Does music affect citizens' evaluations of candidates?

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Abstract. **While some candidates use music in some of their campaign ads to shape individuals' perceptions of their competence or compassion, for example, it is unclear whether the relationship between music and trait perceptions is empirically valid. Considering the importance of knowing where trait perceptions—which represent important determinants of the vote—come from and the extent to which it is possible to manipulate trait perceptions by means of music, this study investigates the effect of music on trait perceptions using data from an online survey experiment conducted between October 30 and November 12, 2020. In this experiment, 362 individuals were exposed to a random sequence of five campaign ads, either with their original music or with no music. Following each campaign ad, individuals were asked to evaluate the candidate's competency, honesty, leadership, and compassion. The analyses reveal that music marginally affects perceptions of competency, honesty, and leadership. Moreover, music exerts no significant effect on perceptions of compassion.**

Key words: Political Science, Music, Experiment, Communication

Music represents a key element of modern campaign ads. In fact, many candidates use either upbeat or melancholic music in some of their campaign ads because they believe that music—like images—can shape individuals' perceptions regarding, for instance, their competence or compassion (Brader, 2005; Holtz-Bacha & Just, 2017). However, is this belief empirically valid? That is, does music affect trait perceptions? Answering this question is key because it would further our knowledge of where trait perceptions—which represent important determinants of the vote (Campbell et al. 1960; Funk & Carolyn, 1999; Hayes, 2009)—come from. Moreover, considering that music may be used to manipulate public opinion and push individuals to vote for a candidate who does not reflect their best interests, it is crucial that we understand whether music is effective, or not, at shaping trait perceptions.

This article investigates the relationship between music and trait perceptions. It does so using data from an online survey experiment conducted between October 30 and November 12, 2020. In this experiment, individuals were exposed to a random sequence of five campaign ads, either with their original music or with no music. Following each campaign ad, individuals were asked a battery of questions tapping their perceptions of the five candidates on the four most relevant trait dimensions (competence, honesty, compassion, and leadership) (Geer, 2006; Kinder, 1986).[1,2]

In line with prior work (Thorson et al., 1991), the results suggest that music marginally affects perceptions of competency, honesty, and leadership, implying that individuals are not much more likely to perceive a candidate as competent, honest, or a strong leader when they are exposed to campaign ads with their original music than when they are exposed to the same ads with no music. Moreover, music exerts no significant effect on the degree to which individuals perceive a candidate as compassionate. Importantly, these results hold when we

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[1]Not only are these the most common trait dimensions in the literature (Kinder et al., 1980; MacKuen et al., 2001), there is evidence that other candidate traits map onto competence, honesty, compassion, and leadership. Indeed, Kinder (1986) performed a factor analysis of a long list of traits that would qualify the "best" and the "worst" president in the public's eyes, and he revealed that the list can be reduced to four dimensions: competence, honesty, compassion, and leadership.

[2]Competence refers to how capable a candidate is to perform a public role (Fenno, 1978). Honesty pertains to how likely a candidate is not to use public funds or his or her position for her own benefit (McCurley & Mondak, 1995). Compassion regards how concerned a candidate is about the well-being of different groups, especially those that are traditionally marginalized (Prysby, 2008). Finally, leadership pertains to the capacity of a candidate to influence political decisions without the use of force (Rapoport et al., 1989).

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look at the effect of music on trait perceptions with data from each campaign ad: in only 3 out of 20 cases, the relationship between music and trait perceptions reaches statistical significance.

With these findings, this study advances knowledge on the relationship between music and trait perceptions. More specifically, it offers evidence that, unlike images, music may not represent a source of trait perceptions. Therefore, this study suggests that music may not serve to manipulate public opinion and, in this sense, push individuals to vote for a candidate who does not reflect their best interests.

Does music affect trait perceptions?

Within the psychology and political science fields, there is indirect evidence that music can affect trait perceptions. In fact, prior work in those fields showed that music can affect emotions and, in turn, emotions can influence trait perceptions. Beginning with the first causal link (between music and emotions), research showed that Mahler's and Mozart's music can generate a strong emotional reaction in its listeners (Niedenthal & Setterlund, 1994) (see also the work of Baumgartner et al., 2006; Suguna & Deepika, 2017; Västfjäll, 2002). Research revealed as well that brain regions normally associated with emotional activity—the amygdala and the hypothalamus—are both activated with exposure to music (Sachs et al., 2015), a reaction that emerges in only a few seconds (Bachorik et al., 2009). Finally, comparing different types of emotion stimuli, Krumhansl (1997) found that music not only induces emotions but does so more strongly than images.

