reaction for each prime, thereby no seasonal prime generated significantly more response.

A chi-square test for independence was conducted to determine whether there was a relationship between the seasonal condition prime (fall, winter, spring, or summer) and the music preference classification choice (*reflexive and complex, intense and rebellious, upbeat and conventional,* or *energetic and rhythmic*). Consistent with our hypothesis, the outcome showed that there was a marginally significant relationship between these variables, $\chi^2(9, N = 199) = 15.48$, p = .08, φ = .28 (see Fig. 2). A chi-square test for independence, using only the original seasonal condition categories of winter and summer used in Study 1 and the music classification choice, found a

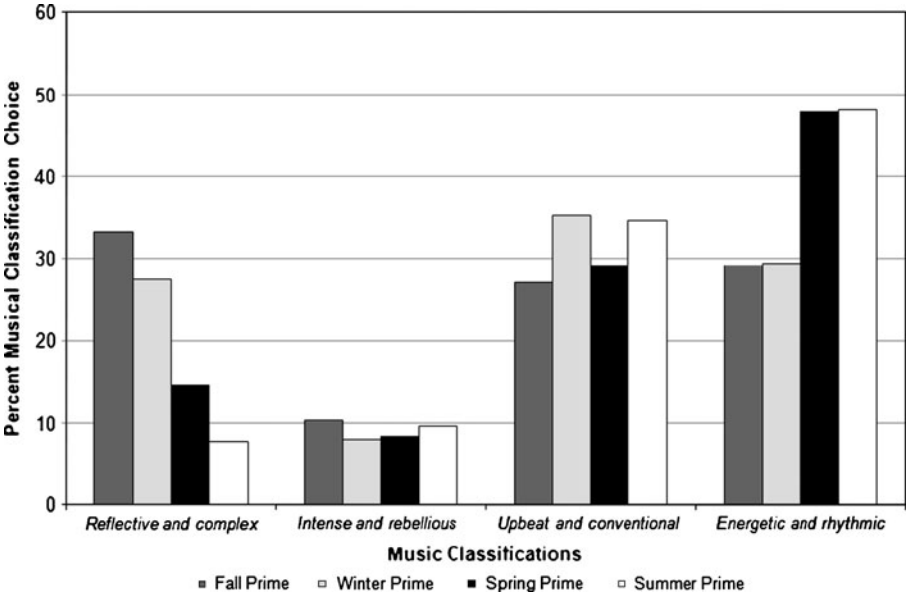

Fig. 2 Mean percentage musical classification choice by seasonal condition prime, Study 2

significant relationship between variables, $\chi^2(3, N = 103) = 8.16$, $p = .04$, $\varphi = .28$, replicating the effect from Study 1. As found in Study 1, participants in Study 2 also preferred *reflexive and complex* music more in the winter than in the summer condition, $\chi^2(1, N = 18) = 5.56$, $p = .02$, $\varphi = .56$, 14 vs. 4 cases, respectively. While participants preferred *energetic and rhythmic* music more in the summer than in the winter condition, $\chi^2(1, N = 40) = 2.50$, $p = .11$, $\varphi = .25$, 25 vs. 15 cases, respectively, this difference was not statistically significant. There were no significant differences when comparing winter and summer conditions on preferences for *intense and rebellious* music, $\chi^2(1, N = 9) = .11$, $p = .74$, $\varphi = .11$, 4 vs. 5 cases, respectively, or *upbeat and conventional* music, $\chi^2(1, N = 36) = .00$, $p = 1.0$, $\varphi = .00$, 18 vs. 18 cases.

Upon examining the pattern of these results for all seasons, we confirmed the similarity between spring and summer and between fall and winter music preferences. We conducted a chi-square test for independence using only fall and winter conditions and the music classification choice and found no relationship, $\chi^2(3, N = 99) = .99$, $p = .80$, $\varphi = .10$ We also conducted a chi-square test for independence using only spring and summer conditions and the music classification choice and also found no relationship, $\chi^2(3, N = 100) = 1.36$, $p = .72$, $\varphi = .12$. Since spring and summer were similar and fall and winter were similar, we combined the fall and winter seasonal condition primes and the spring and summer seasonal condition primes together. Using the combined seasonal condition primes (fall/winter or spring/summer) we found a significant relationship between seasonal condition prime and music preference classification choice, $\chi^2(3, N = 199) = 13.50$, $p = .004$, $\varphi = .26$ (see Fig. 3).

