

Social music: Investigating the link between personal liking and perceived groove

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Abstract

Integrating methods from experimental social psychology and music perception, we tested the hypothesis that when listeners personally like a musician, they will be more inclined to experience his or her music as both provoking movement and as subjectively pleasurable, the two core features of perceived groove. In Experiment 1, participants were exposed to a set of moderately-syncopated, high-groove drum-breaks which they were led to believe were either produced by a relatively likable or unlikable musician. In line with predictions, participants led to find the musician more versus less likable rated the same drum-breaks as more evocative of both the urge to move and of feelings of pleasure. When participants in a follow-up study (Experiment 2) were administered the exact same manipulation of likability, but exposed to highly syncopated, low-groove drum-breaks, these effects were eradicated, suggesting that the results of Experiment 1 were not merely due to demand characteristics or response biases. Together, these findings support the notion that listeners are more responsive to “participating in the music” when they are relatively motivated to affiliate with the musician(s). Methodological limitations and directions for future research on the social psychology of “the groove” are discussed.

KEYWORDS: *syncopation, groove, affiliation, liking, movement*

Introduction

In a seminal article, Janata et al. (2012) defined musical groove as a pleasurable urge to move the body in response to music. In recent years, a number of studies have been conducted to identify the aspects of musical structure that promote the experience of groove. For instance, Witek and her colleagues (Witek, 2017; Witek et al., 2014) have focused on the role of syncopation—the appearance of musical onsets at metrically unexpected moments—showing that the pleasurable desire to move is most associated with moderately syncopated music. According to Witek (2017), a common source of groove-inducing syncopation is

created by the “...superimposition of two rhythms with different metric tendencies, such as 4/4 against 3/4” (p. 141). She theorizes that such polyrhythmic structures create “gaps” in which metric accents are not accompanied by objective auditory onsets, motivating listeners to move their bodies in order to physically enact the missing beats. Notably, Witek (2017) proposes that gaps in the musical surface do not compel movement, but rather, *invite* listeners’ participation in the music, implying that listeners must choose whether to *accept* this invitation or not (see also, Levitin et al., 2018; Senn et al., 2018). [1]

Given Witek’s (2017) analysis, the question arises: What determines whether listeners will answer this implicit call to participate in the music? One potential clue may be found in the theorizing of Janata et al. (2012), who posit that since “...music implies the actions of a group (the musicians)...high-groove music [may serve] as an invitation to *join the group* by virtue of inducing an urge to move along with [their] actions” (p. 71; emphasis added). Restated, the groove may be at least partially driven by a desire to affiliate with the musician(s). This suggests that the experience of groove should be heightened when affiliation motives are stronger. One well-established predictor of the desire to *affiliate* is personal liking—individuals are most inclined to connect with others whom they like and to avoid interacting with those whom they dislike (e.g., Likowski et al., 2008).

Interestingly, a general link between affiliation motives and body movement has been established in social psychological research on behavioral mimicry. Specifically, Likowski et al. (2008) have found that when individuals like others, they are automatically more inclined to imitate their facial expressions of emotion. Likewise, Lakin and Chartrand (2003) have shown that when individuals are induced to adopt the goal of affiliating with others, they are subsequently more likely to mimic a stranger’s body language.



According to Duffy and Chartrand (2015), mimicry of this sort has important social functions, helping individuals to understand the behavior that they are mimicking and allowing them to nonverbally convey this understanding to those whom they emulate. As a result, mimicry often fosters liking, rapport, and prosociality among interacting individuals, and is therefore associated with a range of social rewards.

Integrating these observations, we hypothesize that when listeners find musicians more likable, they will be more motivated to affiliate with them and thereby more responsive to participating in the music that they create or perform. In turn, this should facilitate the urge to move, at least when the music invites “gap filling” via moderate syncopation (Witek, 2017). Inasmuch as moving to the music may be construed as a form of mimicry—of moving along with the virtual actions of the musician (Janata et al., 2012)—experiencing a heightened urge to move may also engender positive affect inasmuch as mimicry is often socially rewarding (Duffy & Chartrand, 2015). In sum, we predicted that when they like the musician, individuals will be more likely to experience their music as stimulating movement and as subjectively pleasurable, the two core features of musical groove (Janata et al., 2012). We tested this proposition in a large-scale lab experiment, in which we manipulated the likability of the musician and measured the amount of groove participants perceived in the music that he had ostensibly produced.