With respect to the second causal link (between emotions and trait perceptions), prior work provided evidence that emotions affect the extent to which individuals seek new information. More precisely, when individuals feel enthusiastic in a given context, they are likely to rely on habitual responses. By contrast, when they feel fear, they are likely to "stop ongoing action, shift attention to new stimuli (and) uncouple reliance on habit" (Marcus et al., 2000, p. 54). In addition to triggering a process of information seeking, research showed, emotions also affect how individuals evaluate a candidate. More specifically, Isbell and Wyer (1999) and Yamasaki et al. (2015) showed that exposure to a happy stimulus results in more favorable evaluations of a candidate than exposure to a sad stimulus or no stimulus. Following this body of work—specifically, the evidence on the connection between music and emotions, and between emotions and traits perceptions—we derive the following hypothesis: *music can affect individuals' trait perceptions.*

To the best of our knowledge, one study tested the connection between music and trait perceptions empirically: Thorson, Christ, and Caywood (1991). These scholars examined the impact of music on trait perceptions by means of a lab experiment with 161 undergraduate students from the communications department of a large midwestern university. In this experiment, those in the treatment condition watched four senatorial ads with an upbeat, voiceless, patriotic song.[3] By contrast, those in the control condition watched the same ads with no song. The authors observed no statistically significant difference in how candidates were perceived by the treatment and the control groups, which led them to conclude that music bears no influence on trait perceptions.

While we acknowledge the important contribution of Thorson, Christ, and Caywood (1991) to the understanding of whether and the degree to which music can affect trait perceptions, there is good reason to be skeptical about their null findings and to believe that more research is needed before any firm conclusion is made on the topic. More precisely, one of the key problems in their study is that the authors did not use the original music from the ads as the treatment. As a result, individuals may not have perceived the treatment as realistic because of the incongruence between the music and the images, affecting the overall validity of the experiment.

The experiment

This study examines the relationship between music and trait perceptions by means of an online survey experiment conducted between October 30 and November 12, 2020, with either the original music from campaign ads (the treatment condition) or no music (the control condition) (see Appendix A in the supplementary material online for an overview of the experimental design and Appendix B for the experimental protocol).[4]

[3]The ads were sponsored by Phil Gramm, Gordon Humphrey, Ray Shamie, or John Warner. The name of the song was not provided by the authors.

[4]The ads were sponsored by Rick Santorum, Ben Carson, Jeremy Corbyn, Bill English, or Pete Buttigieg. Rick Santorum and Ben Carson were contenders for the Republican presidential nomination in 2012 and 2016, respectively. Jeremy Corbyn is the former leader of the

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Following each campaign ad, individuals in both treatment and control conditions were asked to evaluate the candidates regarding their competency, honesty, leadership, and compassion.[5] Importantly, this experiment was conducted in Canada, where individuals feel less attached to a political party and are more likely to switch their vote between elections (Bischoff, 2013). While examining the relationship between music and trait perceptions in highly partisan and volatile contexts seems relevant, it adds a complexity to the study of that relationship that is beyond the scope of this study.

The experiment was conducted with 362 individuals (yielding 1,810 observations) who were recruited by means of Prolific, based on four criteria: (1) absence of a hearing or a visual impairment, (2) good internet connection and a functional audio and visual interface, (3) no affiliation with a political science department (either as a student or as a professor), and (4) fluency in French.[6,7,8] The first two criteria (absence of a hearing or a visual impairment, and good internet connection and a functional audio and visual interface) were established because being able to see the candidates and hear the music in the campaign ads is imperative in the context of this study. By contrast, the third and the fourth criteria (no affiliation with a political science department, and fluency in French) were established to reduce the risk of prior knowledge of the candidates. The 362 individuals who satisfied those four criteria were paid $5.90 Canadian dollars each, which corresponds to almost half (47 percent) of the minimum wage in the Canadian province of Quebec.[9,10]