A chi-square goodness of fit test was used to compare fall/winter and spring/summer condition primes for each of the four music preference classification choices. As found in

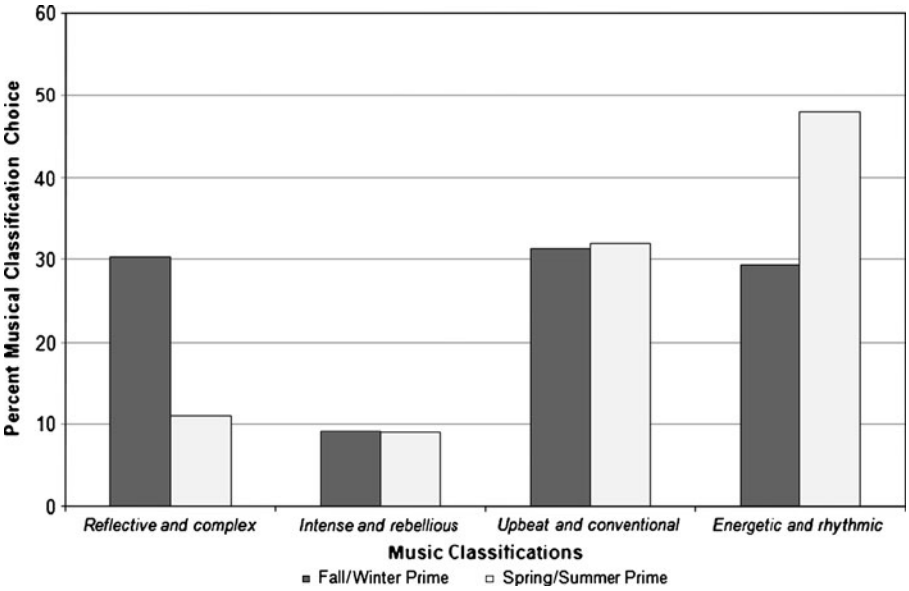

Fig. 3 Mean percentage musical classification choice by combined seasonal condition prime, Study 2

Study 1, participants preferred *reflexive and complex* music more in the fall/winter than in the spring/summer condition, $\chi^2(1, N = 42) = 7.71$, $p = .005$, $\varphi = .43$, 30 vs. 12 cases, respectively, and participants preferred *energetic and rhythmic* music more in the spring/summer than in the fall/winter condition, $\chi^2(1, N = 76) = 4.26$, $p = .04$, $\varphi = .24$, 47 vs. 29 cases, respectively. There were no significant differences when comparing fall/winter and spring/summer conditions on preferences for *intense and rebellious* music, $\chi^2(1, N = 17) = .06$, $p = .81$, $\varphi = .06$, 9 vs. 8 cases, respectively, or *upbeat and conventional* music, $\chi^2(1, N = 64) = .06$, $p = .80$, $\varphi = .03$, 31 vs. 33 cases, respectively. Again, we did not find the predicted preference for *upbeat and conventional* music in the spring/summer season.

While we did not make specific sex difference predictions, we were interested in whether males and females reported similar music preferences in the seasonal condition primes in the current study. We ran a chi-square test for independence, looking at the relationship between combined seasonal condition prime (fall/winter and spring/summer) and music preference separately for the male sample and the female sample. While the pattern for the males and females was similar, and similar to the overall results, the results were statistically significant for the female sample, $\chi^2(3, N = 128) = 11.71$, $p = .008$, $\varphi = .30$, but not for the male sample, $\chi^2(3, N = 71) = 3.12$, $p = .37$, $\varphi = .21$. These sex differences were opposite those found in Study 1, suggesting participant sex may not be consistent in determining seasonal music preferences. Similarly, Rentfrow and Gosling (2003) found no sex differences in their correlations between personality and music preferences. Future studies may choose to examine sex differences in music preferences more precisely.