Experiment 1: Method

Participants

Participants were 201 students from the University at Albany (114 female; Age: $M = 19.14$, $SD = 2.82$) who completed the study for partial course credit in an introductory psychology course. Fifty-one (25.4%) reported having at least one year of formal training in music theory and 122 (60.7%) reported at least one year of formal training on a musical instrument.

Materials

Musical stimuli consisted of 6 moderately syncopated, two-measure-long drum-breaks adapted from Witek et al. (2014; see Supporting Information for musical notation and syncopation measures; see also Kowalewski et al., 2020 for full listing of individual stimuli). Each drum-break was looped four times and played at 120 BPM for a total duration of 16.5 s. The stimuli were transcribed into Sibelius First music notation software (v. 2018.7) and exported as MIDI files, which were played through Sibelius’ virtual

instrument sample banks (high-hat, snare, and bass drum) and recorded as WAV files.

Procedure

Upon arrival at the lab, participants were seated at visually isolated computer workstations and instructed to put on a pair of headphones (Koss UR-20). They were then provided with the cover story:

The music you will be hearing today has been made by students at UAlbany who produced music for an electronic music course they took last semester. The students were also asked about their experiences at UAlbany and their impressions of the music course. You will later be asked about these details and how they compare to your own experiences. The names of the students have been changed to protect their identity. You will listen to several rhythms made by each student. Please listen to each rhythm and answer the questions that follow.

Participants were then sequentially presented with the names (Matthew, Jacob, and Martin) and classes (sophomore or junior) of each musician, as well as their purported comments regarding the music course. The comments made by the first two musicians were simply included to bolster the plausibility of the cover story: However, the comments of the third musician (Martin) were designed to manipulate his likability by suggesting that he either loved or hated the university that participants were attending and toward which they tend to have highly favorable attitudes. Specifically, for participants randomly assigned to the High Likability group, Martin commented, “I love UAlbany! I have always had a passion for music and I feel at home in this class!”; whereas, for those assigned to the Low Likability group, Martin instead commented, “Honestly, I hate UAlbany. I have always had a passion for music, but I don’t feel at home in this class.” Decades of social psychological research has established that attitudinal (dis)similarity robustly predicts (dis)liking (e.g., Byrne, 1971).

As the information regarding a particular musician remained on screen, participants listened to two of the abovementioned drum-breaks, which were ostensibly created by this musician. Following the procedure of Witek et al. (2014), to assess perceived groove, after each drum-break, participants were asked, “To what extent did this rhythm make you want to move?” and “How much pleasure did you experience listening to this rhythm?” on a 7-point Likert scale anchored at 1 (*not at all*) and 7 (*very much*). After evaluating Martin’s rhythms, as a manipulation check, participants were

asked to rate their attitudes toward all of the musicians in reverse order of appearance. Finally, participants completed measures of age, gender, and music training (years of formal training in music theory and on a musical instrument), as well as a measure of attitudes toward the University at Albany (see Kowalewski et al., 2020 for exact wording of all items).

Experiment 1: Results

According to independent samples *t*-tests, compared to those in the Low Likability ($n = 101$) group, participants in the High Likability group ($n = 100$) rated themselves as more apt to like the critical musician ($M_{\text{High}} = 4.79$, $SD = 1.22$; $M_{\text{Low}} = 3.88$, $SD = 1.44$; $t[194.05] = 4.83$, $p < .0001$, $\eta_p^2 = .11$), and to like interacting with him ($M_{\text{High}} = 4.58$, $SD = 1.11$; $M_{\text{Low}} = 3.65$, $SD = 1.45$; $t[187.18] = 5.08$, $p < .0001$, $\eta_p^2 = .12$), confirming that the manipulation of likability was successful. In addition, participants' self-reported liking for ($M = 2.68$, $SD = 1.51$) and feelings about ($M = 2.41$, $SD = 1.29$) the University at Albany were significantly below the (reverse-coded) scale midpoint, t 's > 12.42 , p 's $< .0001$, suggesting highly favorable attitudes toward the institution. This supports the assumption that (dis)liking for the critical musician was shaped by perceived differences in attitudinal (dis)similarity.