To avoid potential biases in the treatment estimates, the experiment included ads featuring only non-Canadian politicians (who should be unknown to participants) and containing no party references. Moreover, the ads were played in a random order to reduce the risk of between-treatment contamination. Finally, in line with Kroodsma (1990) and Machlis et al. (1985), the ads contained different music styles as well as different times of exposure to the candidates and to the music. More precisely, Ben Carson's ad included an original piano-based, voiceless, melancholic song, and Carson appeared in 9 seconds of a 59-second video; Rick Santorum's ad included an original guitar-based, voiceless, upbeat song, and Santorum appeared in 51 seconds of a 1-minute, 4-second video; Pete Buttigieg's ad included an original electronic, voiceless, upbeat song, and Buttigieg appeared in 14 seconds of a 29-second video; Bill English's included an original folk-inspired, voiceless, upbeat song, and English appeared in 27 seconds of a 1-minute, 59-second video; lastly, Jeremy Corbyn's ad included Lilly Allen's version of "Somewhere Only We Know," and Corbyn appeared in 26 seconds of a 1-minute, 45-second video. Therefore, the results are unlikely to be contaminated with pseudo-replication bias.

With these elements from the experimental design in mind, the results from balance tests suggest a successful randomization of participants in either the treatment or the control group. As shown in Table 1, there is no significant difference between the two

British Labour Party. Bill English is the former prime minister of New Zealand. Pete Buttigieg was contender for the Democrat presidential nomination in 2020 (see Appendix C for images of the five campaign ads).

[5]In this study, trait perceptions were measured as in Bittner (2015). Specifically, "Please indicate on a scale of 0 to 10, where 0 means 'not at all' and 10, 'very well,' how much of the following terms describe the candidate in the political advertisement. Competent; Honest; Strong leader; Compassionate."

[6]Cohen (1988) argued that a standardized between-group difference within the range of 0.25–0.50 may be considered a small-size effect; 0.50–0.75, a medium-size effect; and over 0.75, a large-size effect. Based on this classification, which has been used in the political science literature (Krupnikov & Levine, 2014; Mullinix et al., 2015), we calculated the number of respondents that would allow the estimation of a moderate-size effect that is close to the 0.50 threshold in Cohen's classification, with a 5 percent chance of rejecting the null hypothesis, when there is no difference, and 80 percent chances of detecting a difference, where there is, indeed, one. We found that at least 250 participants would allow estimating such effect.

[7]Prolific is a British-based survey company that facilitates the task of recruiting participants to a study. More precisely, researchers use the Prolific platform to advertise their study to a pool of preregistered individuals and, in this way, recruit participants to their study (see Shmargad & Klar, 2020, for a recent application of Prolific in experimental research).

[8]Participants in our experiment may have some knowledge of English given that their communication with Prolific (the online survey platform) was made in English.

[9]From a total of 471 participants who were initially retained for the experiment, 109 participants ended up being excluded because they did not meet those criteria, they finished the experiment in less than four minutes, or they left the experiment before watching the first ad.

[10]Despite this monetary compensation, the experiment still included participants who are younger, more educated, and more left-wing than the 2019 Canadian Election Study (CES): the average age is 29 in the experiment, and 54 in the 2019 CES; the average education (measured by the question "Can you indicate your highest level of education completed?") is 0.45 in the experiment and 0.37 in the 2019 CES; and the average ideology (measured by the question "Where would you place yourself on a 0–10 scale, where 0 means 'extreme left,' and 10, 'extreme right'?") is 0.39 in the experiment, and 0.51 in the 2019 CES. However, given our focus on between-group differences, this should not affect the validity of the experiment. Furthermore, there is no good reason to expect that the results would be different with a different sample (see Appendix D for some descriptive statistics of the experimental sample).

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Table 1. Balance tests of the experimental sample.

	Treatment group	Control group	Difference
Political ideology	0.38	0.40	–0.02
	(0.02)	(0.02)	(0.03)
N	185	175	360
Political interest	0.52	0.55	–0.03
	(0.02)	(0.02)	(0.03)
N	186	176	362
Age	29.45	28.77	0.69
	(0.95)	(0.73)	(1.21)
N	186	176	362
Education	0.43	0.47	–0.04
	(0.02)	(0.02)	(0.03)
N	182	176	358
Gender	0.50	0.50	0.00
	(0.04)	(0.04)	(0.05)
N	183	173	356

Notes: Results from two-tailed *t*-tests with participants as the unit of analysis. Differences are calculated by subtracting the mean value in the treatment group from the mean value in the control group. * $p < .05$; ** $p < .01$; *** $p < .001$. Standard errors in parentheses.

Table 2. The impact of music on trait perceptions.