Participants in the current sample again reported listening to music often in all seasons, $M_{fall} = 6.04$ and $SD = 1.22$, $M_{winter} = 6.01$ and $SD = 1.26$, $M_{spring} = 6.19$ and

SD = 1.08, and M_{summer} = 6.33 and SD = 1.05. Similar to Study 1, students reported listening to music most often in the summer, $F(3, 195) = 15.43$, $p < .001$, $\eta^2 = .07$. The majority of students (71.4%) reported typically taking a break from enrolling in college courses in the summer.

While results were generally in line with predictions, what exactly about the seasonal condition primes leads people to prefer different types of music? We considered the influence of emotion, social activities with friends, work, and leisure opportunities as possible variables that could vary between seasons. The content of the seasonal condition prime responses were analyzed to check for differences between seasonal primes for these variables using the Linguistic Inquiry and Word Count 2007 (LIWC) (2007, liwc.net) software package. Pennebaker et al. (2007) developed the LIWC program to analyze text by counting word usage and calculating the degree to which individuals use different categories of words, such as emotions, and categories relating to psychological processes. Additional details about the development of the LIWC program, its psychometric properties, and specific words within coding categories are available online at www.liwc.net/liwcdescription.php. For our purposes, we were most interested in the LIWC categories of positive emotion, negative emotion, social processes (including family and friends), work, and leisure.

One-way ANOVAs showed statistically significant differences ($p < .01$) between seasonal conditions for all of the LIWC categories except for the negative emotion category ($p = .29$). Subsequent individual comparisons within each category, using the Bonferonni correction method, were conducted. See Table 1 for descriptive statistics and a summary of individual comparison results. Participants expressed the most positive expression words in the spring and summer conditions, and the least positive emotion words in the fall. The most negative expression words were used in the winter, and the least negative emotion words were used in the summer and spring, but these differences were not statistically significant. For example, one student wrote, "During the winter I wake up to a dark sky and freezing. I am usually miserable and groggy, I proceed to drag myself to school and remain half asleep through more than half the day. . ." Social processes were written about most in the summer and spring, and least in the winter and fall. Summer is a very social time for

Table 1 Linguistic Inventory and Word Count (LIWC) analysis and descriptive statistics for selected categories by seasonal condition primes, Study 2

	Seasonal condition prime M (SD)			
LIWC category	Fall	Winter	Spring	Summer
Positive emotion	1.64 (1.74)[a]	3.20 (3.31)[b]	3.77 (3.39)[b]	3.33 (2.35)[b]
Negative emotion	.20 (.73)	.34 (.93)	.11 (.46)	.12 (.44)
Social processes	2.19 (2.74)[a]	2.29 (3.19)[a]	3.71 (3.81)	4.06 (3.70)[b]
Work	11.04 (12.45)[a]	4.54 (4.14)[b]	4.57 (3.56)[b]	3.82 (3.34)[b]
Leisure	2.63 (2.58)[a]	3.75 (5.17)	6.37 (8.22)[b]	4.62 (4.70)

N = 199. Significant individual comparison results are denoted by non-matching letters within category rows, $p < .05$

many of the students, with less rigid schedules then when school is in session. Also consider the current sample was taken from a university in close proximity to Myrtle Beach, South Carolina, with an abundance of entertainment opportunities. As one student wrote, "I get up around one in the afternoon and go the beach or pool, have something to eat, then go home, shower take a nap, go meet up with my friends later."

Students mentioned work much more frequently in the fall than in the other seasonal conditions. Leisure activities and plans were shared most often in the spring and summer, and least often in the fall and winter seasonal conditions. In the summer months, having more free time, not having to deal with the demands of college classes, having more social activities, and generally having a less structured schedule may contribute to a greater preference for music that is more *energetic and rhythmic*. During the fall and winter, managing work, school, and negative emotions that are related to the cold and cloudy weather may lead to a greater preference for music that is *reflexive and complex*. More specific investigations of how different types of music preferences are related to emotions, weather, and social activities in different seasons may be conducted in the future.

General Discussion

Overall, the results of Studies 1 and 2 support our general predictions. College students from two different geographic regions in the U.S., exposed to two different types of seasonal primes, preferred *reflective and complex* music after thinking about fall or winter seasons and preferred *energetic and rhythmic* music after thinking about spring or summer seasons. Although we also predicted *upbeat and conventional* music would be favored after thinking about spring or summer, we did not find support for seasonal variations in musical choice for this music classification type. This research shows college students prefer blues, jazz, classical, and folk music during the fall and winter months, rap/hip-hop, soul/funk, and electronica/dance music during the summer months, and pop, country, religious, and soundtrack music across all seasons.