As in prior research (e.g., Witek et al., 2014), ratings of the two components of groove, urge to move and listening pleasure, were highly correlated overall, $r(199) = .86$, $p < .0001$. However, following Witek et al. (2014), we analyzed these measures separately. Consistent with predictions, analyses of variance (ANOVAs) revealed that participants in the High versus Low Likability group rated the drum rhythms ostensibly produced by the critical musician as eliciting a significantly greater urge to move ($M_{\text{High}} = 4.49$, $SD = 1.36$; $M_{\text{Low}} = 4.09$, $SD = 1.42$; $F[1, 199] = 4.09$, $p < .05$, $\eta_p^2 = .02$), as well as more listening pleasure ($M_{\text{High}} = 4.44$, $SD = 1.42$; $M_{\text{Low}} = 3.96$, $SD = 1.52$; $F[1, 199] = 5.19$, $p < .03$, $\eta_p^2 = .03$). Groove ratings for rhythms ostensibly produced by control musicians (i.e., those for whom liking was not manipulated) did not differ between groups, all p 's $> .17$.

Although these initial results were consistent with our hypothesis, they did leave open at least two alternative explanations. First, the findings may have stemmed from a "halo" effect (Thorndike, 1920), in which participants were biased to rate the music of the likable musician more favorably, irrespective of its structure and, most critically, whether or not it invited movement via moderate syncopation (Witek, 2017).

Second, it is possible that despite our attempts to obscure the true purpose of the study using a deceptive cover story and a between-participants likability manipulation, participants were nonetheless able to infer the hypothesis, leading them to artificially modify their groove ratings as a response to perceived experimenter demand. To address these concerns, we conducted a follow-up experiment in which high syncopation stimuli (i.e., low groove; Witek et al., 2014) were used. In addition, to measure levels of suspicion, we appended a funnel debriefing to the end of the experimental procedure (e.g., Blackhart & Clark, 2019).

Experiment 2: Method

Participants

Participants were 181 students from the University at Albany (134 female; Age: $M = 18.76$, $SD = 1.22$) who completed the study for partial course credit in an introductory psychology course. Fifty-six (30.9%) reported having at least one year of formal training in music theory and 110 (60.8%) reported at least one year of formal training on a musical instrument. Thirteen participants were excluded from the analysis based on the results of the suspicion check (see below), leaving 168 participants (125 female). None of the participants had participated in Experiment 1.

Materials and Procedure

Materials and procedure for Experiment 2 were identical to those for Experiment 1 with two exceptions: First, the moderately syncopated drum-breaks used for the critical musician were replaced with 2 highly syncopated, low-groove drum-breaks composed by Witek (see Kowalewski et al., 2020). Again, the order of presentation of these drumbreaks was counterbalanced between participants. Second, immediately prior to debriefing, participants were administered a "funneled" suspicion check in which general questions about the study gradually gave way to a more direct inquiry regarding suspicions, thereby giving participants a set of graded opportunities to "confess" any doubts regarding the cover story as well to reveal any beliefs regarding the true nature of the hypothesis (see Bargh & Chartrand, 2000; Blackhart & Clark, 2019).

Experiment 2: Results

Examination of responses to the post-experimental suspicion check revealed that 13 participants (7.2%) correctly inferred that the study was aimed at testing

whether attitudes toward the musician influenced ratings of his music. Although this lends credence to the possibility that experimenter demand is capable of influencing responses within this experimental paradigm, it indicates that participants generally appear to have believed the cover story and failed to guess the hypothesis. As alluded to above, the responses of these 13 participants were excluded from the analyses. The results reported below did not differ based on these exclusions. As in Experiment 1, independent samples *t*-tests revealed that the likability manipulation was successful (see Kowalewski et al., 2020 for detailed statistics on this manipulation check).

Groove ratings were analyzed exactly as in Experiment 1. In contrast to the results of the first experiment, ANOVAs revealed no significant differences between participants in the High and Low Likability groups either for ratings of the urge to move ($M_{\text{High}} = 1.94$, $SD = 1.19$; $M_{\text{Low}} = 1.73$, $SD = 0.98$; $F[1, 166] = 1.70$, $p = .20$, $\eta_p^2 = .01$) or listening pleasure ($M_{\text{High}} = 1.89$, $SD = 1.12$; $M_{\text{Low}} = 1.66$, $SD = 0.97$; $F[1, 166] = 1.88$, $p = .17$, $\eta_p^2 = .01$). This failure to replicate the results of Experiment 1 using highly syncopated stimuli suggests that the impact of Likability on groove ratings is sensitive to musical structure and is not merely an artifact of halo effects or demand characteristics.