	Treatment group	Control group	Difference
Competency	0.57	0.55	0.02*
	(0.00)	(0.00)	(0.01)
N	875	823	1,698
Compassion	0.62	0.60	0.02
	(0.01)	(0.01)	(0.01)
N	875	824	1,699
Honesty	0.57	0.55	0.02*
	(0.01)	(0.01)	(0.01)
N	875	824	1,699
Leadership	0.58	0.55	0.03*
	(0.01)	(0.01)	(0.01)
N	879	820	1,699

Notes: Results from two-tailed *t*-tests. Differences are calculated by subtracting the mean value in the treatment group from the mean value in the control group. * $p < .05$; ** $p < .01$; *** $p < .001$. Standard error in parentheses. For the impact of the music from each campaign ad, see Appendix E in the supplementary material.

groups regarding key attitudinal and sociodemographic factors. Specifically, individuals in the treatment group and those in the control group are, on average, equivalent when it comes to the extent to which they are interested in politics, their ideological position, their level of education, their age, and their gender.[11] Therefore, the following estimations of the impact of music on trait perceptions are based on conventional two-tailed *t*-tests, which are conducted first with the pooled experimental data and then with ad-specific data. Importantly, the analyses exclude those who knew the candidate before the experiment[12] or did not pay sufficient attention to the campaign ads.[13]

The results

Table 2 presents the results of the online survey experiment with the pooled data. They reveal a statistically significant difference between the treatment and the control groups in three of the four trait perceptions that are measured in the context of this study. Specifically, individuals who were exposed to campaign ads with their original music are more likely to perceive candidates as competent, honest, and a strong leader than individuals who were exposed to the same campaign ads but with no music. Yet these differences are substantially small: they vary between .02 and .03 points in a 0–1 scale.

Importantly, the results are not different when we analyze differences with respect to each specific ad: in fact, in only three of the 20 ad-trait combinations, the effect of music reaches statistical significance. More specifically, those who were exposed to the music from Buttigieg's campaign ad are more likely to evaluate that candidate positively when it comes to the competency and the honesty dimensions than those who were not exposed. By the same token, those who listened to the music from English's campaign ad are more likely to see that candidate as compassionate than those who did not (see Appendix E). In most cases (17 of the 20 ad-trait combinations), however, music bears no influence on how individuals evaluate the candidates.

Additional tests suggest that music does not affect the candidates' likability or participants' willingness to vote

[11]Political interest was measured by the question "How interested are you in politics in general?"

[12]Prior knowledge of the candidate was measured by the question "Please indicate how much you knew the candidate before watching the ad." Those who answered "a lot" or "enough" after Corbyn's ad were subsequently asked, "Is this candidate for or against abortion?" and "Is this candidate for or against same-sex marriage?" After Santorum's ad, "Is this candidate for or against teaching the evolutionary theory in public schools?" and "Is this candidate for or against the promotion of traditional values?" After Corbyn's ad, "Is this candidate for or against more public spending?" and "Is this candidate for or against more immigration?" After English's ad, "Is this candidate for or against secularism?" and "Is this candidate for or against more rights for the indigenous people?" Finally, after Buttigieg's ad, "Is this candidate for or against universal health insurance?" and "Is this candidate for or against the use of more green energy?"

[13]Attention to the campaign ads was measured by one of the following questions: "Is the candidate in the ad young or old?", "Is the weather in the ad sunny or rainy?," "Is the candidate in the ad a man or a woman?," "Does the ad show the candidate in front of a crowd?," or "Does the ad show images of the nature?"

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for the candidates in a hypothetical election.[14] As shown in Appendix F, the difference between those who are exposed to music and those who are not fails to reach statistical significance when it comes to both likability and willingness to vote. Furthermore, in one of the 10 ad-trait combinations, the treatment estimate stands out as significant: as expected, those who watched Buttigieg's campaign ad with music are more likely to vote for him in a hypothetical election than those who watched the same ad without music. Given that a candidate's likeability and individuals' willingness to vote for a candidate are correlates of trait perceptions, these results provide additional support to the view that music may exert a marginal (or no) influence on trait perceptions.

Discussion and conclusion

This study explored a common assumption in politics: that music can shape the way in which candidates are perceived by the public. To this end, it relied on an online survey experiment exposing participants to a random sequence of five campaign ads, either with their original music or with no music. This study showed that music marginally affects individuals' perceptions of candidates on three trait dimensions: competence, honesty, and leadership. It also showed that music exerts no significant effect on perceptions of compassion.