Upbeat and conventional music includes the genres of pop, country, religious, and soundtrack music. Pop music is considered more mainstream, available, and recognizable compared to country, religious, or soundtrack music genres that have their specific audiences. Pop music is more diverse in its artists, music, and song themes than other genres, and therefore its appeal may be more universal. Pop music may be a preferred music genres at *all* times during the year, and this appeal may partially explain why *upbeat and conventional* music was chosen often and equally across the different seasonal conditions.

Preferences for more serious, complex *reflective and complex* music during the more taxing fall and winter seasons and preferences for the more lively, active *energetic and rhythmic* music during the more relaxed spring and summer seasons is consistent with previous research (Pettijohn and Sacco 2009a, b) and the *Environmental Security Hypothesis*. When times are more difficult, individuals choose social media which reflect the current environmental conditions. Meaningful songs are preferred in the fall and winter and dance songs are preferred in the spring

and summer. Environmental influences can help explain why and when people like certain types of music.

Implications for application of these results are vast. The findings from these studies could be used to predict when consumers are most likely to purchase certain genres of music or the most effective time for artists or record companies to promote specific classification of music. As an example, it may be beneficial for musical artists to release dance songs in the spring and summer and more meaningful ballads in the fall and winter. Marketing may also apply these results by pairing products with certain genres of music in ads that run in different seasons. For example, car companies may endorse the fun and social benefits of purchasing their vehicle while playing an *energetic and rhythmic* song in the summer. Music could also be combined with cognitive behavioral therapy to counteract the effects of seasonal affective disorder (SAD). Knowing that individuals are more drawn to *reflective and complex* in the fall and winter months, this deep introspection may lead to further isolation and depression for individuals experiencing SAD. By providing more upbeat, fun, and energetic musical options for patients to listen to, therapists may be able to help patients reduce some of the negative effects of SAD and help them manage their emotions.

Limitations and Future Directions

We recognize the limitations of our studies, including the seasonal condition primes and the music classification choices used. Alternative season primes could be utilized in future research, such as photographs depicting a location in fall, winter, spring, and summer. We would anticipate results similar to what were found with our two methods of manipulating seasonal primes. A more direct option might be to investigate music preferences of individuals while they are experiencing the actual seasons. A diary type method, similar to the one used in LaMont and Webb's (2010) research, could be used across an entire year to see changes in favorite music and music listening trends. Another option for future research could be to investigate *Billboard* song variations with the seasons to see if more serious songs top the charts in the fall and winter and more fun, dance tunes are number one in the summer. Alternative seasons could also be considered in future research to coincide with cross-cultural traditions, weather patterns, and regional events (Duncan 2001). For example, the East Asian calendar recognizes 24 solar terms related to solstices and equinoxes (Cormack 2003; Hong Kong Observatory 2010). The specific elements of the seasons which dictate musical preferences should also be addressed. The seasonal scenarios used in Study 1 and the seasonal stories written by students in Study 2, combined several seasonal factors (i.e., weather, social activity, emotions, work) that could be individually manipulated and explored in future experiments of musical preferences to isolate specific variables effects.

Emotional experiences and mood management could also be explored in future research on music preferences (Juslin and Sloboda 2010). Previous research has found that individuals choose music that matches their current mood state (Knobloch and Zillmann 2002; North and Hargreaves 1996). For example, an individual who is feeling happy might listen to an upbeat pop selection and someone who feels down

or sad might choose to listen to the blues. Rentfrow and Gosling (2003) did not find evidence that chronic emotional states (i.e., emotional stability, self-esteem, and depression) are related to music preferences. However, they do note that both positive and negative emotions are expressed in the *reflexive and complex* dimension, intense negative emotions are part of the *intense and rebellious* dimension, the *upbeat and conventional* dimension includes mostly positive emotions, and the *energetic and rhythmic* dimension exhibits less positive and negative emotions compared to other dimensions. Recall the analysis of seasonal stories from Study 2 revealed participants wrote about positive expression words in the spring and summer conditions, and negative expression words were used most in the winter. If mood was the only factor influencing music selection, participants should have chosen *upbeat and conventional* music in the spring and summer since they were happier, and *intense and rebellious* music in the winter because they were more negative. This was not the case with our results. Clearly there are more variables interacting to produce music preferences in different seasons, and these results cannot be explained by a mood effect alone.

