

Press release

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What kind of music makes us dance? Musical taste is more important than rhythm

The "Groove" research project seeks to identify the properties of a song that stimulate people to move their bodies. A team of researchers at the Lucerne University of Applied Sciences and Arts has now been able to show that this effect is not solely down to the music: essentially, people's preferences are at the root of it.

Understanding what makes people move synchronously to music is something of a holy grail for music psychologists. "We look for the causes of the groove in the rhythmic properties of the music, but results to date are contradictory," says researcher Olivier Senn from the Lucerne University of Applied Sciences and Arts. To shed light on the "secret of groove", he and his team launched an online listening experiment two years ago in which participants were asked to rate reconstructed drum patterns from 248 songs. The songs came from very different styles – for example pop, rock, funk, soul and disco – and the originals involved the playing of fifty world-famous drummers, including John Bonham (Led Zeppelin), Clyde Stubblefield (James Brown) and Chad Smith (Red Hot Chili Peppers).

"We made the assumption that it was the drums, as a concise and beat-bearing instrument, that played a key role in establishing the feeling of groove," says Senn. That is why the online listening experiment involved listening to the songs' drum patterns on their own. The experiment took place between October 2016 and December 2017. 665 persons took part, mainly from Switzerland and Germany. They listened to some of the drum patterns and gave a total of 8329 ratings on how strongly the patterns triggered their desire to move to the rhythm.

Personal taste dominates the musical factors

The ratings exhibited numerous small rhythmic effects: more complex drum rhythms, for instance, exerted a greater groove effect. However, this effect depended to a large extent on the musical expertise of the participants: professional and amateur musicians responded positively to complexity, while lay persons liked moving to simple rhythms just as much.

That said, personal musical tastes had a far greater influence: participants rated a drum pattern significantly higher if they thought it came from a style they liked or from a song they knew. "That surprised us," says Senn. "After all, the isolated drum patterns lacked most of the features that might reveal the style or the song, such as the instrumentation, vocal style, melody, lyrics or sound." The mere association of a rhythm with a style or a song was apparently enough to influence the ratings. "We knew, of course, that musical taste coloured people's perception of music. What surprised us, however, was the strong dominance of personal musical taste," says Senn.

Consequences for groove research

Research into groove has so far looked for universal factors, for musical properties that exert a similar effect on a majority of people. The new results call this approach into question: depending on the stylistic or cultural context, completely different factors can trigger people's desire to dance. "Groove research must now broaden its perspective," says Senn. "To understand how a person

responds to music, we need to know much more about them: what music they know and like, what music they grew up with, what culture they are embedded in, and whether they generally like moving to music. Our next study will take these factors into account."

In a subsequent step, the Lucerne team has revised its groove questionnaire in a bid to distinguish between taste-related and motor responses. The new questionnaire is currently being tested as part of a wide-ranging survey, and everyone is invited to participate in this test: www.hslu.ch/groove-questionnaire (English).

Starting in 2019 the team is planning a new, large-scale study that will focus on listeners' contextual factors and the interaction of the bass and the drums.

Several projects exploring groove

The research team of the Lucerne School of Music at the Lucerne University of Applied Sciences and Arts started its research into the perception of groove six years ago. It started by devoting itself to the hypothesis that shifts in the bass and drum playing in the millisecond range – microtiming – are co-responsible for the groove. The Lucerne-based scientists investigated the movements of test subjects using video-based movement tracking. This revealed that although microtiming plays a role in the groove, it only explains a small part of the phenomenon.

In the follow-up project, which was also funded by the Swiss National Science Foundation, researchers concentrated on the drums: the first part (2016 to 2017) involved looking for connections between drum patterns and listeners' responses in a listening experiment. Details are available under: www.hslu.ch/groove.

The next project will focus on the music biographies of the listeners and the interplay of bass and drums.

Links:

Link to the online survey: www.hslu.ch/groove-questionnaire

The results of the drum project (2016 to 2017) were published in *PLoS ONE*, the journal of the Public Library of Science:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0199604>

The findings of the microtiming study (2012 to 2014) appeared in *Frontiers in Psychology*:

<http://journal.frontiersin.org/article/10.3389/fpsyg.2016.01487/full>

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