Why does music exert a marginal (or no) effect on trait perceptions? While providing an answer to this question is out of the scope of this study, we still conducted additional tests with a reduced version of the Positive and Negative Effect Schedule (PANAS) tapping four emotions (anger, anxiety, enthusiasm, and sadness).[15] As Appendix G suggests, it is possible that music is not able to change how individuals feel when it is an element of campaign ads. In fact, individuals assigned to the treatment group are not, on average, statistically different from those assigned to the control group when it comes to how much they feel angry, anxious, enthusiastic, or sad (for the impact of emotions on trait perceptions, see also Appendix G). Note, however, that this exploratory analysis was carried out beyond the purview of the preregistered pre-analysis plan. Furthermore, we are cautious about drawing any firm conclusion about the connection between music and emotions as a better question may ask individuals how they feel with respect to each campaign ad in the experiment, not how they feel in general.

Having said that, it is quite interesting that music marginally affects trait perceptions. While we took many precautions to best assess the impact of music on trait perceptions, our survey experiment is still limited in some respects. Most importantly, it is possible that individuals assigned to the treatment group did not listen to the music in the campaign ads, and therefore did not receive the treatment. To ensure this would not happen, participants in the treatment group were asked to confirm (before the experiment began) that they were able to watch the campaigns ads and that they could listen to the music in those ads. In addition, participants were asked a series of attention checks, including "Is the candidate in the ad young or old?," "Is the weather in the ad sunny or rainy?," or "Is the candidate in the ad a man or a woman?" While we expect noncompliers to be the exception in our experiment, we cannot rule out this possibility.

Despite this potential limitation, this study makes a contribution. It furthers our understanding of whether a common non-verbal element in campaign ads (music) can influence the way in which citizens perceive candidates. In other words, if music represents a source of trait perceptions. Given the link between music and emotions (Bachorik et al., 2009; Baumgartner et al., 2006; Krumhansl, 1997; Niedenthal & Setterlund, 1994; Suguna & Deepika, 2017) and between emotions and trait perceptions (Isbell & Wyer, 1999), it seems obvious that music can shape trait perceptions. Yet our research suggests that music may in fact not influence individuals' trait perceptions.

From the perceptive of electoral democracy, the weak (or null) relationship between music and trait perceptions is good news. The reason is that while some candidates may use music in their campaign ads to more easily inform the citizenry about their actual traits, other candidates may use it to mischaracterize some of their traits or even to create traits that are not real. Furthermore, while we do not reject the usefulness of non-verbal cues in helping individuals to have an opinion about a candidate and to make a decision about who they should vote for, there is a risk that individuals are influenced unconsciously by the music from the campaign ads and, consequently, that they

[14]Candidate's likability was measured by the question "On a scale of 0 to 10, where 0 means 'not at all,' and 10 means 'a lot,' please indicate how much you like the candidate." Vote intention was measured by the question "Would you vote for this candidate?"

[15]The question covering those four emotions was asked after each campaign ad: "Please indicate how you feel right now. Anxious; Enthusiastic; Sad; Angry."

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end up voting for candidates who are not in line with their political preferences.

In addition to making those contributions, this study opens many avenues of research. More specifically, this study shows that the music from campaign ads whose goal is to foster positive evaluations of a candidate does not affect (or marginally affects) trait perceptions. Yet it is possible that music is more influential on trait perceptions in the context of campaign ads whose goal is to foster negative evaluations of a candidate. Future research may build on this study and examine this possibility, providing evidence on whether and the degree to which our findings generalize to other types of campaign ad (including those that are sponsored by female candidates).

Future research might also explore whether and the degree to which music yields physiological responses on the part of individuals or activates certain parts of their brain. While we do not expect a different conclusion regarding the relationship between music and trait perceptions, this research would further our knowledge of why that relationship proves itself to be empirically weak (or inexistant).

To conclude, the key message from this study is that, despite the use of music by some candidates as a way of influencing how citizens perceive them, music seems to play a limited (or no) role in that respect. From this perspective, music may not represent a tool with which campaign ads may shift public opinion. It may capture the attention of individuals or facilitate the task of remembering a candidate, but it seems unable to shape the way in which individuals perceive candidates regarding their competency, honesty, leadership, and compassion, important determinants of the vote.

Supplementary Materials

To view supplementary material for this article, please visit http://dx.doi.org/10.1017/pls.2021.22.

Competing Interest

None.

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