The music preference classification dimensions used in the current study were based on research by Renfrow and Gosling (2003) and provide broad, reliable, preference clusters. Individual music genre preferences within these dimensions, or even specific artist or song choices, may be investigated in the future. With broad classifications, we are uncertain which genre of music participants were most interested in listening to, and in some cases individuals may have liked a couple of the genres and even disliked one the genres they selected. For example, someone may have preferred country music but disliked rock, although they are both included in the *upbeat and conventional* classification dimension. It should also be noted that the STOMP has been recently updated with additional music genre alternatives. The STOMPR (Rentfrow and Gosling 2010) now includes 23 genres, including the addition of bluegrass, oldies, and international/foreign genres, and is available online. Participants may also have chosen music preferences based on the terms used in describing the dimensions instead of the specific genres associated with them, and these terms may offer additional information about music preferences. For example, music within any genre could potentially vary in terms of its simplicity, seriousness, tempo, and content. Rock music could be reflexive or rebellious or energetic depending on the selection. Further refinement of music preference options should be considered and samples beyond college students should be examined.

Past experiences within different seasons, connected with different types of music, may also be an interesting area of future research exploration. Similar to Lampinen et al.'s (2005) notion that memory involves the recollection of the perceptual, contextual, emotional, and cognitive features of the original place or event, music that was listened to in previous seasons may have been recalled and associated with the season. Korenman and Peynircioglu (2004) and Dalgleish et al. (2001) have found that listening to music can often cue the recollection of episodic memory and metamemory of a stimulus that was present at the same time; thus associating positive and negative memories with specific seasons. Listening to a simple compellation of musical instruments or insightful lyrics in a favorite song could conjure memories of a certain time or place in which that song is most readily associated with. For example, listening to music by the Beach Boys may conjure

memories of a sunny day on the beach, or listening to Bach may bring back memories of a cold winter night harkened to the fire. Recent research on the effect of music-evoked nostalgia (Barrett et al. 2010) may also be relevant to the connections between past seasons, music, and memories.

Conclusion

The current research provides new insights into the seasonal music preferences of college students in the United States. College students listen to music quite frequently, especially during the summer season. Music selection reflects seasonal influences, demonstrating the importance of environment in determining music preferences. To every song there is a season. There is a season we prefer music that makes us laugh and dance, and there is a season we prefer music that makes us cry and lets us mourn. Research development of this topic has great potential and its application to the music industry, marketing, therapy, and other areas could prove to be a promising research endeavor.

Appendix

Summer and Winter Seasonal Condition Scenarios, Study 1

Summer Seasonal Condition Scenario

It is the middle of July, and you wake up to the sounds of birds chirping. Although you need to go to work, it is a beautiful Saturday and the sun is shining. You wake up, shower, eat breakfast, hop into your car and your day has begun. You roll your windows down to catch a cool breeze in your warm car on the way to work. After a long day at work, you return home to have a quick dinner, and then you're back out to meet up with some friends at the park. After an enjoyable afternoon outside with your friends, you all decided to go out for some ice cream to cool off. After ice cream, you decide to go back to a friend's house and take a late night dip in the pool to relax, a perfect end to a warm summer day.

Winter Seasonal Condition Scenario

It is middle of January. The snow is piled high and the wind is blowing hard, which makes the frigid temperatures even colder. As you bundle up for your short walk to class, you notice that the sidewalks are covered with ice and snow drift. Reluctantly, you leave you apartment and make your way to your Tuesday morning class. On the way, the wind blows snow in your face and as you look up, you see that the sky is grey. After class, you return back to your apartment to eat lunch before you go to work. You get bundled back up to go scrape and warm up your car before your departure. On your drive to work, you take extra precaution due to slow traffic and icy conditions. After work, you return home to take a warm shower and settle in for some studying in your room. After a long day you crawl into bed, pull your blankets in tight, and call it a night.

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