Discussion

In this study, we tested the hypothesis that when listeners have relatively positive attitudes toward a musician, they will be more inclined to experience his or her music as provoking movement and as subjectively pleasurable, the two core features of perceived groove (Janata et al., 2012). To this end, in Experiment 1, we exposed participants to a set of moderately-syncopated drumbreaks and experimentally manipulated the likability of the musician who had ostensibly created them. In line with predictions, participants led to find the musician more versus less likable rated the same drumbreaks as more evocative of both the urge to move and of feelings of pleasure.

Results of a follow-up experiment using high-syncopation, low-groove stimuli (Experiment 2) revealed no effect of induced motivation to affiliate with the musician on either the urge to move or feelings of pleasure, suggesting that participants did not indiscriminately rate the music of more likable musicians more favorably. An added suspicion check did show that at least some participants were capable of explicitly guessing the connection between the

experimental manipulation and the dependent measures. However, the null results of Experiment 2 suggest that the demand characteristics associated with the likability manipulation cannot account for the significant impact of likability on perceived groove found in Experiment 1. As such, the present findings remain consistent with the notion that moderately syncopated music extends an invitation to move (Witek, 2017) and that this invitation is more likely to be accepted when the music is associated with someone with whom listeners would prefer to affiliate.

Although the present study may be the first to empirically support a link between personal liking and groove, it is also subject to a number of methodological limitations that will need to be addressed in future research. First and foremost, it did not gauge actual movement in response to the musical stimuli. In at least a handful of studies, self-reported groove ratings have been supplemented with objective measurements of body movement based on video coding (e.g., Janata et al., 2012) or psychophysiological indices of motor system activation (e.g., motor-evoked potentials; Stupacher et al., 2013). Conceptual replication of the present findings using a measure of overt movement would provide more conclusive evidence for our hypothesis by objectively confirming that the self-reported urge to move is not merely a response bias.

Although the present study only focused on affiliation motives based on attitudinal (dis)similarity, a number of other social psychological factors might also bear on the desire to affiliate with musicians, thereby impacting the urge to move to their music. For instance, listeners may be more inclined to form a personal connection with, and thereby to participate in the music produced by a musician with whom they share social group membership based on ethnicity, gender, race, or class. Likewise, the (un)favorability of the stereotypes that individuals possess regarding members of different groups may affect whether they will emotionally and/or physically engage with music produced by a member of the group, particularly when “individuating” information regarding the musician is limited.

The specific contents of stereotypes might contribute to perceptions of groove more directly, irrespective of their influence on affiliation motives. For example, research has shown that African Americans are commonly stereotyped as superior in rhythmic ability (Plous & Williams, 1995). This raises the possibility that listeners may be, however implicitly, biased to perceive music produced by black musicians as higher in groove simply due to their expectation that such

music is likely to be more “rhythmic” or danceable (“positive” stereotypes; see Czopp et al., 2015).

Conclusion

The present study suggests that the experience of groove does not merely involve an automatic compulsion to move elicited by particular musical structures. Rather, it at least partially reflects the desire to affiliate with the musician(s) by synchronizing one’s movement with the sounds that they produce—the stronger the motive to affiliate, the greater the urge to move to the music and the more pleasure it evokes. To be clear, this does not imply that the structure of the music itself is irrelevant to groove—as discussed earlier, some forms of music may be more likely to set the stage for movement, for instance, by creating “gaps” within a syncopated metrical framework that can be filled by moving the body in synchrony with the beat (Witek, 2017). Consistent with this assumption, we found no effect of musician likability when the critical musical stimuli were too high in syncopation to elicit an urge to move. This suggests that the impact of musical structure on groove may be moderated by the implicit or explicit “sense of social interaction” (Janata et al., 2012, p. 71) inherently associated with musical engagement. We hope that our findings will spur additional research aimed at elucidating the potential social-psychological underpinnings of “the groove”.

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End Notes

[1] This proceedings article is based on Kowalewski et al. (2020), which contains a more comprehensive description of the research program outlined here.

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